

TABLE OF CONTENTS OF SPECIAL PROVISIONS

Note: This Table of Contents has been prepared for the convenience of those using this contract with the sole express purpose of locating quickly the information contained herein; and no claims shall arise due to omissions, additions, deletions, etc., as this Table of Contents shall not be considered part of the contract.

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MARCH 27, 2019
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 155-173

REPLACEMENT OF HIGHWAY SIGNING ON I-84

Towns of West Hartford, Hartford & East Hartford

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016, as revised by the Supplemental Specifications dated July 2018 (otherwise referred to collectively as "ConnDOT Form 817") is hereby made part of this contract, as modified by the Special Provisions contained herein. Form 817 is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362>. The current edition of the State of Connecticut Department of Transportation's "Construction Contract Bidding and Award Manual" ("Manual"), is hereby made part of this contract. If the provisions of this Manual conflict with provisions of other Department documents (not including statutes or regulations), the provisions of the Manual will govern. The Manual is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=2288&q=259258>. The Special Provisions relate in particular to the REPLACEMENT OF HIGHWAY SIGNING ON I-84 in the Towns of West Hartford, Hartford & East Hartford.

CONTRACT TIME AND LIQUIDATED DAMAGES

Seven Hundred Ninety Two (792) calendar days will be allowed for completion of the work on this Contract and the liquidated damages charge to apply will be Two Thousand Four Hundred Dollars (\$2,400.00) per calendar day.

LIQUIDATED DAMAGES PER HOUR
PROJECT 155-173

I-84 Eastbound			
If Working Period Results in Additional Number of Lanes Closed	Additional 1 Lane Closure	Additional 2 Lane Closure	Additional 3 Lane Closure
1st Hour of Restriction Violation	\$ 50,000	\$ 100,000	\$ 100,000
2 nd Hour of Restriction Violation	\$ 100,000	\$ 100,000	\$ 100,000
3rd Hour or any Subsequent Hour of Restriction Violation	\$ 100,000	\$ 100,000	\$ 100,000
I-84 Westbound			
If Working Period Results in Additional Number of Lanes Closed	Additional 1 Lane Closure	Additional 2 Lane Closure	Additional 3 Lane Closure
1st Hour of Restriction Violation	\$ 500	\$ 10,000	\$ 25,000
2 nd Hour of Restriction Violation	\$ 500	\$ 50,000	\$ 100,000
3rd Hour or any Subsequent Hour of Restriction Violation	\$ 3,000	\$ 100,000	\$ 100,000

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a “0,” “1,” “2,” or “3.”

The above liquidated damages shall be applied when the actual number of lanes closed exceeds the number of lanes allowed to be closed, as dictated in the Limitation of Operations Chart.

If all available shoulder widths or gore areas are not available to traffic for each hour designated with a “0” on the Limitation of Operations Charts, then liquidated damages of \$500 shall apply for each hour, or part thereof.

**NOTICE TO CONTRACTOR - POTENTIAL MODIFIED AWARD
SCHEDULE**

The contractor is hereby given notice that this contract will not be awarded until all State and Federal funding approvals have been received. If funding approvals are not received, this Contract award may be delayed or the Contract may be withdrawn and re-advertised at the discretion of the Department, per section XIII of the Construction Contract Bidding and Award Manual. Any delay to the Contract award or failure to award shall not be the basis for any claims by any bidder.

NOTICE TO CONTRACTOR - PRE-BID QUESTIONS AND ANSWERS

Questions pertaining to DOT advertised construction projects must be presented through the CTDOT Pre-Bid Q and A Website. The Department cannot guarantee that all questions will be answered prior to the bid date. **PLEASE NOTE - at 9:00 am Monday (i.e. typical Wednesday Bid Opening) the project(s) being bid will be closed for questions, at which time questions can no longer be submitted through the Q and A Website.**

Answers may be provided by the Department up to 12:00 noon, the day before the bid. At this time, the Q and A for those projects will be considered final, unless otherwise stated and/or the bid is postponed to a future date and time to allow for further questions and answers to be posted.

If a question needs to be asked the day before the bid date, please contact the Contracts Unit staff and email your question to dotcontracts@ct.gov immediately.

Contractors must identify their company name, contact person, contact email address and phone number when asking a question. The email address and phone number will not be made public.

The questions and answers (if any) located on the Q and A Website are hereby made part of the bid/contract solicitation documents (located on the State Contracting Portal), and resulting contract for the subject project(s). It is the bidder's responsibility to monitor, review, and become familiar with the questions and answers, as with all bid requirements and contract documents, prior to bidding. By signing the bid proposal and resulting contract, the bidder acknowledges receipt of, and agrees to the incorporation of the final list of Q and A, into the contract document.

Contractors will not be permitted to file a future claim based on lack of receipt, or knowledge of the questions and answers associated with a project. All bidding requirements and project information, including but not limited to contract plans, specifications, addenda, Q and A, Notice to Contractors, etc., are made public on the State Contracting Portal and/or the CTDOT website.

**NOTICE TO CONTRACTOR - HARTFORD AND EAST HARTFORD
SPECIAL EVENTS**

The Contractor is hereby notified that ramps, turning roadways, and roadway closures in the City of Hartford and the Town of East Hartford will be subject to additional restrictions during periods with scheduled special events. Special events include, but are not limited to, the Hartford Marathon, UConn sporting events, and parades.

Additionally, it is anticipated that there will approximately 70 home games for the Hartford Yard Goats, from the middle of April to early September. The finalized schedule including home game dates is anticipated to be released by February of each year.

Refer to the “Special Events” section within the special provision for Section 1.08.04 – Prosecution and Progress: Limitation of Operations for additional information and restrictions.

**NOTICE TO CONTRACTOR - GLOBAL POSITIONING SYSTEM (GPS)
COORDINATES FOR SIGNS**

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new State owned and maintained signs. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov. Refer to the special provision for Section 12.00 General Clauses For Highway Signing.

NOTICE TO CONTRACTOR - EXISTING DOT ELECTRICAL FACILITIES

The Contractor is hereby advised that Bridge No. 01428A, carrying I-91 SB over I-84 EB and WB, contains existing rigid metal conduit with active highway lighting circuit conductors cast into both parapets and associated wingwalls. Underbridge lighting is also present, mounted to the underside of the bridge structure.

Prior to any work to be performed in the subject area, the Contractor shall contact District 1 Electrical Maintenance to mark out the locations of any lighting circuits which may potentially be impacted within the construction limits.

Existing illumination conduit and conductors contained within the bridge parapet/wingwalls shall be maintained in service during construction. The Contractor shall carry out his work in such a manner as to avoid causing damage to existing conduits and lighting circuitry. It is the Contractor's responsibility to review the existing conduit system cast into the bridge parapets and to determine if the proposed construction activities will cause damage to the conduit system.

The Contractor shall determine the exact location of conduit and junction boxes cast into parapet/wingwalls at the locations where his drilling procedure will be carried out. The Contractor shall inform the Engineer if damage to electrical conduits will result from his work so that modifications to the proposed project work can be developed.

The Contractor shall be responsible for the repair of damage to the lighting system incurred as the result of his operations. All repairs or replacements due to the Contractor's operations shall be made by the Contractor at the Contractor's expense. The Contractor shall repair the lighting system before the normal nighttime turn-on of the lights.

**NOTICE TO CONTRACTOR - CONSTRUCTION CONTRACTOR
DIGITAL SUBMISSIONS**

Upon execution of the Contract, the Contractor acknowledges and agrees that contractual submittals for this Project shall be submitted and handled through a system of paperless electronic means as outlined in the special provision for Section 1.05 herein.

Shop drawings, working drawings, and product data shall be created, digitally signed and delivered by the Contractor in accordance with the Department's [Contractor Digital Submission Manual](#) (CDSM). Other deliverables that are required by other special provisions shall be similarly submitted.

Access credentials will be provided to the Contractor by the Department.

The Department will provide the Contractor with a list of email addresses that are to be used for each submittal type.

The Department shall not be held responsible for delays, lack of processing or response to submittals that do not follow the specified guidelines in the CDSM.

NOTICE TO CONTRACTOR - USE OF STATE POLICE OFFICERS

The Department will reimburse services of State Police Officers as a direct payment to the Department of Emergency Services and Public Protection. Payment for State Police Officers must be approved by the Engineer. Any State Police Officers used by the Contractor for its convenience is the responsibility of the Contractor. A separate payment item for State Police Officers is not included in this Contract.

Any costs associated with coordination and scheduling of State Police Officers shall be included in the lump sum bid price for Item No. 0971001A – Maintenance and Protection of Traffic.

NOTICE TO CONTRACTOR - HAZARDOUS MATERIALS INVESTIGATIONS

A limited hazardous materials site investigation has been conducted in association with the replacement of Highway Signing in West Hartford, Hartford & East Hartford, Connecticut. The scope of inspection was limited to the representative components projected for impact.

Galvanized (unpainted) sign support poles were confirmed present at Site Nos 1, 4, 7, 15, 16, 18, 20, 22, 33, 42, 45, 46, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 66, 67, 68, & 69, therefore no lead paint was identified.

Detectable amounts of lead in paint were either identified or presumed at Site Nos. 2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 17, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 43, 44, 47, 52, 62, 63, 64, & 65.

Projected paint waste debris was characterized as non-hazardous, non-RCRA waste at Site Nos. 2, 3, 5, 9, 11, 14, 17, 26, 32, 36, 27, 28, 39, 44, 47, 62, 63, 64 & 65.

Projected paint waste debris at Site Nos. 6, 8, 10, 12, 13, 19, 21, 23, 24, 25, 27, 28, 29, 30, 31, 34, 35, 40, 41, 43 & 52 was either characterized or is presently presumed as CTDEEP/RCRA hazardous waste.

All steel and metal generated from work tasks (painted or not) shall be segregated and recycled as scrap metal at a scrap metal recycling facility. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

Caulkings (C1, C2, C3 & C4) around the metal sign support baseplates and concrete foundations at Site Nos. 11, 24, 25, 37 & 64 were found to contain asbestos, however the caulking at these sites are not projected to be impacted as the scope of work is for new signs to be placed on the existing sign supports.

The Contractor is hereby notified that these hazardous materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. The Contractor will be required to implement appropriate health and safety measures for all construction activities impacting these materials. These measures shall include, but are not limited to, air monitoring, engineering controls, personal protective equipment and decontamination, equipment decontamination and personnel training. **WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.**

The Department, as Generator, will provide an authorized representative to sign all manifests and waste profile documentation required by disposal facilities for disposal of hazardous materials.

The Sections which shall be reviewed by the Contractor include, but are not limited to, the following:

- Item No. 0020903A – Lead Compliance for Miscellaneous Exterior Tasks

The Contractor is alerted to the fact that a Department environmental consultant may be on site for abatement and related activities, to collect environmental samples (if necessary), and to observe site conditions for the State.

Information pertaining to the results of the limited hazardous materials investigation discussed can be found in the document listed below. This document shall be available for review electronically.

- HazMat Inspection Letter, Replacement of Highway Signing, West Hartford, Hartford & East Hartford, CT, TRC Environmental Corporation, December 28, 2018.

SECTION 1.02 - PROPOSAL REQUIREMENTS AND CONDITIONS

Article 1.02.04 – Examination of Plans, Specifications, Special Provisions and Site of Work:

Replace the third sentence of the last paragraph with:

The Department cannot ensure a response to inquiries received later than ten (10) days prior to the original scheduled opening of the related bid.

SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

"The Contractor shall commence and proceed with the Contract work on the date specified in a written notice to proceed issued by the Engineer to the Contractor. The date specified will be no later than 45 calendar days after the date of the execution of the Contract by the Department".

SECTION 1.05 - CONTROL OF THE WORK

Replace Article 1.05.02 with the following:

1.05.02—Contractor Submittals, Working Drawings, Shop Drawings, Product Data, Submittal Preparation and Processing - Review Timeframes, Department’s Action:

1. Contractor Submittals: The plans provided by the Department show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show the location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare working drawings, shop drawings or product data necessary to complete the Project.

The Contractor shall prepare submittals as Portable Document Format (PDF) files. The Contractor is also required to acquire, maintain access and use the Department’s document management system for delivery of submittals. The format, digital signing requirements, delivery processes and document tracking procedures shall be performed in accordance with this specification and the [Contractor’s Digital Submission Manual](#) (CDSM).

The submittals shall be sent to the Department’s reviewer(s), sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods as specified herein (including any necessary revisions, resubmittal, and final review), and acquisition of materials, without causing a delay of the Project.

2. Working Drawings: When required by the Contract or when ordered to do so by the Engineer, the Contractor shall prepare and submit the working drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut, for review. The drawings shall be delivered sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods specified herein (including any necessary revisions, resubmittal, and final review).

There will be no direct payment for furnishing any working drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

a. Working Drawings for Permanent Construction: The Contractor shall supply to the Assistant District Engineer a certificate of insurance in accordance with 1.03.07 at the time that the working drawings for the Project are submitted.

The Contractor’s designer, who prepares the working drawings, shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum amount of \$2,000,000 per error or omission. The Contractor’s designer may elect to obtain a policy containing a maximum \$250,000 deductible clause, but if the Contractor’s designer should obtain a policy containing such a clause, they shall be liable to the extent of at

least the deductible amount. The Contractor's designer shall obtain the appropriate and proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's designer shall continue this liability insurance coverage for a period of

- (i) 3 years from the date of acceptance of the work by the Engineer, as evidenced by a State of Connecticut, Department of Transportation form entitled "Certificate of Acceptance of Work," issued to the Contractor; or
- (ii) 3 years after the termination of the Contract, whichever is earlier, subject to the continued commercial availability of such insurance.

b. Working Drawings for Temporary Construction: The Contractor shall submit drawings, calculations, procedures and other supporting data to the Assistant District Engineer.

3. Shop Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver shop drawings to the Designer for review. Review timeframes and submission locations are as specified herein.

There will be no direct payment for furnishing any shop drawings, but the cost thereof shall be considered as included in the general cost of the work.

4. Product Data: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver product data.

The Contractor shall submit the product data in a single submittal for each element or group of elements of construction.

The Contractor shall mark each copy of the product data submittal to show applicable choices and options. Where product data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product data shall include the following information and confirmation of conformance with the Contract to the extent applicable: manufacturer's printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and seals, notation of coordination requirements, Contract item number, and any other information required by the individual Contract provisions.

There will be no direct payment for furnishing any product data, but the cost thereof shall be considered as included in the general cost of the work.

5. Submittal Preparation and Processing – Review Timeframes: The Contractor shall allow 30 calendar days for submittal review by the Department, from the date receipt is acknowledged by the Department's reviewer. For any submittals marked with "Revise and Resubmit" or "Rejected," the Department is allowed an additional 20 calendar days for review of any resubmissions.

An extension of Contract time will not be authorized due to the Contractor's failure to transmit submittals sufficiently in advance of the work to permit processing.

The furnishing of shop drawings, working drawings or product data, or any comments or suggestions by the Designer or Engineer concerning shop drawings, working drawings or product data, shall not relieve the Contractor of any of its responsibility for claims by the State or by third parties, as per 1.07.10.

The furnishing of the shop drawings, working drawings and product data shall not serve to relieve the Contractor of any part of its responsibility for the safety or the successful completion of the Project construction.

- 6. Department's Action:** The Designer or Engineer will review each submittal, mark each with a self-explanatory action stamp, and return the stamped submittal promptly to the Contractor. The Contractor shall not proceed with the part of the Project covered by the submittal until the submittal is marked "No Exceptions Noted" or "Exceptions as Noted" by the Designer or Engineer. The Contractor shall retain sole responsibility for compliance with all Contract requirements. The stamp will be marked as follows to indicate the action taken:
- a. If submittals are marked "No Exceptions Noted," the Designer or Engineer has not observed any statement or feature that appears to deviate from the Contract requirements. This disposition is contingent on being able to execute any manufacturer's written warranty in compliance with the Contract provisions.
 - b. If submittals are marked "Exceptions as Noted" the considerations or changes noted by the Department's Action are necessary for the submittal to comply with Contract requirements. The Contractor shall review the required changes and inform the Designer or Engineer if they feel the changes violate a provision of the Contract or would lessen the warranty coverage.
 - c. If submittals are marked "Revise and Resubmit," the Contractor shall revise the submittals to address the deficiencies or provide additional information as noted by the Designer or Engineer. The Contractor shall allow an additional review period as specified in 1.05.02-5.
 - d. If submittals are marked "Rejected," the Contractor shall prepare and submit a new submittal in accordance with the Designer's or Engineer's notations. The resubmissions require an additional review and determination by the Designer or Engineer. The Contractor shall allow an additional review period as specified in 1.05.02-5.

SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.10 - Contractor's Duty to Indemnify the State against Claims for Injury or Damage:

Add the following after the only paragraph:

“It is further understood and agreed by the parties hereto, that the Contractor shall not use the defense of Sovereign Immunity in the adjustment of claims or in the defense of any suit, including any suit between the State and the Contractor, unless requested to do so by the State.”

SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.13 - Contractor's Responsibility for Adjacent Property, Facilities and Services is supplemented as follows:

The following company and representative shall be contacted by the Contractor to coordinate the removal of their utilities on this project 30 days prior to the start of any work on this project involving their utilities:

Mr. Augusto Grazuna
District 1 Electrical Supervisor
Department of Transportation
Hartford, Connecticut
(860) 566-3156/3157

Mr. Kevin O'Brian
Eversource
(860)651-2446
kevin.obrian@nu.com

Inspection Date:

Unmetered Power Letter

155-260

Type of Request: NEW (service) Date: 12/26/2018 YYX
 Change (modify) Remove
 Revision No: 0 Removal Date:
 Meter No: Project No: 0155-0173
 Account No: WR #:

Equipment Description

Sign with Flashers

Operating Characteristics

No Of Intervals: LED: X No Of Ways:
 Green Indications: No of Arrows:
 No Of Signs: 1 No Of Walks:
 Controller Wattage: 10 Sign Wattage: 0
 Lamp Wattage: Red: Yellow: 0 Green:
 Don't Walk: Arrow:

No of Flashing: Red: Yellow:
 Luminaires: QTY: Wattage:

0.000 kw X 0 hrs/mo = 0 kwh/mo

(Normal Operation)

0.000 kw X 0 hrs/mo = 0 kwh/mo

(Flashing Operation)

0.060 kw X 730 hrs/mo = 44 kwh/mo

(Flashing Operation Sign)

Monthly Estimate: \$ 4 Total Monthly kWh: 44

Remarks:

REMOVAL OF SIGN WITH FLASHER UNDER PROJECT # 155-173

FOR UTILITY USE ONLY:

Engineering Dept: Date of Service: _____
 Customer Serv Rep: _____
 CE & MS Rep: _____
 Work Request: _____ Town Code: _____
 Work Order: _____ SIC Code: _____
 Service Pole: _____ Isolation Dev: _____
 Engineering Notes:

BILLING DEPARTMENT

Effective Billing Date: ____/____/____

New Account Change Account Delete Account

Monthly Billing Demand (KW) Rate:
 Monthly Billing Energy (KWH) Notes:
 Customer Account Number Line No:
 Summary Account Number Dept No:

Authorized Billing Signature: _____

Routing (Please Make Copies)

____ Engineering _____ Operations
 ____ Billing & Accounting _____ Applicant

S
E
N
D

UTILITY COMPANY ADDRESS: (SEND TO)

Utility: EVERSOURCE
 Attention:
 Address:
 P.O. Box: 150493
 City/State/Zip: HARTFORD, CT. 06164

LOCATION DESCRIPTION City/Town: WEST HARTFORD

Reference No: 155-260
 Pole Custodian: HELCO
 Pole No: 3024
 Meter Address:
 Route Number: 084 (EB - BRIDGE MTD SIGN)
 Nearest Cross Street: ON ROUTE 173 (SOUTH MAIN ST) (FLA SIGN)
 Applicant Contact: Cory DeSanti
 Contact Telephone: (860) 594-2602

R
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Applicant Address: (RETURN TO)

Applicant: Dept of Transportation
 Address: Division of Traffic Engineering
 Address: 2800 Berlin Turnpike
 City/Town: Newington
 State/Zip: CT 06131-7546

Authorized Signature

In Signing Below, I recognize that the Utility Company may verify these loads at any time and billing may be adjusted according to the results of that verification.

Authorized Signature: _____

Name (Typed or Printed): Jorge M. Kuljis

B
I
L
L

Customer to be Billed: (BILL TO)

Customer: STATE OF CONN.
 Attention: DEPT. OF TRANS.
Zakia Choudhry 2800 BERLIN TURNPIKE
 P.O. Box: 317546
 City/State/Zip: NEWINGTON, CT 06131-7546

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.04 - Limitation of Operations - Add the following:

In order to provide for traffic operations as outlined in the Special Provision "Maintenance and Protection of Traffic," the Contractor will not be permitted to perform any work which will interfere with the described traffic operations on all project roadways as follows:

I-84

On the following State observed Legal Holidays:

New Year's Day
Good Friday, Easter*
Memorial Day
Independence Day
Labor Day
Thanksgiving Day**
Christmas Day

The following restrictions also apply:

On the day before and the day after any of the above Legal Holidays.

On the Friday, Saturday, and Sunday immediately preceding any of the above Holidays celebrated on a Monday.

On the Saturday, Sunday, and Monday immediately following any of the above Holidays celebrated on a Friday.

* From 6:00 a.m. the Thursday before the Holiday to 8:00 p.m. the Monday after the Holiday.

** From 6:00 a.m. the Wednesday before the Holiday to 8:00 p.m. the Monday after the Holiday.

During all other times

The Contractor shall maintain and protect traffic as shown on the accompanying "Limitation of Operations" charts, which dictate the minimum number of lanes that must remain open for each day of the week.

The Contractor will be allowed to halt I-84 traffic for a period not to exceed 10 minutes to perform necessary work for the erection and/or removal of overhead sign supports, as approved by the Engineer, between 12:01 a.m. and 5:00 a.m. on all non-Holiday days.

**Limitation of Operations Chart
Maximum Number of Lanes Allowed to be Closed**

Route: I-84 EB Number of Through Lanes: 3								Route: I-84 EB Number of Through Lanes: 4							
Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	2	2	2	2	2	2	2	Mid	3	3	3	3	3	3	3
1 AM	2	2	2	2	2	2	2	1 AM	3	3	3	3	3	3	3
2 AM	2	2	2	2	2	2	2	2 AM	3	3	3	3	3	3	3
3 AM	2	2	2	2	2	2	2	3 AM	3	3	3	3	3	3	3
4 AM	2	2	2	2	2	2	2	4 AM	3	3	3	3	3	3	3
5 AM	1	1	1	1	1	2	2	5 AM	2	2	2	2	2	3	3
6 AM	0	0	0	0	0	1	2	6 AM	0	0	0	0	0	2	3
7 AM	0	0	0	0	0	S	1	7 AM	0	0	0	0	0	1	2
8 AM	0	0	0	0	0	S	1	8 AM	0	0	0	0	0	1	2
9 AM	S	S	S	S	S	S	S	9 AM	S	S	S	S	S	S	1
10AM	S	S	S	S	S	S	S	10AM	S	S	S	S	S	S	1
11 AM	S	S	S	S	S	S	S	11 AM	S	S	S	S	S	S	S
Noon	S	S	S	S	S	S	S	Noon	S	S	S	S	S	S	S
1 PM	S	S	S	S	S	S	S	1 PM	S	S	S	S	S	S	S
2 PM	S	S	S	S	S	S	S	2 PM	S	S	S	S	S	S	S
3 PM	0	0	0	0	0	S	S	3 PM	0	0	0	0	0	S	S
4 PM	0	0	0	0	0	S	S	4 PM	0	0	0	0	0	S	S
5 PM	0	0	0	0	0	S	S	5 PM	0	0	0	0	0	S	S
6 PM	S	S	S	S	S	S	S	6 PM	S	S	S	S	S	S	S
7 PM	S	S	S	S	S	S	S	7 PM	1	1	1	S	S	1	1
8 PM	S	S	S	S	S	S	S	8 PM	1	1	1	1	S	1	1
9 PM	1	1	1	S	S	S	1	9 PM	2	2	2	1	1	1	2
10 PM	1	1	1	1	1	1	1	10 PM	2	2	2	2	2	2	2
11 PM	2	2	2	2	1	1	2	11 PM	3	3	3	3	2	2	3

On Holidays and within Holiday Periods, all Hours shall be '0.'

“0” = No lanes are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, gore areas, and all available shoulder widths shall be open to traffic during this time period.

“S” = Shoulders are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, and gore areas shall be open to traffic during this time period.

“1” = One lane closure is allowed. Adjacent shoulder(s) and/or gore areas can also be closed as necessary.

“2” = Two lane closures are allowed. Adjacent shoulder(s) and/or gore areas can also be closed as necessary.

“3” = Three lane closures are allowed. Adjacent shoulder(s) and/or gore areas can also be closed as necessary.

**Limitation of Operations Chart
Maximum Number of Lanes Allowed to be Closed**

Route: I-84 WB Number of Through Lanes: 3								Route: I-84 WB Number of Through Lanes: 4							
Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	2	2	2	2	2	2	2	Mid	3	3	3	3	3	3	3
1 AM	2	2	2	2	2	2	2	1 AM	3	3	3	3	3	3	3
2 AM	2	2	2	2	2	2	2	2 AM	3	3	3	3	3	3	3
3 AM	2	2	2	2	2	2	2	3 AM	3	3	3	3	3	3	3
4 AM	2	2	2	2	2	2	2	4 AM	3	3	3	3	3	3	3
5 AM	1	1	1	1	1	2	2	5 AM	2	2	2	2	2	3	3
6 AM	0	0	0	0	0	1	2	6 AM	0	0	0	0	0	2	3
7 AM	0	0	0	0	0	1	1	7 AM	0	0	0	0	0	2	2
8 AM	0	0	0	0	0	S	1	8 AM	0	0	0	0	0	1	2
9 AM	S	S	S	S	S	S	S	9 AM	S	S	S	S	S	S	S
10AM	S	S	S	S	S	S	S	10AM	S	S	S	S	S	S	S
11 AM	S	S	S	S	S	S	S	11 AM	S	S	S	S	S	S	S
Noon	S	S	S	S	S	S	S	Noon	S	S	S	S	S	S	S
1 PM	S	S	S	S	S	S	S	1 PM	S	S	S	S	S	S	S
2 PM	S	S	S	S	S	S	S	2 PM	S	S	S	S	S	S	S
3 PM	0	0	0	0	0	S	S	3 PM	0	0	0	0	0	S	S
4 PM	0	0	0	0	0	S	S	4 PM	0	0	0	0	0	S	S
5 PM	0	0	0	0	0	S	S	5 PM	0	0	0	0	0	S	S
6 PM	S	S	S	S	S	S	S	6 PM	S	S	S	S	S	S	S
7 PM	S	S	S	S	S	S	S	7 PM	1	1	1	S	S	1	S
8 PM	S	S	S	S	S	S	S	8 PM	1	1	1	1	1	1	1
9 PM	1	1	1	S	S	S	S	9 PM	2	2	2	1	1	1	1
10 PM	1	1	1	1	S	1	1	10 PM	2	2	2	2	1	2	2
11 PM	2	2	2	1	1	1	1	11 PM	3	3	3	2	2	2	2

On Holidays and within Holiday Periods, all Hours shall be '0.'

“0” = No lanes are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, gore areas, and all available shoulder widths shall be open to traffic during this time period.

“S” = Shoulders are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, and gore areas shall be open to traffic during this time period.

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“3” = Three lane closures are allowed. Adjacent shoulder(s) and/or gore areas can also be closed as necessary.

Ramps and Turning Roadways

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

All Other Roadways

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

Additional Lane Closure Restrictions

It is anticipated that work on adjacent projects will be ongoing simultaneously with this project. The Contractor shall be aware of those projects and anticipate that coordination will be required to maintain proper traffic flow at all times on all project roadways, in a manner consistent with these specifications and acceptable to the Engineer.

The Contractor will not be allowed to perform any work that will interfere with traffic operations on a roadway when traffic operations are being restricted on that same roadway, unless there is at least a one mile clear area length where the entire roadway is open to traffic or the closures have been coordinated and are acceptable to the Engineer. The one mile clear area length shall be measured from the end of the first work area to the beginning of the signing pattern for the next work area.

Special Events

The Contractor shall not be allowed to perform any work that will interfere with the existing traffic operations in the City of Hartford and the Town of East Hartford on all roadways during the time period from four hours prior to and four hours following any special event scheduled at or in the XL Center, XFINITY Theatre, Connecticut Convention Center, Pratt and Whitney Stadium at Rentschler Field, Downtown Hartford, and Downtown East Hartford. Such special events include, but are not limited to, the following:

- Hartford Marathon
- Hartford Puerto Rican Day Parade
- Hartford St. Patrick's Day Parade
- Hartford Yard Goats
- NCAA Basketball Championship Tournament
- Riverfront Fireworks
- UConn basketball and football sporting events
- XFINITY Theatre concerts

This restriction is in addition to the restrictions noted above for I-84, the associated ramps and exit only lanes, and all other roadways. A schedule of special events shall be requested through the Hartford and East Hartford Police Departments and all coordination shall be the responsibility of the Contractor.

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.07 - Determination of Contract Time:

Delete the second, third and fourth paragraphs and replace them with the following:

When the contract time is on a calendar day basis, it shall be the number of consecutive calendar days stated in the contract, INCLUDING the time period from December 1 through March 31 of each year. The contract time will begin on the effective date of the Engineer's order to commence work, and it will be computed on a consecutive day basis, including all Saturdays, Sundays, Holidays, and non-work days.

1.08.08 - Extension of Time:

Delete the sixth paragraph, "If an approved extension of Contract time.... the following April 1".

Article 1.08.09 - Failure to Complete Work on Time:

Delete the second paragraph, "If the last day...the project is substantially completed" and replace it with "Liquidated damages as specified in the Contract shall be assessed against the Contractor per calendar day from that day until the date on which the project is substantially completed."

SECTION 6.03 - STRUCTURAL STEEL

Section 6.03 is amended as follows:

6.03.03—Construction Methods: Revise Subarticle 4(f) “High Strength Bolted Connections” as follows:

Replace the first paragraph and Table A: "Minimum Bolt Tension in kips" with the following:

" The assembly of structural connections using high-strength bolts shall be installed so as to develop the minimum required bolt tension specified in Table A. The Manufacturer’s certified test report; including the rotational capacity test results must accompany the fastener assemblies. Fastener Assemblies delivered without the certified reports will be rejected.

Table A: Minimum Bolt Tension in kips*

<u>Bolt Diameter (Inches)</u>	<u>ASTM F3125 Grade A325</u>	<u>ASTM F3125 Grade A490</u>
5/8	19	24
3/4	28	35
7/8	39	49
1	51	64
1 1/8	64	80
1 1/4	81	102
1 3/8	97	121
1 1/2	118	148

*Equal to 70% of specified minimum tensile strength of bolts (as specified in ASTM Specifications for tests of full-size F3125 Grade A 325 and F3125 Grade A 490 bolts with UNC threads, loaded in axial tension) rounded to the nearest kip.

Revise the last sentence of the sixteenth paragraph, "Rotational-Capacity Tests" as follows:

" When performed in the field, the procedure shall meet the requirements of ASTM F3125 Annex A2."

In Table C, insert the word "Grade" in the third row before every occurrence of "A325" and "A490."

SECTION 12.00 - GENERAL CLAUSES FOR HIGHWAY SIGNING

Description:

Work under this item shall conform to the requirements of Section 12.00 supplemented as follows:

12.00.07 – Global Positioning System (GPS) coordinates for signs:

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new permanent State owned and maintained signs (temporary and construction signs are not to be included) installed in the project. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov.

The horizontal datum is to be set to the State Plane Coordinate System, North American Datum of 1983 (NAD83) in feet. The minimum tolerance must be within 10 feet. The format of the GPS information shall be provided in a Microsoft Office compatible spreadsheet (Excel) file with data for each sign. The record for each sign installed is to be compatible with the anticipated CTDOT Sign Inventory and Management System (CTSIMS). The following format shall be used. However, the data fields noted by “#” are not required for the project submission. These entries will be completed as part of the Traffic Engineering CTSIMS data upload.

The cost of this work shall be included in the cost of the respective sign face – sheet aluminum and sign face – extruded aluminum items. The receipt of this electronic database must be received and accepted by the Engineer prior to final payment for items involving permanent highway signing. The electronic database information shall detail information regarding the sign actually installed by the project.

Field Number	Type	size	Description
1	text	20	Record Number (starting at 1...)
2	text	20	Sign Catalog Number
# 3	text	10	Size Height
# 4	text	10	Size Width
5	text	25	Legend
# 6	text	10	Background Color
# 7	text	10	Copy Color
8	Link	25	Material (see acceptable categories)
9	text	30	Comments if any
# 10	text	20	MUTCD Type
11	text	15	Town

	12	text	5	Route
	13	text	5	Route direction
#	14	text	10	Highway Log Mileage
	15	text	15	Latitude
	16	text	15	Longitude
	17	text	25	Mounting Type
	18	text	25	Reflective Sheeting Type
	19	date	25	Date Installed
	20	text	10	Number of Posts
	21	text	255	Sheeting Manufacturer name and address
	22	text	15	State Project Number (or)
	23	text	15	Encroachment Permit number.
	24	Graphic	*	Sign Picture Graphic.

* Graphics provided shall be representative of the sign supplied and be in color. Graphic formats shall be either JPG or TIFF and provided with a recommended pixel density of 800 x 600. The graphic shall be inserted in the supplied media in field 24 for each sign.

ON-THE-JOB TRAINING (OJT) WORKFORCE DEVELOPMENT PILOT

Description

To provide construction industry related job opportunities to minorities, women and economically disadvantaged individuals; and to increase the likelihood of a diverse and inclusive workforce on Connecticut Department of Transportation (ConnDOT) projects.

All contractors (existing and newcomers) will be automatically placed in the Workforce Development Pilot. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level for new projects. Instead, these requirements will be applicable on an annual basis for each contractor performing work on ConnDOT projects.

The OJT Workforce Development Pilot will allow a contractor to train employees on Federal, State and privately funded projects located in Connecticut. However, contractors should give priority to training employees on ConnDOT Federal-Aid funded projects.

Funding

The Department will establish an OJT fund annually from which contractors may bill the Department directly for eligible trainee hours. The funds for payment of trainee hours on federal-aid projects will be allocated from the ½ of 1% provided for OJT funding, and will be based on hours trained, not to exceed a maximum of \$25,000.00 per year; per contractor.

Minorities and Women

Developing, training and upgrading of minorities, women and economically disadvantaged individuals toward journeyman level status is the primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority, women and economically disadvantaged individuals as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Coordinator, will assign training goals for a calendar year based on the contractor's past two year's activities and the contractor's anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time, the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from one (1) to six (6) per

contractor per calendar year. Each January, a summary of the trainees required and the OJT Workforce Development Pilot package will be sent to participating contractors. The number of trainees assigned to each contractor in the summary will increase proportionately not to exceed 6, as shown in the following table. This package will also be provided to contractors as they become newly eligible for the OJT Workforce Development Pilot throughout the remainder of the year. Projects awarded after September 30 will be included in the following year's Program.

The dollar thresholds for training assignments are as follows:

\$4.5 – 8 million=	1 trainee
\$ 9 – 15 million=	2 trainees
\$16 – 23 million=	3 trainees
\$24 – 30 million=	4 trainees
\$31 – 40 million=	5 trainees
\$41 – and above=	6 trainees

Training Classifications

Preference shall be given to providing training in the following skilled work classifications. However, the classifications established are not all-inclusive:

Equipment Operators	Electricians
Laborers	Painters
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has on file common training classifications and their respective training requirements; that may be used by the contractors. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and the number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

Where feasible, 25% percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment in the program and submit all required reports documenting company compliance under these contract requirements. These documents and any other information shall be submitted to the OJT Program Coordinator as requested.

Upon the trainee's completion and graduation from the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

In order to determine the continued effectiveness of the OJT Program in Connecticut, the department will periodically conduct personal interviews with current trainees and may survey recent graduates of the program. This enables the OJT Program Coordinator to modify and improve the program as necessary. Trainee interviews are generally conducted at the job site to ensure that the trainees' work and training is consistent with the approved training program.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no case, will the trainee be paid less than the prevailing rate for general laborer as shown in the contract wage decision (must be approved by the Department of Labor).

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee currently enrolled or who becomes enrolled in the approved training program and providing they receive the required training under the specific training program. Trainees will be allowed to be transferred between projects if required by the Contractor's schedule and workload. The OJT Program Coordinator must be notified of transfers within five (5) days of the transfer or reassignments by e-mail (Phylisha.Coles@ct.gov).

Where a contractor does not or cannot achieve its annual training goal with female or minority trainees, they must produce adequate Good Faith Efforts documentation. Good Faith Efforts are those designed to achieve equal opportunity through positive, aggressive, and continuous result-oriented measures. 23 CFR § 230.409(g) (4). Contractors should request minorities and females from unions when minorities and females are under-represented in the contractor's workforce.

Whenever a contractor requests ConnDOT approval of someone other than a minority or female, the contractor must submit documented evidence of its Good Faith Efforts to fill that position with a minority or female. When a non-minority male is accepted, a contractor must continue to attempt to meet its remaining annual training goals with females and minorities.

Where a contractor has neither attained its goal nor submitted adequate Good Faith Efforts documentation, ConnDOT will issue a letter of non-compliance. Within thirty (30) days of receiving the letter of non-compliance, the contractor must submit a written Corrective Action Plan (CAP) outlining the steps that it will take to remedy the non-compliance. The CAP must be approved by ConnDOT. Failure to comply with the CAP may result in your firm being found non-responsive for future projects.

Measurement and Payment

Optional reimbursement will be made to the contractor for providing the required training under this special provision on ConnDOT Federal-Aid funded projects only.

Contractor will be reimbursed at \$0.80 for each hour of training given to an employee in accordance with an approved training or apprenticeship program. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement.

Reimbursement for training is made annually or upon the trainees completion and not on a monthly basis. No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor.

Program reimbursements will be made directly to the prime contractor on an annual basis. To request reimbursement, prime contractors must complete the Voucher for OJT Workforce Development Pilot Hourly Reimbursement for each trainee in the OJT Program. This form is included in the OJT Workforce Development Pilot package and is available on the Department's web site at:

www.ct.gov/dot

The completed form must be submitted to the Office of Contract Compliance for approval. The form is due on the 15th day of January for each trainee currently enrolled and for hours worked on ConnDOT Federal-Aid funded projects only.

**SMALL CONTRACTOR AND SMALL CONTRACTOR MINORITY
BUSINESS ENTERPRISES (SET-ASIDE)**

March, 2001

NOTE: Certain of the requirements and procedures stated in this "Special Provision" are applicable prior to the execution of the Contract.

I. GENERAL

- A. The Contractor shall cooperate with the Connecticut Department of Transportation (CONNDOT) in implementing the required contract obligations concerning "Small Contractor" and "Small Contractor Minority Business Enterprise" use on this Contract in accordance with Section 4a-60g of the Connecticut General Statutes as revised. References, throughout this "Special Provision", to "Small Contractors" are also implied references to "Small Contractor Minority Business Enterprises" as both relate to Section IIA of these provisions. The Contractor shall also cooperate with CONNDOT in reviewing the Contractor's activities relating to this provision. This "Special Provision" is in addition to all other equal opportunity employment requirements of this Contract.
- B. For the purpose of this "Special Provision", the "Small Contractor(s)" and "Minority Business Enterprise(s)" named to satisfy the set-aside requirement must be certified by the Department of Administrative Services, Business Connections/ Set-Aside Unit [(860) 713-5236 www.das.state.ct.us/busopp.htm] as a "Small Contractor" and "Minority Business Enterprises" as defined by Section 4a-60g Subsections (1) and (3) of the Connecticut General Statutes as revised and is subject to approval by CONNDOT to do the work for which it is nominated pursuant to the criteria stipulated in Section IIC-3.
- C. Contractors who allow work which they have designated for "Small Contractor" participation in the pre-award submission required under Section IIC to be performed by other than the approved "Small Contractor" organization and prior to concurrence by CONNDOT, will not be paid for the value of the work performed by organizations other than the "Small Contractor" designated.
- D. If the Contractor is unable to achieve the specified contract goals for "Small Contractor" participation, the Contractor shall submit written documentation to CONNDOT's Manager of Construction Operations indicating his/her good faith efforts to satisfy goal requirements. Documentation is to include but not be limited to the following:

1. A detailed statement of the efforts made to select additional subcontract opportunities for work to be performed by each "Small Contractor" in order to increase the likelihood of achieving the stated goal.
 2. A detailed statement, including documentation of the efforts made to contact and solicit contracts with each "Small Contractor", including the names, addresses, dates and telephone numbers of each "Small Contractor" contacted, and a description of the information provided to each "Small Contractor" regarding the scope of services and anticipated time schedule of items proposed to be subcontracted and the nature of response from firms contacted.
 3. For each "Small Contractor" that placed a subcontract quotation which the Contractor considered not to be acceptable, provide a detailed statement of the reasons for this conclusion.
 4. Documents to support contacts made with CONNDOT requesting assistance in satisfying the contract specified or adjusted "Small Contractor" dollar requirements.
 5. Document other special efforts undertaken by the Contractor to meet the defined goal.
- E. Failure of the Contractor to have at least the specified dollar amount of this contract performed by "Small Contractor" as required in Section IIA of this "Special Provision" will result in the reduction in contract payment to the Contractor by an amount equivalent to that determined by subtracting from the specific dollar amount required in Section IIA, the dollar payments for the work actually performed by each "Small Contractor". The deficiency in "Small Contractor" achievement, will therefore, be deducted from the final contract payment. However, in instances where the Contractor can adequately document or substantiate its good faith efforts made to meet the specified or adjusted dollar amount to the satisfaction of CONNDOT, no reduction in payments will be imposed.
- F. All records must be retained for a period of three (3) years following completion of the contract and shall be available at reasonable times and places for inspection by authorized representatives of CONNDOT.
- G. Nothing contained herein, is intended to relieve any contractor or subcontractor or material supplier or manufacturer from compliance with all applicable Federal and State legislation or provisions concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of this Contract.

II. SPECIFIC REQUIREMENTS

In order to increase the participation of "Small Contractors", CONNDOT requires the following:

- A. Not less than 10 (%) percent of the **final** value of this Contract shall be subcontracted to and performed by, and/or supplied by, manufactured by and paid to "Small Contractors" and/or "Small Contractors Minority Business Enterprises".

If the above percentage is zero (0%) AND an asterisk () has been entered in the adjacent brackets [], this Contract is 100% solely set-aside for participation by "Small Contractors" and/or "Small Contractors Minority Business Enterprises".*

- B. The Contractor shall assure that each "Small Contractor" will have an equitable opportunity to compete under this "Special Provision", particularly by arranging solicitations, time for the preparation of Quotes, Scope of Work, and Delivery Schedules so as to facilitate the participation of each "Small Contractor".
- C. The Contractor shall provide to CONNDOT's Manager of Contracts within Seven (7) days after the bid opening the following items:
1. An affidavit (Exhibit I) completed by each named "Small Contractor" subcontractor listing a description of the work and indicating the dollar amount of all contract(s) and/or subcontract(s) that have been awarded to him/her for the current State Fiscal Year (July 1 - June 30) does not exceed the Fiscal Year limit of \$10,000,000.00.
 2. A certification of work to be subcontracted (Exhibit II) signed by both the Contractor and the "Small Contractor" listing the work items and the dollar value of the items that the nominated "Small Contractor" is to perform on the project to achieve the minimum percentage indicated in Section IIA above.
 3. A certification of past experience (Exhibit III) indicating the scope of work the nominated "Small Contractor" has performed on all projects, public and private, for the past two (2) years.
 4. In instances where a change from the originally approved named "Small Contractor" (see Section IB) is proposed, the Contractor is required to submit, in a reasonable and expeditious manner, a revised submission, comprised of the documentation required in Section IIC, Paragraphs 1, 2 and 3 and Section E together with documentation to substantiate and

justify the change, (i.e., documentation to provide a basis for the change) to CONNDOT's Manager of Construction Operations for its review and approval prior to the implementation of the change. The Contractor must demonstrate that the originally named "Small Contractor" is unable to perform in conformity to specifications, or unwilling to perform, or is in default of its contract, or is overextended on other jobs. The Contractor's ability to negotiate a more advantageous contract with another "Small Contractor" is not a valid basis for change. Documentation shall include a letter of release from the originally named "Small Contractor" indicating the reason(s) for the release.

- D. After the Contractor signs the Contract, the Contractor will be required to meet with CONNDOT's Manager of Construction Operations or his/her designee to review the following:
1. What is expected with respect to the "Small Contractor" set aside requirements.
 2. Failure to comply with and meet the requirement can and will result in monetary deductions from payment.
 3. Each quarter after the start of the "Small Contractor" the Contractor shall submit a report to CONNDOT's Manager of Construction Operations indicating the work done by, and the dollars paid to each "Small Contractor" to date.
 4. What is required when a request to sublet to a "Small Contractor" is submitted.
- E. The Contractor shall submit to CONNDOT's Manager of Construction Operations all requests for subcontractor approvals on standard forms provided by the Department.

If the request for approval is for a "Small Contractor" subcontractor for the purpose of meeting the contract required "Small Contractor" percentage stipulated in Section IIA, a copy of the legal contract between the Contractor and the "Small Contractor" subcontractor must also be submitted at the same time. Any subsequent amendments or modifications of the contract between the Contractor and the "Small Contractor" subcontractor must also be submitted to CONNDOT's Manager of Construction Operations with an explanation of the change(s). The contract must show items of work to be performed, unit prices and, if a partial item, the work involved by both parties.

In addition, the following documents are to be attached:

- (1) A statement explaining any method or arrangement for renting equipment. If rental is from a Contractor, a copy of Rental Agreement must be submitted.
- (2) A statement addressing any special arrangements for manpower.
- (3) A statement addressing who will purchase material.

F. Contractors subcontracting with a "Small Contractor" to perform work or services as required by this "Special Provision" shall not terminate such firms without advising CONNDOT, in writing, and providing adequate documentation to substantiate the reasons for termination if the designated "Small Contractor" firm has not started or completed the work or the services for which it has been contracted to perform.

G. Material Suppliers or Manufacturers

If the Contractor elects to utilize a "Small Contractor" supplier or manufacturer to satisfy a portion or all of the specified dollar requirements, the Contractor must provide the Department with:

1. An executed Affidavit Small Contractor (Set-Aside) Connecticut Department of Transportation Affidavit Supplier or Manufacturer (sample attached), and
2. Substantiation of payments made to the supplier or manufacturer for materials used on the project.

Brokers and packagers shall not be regarded as material Suppliers or manufacturer.

H. Non-Manufacturing or Non-Supplier "Small Contractor" Credit

Contractors may count towards its "Small Contractor" goals the following expenditures with "Small Contractor" firms that are not manufacturers or suppliers:

1. Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment, material or supplies necessary for the performance of the contract provided that the fee or commission is determined by the Department of Transportation to be reasonable and consistent with fees customarily allowed for similar services.

2. The fees charged for delivery of materials and supplies required on a job site (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is not also the manufacturer of or a regular dealer in the materials and supplies, provided that the fee is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.
3. The fees or commissions charged for providing any bonds or insurance specifically required for the performance of the Contract, provided that the fee or commission is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.

III. **BROKERING**

For the purpose of this "Special Provision", a "Broker" is one who acts as an agent for others in negotiating contracts, purchases, sales, etc., in return for a fee or commission. Brokering of work by a "Small Contractor" is not allowed and is a contract violation.

IV. **PRE-AWARD WAIVERS:**

If the Contractor's submission of the "Small Contractor" listing, as required by Section IIC indicates that it is unable, by subcontracting to obtain commitments which at least equal the amount required by Section IIA, it may request, in writing, a waiver of up to 50% of the amount required by Section IIA. To obtain such a waiver, the Contractor must submit a completed "Application for Waiver of Small Contractor Minority Business Enterprise Goals" to CONNDOT's Manager of Contracts which must also contain the following documentation:

1. Information described in Section ID.
2. For each "Small Contractor" contacted but unavailable, a statement from each "Small Contractor" confirming its unavailability.

Upon receipt of the submission requesting a waiver, the CONNDOT's Manager of Contracts shall submit the documentation to the Director of the Office of Contract Compliance who shall review it for completeness. After completion of the Director of Contract Compliance's review, she/he should write a narrative of his/her findings of the application for a waiver, which is to include his/her recommendation. The Director of Contract Compliance shall submit the written narrative to the Chairperson of the DBE Screening Committee at least five (5) working days before the scheduled meeting. The Contractor shall be invited to attend the meeting and present his/her position. The DBE Screening Committee shall render a decision on the waiver request within five (5) working days after the meeting. The DBE Screening Committee's decision shall be final. Waiver applications are available from the CONNDOT Manager of Contracts.

SMALL CONTRACTOR/*MINORITY BUSINESS ENTERPRISE
(* Delete if not Applicable)
SET-ASIDE PROGRAM
(QUALIFICATION AFFIDAVIT)

PROJECT(s) _____
(INCLUDING TOWN & DESCRIPTION)

STATE OF _____ CONNECTICUT _____

COUNTY OF _____

I _____, ACTING IN BEHALF

NAME OF PARTY SIGNING AFFIDAVIT

OF _____, DO HEREBY CERTIFY

PERSON FIRM OR ORGANIZATION

AND AFFIRM THAT THE INFORMATION SET FORTH BELOW IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE. AS OF THIS DATE _____ THE LIST OF SMALL CONTRACTOR SET-ASIDE PROGRAM - CONTRACTS AND/OR SUBCONTRACTS AWARDED DURING THE CURRENT FISCAL YEAR (JULY 1 - JUNE 30) 20 _____ IS AS FOLLOWS:

Table with 5 columns: Col. 1 TOWN AND PROJECT NUMBER, Col. 2 STATE AGENCY WHICH AWARDED CONTRACT, Col. 3 CONTRACT AMOUNT AWARDED UNDER THIS PROGRAM, Col. 4 AMOUNT OF WORK SUBCONTRACTED FROM OTHER FIRMS UNDER THIS PROGRAM, Col. 5 TOTAL AMOUNT OF ALL WORK UNDER THIS PROGRAM Col. 3 Plus Col. 4. Includes a 'TOTALS' row at the bottom.

NAME OF PERSON, FIRM OR ORGANIZATION

(FIRM SEAL)

SIGNATURE & TITLE OF OFFICIAL

SWORN TO AND SUBSCRIBED BEFORE ME BY _____

WHO IS PERSONALLY KNOWN TO ME, THIS _____ DAY OF _____, 20 _____

(NOTARY PUBLIC)

MY COMMISSION EXPIRES _____ SEAL

PLEASE NOTE THAT ALL THE WORK AWARDED OR SUBCONTRACTED TO YOUR FIRM UNDER THE SET-ASIDE PROGRAM IN A FISCAL YEAR (JULY 1-JUNE 30) INCLUDING THIS PROJECT, CANNOT BE MORE THAN \$10,000,000.00

EXHIBIT II

Mar.01

DEPARTMENT OF TRANSPORTATION
CONTRACT DIVISION
2800 BERLIN TURNPIKE
NEWINGTON, CT 06111

CERTIFICATION OF WORK TO BE SUBCONTRACTED
NOMINATED SMALL CONTRACTOR/*MINORITY BUSINESS ENTERPRISE

* Delete if not applicable

PLEASE INCLUDE A COPY OF CERTIFICATION LETTER

CONTRACTOR _____

ADDRESS _____

TOWN _____ PROJECT NO. _____

DESCRIPTION OF PROJECT _____

CONTRACT BID AMOUNT \$ _____

DATE _____

Listed below is the Nominated Small Contractor/Minority Business Enterprise for the above project and the requested data:

Name, Address & Tel No. of the Nominated Firm	ITEM(S)NUMBER(S) and Description of the Item(s) to be performed by and paid to the Subcontractor	Quantities (indicate if partial)	Prime's Bid Amount For Item	Dollar Amount Subcontracted	Small Business Set-Aside Dollar Requirement
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Signed By _____ Signed By _____
 Small Contractor/*Minority Business Enterprise Contractor
 (Subcontractor) Title _____

EXHIBIT III

CERTIFICATION
PAST CONSTRUCTION EXPERIENCE

Mar. 01

SMALL CONTRACTOR / * MINORITY BUSINESS ENTERPRISES

* Delete if not applicable

PLEASE LIST ALL CONSTRUCTION PROJECTS YOUR ORGANIZATION HAS WORKED ON IN THE PAST TWO FISCAL YEARS

PROJECT LOCATION NUMBER AND DESCRIPTION APPLICABLE	CONTRACT AMOUNT	IF WORK PERFORMED AS PRIME GIVE OWNERS NAME IF WORK PERFORMED AS SUBCONTRACTOR GIVE CONTRACTORS NAME	START DATE	ACTUAL OR ESTIMATED COMPLETION DATE	NAME AND PHONE OF OWNER OR PRIME CONTRACTOR AS

SIGNED BY: _____

SMALL BUSINESS CONTRACTOR
*MINORITY BUSINESS ENTERPRISES

D.O.T. PROJECT NO. _____

* Delete if not applicable

MARCH, 2001

**SMALL CONTRACTOR/SMALL CONTRACTOR MINORITY BUSINESS ENTERPRISE
(MBE) (SET-ASIDE) CONNECTICUT DEPARTMENT OF TRANSPORTATION
AFFIDAVIT – SUPPLIER OR MANUFACTURER**

This affidavit must be completed by the State Contractor's designated Small Contractor/ Small Contractor Minority Business Enterprise (MBE), notarized and attached to the contractor's request to utilize a Small Contractor/Small Contractor Minority Business Enterprise (MBE) supplier or manufacturer as a credit towards its Small Contractor/Small Contractor Minority Business Enterprise (MBE) contract requirement; failure to do so will result in not receiving credit towards the contract Small Contractor/Small Contractor Minority Business Enterprise (MBE) requirement.

State Project No. _____
Federal Aid Project No. _____
Description of Project _____

I, _____, acting in behalf of _____
(Name of person signing Affidavit) (Small Contractor/Small Contractor MBE contractor person,
_____ of which I am the _____ affirm that _____
firm, association or certify and corporation) (Title of Person) (Small
Contractor/Small Contractor MBE person, firm, association or corporation)
_____ is a certified Small Contractor/Small
Contractor Minority Business Enterprise, as defined by Section 4a-60g of the Connecticut General
Statutes, as revised.

I further certify and affirm that _____
(Small Contractor/Small Contractor MBE person, firm, association or corporation)
will assume the actual and contractual responsibility for the provision of the materials and/or supplies
sought by _____. If a manufacturer, I produce goods from raw
(State Contractor)
materials or substantially alter them before resale, or if a supplier, I perform a commercially useful
function in the supply process.

I understand that false statements made herein are punishable at Law (Sec. 53a-157, CGS, as revised).

(Name of Small Contractor/Small Contractor MBE person, firm, association or corporation)

(Signature and Title of Official making the Affidavit)

Subscribed and sworn to before me, the _____ day of _____ 200_____.

Notary Public (Commissioner of the Superior Court)

My Commission Expires _____

CERTIFICATE OF CORPORATION

I, _____, certify that I am the _____
(Official) of the Corporation named in the foregoing instrument; that I have been duly authorized to affix
the seal of the Corporation to such papers as require the seal; that _____, who
signed said instrument on behalf of the Corporation, was then _____ of
said corporation; that said instrument was duly signed for and in behalf of said Corporation by authority
of its governing body and is within the scope of its corporation powers.

(Signature of Person Certifying)

(Date)

(Corporate Seal)

ITEM #0020903A - LEAD COMPLIANCE FOR MISCELLANEOUS EXTERIOR TASKS

Description:

Work under this item shall include the special handling measures and work practices required for miscellaneous exterior tasks that impact materials containing or covered by lead paint. Lead paint includes paint found to contain **any** detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF). Examples of typical miscellaneous exterior tasks includes; work impacting signs, guiderails, minor bridge rehabilitation, catenary structures, canopy structures, spot paint removal, etc.

All activities shall be performed in accordance with the OSHA Lead in Construction Regulations (29 CFR 1926.62), the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260 through 274), and the CTDEEP Hazardous Waste Regulations (RCSA 22a-209-1 and 22a-449(c)).

All activities shall be performed by individuals with appropriate levels of OSHA lead awareness and hazard communication training and shall supervised by the Contractors Competent Person on the job site at all times. The Contractors Competent Person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Deviations from these Specifications require the written approval of the Engineer.

Materials:

All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with MSDS sheets as applicable.

No damaged or deteriorating materials shall be used. If material becomes contaminated with lead, the material shall be decontaminated or disposed of as lead-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.

The following material requirements are to be met if to be used during the work:

Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating minimum six (6) mil thickness.

Polyethylene disposable bags shall be minimum six (6) mils thick.

Tape (or equivalent) product capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

Cleaning Agents and detergent shall be lead specific, such as TriSodium Phosphate (TSP).

Chemical strippers and chemical neutralizers shall be compatible with the substrate as well as with each other. Such chemical stripper shall contain less than 50% Volatile Organic Compounds (VOCs) by weight in accordance with RCSA 22a-174-40 Table 40-1.

Labels and warning signs shall conform to 29 CFR 1926.62, 40 CFR 260 through 274 and 49 CFR 172 as appropriate.

Air filtration devices and vacuum units shall be equipped with High-Efficiency Particulate Air (HEPA) filters.

Construction Methods:

(1) Pre-Abatement Submittals and Notices

A. Prior to the start of **any** work on a contiguous per site basis that will generate hazardous lead waste above conditionally exempt small quantities (greater than 100 kg/month or greater than 1000 kg at any time), the Contractor shall obtain from the Engineer on a contiguous per site basis a temporary EPA Hazardous Waste Generators ID number, unless otherwise directed by the Engineer.

B. Fifteen (15) working days prior to beginning work that impacts lead paint, the Contractor shall submit the following to the Engineer:

1. Work plan for work impacting lead paint including engineering controls, methods of containment of debris and work practices to be employed, as needed, to minimize employee exposure and prevent the spread of lead contamination outside the Regulated Area.
2. Copies of all employee certificates, dated within the previous twelve (12) months, relating to OSHA lead awareness and hazard communication training and training in the use of lead-safe work practices. SSPC training programs may be accepted as meeting these requirements if it can be demonstrated that such training addressed all required topics.

This information shall be updated and resubmitted annually, or as information changes, for the duration of the activities impacting lead to verify continued compliance.

3. Name and qualifications of Contractor's OSHA Competent Person under 29 CFR 1926.62.
4. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following:
 - a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.62;
 - b. biological monitoring within the previous six (6) months, as required in 29 CFR 1926.62;
 - c. respirator fit testing within the previous twelve (12) months, as required in 29 CFR 1910.134 (for those who don a tight-fitting face piece respirator)

This information shall be updated and resubmitted annually, or as information changes, for the duration of the activities impacting lead to verify continued compliance.

5. Names of the proposed non-hazardous construction and demolition (C&D) lead debris bulky waste disposal facility (CTDEEP-permitted Solid Waste landfill).
6. Names of the proposed scrap metal recycling facilities. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected facility is able to accept lead-painted scrap metal.
7. Names of the proposed hazardous waste disposal facility (selected from the Department approved list provided herein), and copies of each facilities acceptance criteria and sampling frequency requirements.
8. Copies of the proposed hazardous waste transporters current USDOT Certificate of Registration for Hazardous Materials Transport, and the proposed transporters current Hazardous Waste Transporter Permits for the State of Connecticut and the waste destination State.
9. Negative exposure assessments conducted within the previous 12 months documenting that employee exposure to lead for each task is below the OSHA Action Level of $30 \mu\text{g}/\text{m}^3$. If a negative exposure assessment has not been conducted, the Contractor shall submit its air monitoring program for the work tasks as part of the Work Plan. Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized persons entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62.

No activity shall commence until all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be

allowed to perform work only upon submittal of acceptable documentation to, and review by, the Engineer.

Contractor shall provide the Engineer with a minimum of 48 hours notice in advance of scheduling, changing or canceling work activities.

(2) Lead Abatement Provisions

A. General Requirements:

All employees of the Contractor who perform work impacting lead paint shall be properly trained to perform such duties. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

Contractor shall provide all labor, materials, tools, equipment, services, testing, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications.

Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions.

As necessary, the Contractor shall:

Shut down and lock out electrical power, including all receptacles and light fixtures, where feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.

If adequate electrical supply is not available at the site, the Contractor shall supply temporary power. Such temporary power shall be sufficient to provide adequate lighting and power the Contractor's equipment. The Contractor is responsible for proper connection and installation of electrical wiring and shall ensure safe installation of electrical equipment in compliance with applicable electrical codes and OSHA requirements.

If water is not available at the site for the Contractor's use, the Contractor shall supply sufficient water for each shift to operate the wash facility/decontamination shower units in addition to the water needed at the work area.

The Engineer may provide a Project Monitor to monitor compliance of the Contractor and protect the interests of the Department. In such cases, no activity impacting lead paint shall be performed until the Project Monitor is on-site. Where no Project Monitor will be provided, Contractor shall proceed at the direction of the Engineer. Environmental sampling, including ambient air sampling, TCLP waste stream sampling, and dust wipe sampling, will be conducted by the State as it deems necessary throughout the project. Air monitoring to comply with the Contractor's obligations under OSHA remains solely responsibility of the Contractor.

If at any time, procedures for engineering, work practice, administrative controls or other topics are anticipated to deviate from those documented in the submitted and accepted Lead Work Plan, the Contractor shall submit a modification of its existing plan for review and acceptance by the Engineer prior to implementing the change.

If air samples collected outside of the Regulated Area during activities impacting lead paint indicate airborne lead concentrations greater than original background levels or $30 \mu\text{g}/\text{m}^3$, whichever is larger, or if at any time visible emissions of lead paint extend out from the Regulated Area, an examination of the Regulated Area shall be conducted and the cause of such emissions corrected. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming work.

Work outside the initial designated area(s) will not be paid for by the Engineer. The Contractor will be responsible for all costs incurred from these activities including repair of any damage.

B. Regulated Area

The Contractor shall establish a Regulated Area through the use of appropriate barrier tape or other means to control unauthorized access into the area where activities impacting lead paint are occurring. Warning signs meeting the requirements of 29 CFR 1926.62 shall be posted at all approaches to Regulated Areas. These signs shall read:

DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK, OR SMOKE IN THIS AREA

The Contractor shall implement appropriate engineering controls such as poly drop cloths, local exhaust ventilation, wet dust suppression methods, etc. as necessary, and as approved by the Engineer, to prevent the spread of lead contamination beyond the Regulated Area in accordance with the Contractor's approved work plan. Should the previously submitted work plan prove to be insufficient to contain the contamination, the Contractor shall modify its plan and submit it for review by the Engineer.

C. Wash Facilities:

The Contractor shall provide handwash facilities in compliance with 29 CFR 1926.51(f) and 29 CFR 1926.62 regardless of airborne lead exposure.

If employee exposure to airborne lead exceeds the OSHA Permissible Exposure Limit of 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), shower rooms must be provided. The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm

running water. Shower water shall be collected and filtered using best available technology and disposed of in accordance with all Federal, State and local laws, regulations and ordinances.

D. Personal Protection:

The Contractor shall initially determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 $\mu\text{g}/\text{m}^3$. Assessments shall be based on initial air monitoring results as well as other relevant information. The Contractor may rely on historical air monitoring data obtained within the past 12 months under workplace conditions closely resembling the process, type of material, control methods, work practices and environmental conditions used and prevailing in the Contractor's current operations to satisfy the exposure assessment requirements. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.

Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized person entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Sufficient quantities shall be provided to last throughout the duration of the project.

Protective clothing provided by the Contractor and used during chemical removal operations shall be impervious to caustic materials. Gloves provided by the Contractor and used during chemical removal shall be of neoprene composition with glove extenders.

Respiratory protective equipment shall be provided and selection shall conform to 42 CFR Part 84, 29 CFR Part 1910.134, and 29 CFR Part 1926.62. A formal respiratory protection program must be implemented in accordance with 29 CFR Part 1926.62 and Part 1910.134.

E. Air Monitoring Requirements

The Contractor shall:

1. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
2. Conduct initial exposure monitoring to determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.
3. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.62. Documentation of air sampling results must be recorded at the

work site within twenty-four (24) hours and shall be available for review until the job is complete.

F. Lead Abatement Procedures

The Contractor's Competent Person shall be at the job site at all times during work impacting lead.

Work impacting lead paint shall not begin until authorized by the Engineer, following a pre-work visual inspection by the Project Monitor or Engineer to verify existing conditions.

Any activity impacting lead painted surfaces shall be performed in a manner which minimizes the spread of lead dust contamination and generation of airborne lead.

The Contractor shall conduct exposure assessments for all tasks which impact lead paint in accordance with 29 CFR 1926.62(d) and shall implement appropriate personal protective equipment until negative exposure assessments are developed.

All work impacting the materials identified below shall be conducted within an established Regulated Area with a remote wash facility/decontamination system in accordance with "C. Wash Facilities" and the OSHA Lead in Construction Standard. In accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

The Contractor shall ensure proper entry and exit procedures for workers and authorized persons who enter and leave the Regulated Area. All workers and authorized persons shall leave the Regulated Area and proceed directly to the wash or shower facilities where they will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Lead chips and dust must not be removed by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with Federal, State and local water discharge standards. Any permit required for such discharge shall be the responsibility of the Contractor.

No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in the Regulated Area.

Data from the limited lead testing performed by the Engineer is documented in the reports listed in the "Notice to Contractor – Hazardous Materials Investigations" or is presented herein. Under no circumstances shall this information be the sole means used by the Contractor for determining the extent of lead painted materials. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer. Proceed through the sequencing of the work phases under the direction of the Engineer.

Replacement Highway Signing pm I-84 – West Hartford, Hartford & East Hartford

- Galvanized (unpainted) sign support poles were confirmed present at Site Nos 1, 4, 7, 15, 16, 18, 20, 22, 33, 42, 45, 46, 48, 49 50, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 66, 67, 68, & 69, therefore no lead paint was identified.
- Detectable amounts of lead in paint were either identified or presumed at Site Nos. 2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 17, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 43, 44, 47, 52, 62, 63, 64, & 65.

Sign Supports	Metal	Tan/Beige	0.1-0.6 mg/cm²
Sign Supports	Metal	Grey	0.1-15.9 mg/cm²

- TCLP waste stream sampling/analysis of the paint associated with Site Nos. 2, 3, 5, 9, 11, 14, 17, 26, 32, 36, 27, 28, 39, 44, 47, 62, 63, 64 & 65 characterized the paint waste as non-hazardous, non-RCRA waste.
- Projected paint waste debris at Site Nos. 6, 8, 10, 12, 13, 19, 21, 23, 24, 25, 27, 28, 29, 30, 31, 34, 35, 40, 41, 43 & 52 was either characterized or is presently presumed as CTDEEP/RCRA hazardous waste.

Paint debris (Site Nos. 2, 3, 5, 9, 11, 14, 17, 26, 32, 36, 27, 28, 39, 44, 47, 62, 63, 64 & 65)	1.4, 0.18 & 0.50 mg/L
Paint debris (Site Nos. 23, 24, 25 & 41)	160 mg/L

****Note:** Sign supports at Site Nos. 11, 12, 17, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 37, 28, 29, 40, 41, 44, 52, 63, 64, & 65 are not projected to be impacted as the scope of work is for new signs to be placed on the existing sign supports. If it is determined during construction that the lead painted surfaces at these Sites require impact, the Contractor shall conduct work in accordance to Item 0020903A as well as the OSHA Lead in Construction Standard (29 CFR 1926.62).

While conducting work to the sign supports, where it is necessary to impact the lead painted surfaces, the Contractor shall either:

- a. Remove the paint to be impacted prior to impacting the substrate in accordance with OSHA Lead in Construction Standard 29CFR 1926.62, or
- b. Impact the substrate using mechanical means with the paint in place in accordance with OSHA Lead in Construction Standard 29CFR 1926.62.

The Contractor shall submit a Work Plan to ConnDOT outlining the exact procedures that will be used to perform the work, contain the spread of lead debris and protect the employees performing the required renovation work impacting the lead paint. No work shall be started by the Contractor until the Work Plan is approved by the Engineer.

All work impacting the lead paint materials shall be conducted within an established Regulated Area with a remote wash facility/decontamination system in accordance with "C. Wash Facilities" and the OSHA Lead in Construction Standard. In accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

The Engineer has characterized and/or presumed the paint waste stream associated with Site Nos. 6, 8, 10, 12, 13, 19, 21, 23, 24, 25, 27, 28, 29, 30, 31, 34, 35, 40, 41, 43 & 52 as RCRA hazardous waste. If the paint is removed from the sign support/bridge surfaces, the paint shall be handled and disposed of in accordance with USEPA/CTDEEP Hazardous Waste Regulations as described under this Item 0020903A.

At Site Nos. 2, 3, 5, 9, 11, 14, 17, 26, 32, 36, 27, 28, 39, 44, 47, 62, 63, 64 & 65, the Engineer has characterized the paint waste stream associated with the sign support components as non-hazardous. If the paint is required to be removed from the metal surfaces of the sign supports, the paint shall be handled and disposed of as non-hazardous, non-RCRA waste as described under this Item 0020903A.

All steel and metal components generated from the miscellaneous exterior work tasks (painted or not) shall be segregated and recycled as scrap metal. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

Should lead contamination be discovered outside of the Regulated Area, the Contractor shall immediately stop all work in the Regulated Area, eliminate causes of such contamination and take steps to decontaminate non-work areas.

Special Requirements:

1. Demolition/Renovation:

- a. Demolish/renovate in a manner which minimizes the spread of lead contamination and generation of lead dust.
 - b. Implement dust suppression controls, such as misters, local exhaust ventilation, etc. to minimize the generation of airborne lead dust.
 - c. Segregate work areas from non-work areas through the use of barrier tape, drop cloths, etc.
 - d. Clean up immediately after renovation/demolition has been completed
2. Chemical Removal:
- a. Apply chemical stripper in quantities and for durations specified by manufacturer.
 - b. Where necessary, scrape lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use sanding, hand scraping, and dental picks to supplement chemical methods as necessary.
 - c. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
 - d. Protect adjacent surfaces from damage from chemical removal.
 - e. Maintain a portable eyewash station in the work area.
 - f. Wear respirators that will protect workers from chemical vapors.
 - g. Do not apply caustic agents to aluminum surfaces.
3. Mechanical Paint Removal:
- a. Provide sanders, grinders, rotary wire brushes, or needle gun removers equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only. Flexible contoured cowlings are required for curved or irregular surfaces.
 - b. Provide HEPA vacuums that are high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum

condition with the shroud in use. The HEPA vacuum shall be equipped with a pivoting vacuum head.

- c. Remove lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use chemical methods, hand scraping, and dental picks to supplement abrasive removal methods as necessary.
 - d. Protect adjacent surfaces from damage from abrasive removal techniques.
 - e. “Sandblasting” type removal techniques shall not be allowed.
4. Component Removal/Replacement:
- a. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
 - b. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the components by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
 - c. Clean up immediately after component removals have been completed. Remove any dust located behind the component removed.

G. Prohibited Removal Methods:

The use of heat guns in excess of 700 degrees Fahrenheit to remove lead paint is prohibited.

The use of sand, steel grit, air, CO₂, baking soda, or any other blasting media to remove lead or lead paint without the use of a HEPA ventilated contained negative pressure enclosure is prohibited.

Power/pressure washing shall not be used to remove lead paint.

Compressed air shall not be utilized to remove lead paint.

Chemical strippers containing Methylene Chloride are prohibited. Any chemical stripping may be prohibited on a project by project basis.

Power tool assisted grinding, sanding, cutting, or wire brushing of lead paint without the use of cowed HEPA vacuum dust collection systems is prohibited.

Lead paint burning, busting of rivets painted with lead paint, welding of materials painted with lead paint, and torch cutting of materials painted with lead paint is prohibited. Where cutting,

welding, busting, or torch cutting of materials is required, lead paint in the affected area must be removed first.

Chemical stripping of coatings from bridge components is generally prohibited unless specifically allowed on a project by project basis.

H. Clean-up and Visual Inspection:

The Contractor shall remove and containerize all lead waste material and visible accumulations of debris, paint chips and associated items.

During clean-up the Contractor shall utilize rags and sponges wetted with lead-specific detergent and water as well as HEPA filtered vacuum equipment.

The Engineer will conduct a visual inspection of the work areas in order to document that all surfaces have been maintained as free as practicable of accumulations of lead in accordance with 29 CFR 1926.62(h). If visible accumulations of waste, debris, lead paint chips or dust are found in the work area, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean up of the work site.

I. Post-Work Regulated Area Deregulation:

Following an acceptable visual inspection, any engineering controls implemented may be removed.

A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor or Engineer to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the lead paint removal remain. If this final visual inspection is acceptable, the Contractor will reopen the Regulated Area and remove all signage.

The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the State.

J. Waste Disposal/Recycling:

Non-metallic building debris waste materials tested and found to be non-hazardous shall be disposed of properly at a CTDEEP approved Solid Waste landfill as described under this Item 0020903A.

Metallic debris shall be segregated and recycled as scrap metal at an approved metal recycling facility.

Concrete, brick, etc. coated with any amount of lead paint cannot be crushed, recycled or buried on-site to minimize waste disposal unless tested and found to meet the RSR GA/Residential standards.

Hazardous lead debris shall be disposed of as described under this Item 0020903A.

The Contractor shall comply with the latest requirements of the USEPA RCRA Hazardous Waste Regulations 40 CFR 260-274 and the DEEP Hazardous/Solid Waste Management Standards 22a-449(c).

Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter approved by the Department and disposed of at an EPA-permitted and Department-approved hazardous waste landfill within 90 days from the date of generation.

The Contractor must use one or more of the following Department-approved disposal facilities for the disposal of hazardous waste:

Clean Earth of North Jersey, Inc., (CENJ) 115 Jacobus Avenue, South Kearny, NJ 07105 Phone: (973) 344-4004; Fax: (973) 344-8652	Clean Harbors Environmental Services, Inc. 2247 South Highway 71, Kimball, NE 69145 Phone: (308) 235-8212; Fax: (308) 235-4307
Clean Harbors of Braintree, Inc. 1 Hill Avenue, Braintree, MA 02184 Phone: (781) 380-7134; Fax: (781) 380-7193	ACV Enviro(CycleChem)(General Chem Co) 217 South First Street, Elizabeth, NJ 07206 Phone: (908) 355-5800; Fax (908) 355-0562
Triumverate (EnviroSafe Corp Northeast) (Jones Environmental Services (NE), Inc.) 263 Howard Street, Lowell, MA 01852 Phone: (978) 453-7772; Fax: (978) 453-7775	US Ecology Environmental Quality Detroit, Inc. 1923 Frederick Street, Detroit, MI 48211 Phone: (800) 495-6059; Fax: (313) 923-3375
Stericycle (Republic Environmental Systems) 2869 Sandstone Drive, Hatfield, PA 19440 Phone: (215) 822-8995; Fax: (215) 997-1293	Clean Harbors – Spring Grove Facility 4879 Spring Grove Ave, Cincinnati OH 45322 Phone: (513) 681-6242; Fax: (513) 681-0869
Envirite of PA (US Ecology) 730 Vogelsong Road, York, PA 17404 Phone: (717) 846-1900; Fax: (717) 854-6757	Stablex, Canada, Inc. 760 Industrial Bl, Blainville Quebec J7C3V4 Phone: (451) 430-9230; Fax: (451) 430-4642
Environmental Quality Company: Wayne Disposal Facility 49350 North I-94 Service Drive Belleville, MI 48111 Phone: (800) 592-5489; Fax: (800) 592-5329	Stericycle (Northland Environmental, Inc.) (PSC Environmental Systems) 275 Allens Avenue, Providence, RI 02905 Phone: (401) 781-6340; Fax: (401) 781-9710

The Contractor shall submit in writing (1) a letter listing the names of the hazardous waste disposal facilities (from the above list) that the Contractor will use to receive hazardous material from this Project, and (2) a copy of each facility’s acceptance criteria and sampling frequency requirements.

Failure to comply with all of the above requirements may result in the rejection of the bid.

No facility may be substituted for the one(s) designated in the Contractor's submittal without the Engineer's prior approval. If the material cannot be accepted by any of the Contractor's designated facilities, the Department will supply the Contractor with the name(s) of other acceptable facilities.

Prior to the generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer (1) the transporter's current US DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain on a contiguous per site basis a temporary EPA Generators ID number for the site that he will forward to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

Handling, storage, transportation and disposal of hazardous waste materials generated as a result of execution of this project shall comply with all Federal, State and Local regulations including the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260-271), the CTDEEP Hazardous Waste Regulations (22a-209 and 22a-449(c)), and the USDOT Hazardous Materials Regulations (49 CFR Part 171-180).

All debris shall be contained and collected daily or more frequently as directed by the Engineer, due to debris buildup. Debris shall be removed by HEPA vacuum collection. Such debris and paint chips shall be stored in leak-proof storage containers in the secured storage site, or as directed by the Engineer. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling and disposal of the debris.

Hazardous waste materials are to be properly packed and labeled for transport by the Contractor in accordance with EPA, CTDEEP and USDOT regulations. The disposal of debris characterized as hazardous waste shall be completed within 90 calendar days of the date on which it began to be accumulated in the lined containers. Storage of containers shall be in accordance with current DEEP/EPA procedures.

The Contractor shall label hazardous waste storage containers with a 6-inch square, yellow, weatherproof, Hazardous Waste sticker in accordance with USDOT regulations.

Materials other than direct paint related debris which are incidental to the paint removal work activities (tarps, poly, plywood, PPE, gloves, decontamination materials, etc.) which may be contaminated with lead, shall be stored separately from the direct paint debris, and shall be sampled by the Engineer for waste disposal characterization testing. Such materials characterized as hazardous shall be handled/disposed of as described herein, while materials characterized as non-hazardous shall be disposed of as non-hazardous CTDEEP Solid Waste.

Direct paint related debris materials not previously sampled and characterized for disposal, which may be originally presumed to be hazardous waste, shall also be stored separately and sampled by the Engineer for ultimate waste disposal characterization testing and handled/disposed of based on that testing.

Project construction waste materials unrelated to the paint removal operations shall NOT be combined/stored with paint debris waste and/or incidental paint removal materials as they are not lead contaminated and shall NOT be disposed of as hazardous waste. The Engineer's on-site Inspectors shall conduct inspections to verify materials remain segregated.

The Contractor shall obtain and complete all paperwork necessary to arrange for material disposal, including disposal facility waste profile sheets. It is solely the Contractor's responsibility to co-ordinate the disposal of hazardous materials with its selected treatment/recycling/disposal facility(s). Upon receipt of the final approval from the facility, the Contractor shall arrange for the loading, transport and treatment/recycling/disposal of the materials in accordance with all Federal and State regulations. **No claim will be considered based on the failure of the Contractor's disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.**

The Contractor shall process the hazardous waste such that the material conforms with the requirements of the selected treatment/disposal facility, including but not limited to specified size and dimension. Refusal on the part of the treatment/disposal facility to accept said material solely on the basis of non-conformance of the material to the facility's physical requirements is the responsibility of the Contractor and no claim for extra work shall be accepted for reprocessing of said materials to meet these requirements.

All DOT shipping documents, including the Uniform Hazardous Waste Manifests utilized to accompany the transportation of the hazardous waste material shall be prepared by the Contractor and reviewed/signed by an authorized agent representing ConnDOT, as Generator, for each load of hazardous material that is packed to leave the site. The Contractor shall not sign manifests on behalf of the State as Generator. The Contractor shall forward the appropriate original copies of all manifests to the Engineer the same day the material leaves the Project site.

Materials not related to lead paint removal and/or characterized as non-hazardous waste shall NOT be shipped for hazardous waste disposal in accordance with USEPA RCRA hazardous waste minimization requirements.

A load-specific certificate of disposal, signed by the authorized agent representing the waste disposal facility, shall be obtained by the Contractor and promptly delivered to the Engineer for each load.

In addition to all pertinent Federal, State and local laws or regulatory agency polices, the Contractor shall adhere to the following precautions during the transport of hazardous materials off-site:

- All vehicles departing the site are to be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume, and contents of materials carried. Vehicles shall display the proper USDOT placards for the type and quantity of waste;
- No materials shall leave the site unless a disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste;
- Documentation must be maintained indicating that all applicable laws have been satisfied and that the materials have been successfully transported and received at the disposal facility; and,
- The Contractor shall segregate the waste streams (i.e. concrete, wood, etc.) as directed by the receiving disposal facility.

Any spillage of debris during disposal operations during loading, transport and unloading shall be cleaned up in accordance with EPA 40 CFR 265 Subparts C & D, at the Contractor's expense.

The Contractor is liable for any fines, costs or remediation costs incurred as a result of their failure to be in compliance with this Item and all Federal, State and Local laws.

K. Project Closeout Data:

Provide the Engineer, within thirty (30) days of completion of the project site work, a compliance package; which shall include, but not be limited to, the following:

1. Competent persons (supervisor) job log;
2. OSHA-compliant personnel air sampling data;
3. Completed waste shipment papers for non-hazardous lead construction and demolition (C&D) waste disposal or recycling and scrap metal recycling.
4. Copies of completed Hazardous Waste Manifests (signed by authorized disposal facility representative).

Method of Measurement:

The completed work shall be paid as a lump sum. This item will include all noted services, equipment, facilities, testing and other associated work for up to three (3) ConnDOT project representatives. Services provided to any ConnDOT project representatives in excess of three (3) representatives will be measured for payment in accordance with Article 1.09.04 – “Extra and Cost-Plus Work.”

Basis of Payment:

The lump sum price bid for this item shall include: services, materials, equipment, all permits, notifications, submittals, personal air sampling, personal protection equipment, temporary enclosures, incidentals, fees and labor incidental to activities impacting lead removal, treatment and handling of lead contaminated materials, and the transport and disposal of any hazardous and/or non-hazardous lead construction and demolition (C&D) bulky waste.

Final payment will not be made until all project closeout data submittals have been completed and provided to the Engineer. Once the completed package has been received in its entirety and accepted by the Engineer, final payment will be made to the Contractor.

<u>Pay Item</u>	<u>Pay Unit</u>
Lead Compliance for Miscellaneous Exterior Tasks	Lump Sum

END OF SECTION

ITEM #0952001A - SELECTIVE CLEARING AND THINNING

Section 9.52 is amended as follows:

Article 9.52.03 – Construction Methods is supplemented as follows:

Where directed by the Engineer, materials to be cut, trimmed or removed shall be those items that restrict visibility to an extruded aluminum sign to less than 800 ft. The entire sign will be visible for 800 ft measured from the center of the right-travel lane approaching the sign, as viewed from a 3.5 ft height above the roadway.

Where directed by the Engineer, materials to be cut, trimmed or removed shall be those items that restrict visibility to a sheet aluminum sign to less than 200 ft. The entire sign will be visible for 200 ft measured from the center of the right-travel lane approaching the sign, as viewed from a 3.5 ft height above the roadway.

This work shall be completed prior to installing the sign panel onto the vertical supports.

All trees scheduled to be removed shall be visibly marked or flagged by the Contractor at least seven days prior to the cutting of such trees.

The Engineer will inspect the identified trees and verify the limits of clearing and thinning prior to the Contractor proceeding with his cutting operation.

ITEM #0969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	400	1000	2000
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by CTDOT personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
- I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner/Fax, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit. The central wiring location will be determined by the CTDOT OIS staff in coordination with the designated field office personnel as soon as the facility is in place.

For Small, Medium and Large field offices the Contractor shall run a CAT 6 LAN cable a minimum length of 25 feet for each CTDOT networked device (including but not limited to: smartboards and Multi-Function Laser Printer/Copier/Scanner/Fax) to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the Contractor shall run CAT 6 LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each device location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect the Wi-Fi printer to the Contractor supplied internet router and to workstations/devices as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the CTDOT network.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner/Fax, and smartboards listed below.

The installation of a data communication circuit between the field office and the CTDOT OIS in Newington will be coordinated between the CTDOT District staff, CTDOT OIS staff and the local utility company once the Contractor supplies the field office phone numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft. x 2.5 ft.).	2	3	5	8
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft. x 12 ft.	-	-	-	1
Table – 3 ft. x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft. x 5 ft. display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
Open bookcase – 3 shelves – 3 ft. long.	-	-	2	2
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1	1	1	1
Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Telephone.	1	1	1	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
8 Outlet Power Strip with Surge Protection	3	4	6	9
Rain Gauge	1	1	1	1

Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1
Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f. , 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1	1	2	4
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .	1	1		
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .			1	1
Field Office Wi-Fi Connection as specified below under <u>Computer Related Hardware and Software</u>	1	1	1	1
Wi-Fi Printer as specified below under <u>Computer Related Hardware and Software</u> .	1	1	1	1
Digital Camera as specified below under <u>Computer Related Hardware and Software</u> .	1	1	3	3
Video Projector as specified below under <u>Computer Related Hardware and Software</u> .	-	-	-	1
Smart Board as specified below under <u>Computer Related Hardware and Software</u> .	-	-	-	1
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1	1	1	2
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1

Flip Phones as specified under <u>Computer Related Hardware and Software.</u>	-	-	-	-
Smart Phones as specified under <u>Computer Related Hardware and Software.</u>	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Computer Related Hardware and Software: The CTDOT will supply by its own means the actual Personal Computers for the CTDOT representatives. The Contractor shall supply the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors, and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at CTDOTs web site <http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904>

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner/Fax), Field Office Wi-Fi, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projector(s) and Smart Board(s) as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Wi-Fi Printer, Wi-Fi Router, Flip Phones, Smart Phones, digital cameras, Projector(s) and Smart Board(s) will be reviewed by CTDOT District personnel. The Multifunction Laser Printer/Copier/Scanner/Fax will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi, Wi-Fi printer, and the configuration of the wireless router as directed by the CTDOT. Installation will be coordinated with CTDOT District and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s), as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be

performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rain water from the top of the post into the rain gauge. The Location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

- A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
- B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
- C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars (\$5,000) in order to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The CTDOT will be responsible for all maintenance costs of CTDOT owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current CTDOT equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the CTDOT may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or

under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the CTDOT will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Type)," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Field Office, (Type)	Month

ITEM #0971001A - MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "Prosecution and Progress":

I-84

The Contractor shall maintain and protect the minimum number of through lanes and shoulders as dictated in the Special Provision for Section 1.08 - Prosecution and Progress "Limitations of Operations - Minimum Number of Lanes to Remain Open" Chart, on a paved travel path not less than 12 feet in width per lane.

The Contractor shall be allowed to halt traffic for a period of time not to exceed 10 minutes for the purpose of erecting / removing overhead sign supports. If more than one 10-minute period is required, the Contractor shall allow all stored vehicles to proceed through the work area prior to the next stoppage.

Ramps and Turning Roadways

The Contractor shall maintain and protect existing traffic operations.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall be allowed to maintain and protect a minimum of one lane of traffic, on a paved travel path not less than 12 feet in width.

All Other Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 11 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 11 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet and there shall be no more than one alternating one-way traffic operation within the project limits without prior approval of the Engineer.

Commercial and Residential Driveways

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed, unless

permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

General

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3-foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of active construction work on overhead signs and structures, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken. At no time shall an overhead sign be left partially removed or installed.

If applicable, when an existing sign is removed, it shall be either relocated or replaced by a new sign during the same working day.

The Contractor shall not store any material on-site which would present a safety hazard to motorists or pedestrians (e.g. fixed object or obstruct sight lines).

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

Construction vehicles entering travel lanes at speeds less than the posted speed are interfering with traffic, and shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at posted speeds, in order to merge with existing traffic.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs throughout the project limits during the duration of the project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and install temporary sign supports if necessary and as directed by the Engineer.

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Department including the offices of Maintenance and Traffic, and the Town/City to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the

following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

TRAFFIC CONTROL DURING CONSTRUCTION OPERATIONS

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

TRAFFIC CONTROL PATTERNS

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic
- Duration of operation
- Exposure to hazards

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist.

Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Typical traffic control plans 19 through 25 may be used for moving operations such as line striping, pot hole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate trafficperson shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

PLACEMENT OF SIGNS

Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads), where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

ALLOWABLE ADJUSTMENT OF SIGNS AND DEVICES SHOWN ON THE TRAFFIC CONTROL PLANS

The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions.

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

TABLE I – MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT MILES PER HOUR	MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

SECTION 1. WORK ZONE SAFETY MEETINGS

- 1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.

- 1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. Any issues that can't be resolved at these meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda should include:
 - Review Project scope of work and time
 - Review Section 1.08, Prosecution and Progress
 - Review Section 9.70, Trafficpersons
 - Review Section 9.71, Maintenance and Protection of Traffic
 - Review Contractor's schedule and method of operations.
 - Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
 - Open discussion of work zone questions and issues
 - Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

SECTION 2. GENERAL

- 2.a) If the required minimum number of signs and equipment (i.e. one High Mounted Internally Illuminated Flashing Arrow for each lane closed, two TMAs, Changeable Message Sign, etc.) are not available; the traffic control pattern shall not be installed.

- 2.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums,

etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.

- 2.c) Failure of the Contractor to have the required minimum number of signs, personnel and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for loss time.
- 2.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. The matter shall be brought to the District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

- 3.a) Lane Closures shall be installed beginning with the advance warning signs and proceeding forward toward the work area.
- 3.b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advance warning signs.
- 3.c) Stopping traffic may be allowed:
 - As per the contract for such activities as blasting, steel erection, etc.
 - To move slow moving equipment across live traffic lanes into the work area.
- 3.d) Temporary road closures using Rolling Road Blocks (RRB) may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:
 - RRB may not start prior to the time allowed in the contract Limitations of Operation for sign pattern installation. Sign pattern removal must be complete prior to the time indicated in the Limitations of Operation for restoring the lanes to traffic.
 - On limited access highways with 4 lanes or more, a RRB may not start until the Limitations of Operation Chart allows a 2 lane closure. In areas with good sight lines and full shoulders, opposite side lead signs should be installed in a separate operation.
 - Truck-Mounted Impact Attenuators (TMAs) equipped with arrow boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including Truck-Mounted Impact Attenuators TMAs and police vehicles leave the shoulder or on-ramp and accelerate to a normal roadway speeds in each lane, then the vehicles will position themselves side by side and decelerate to the RRB speed on the highway.
 - An additional Truck-Mounted Impact Attenuator TMAs equipped with a Portable Changeable Message Sign shall be utilized to advise the motorists that sign pattern installation / removal is underway. The Pre-Warning Vehicle (PWV) should be

- initially positioned in the right shoulder ½ mile prior to the RRB operation. If a traffic queue reaches the PWV's initial location, the contractor shall slowly reverse the PWV along the shoulder to position itself prior to the new back of queue. A Pre-Warning Vehicle, as specified elsewhere in the contract, shall be utilized to advise the motorists that sign pattern installation / removal is underway.
- The RRB duration shall not exceed 15 minutes from start of the traffic block until all lanes are opened as designated in the Limitation of Operation chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the respective construction District.
 - RRB should not be utilized to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. Attenuator trucks (and State Police if available) should be used to protect the workers installing the taper in the additional lane.
 - Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days should be allowed for review and approval by the District.
 - The RRB procedures (including any approved exceptions) will be reviewed and discussed by the inspection team and the Contractor in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, the work will proceed as recommended by the Department Trooper. Any unresolved issues will be addressed the following day.
- 3.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
- 3.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.
- 3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.
- 3.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

- 4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).
- 4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.
- 4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.
- 4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.
- 4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

SECTION 5. USE OF TRUCK MOUNTED OR TRAILER MOUNTED IMPACT ATTENUATOR VEHICLES (TMAs)

- 5.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.
- 5.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to utilize the TMAs.
- 5.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane. The flashing arrow board mounted on the TMA should be in the “flashing arrow” mode when taking the lane. The sign truck and workers should be immediately ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed. The flashing arrow board mounted on the TMA should be in the “caution” mode when traveling in the closed lane.

- 5.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The flashing arrow board mounted on the TMA should be in the “caution” mode when in the closed lane.
- 5.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to the specification entitled “Truck-Mounted or Trailer-Mounted Impact Attenuator”. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.
- 5.f) TMAs should be paid in accordance with how the unit is utilized. If it is used as a TMA and is in the proper location as specified, then it should be paid at the specified hourly rate for “Truck-Mounted or Trailer-Mounted Impact Attenuator”. When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for “High Mounted Internally Illuminated Flashing Arrow”. If a TMA is used to install and remove a pattern and is also used as a Flashing Arrow in the same day, then the unit should be paid as a “Truck-Mounted or Trailer-Mounted Impact Attenuator” for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as a Flashing Arrow during the same day, then the unit should be paid at the daily rate as a “High Mounted Internally Illuminated Flashing Arrow”.

SECTION 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

- 6.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.
- 6.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
- 6.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.
- 6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

SECTION 7. USE OF (REMOTE CONTROLLED) CHANGEABLE MESSAGE SIGNS (CMS)

- 7.a) For lane closures on limited access roadways, one CMS shall be used in advance of the traffic control pattern. Prior to installing the pattern, the CMS shall be installed and in operation, displaying the appropriate lane closure information (i.e.: Left Lane Closed - Merge Right). The CMS shall be positioned ½ - 1 mile ahead of the lane closure taper. If the nearest Exit ramp is greater than the specified ½ - 1 mile distance, than an additional CMS shall be positioned a sufficient distance ahead of the Exit ramp to alert motorists to the work and therefore offer them an opportunity to take the exit.
- 7.b) CMS should not be installed within 1000 feet of an existing CMS.
- 7.c) On non-limited access roadways, the use of CMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the CMS.
- 7.d) The advance CMS is typically placed off the right shoulder, 5 feet from the edge of pavement. In areas where the CMS cannot be placed beyond the edge of pavement, it may be placed on the paved shoulder with a minimum of five (5) traffic drums placed in a taper in front of it to delineate its position. The advance CMS shall be adequately protected if it is used for a continuous duration of 36 hours or more.
- 7.e) When the CMS are no longer required, they should be removed from the clear zone and have the display screen cleared and turned 90° away from the roadway.
- 7.f) The CMS generally should not be used for generic messages (ex: Road Work Ahead, Bump Ahead, Gravel Road, etc.).
- 7.g) The CMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs (Examples include: Exit 34 Closed Sat/Sun - Use Exit 35, All Lanes Closed - Use Shoulder, Workers on Road - Slow Down).
- 7.h) Messages that need to be displayed for long periods of time, such as during stage construction, should be displayed with construction signs. For special signs, please coordinate with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.
- 7.i) The messages that are allowed on the CMS are as follows:

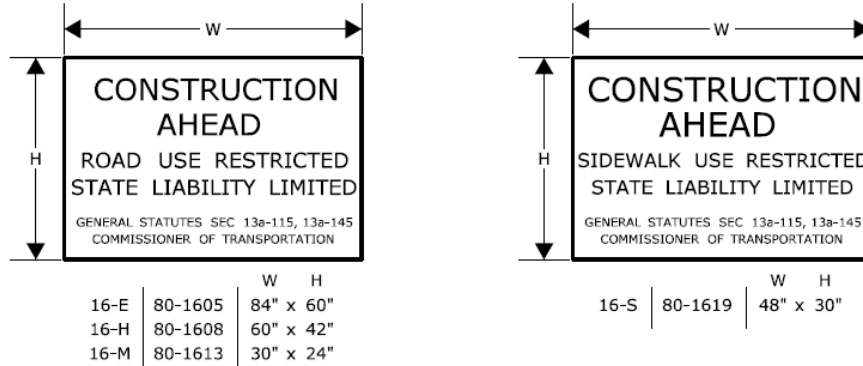
<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>	<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	WORKERS ON ROAD	REDUCE SPEED
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	WORKERS ON ROAD	SLOW DOWN
5	RIGHT LANE CLOSED	MERGE LEFT	13	EXIT XX CLOSED	USE EXIT YY
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	EXIT XX CLOSED USE YY	FOLLOW DETOUR
7	RIGHT LANE CLOSED	REDUCE SPEED	15	2 LANES SHIFT AHEAD	USE CAUTION
8	2 RIGHT LANES CLOSED	REDUCE SPEED	16	3 LANES SHIFT AHEAD	USE CAUTION

For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

SECTION 8. USE OF STATE POLICE OFFICERS

- 8.a) State Police may be utilized only on limited access highways and secondary roadways under their primary jurisdiction. One Officer may be used per critical sign pattern. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Likewise in areas with moderate traffic and wide, unobstructed medians, left lane closures can be implemented without State Police presence. Under some situations it may be desirable to have State Police presence, when one is available. Examples of this include: nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur, however they are not required.
- 8.b) Once the pattern is in place, the State Police Officer should be positioned in a non-hazardous location in advance of the pattern. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall be repositioned prior to the backup to give warning to the oncoming motorists. The State Police Officer and TMA should not be in proximity to each other.
- 8.c) Other functions of the State Police Officer(s) may include:
- Assisting entering/exiting construction vehicles within the work area.
 - Enforcement of speed and other motor vehicle laws within the work area, if specifically requested by the project.
- 8.d) State Police Officers assigned to a work site are to only take direction from the Engineer.

SERIES 16 SIGNS



THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

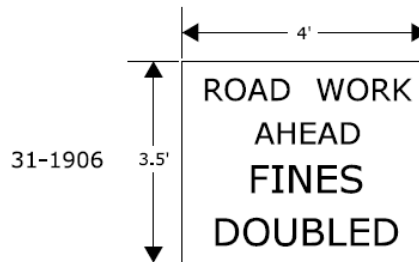
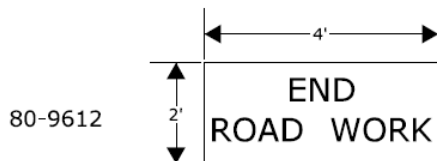
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
REQUIRED SIGNS

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.
2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.
3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.
4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.
5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.
6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.
7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).
8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.
9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.
10. SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm



SCALE: NONE

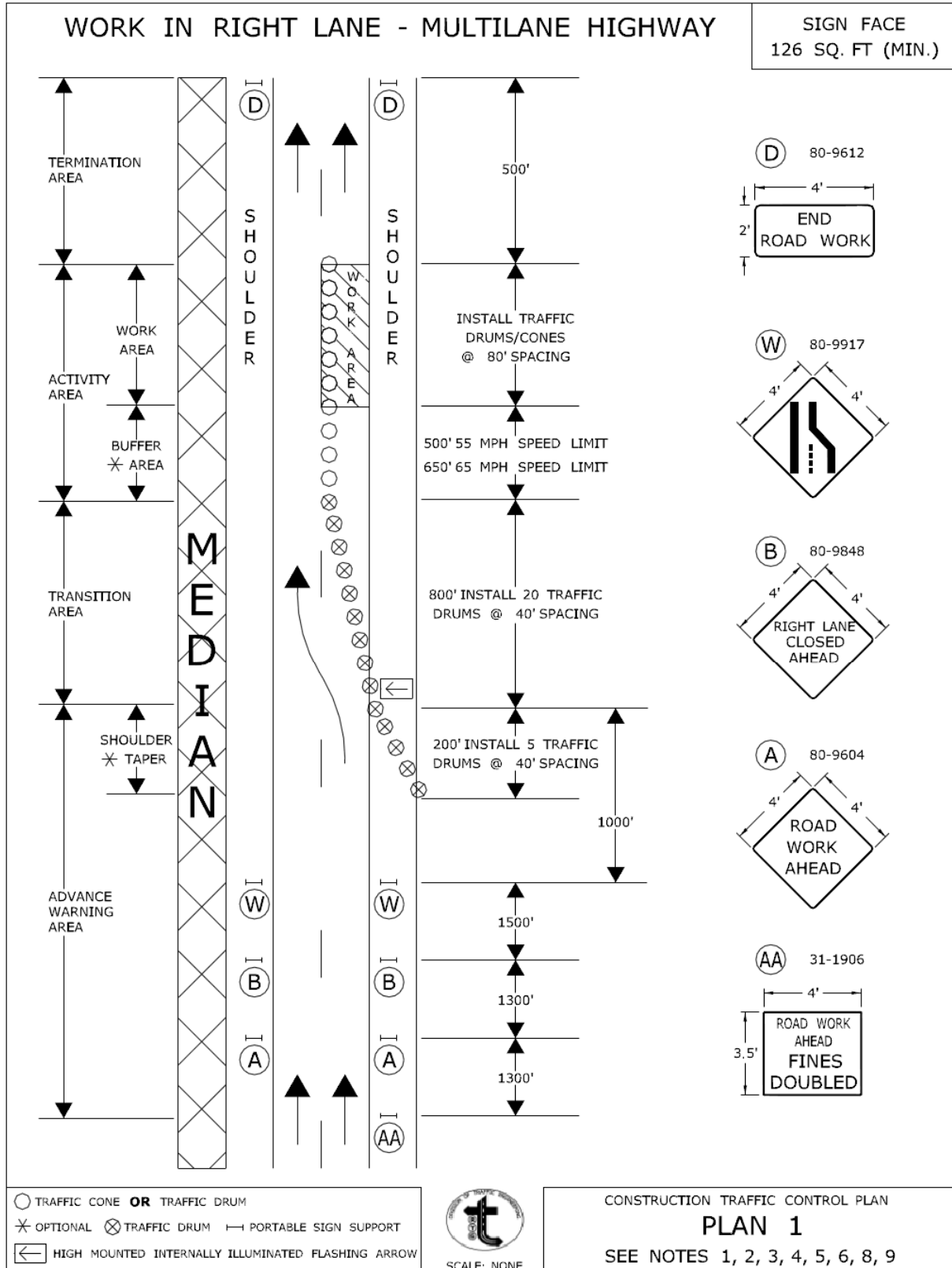
CONSTRUCTION TRAFFIC CONTROL PLAN NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

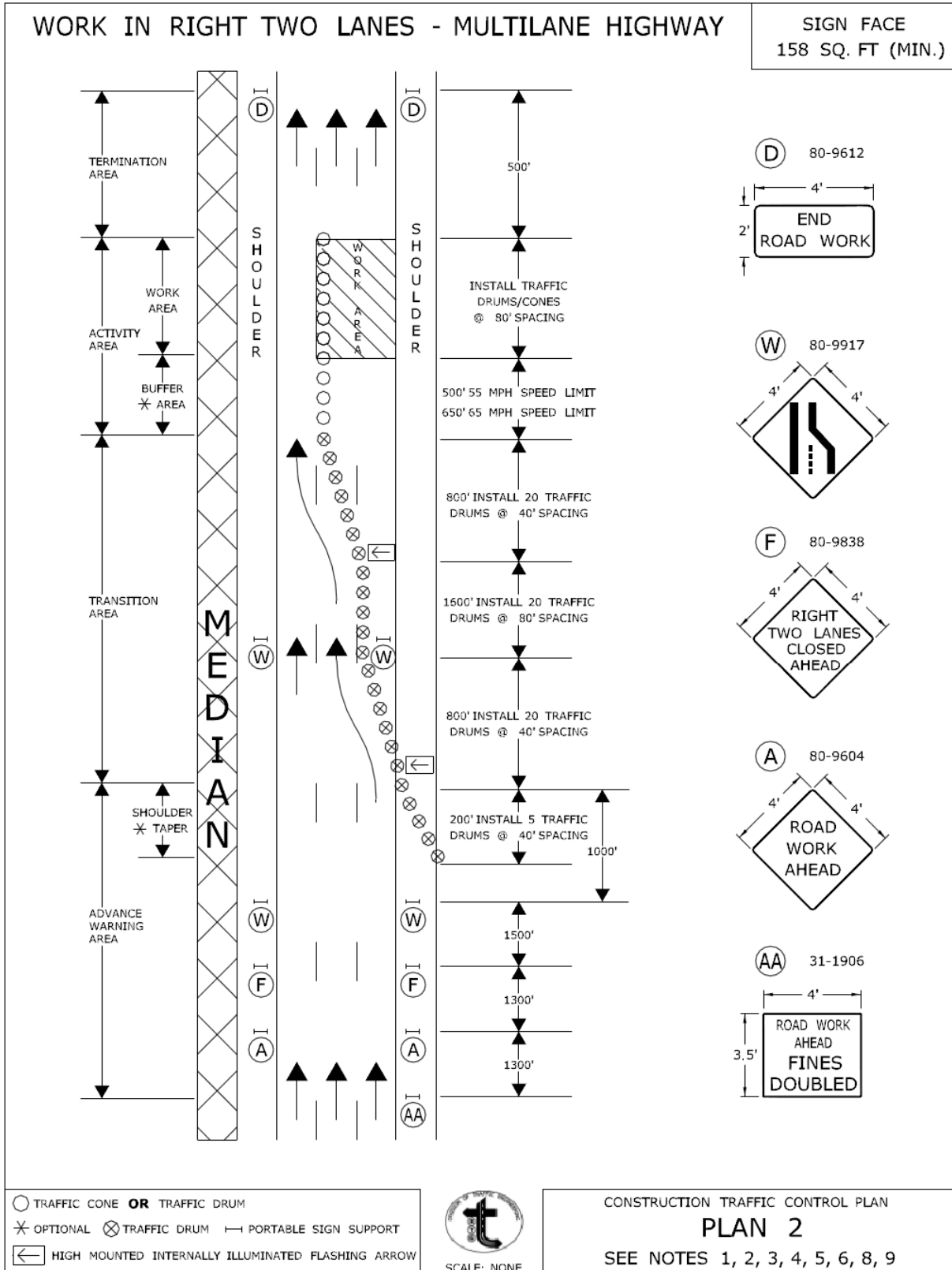
Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.06.05 15:50:35-0400



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

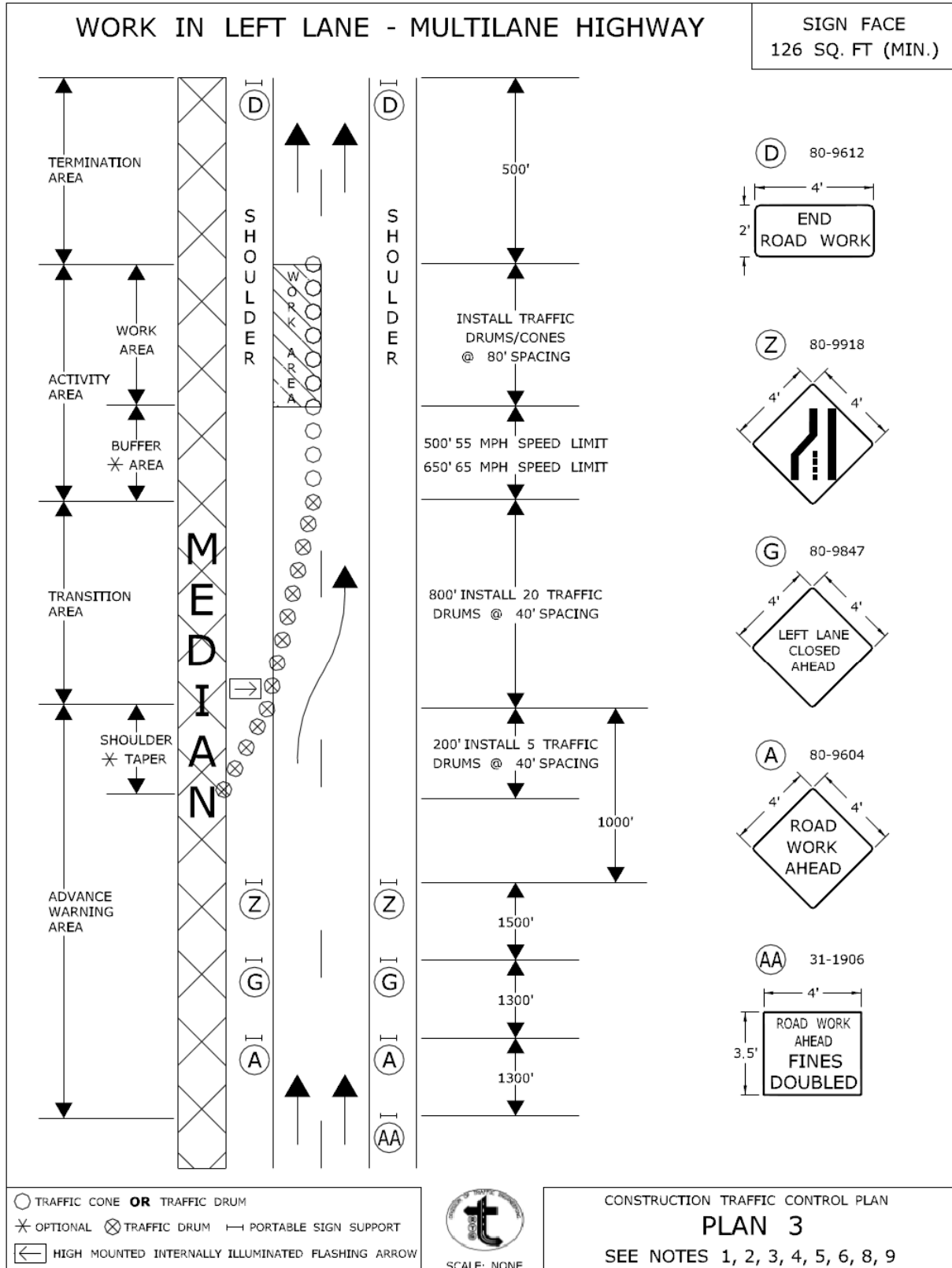
APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:51:00-0400'



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

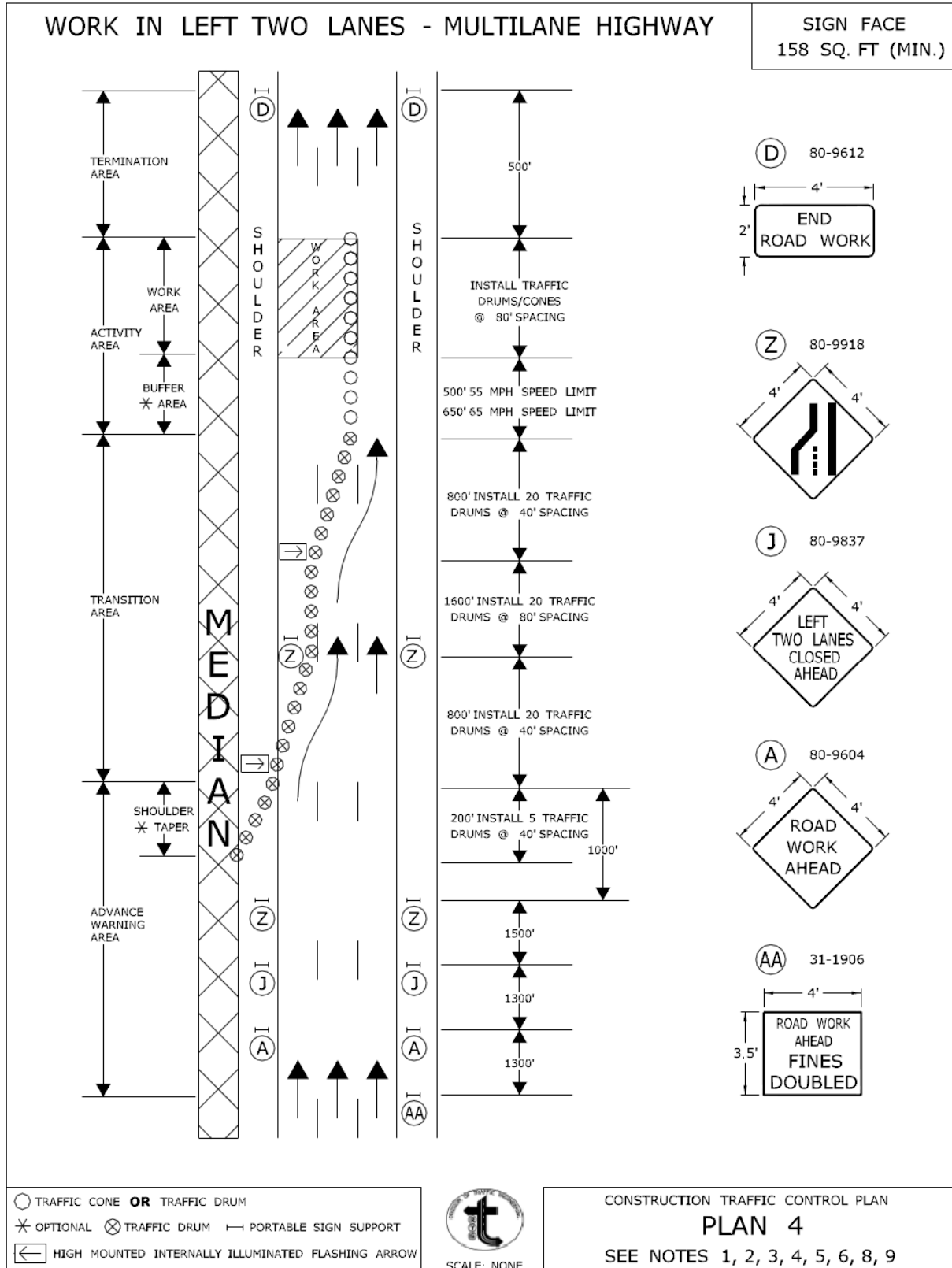
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 2
SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:51:23-04'00"



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APPROVED *Charles S. Harlow*
 Charles S. Harlow
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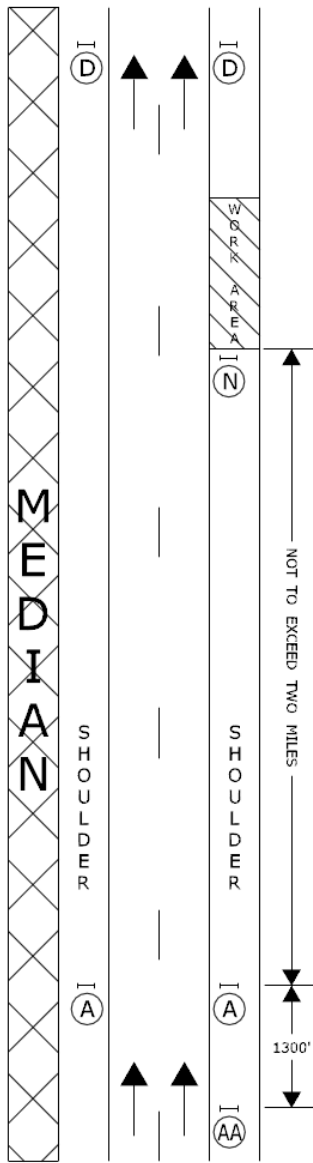


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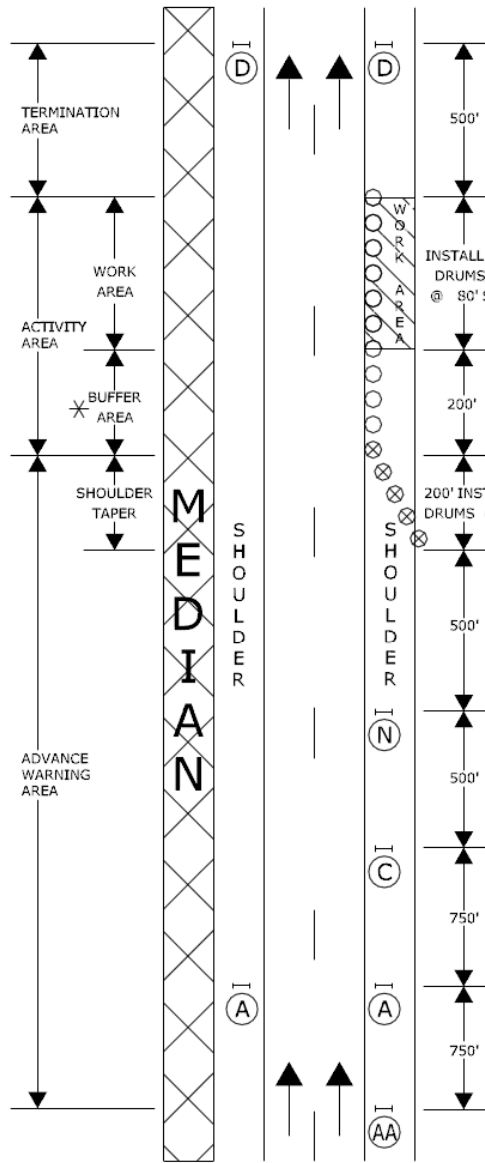
APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:52:10-0400

WORK IN SHOULDER AREA - MULTILANE HIGHWAY

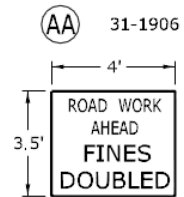
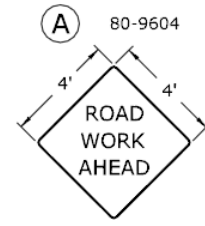
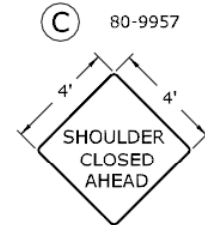
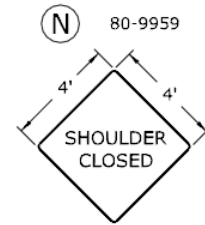
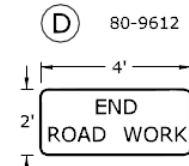
SIGN FACE
94 SQ. FT (MIN.)



MOVING OPERATION



STATIONARY OPERATION



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

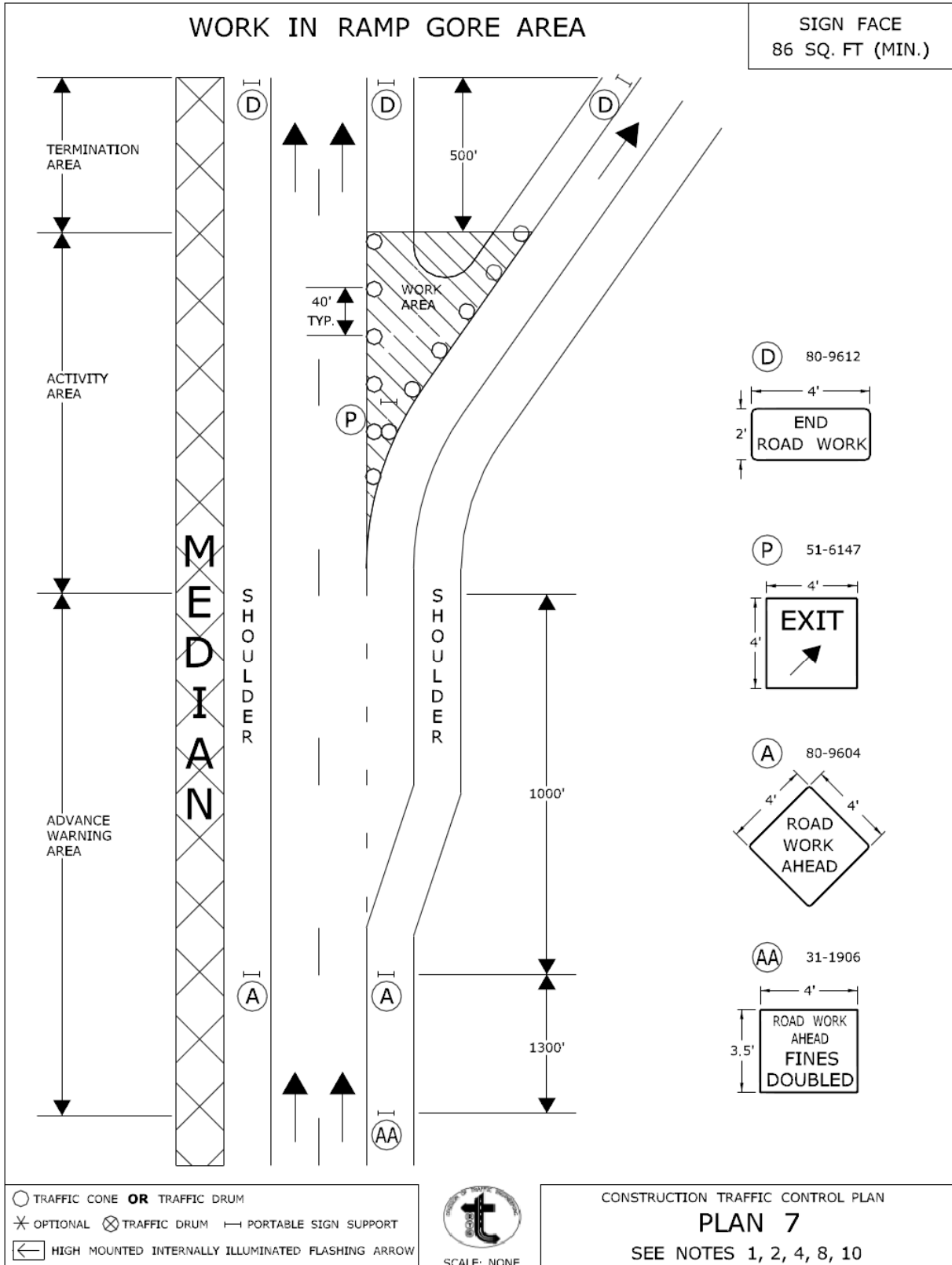
CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 6

SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
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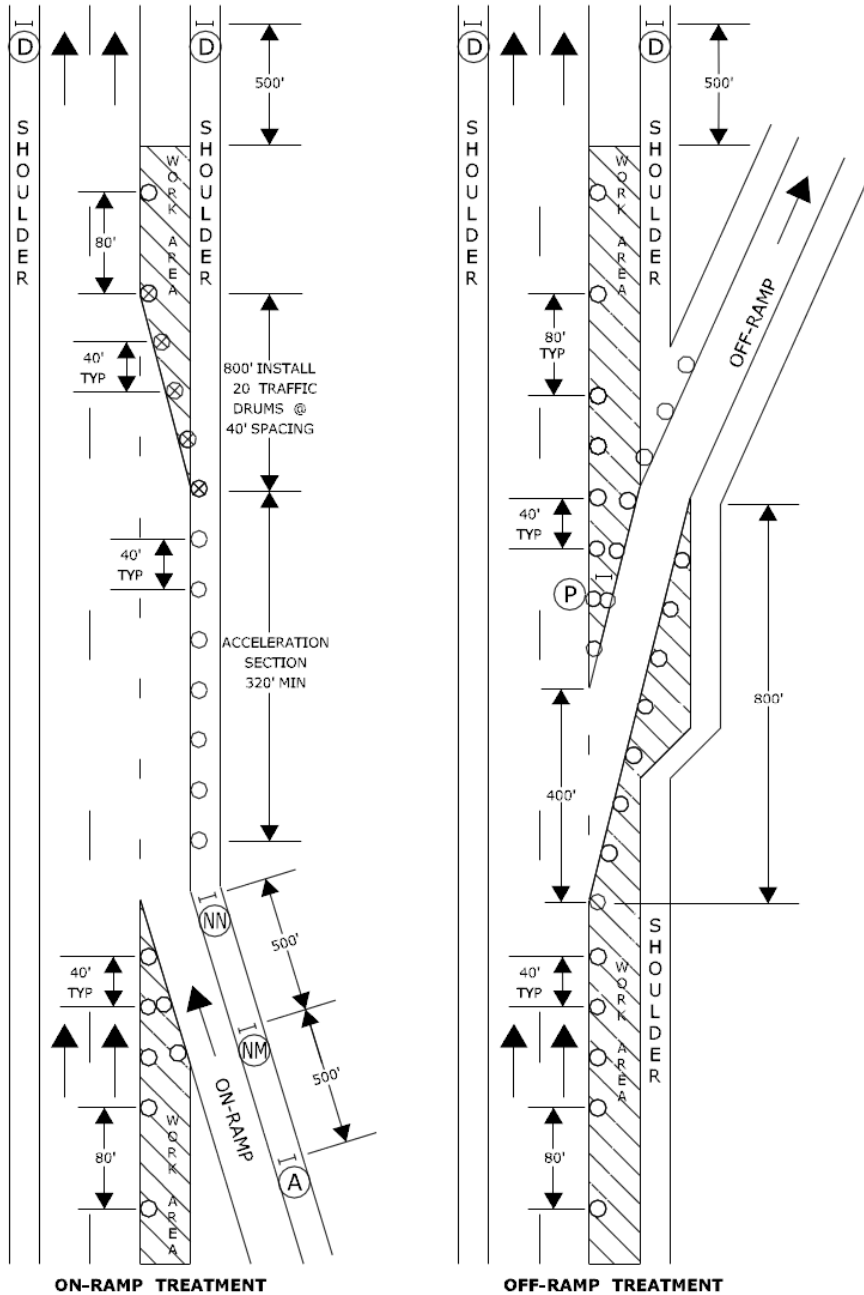


CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:53:03-0400
PRINCIPAL ENGINEER

TYPICAL RAMP TREATMENTS FOR MAINLINE LANE CLOSURE - MULTILANE HIGHWAY

SIGN FACE SQ. FT VARIES



- (D) 80-9612
4' x 2' END ROAD WORK
- (P) 51-6147
4' x 4' EXIT
- (NN) 31-0528
5' YIELD
- (NM) 80-9055
4' x 4' Arrow pointing up
- (A) 80-9604
4' x 4' ROAD WORK AHEAD

USE TRAFFIC CONTROL PLAN 1 TO CLOSE THE RIGHT LANE

- TRAFFIC CONE OR TRAFFIC DRUM
- ✱ OPTIONAL ✕ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

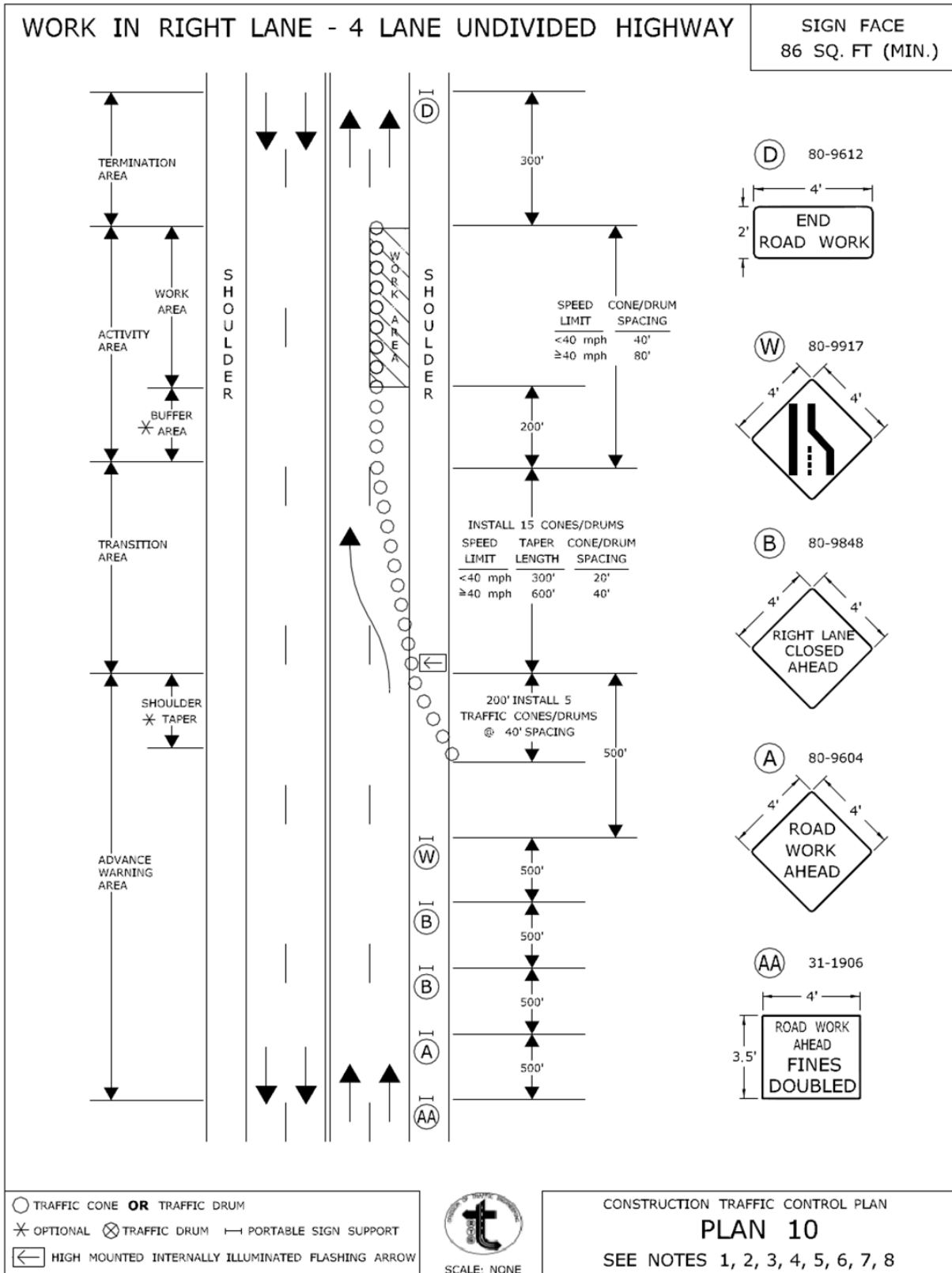
CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 8

SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9, 10

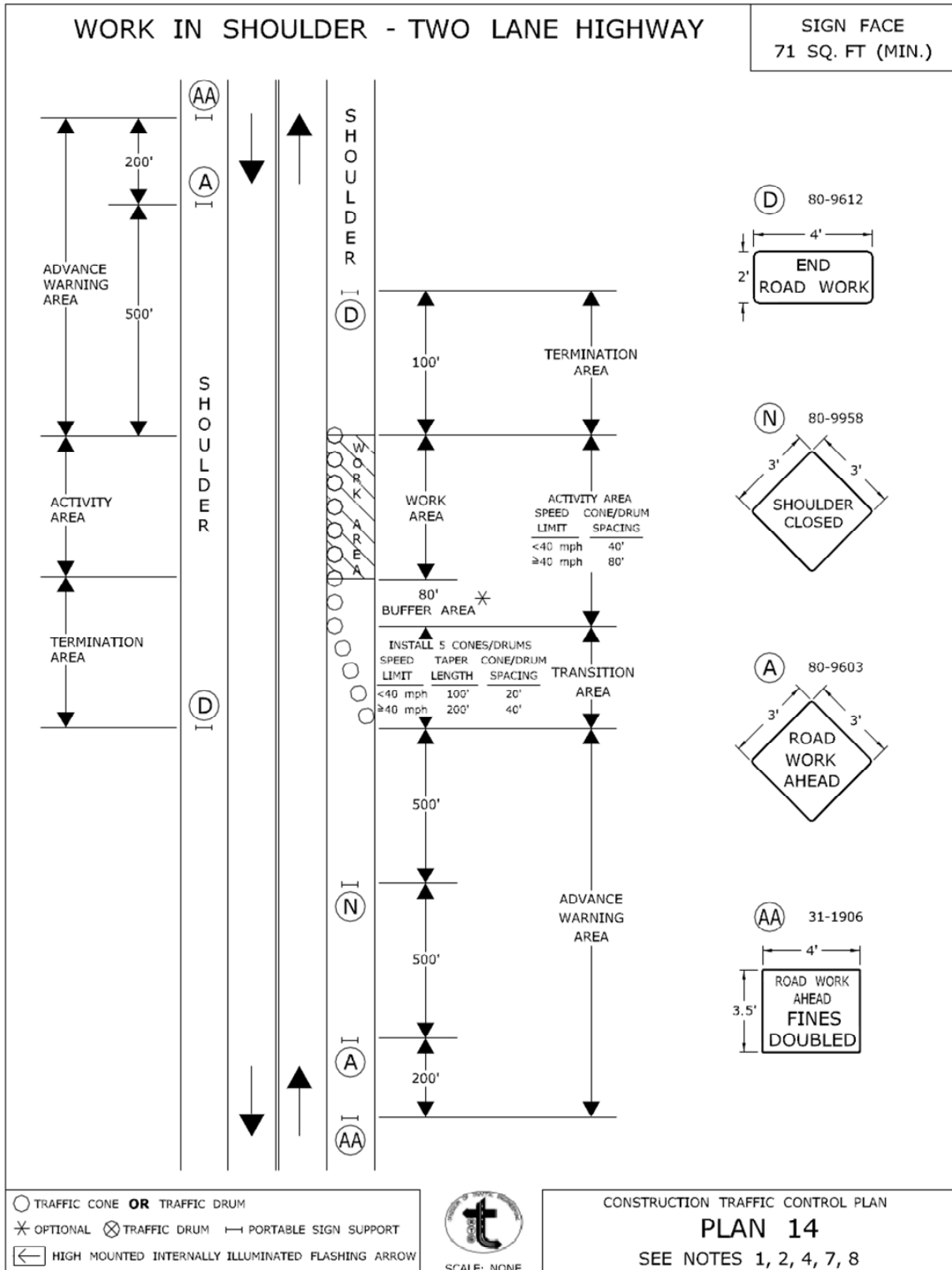
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BUREAU OF ENGINEERING & CONSTRUCTION

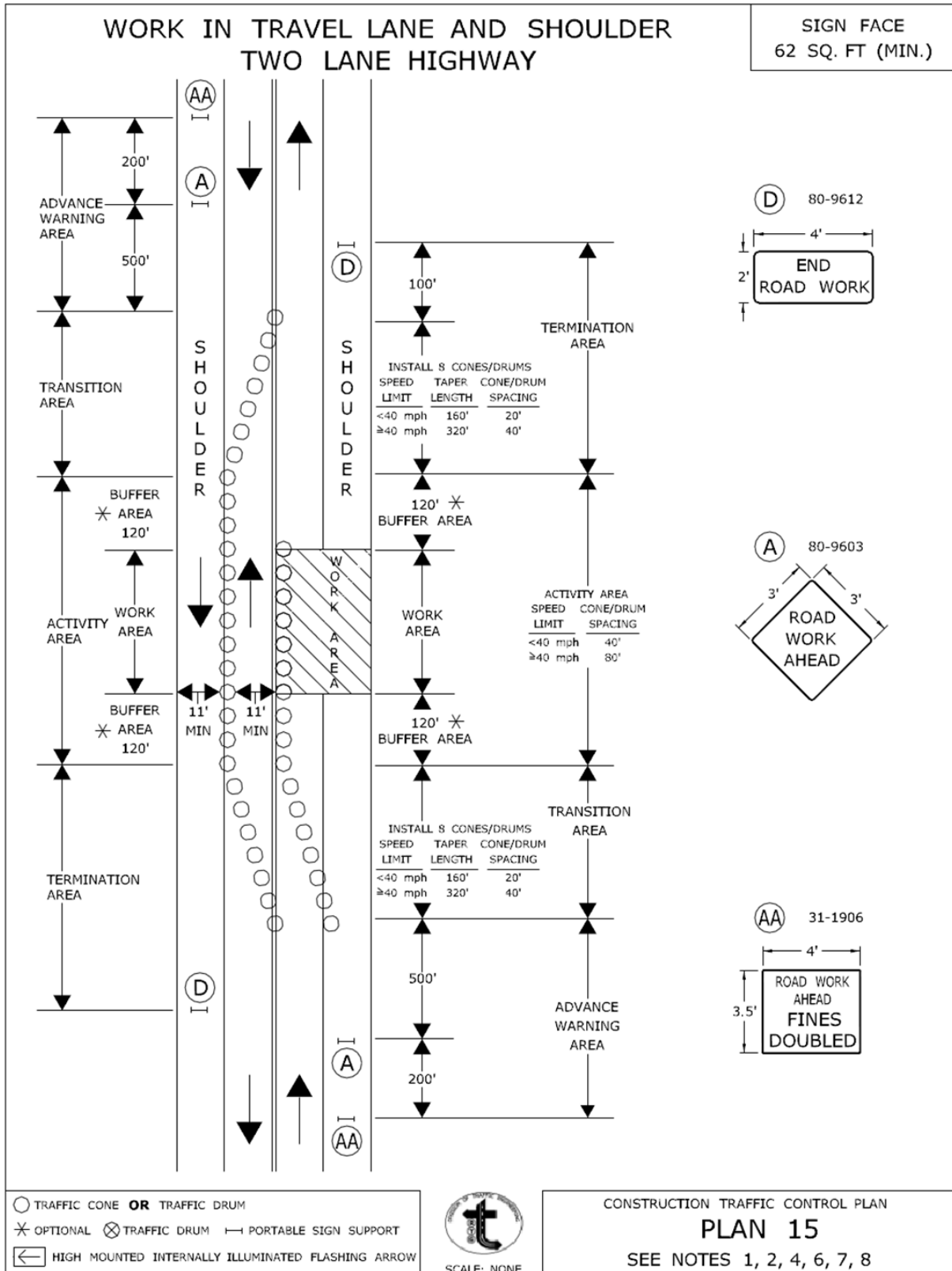
APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:53:31-0400



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* 2012.06.05 15:54:15-0400
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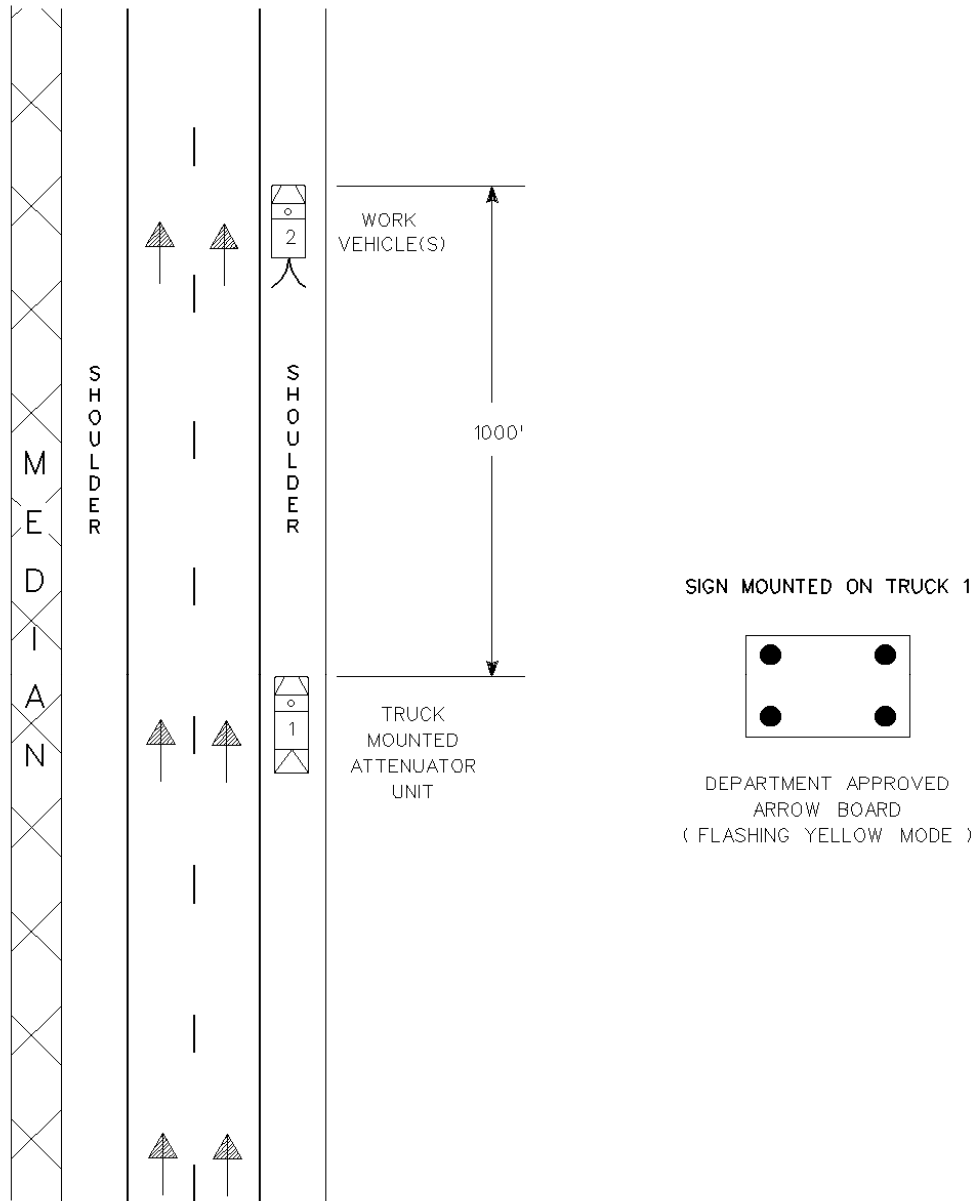




CONNECTICUT DEPARTMENT OF TRANSPORTATION
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APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:56:29-04'00"
PRINCIPAL ENGINEER

MOVING OPERATION ON RIGHT SHOULDER MULTILANE HIGHWAY & SECONDARY ROADWAYS



REV'D 1-02

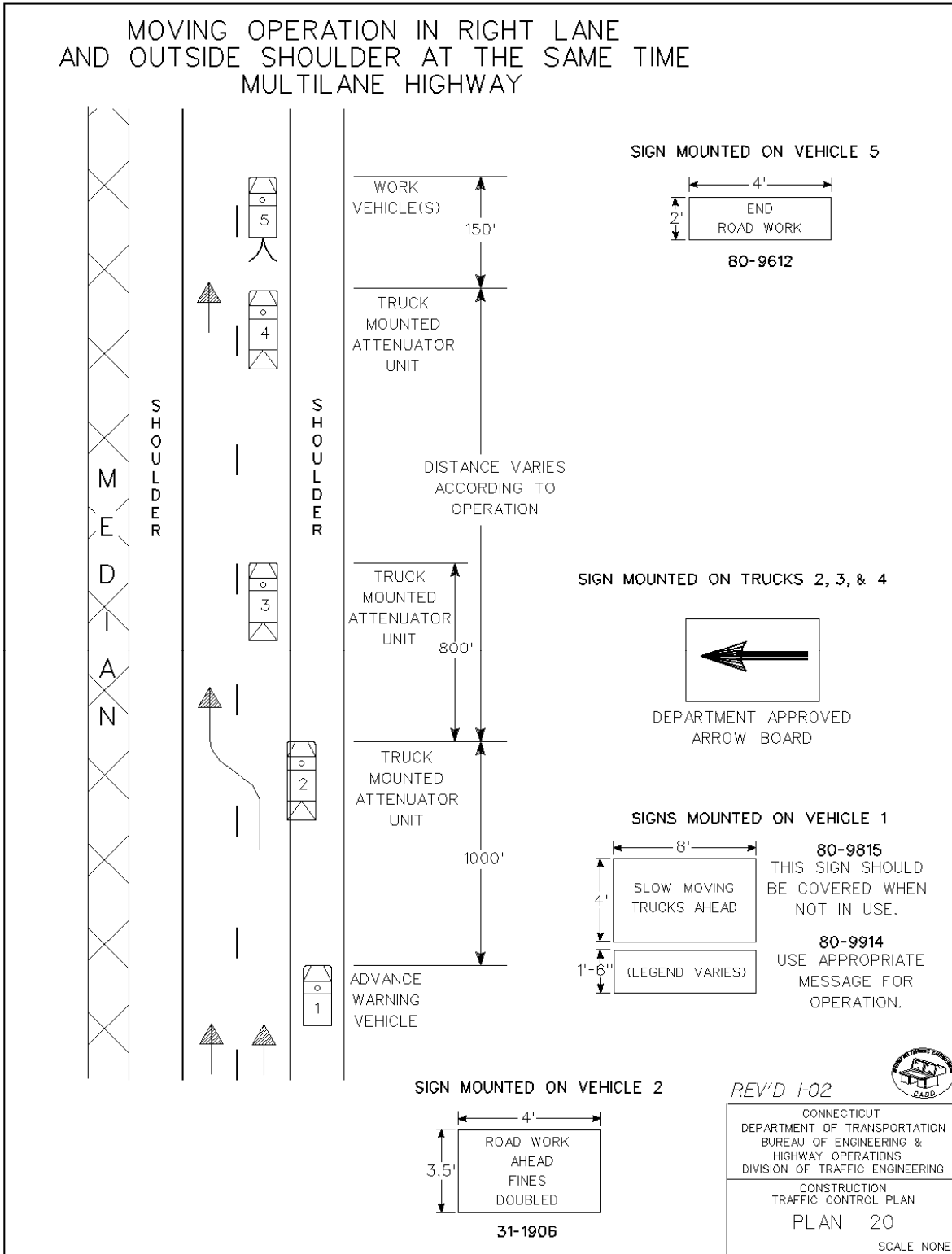


CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING &
HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

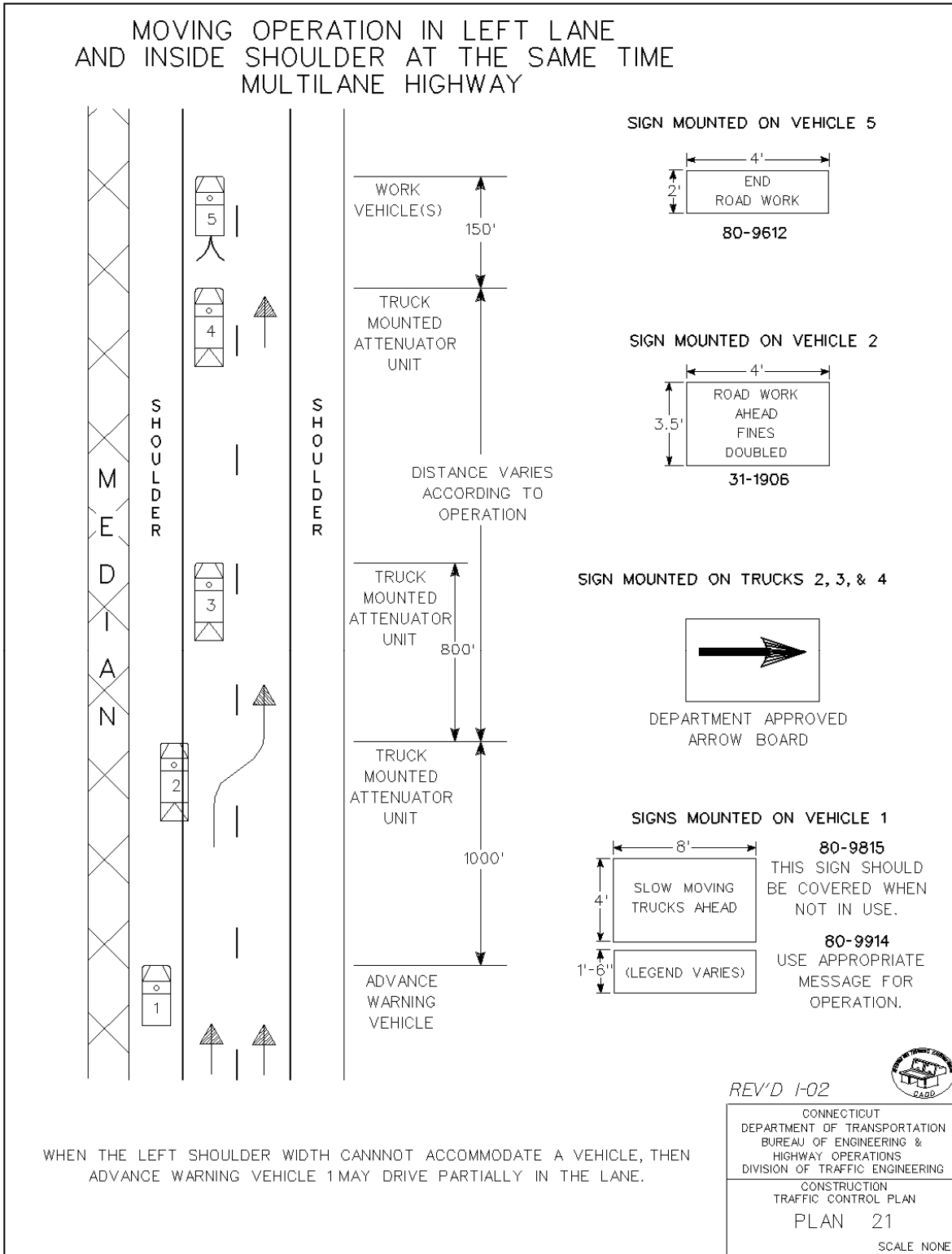
CONSTRUCTION
TRAFFIC CONTROL PLAN
PLAN 19

SCALE NONE

APPROVED J. McCall DATE 1-30-02
PRINCIPAL ENGINEER

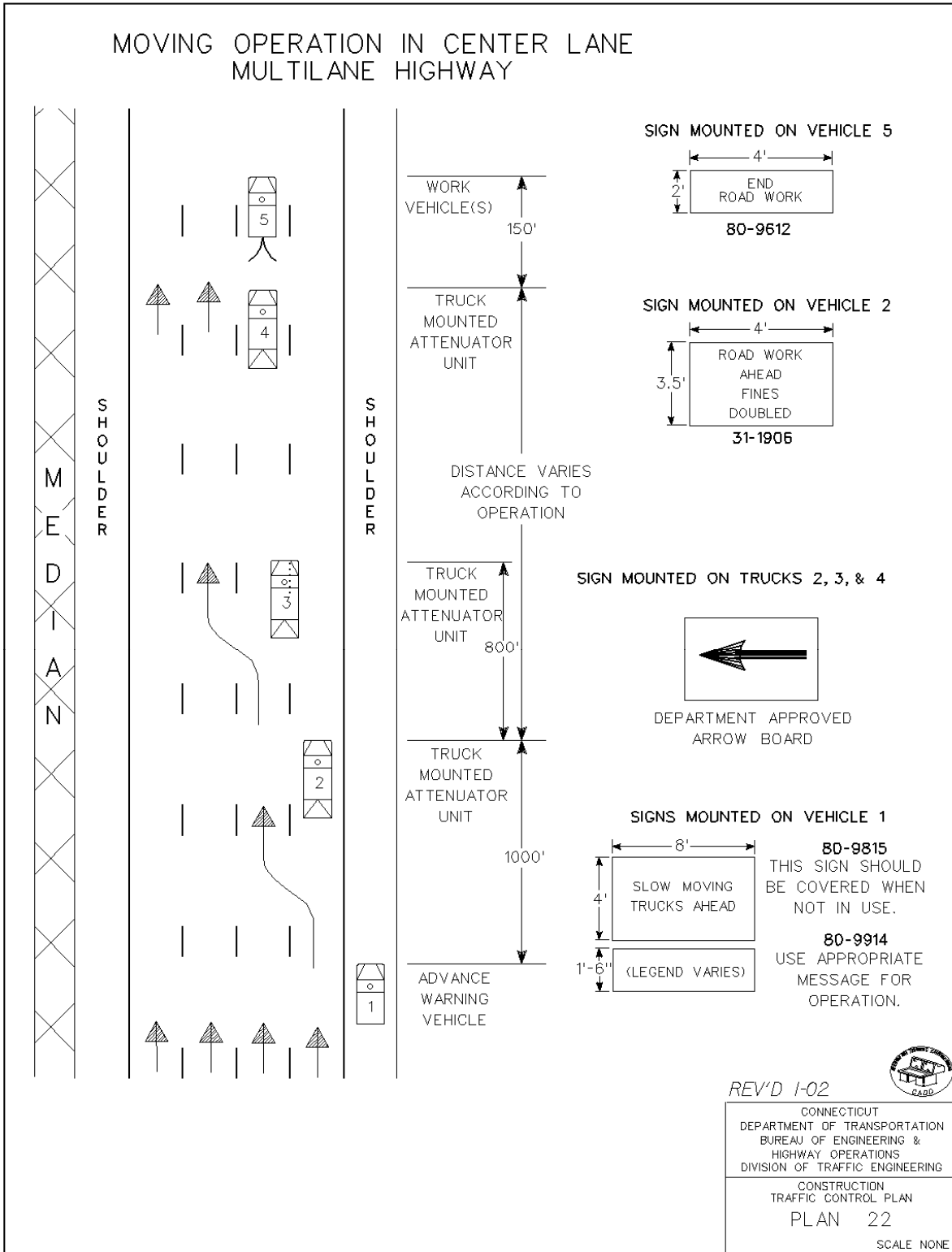


APPROVED John D. McCall DATE I-30-02
PRINCIPAL ENGINEER



APPROVED John D. McCall DATE I-30-02
PRINCIPAL ENGINEER

MOVING OPERATION IN CENTER LANE MULTILANE HIGHWAY



REV'D 1-02



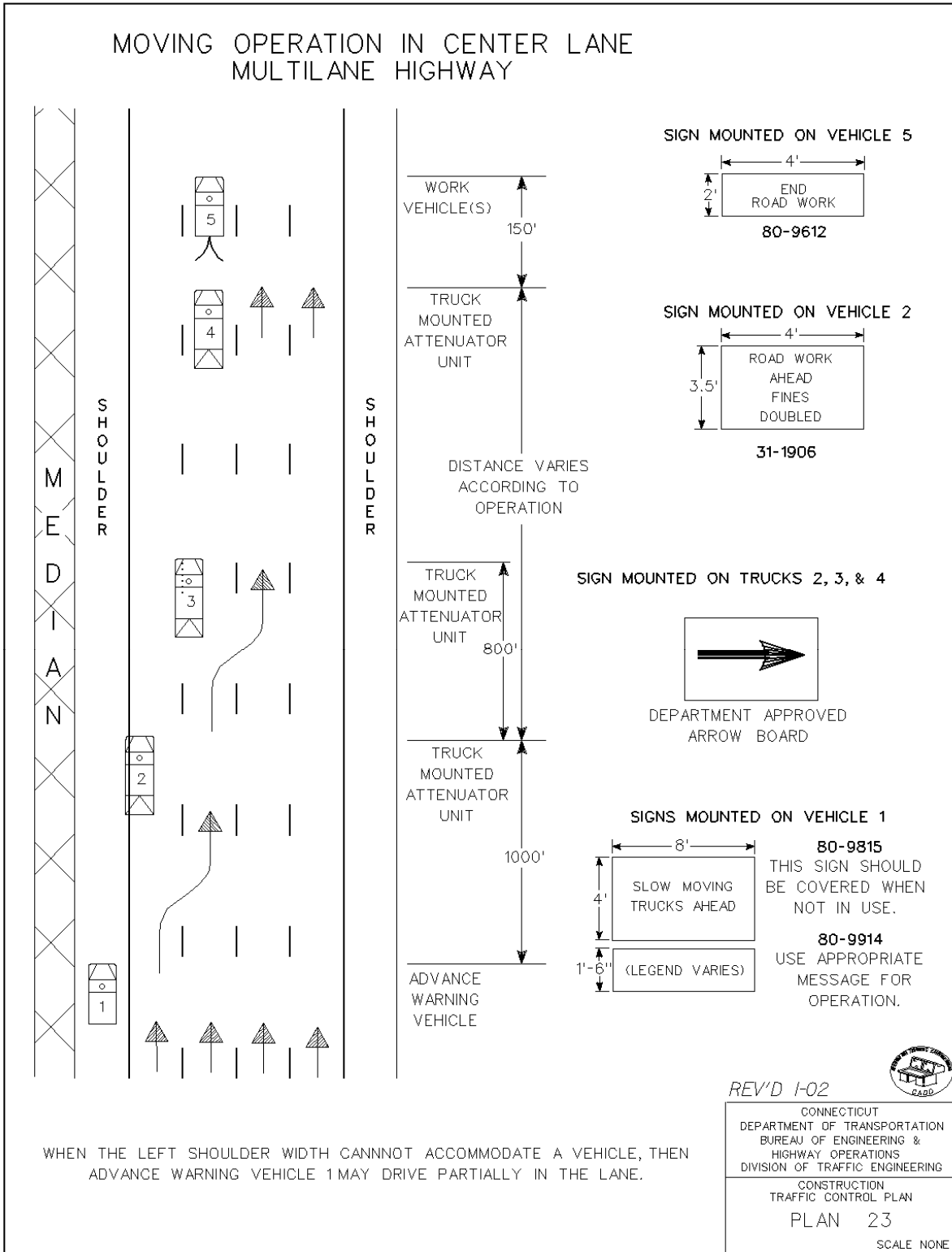
CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING &
HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

CONSTRUCTION
TRAFFIC CONTROL PLAN
PLAN 22

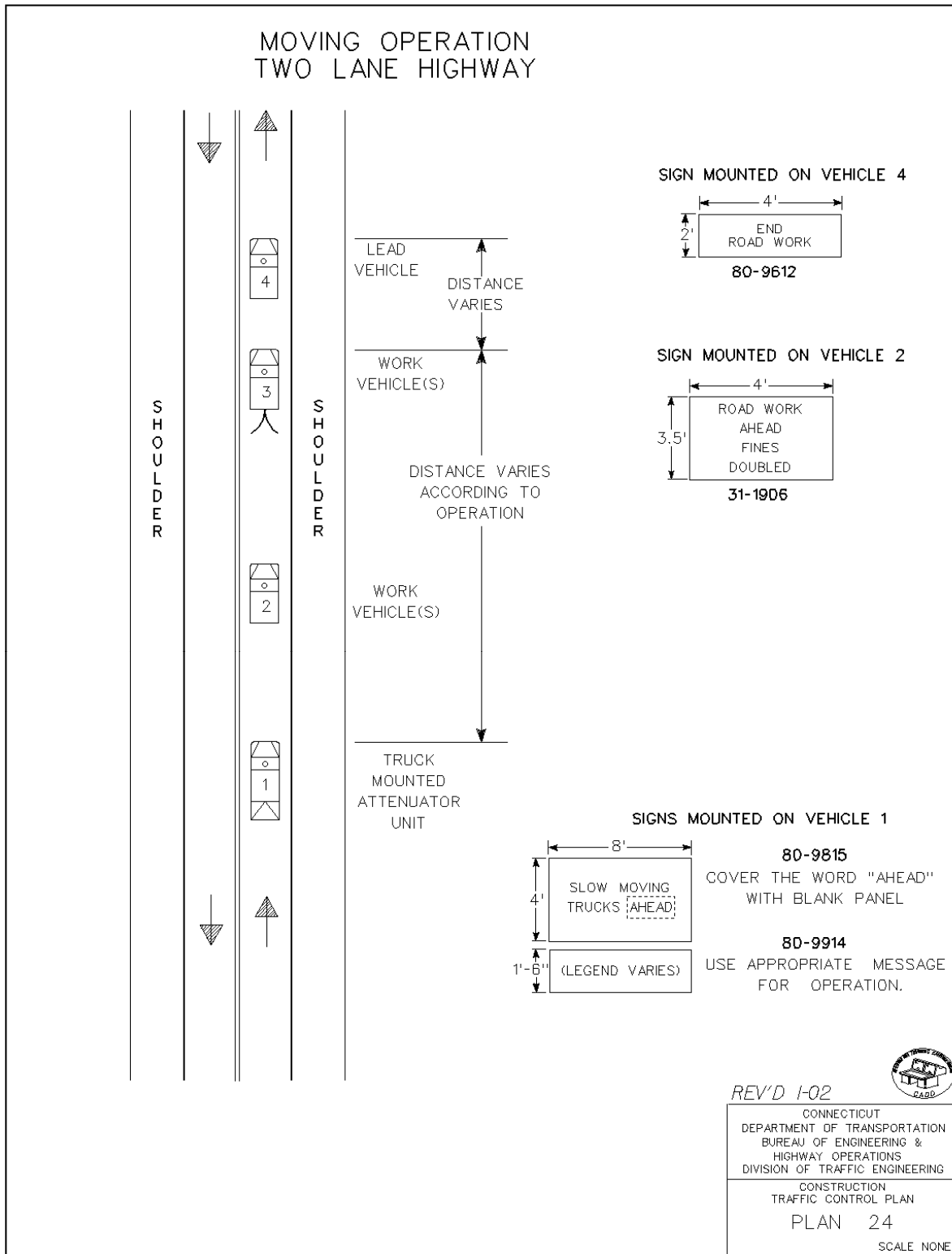
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APPROVED John D. McCall DATE 1-30-02
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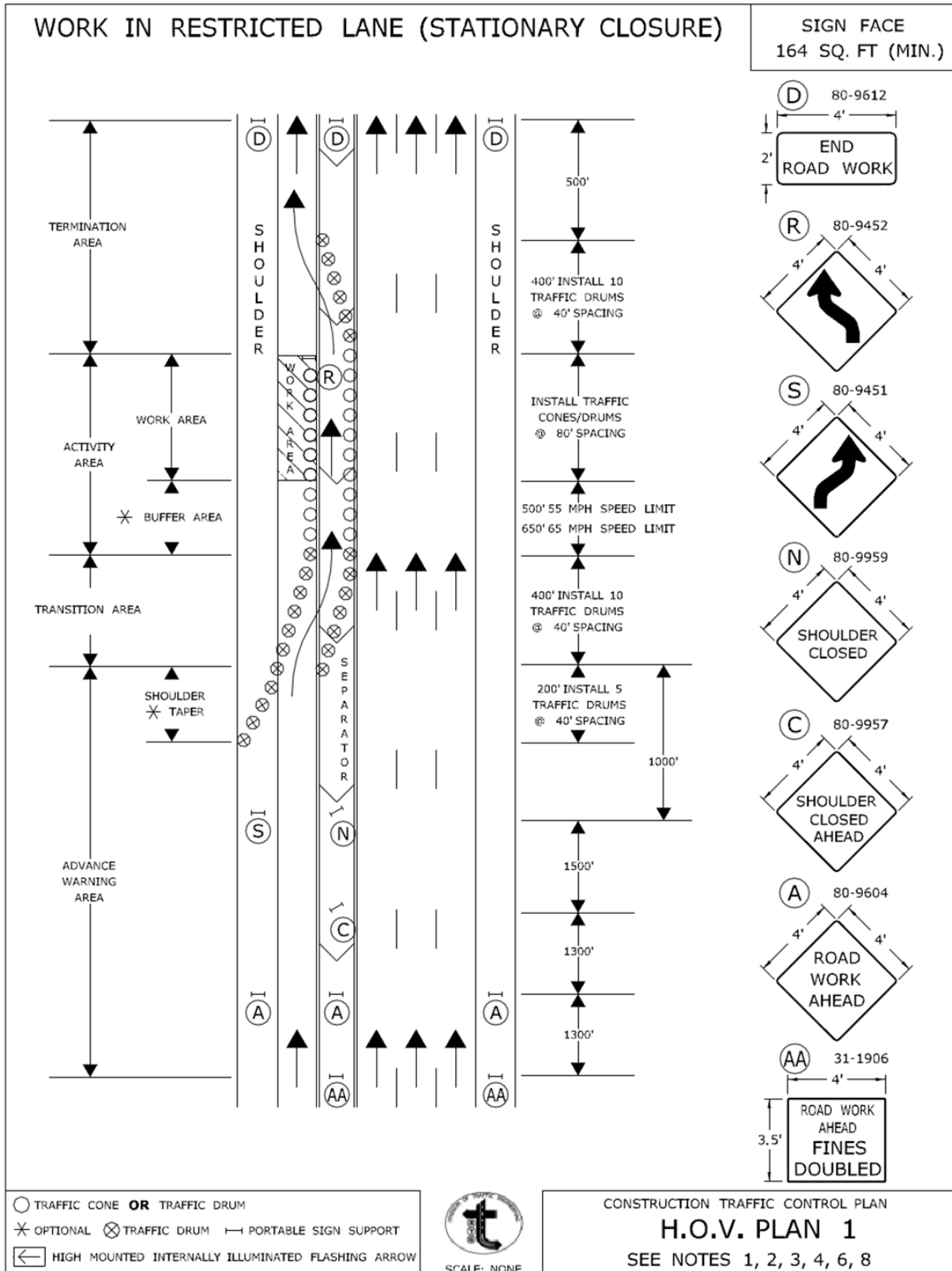
MOVING OPERATION IN CENTER LANE MULTILANE HIGHWAY



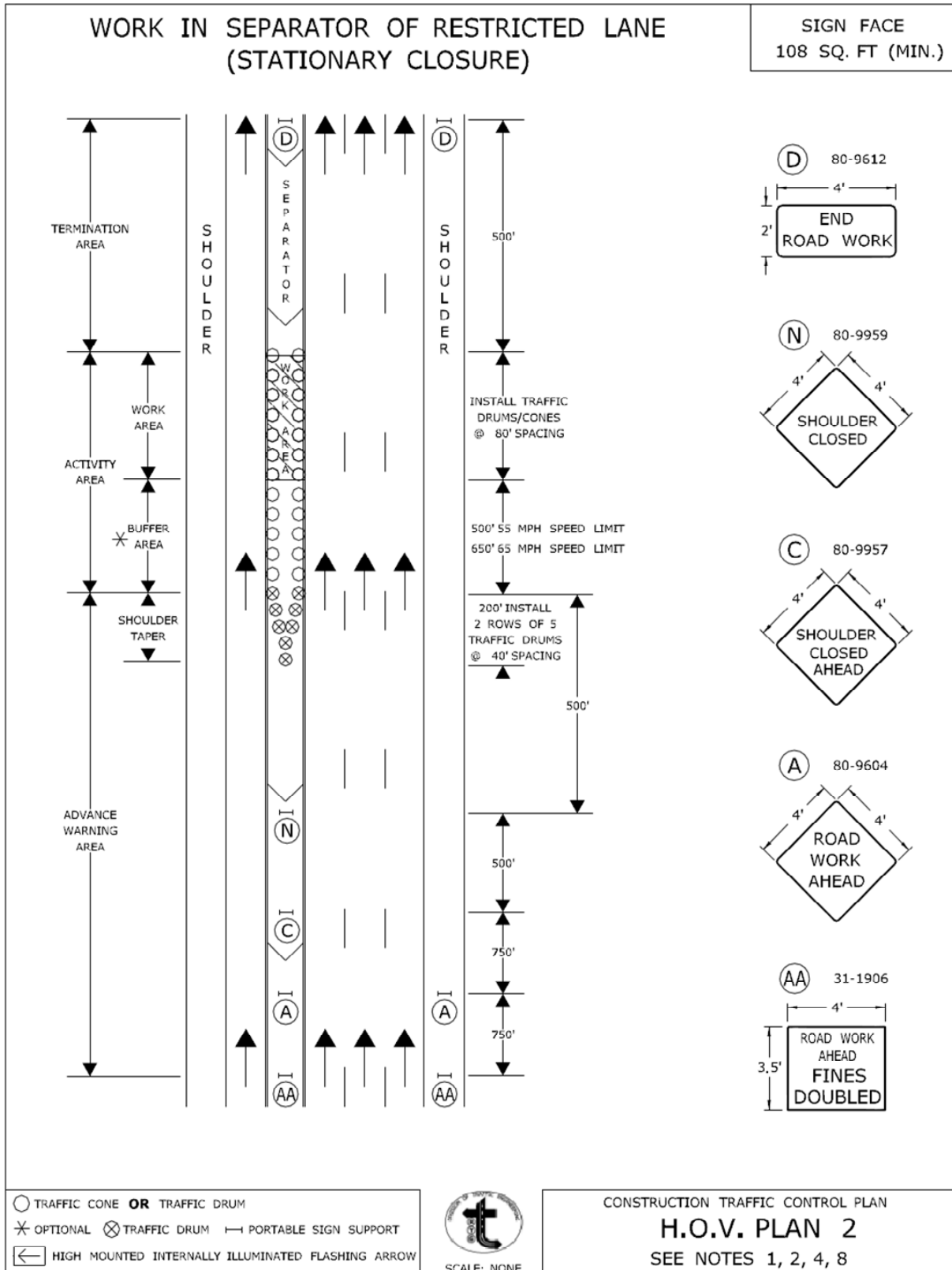
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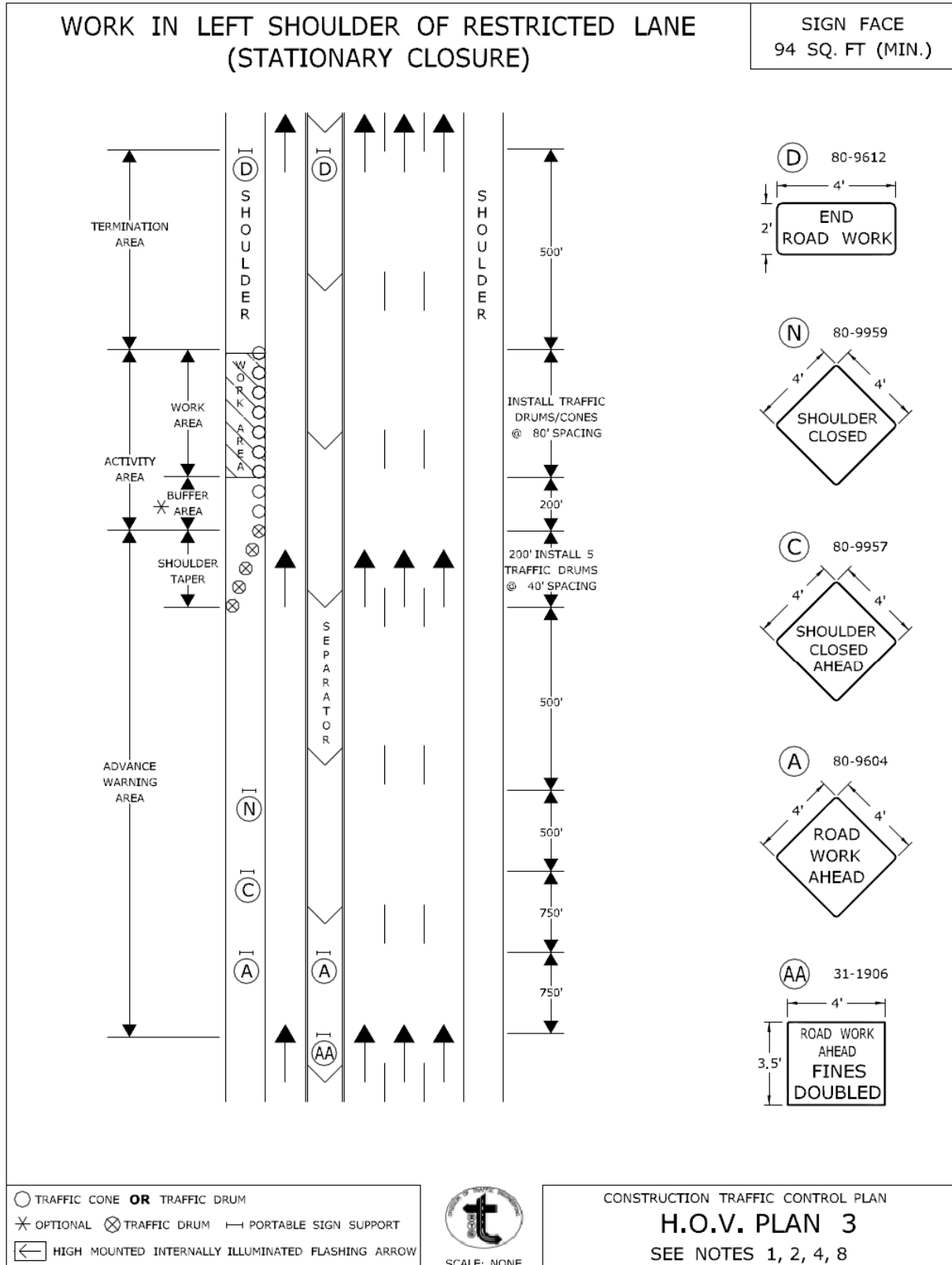


APPROVED John D. McCall DATE 1-30-02
PRINCIPAL ENGINEER



APPROVED *Charles S. Harlow* Charles S. Harlow
 2012.06.05 15:49:08-0400
 PRINCIPAL ENGINEER

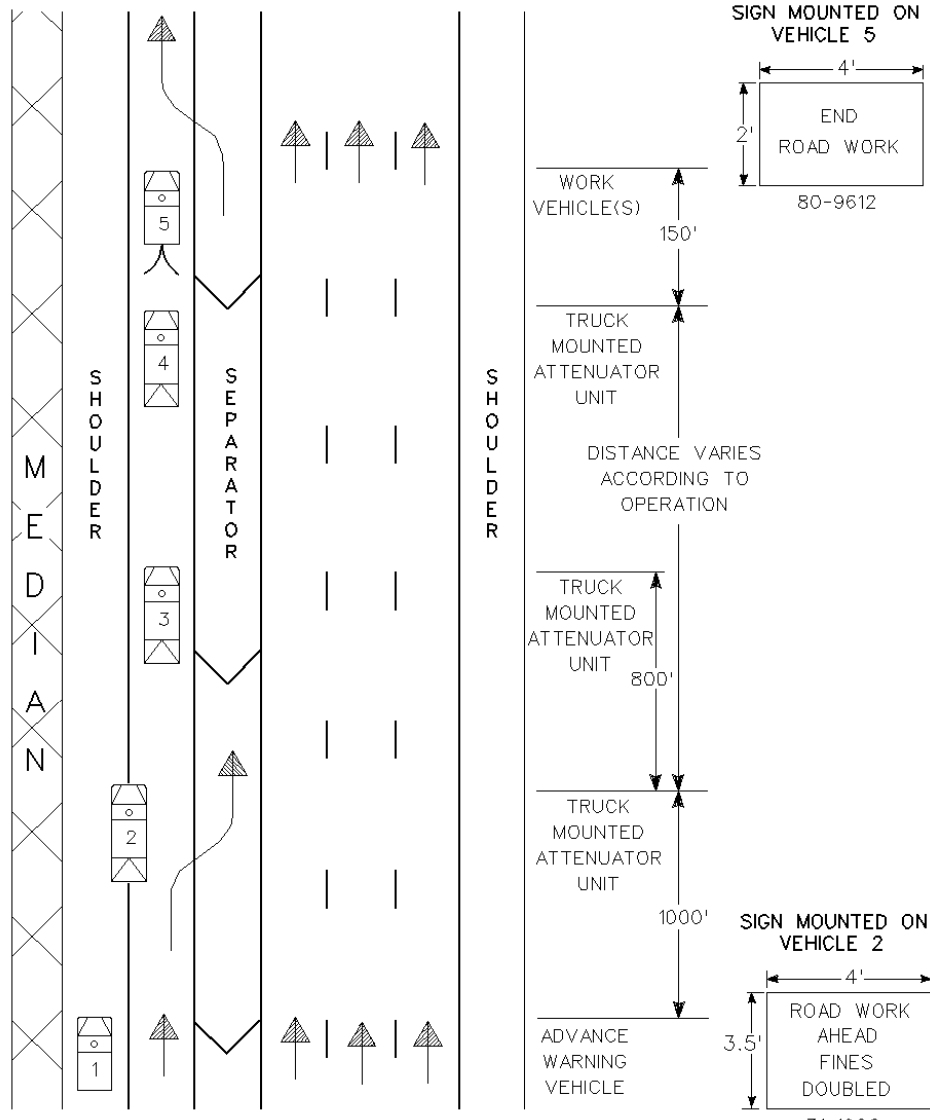




CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:50:10-0400
PRINCIPAL ENGINEER

MOVING OPERATION IN RESTRICTED LANE



SIGNS MOUNTED ON VEHICLE 1

80-9815
THIS SIGN SHOULD BE COVERED WHEN NOT IN USE.

80-9914
USE APPROPRIATE MESSAGE FOR OPERATION.

8' x 4' SLOW MOVING TRUCKS AHEAD

1'-6" (LEGEND VARIES)

SIGN MOUNTED ON TRUCKS 2, 3, & 4

DEPARTMENT APPROVED ARROW BOARD

REV'D I-02

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

CONSTRUCTION TRAFFIC CONTROL PLAN
H.O.V. PLAN 4

SCALE NONE

APPROVED J. Carey DATE I-02
PRINCIPAL ENGINEER

Article 9.71.05 – Basis of Payment is supplemented by the following:

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item “Maintenance and Protection of Traffic”. Temporary overhead sign supports and foundations shall be paid for under the appropriate item(s).

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item “Maintenance and Protection of Traffic.”

ITEM #1201801A - MONOTUBE BRIDGE SIGN STRUCTURE

Description: Work under this item shall consist of designing, fabricating and installing a sign support structure to carry extruded aluminum traffic signs, on a prepared foundation, in accordance with the details shown on the plans, in accordance with these specifications and as ordered by the Engineer. For the purposes of this specification, the sign support structure shall be composed of a single linear tubular overhead span member supported on each end by a single linear tubular pole member.

Materials: The span and pole members shall be tubular members with either a round or multisided cross-section. The round tubular members shall be fabricated from steel pipe with a tabulated yield stress no less than 35,000 psi. The multisided tubular members shall be fabricated from steel plate conforming to the requirements of ASTM A709, Grade 50T2.

The structural plate components, such as the baseplates, connection/flange/splice plates, handhole frames and the plates in the span member to pole connection, shall be made of steel that conforms to the requirements of ASTM A709, Grade 50T2.

Anchorage plates shall conform to the requirements of ASTM A709, Grade 50T2.

The non-structural components, such as hand hole covers and cap plates, shall conform to the requirements of ASTM A709, Grade 50. Sign panel support members shall conform to the requirements of ASTM A709, Grade 50.

The use of steel plate or rolled shapes with a tabulated yield stress of less than 50 ksi is not permitted.

The steel for span and pole members, structural plate components, such as the baseplates, connection/flange/splice plates, gusset plates, handhole frames and the plates in the span member to pole connection, shall meet the following Charpy V-notch impact testing requirements:

Yield Strength	Thickness in.	Minimum Test Value Energy ft.-lbs.	Minimum Average Energy, ft.-lbs.
$F_y \leq 36 \text{ ksi}$	≤ 4	20	25 at 40°F
$36 \text{ ksi} < F_y \leq 50 \text{ ksi}$	≤ 2	20	25 at 40°F
$36 \text{ ksi} < F_y \leq 50 \text{ ksi}$	$2 < t \leq 4$	24	30 at 40°F
$50 \text{ ksi} < F_y \leq 70 \text{ ksi}$	≤ 4	28	35 at -10°F
Charpy V-notch sampling and testing shall be in accordance with ASTM A673, "P" piece frequency.			

The filler metal shall have a matching strength relationship with the base metal.

All high strength bolts shall conform to ASTM A325, Type 1. Nuts shall conform to ASTM A563, Grade DH. Circular, flat, hardened steel washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Grade 50. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The high strength bolts shall conform to the requirements of Subarticle M.06.02-3.

Compressible-washer-type direct tension indicators shall conform to ASTM F959, Type 325, and shall be galvanized in accordance with ASTM B695, Class 50.

U-bolts and threaded rods shall conform to ASTM A449. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Grade 50. The nuts shall be overtapped to the minimum amount required for the fastener assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The threaded ends of all U-bolts and threaded rods shall be supplied with 1 washer and 2 nuts.

The anchor bolts shall conform to ASTM F1554, Grade 105. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. Prior to shipping the anchor bolts, the nuts and washers shall be installed by hand on the anchor bolts to ensure that the nuts can be run on the threads. Only anchor bolts on which the nuts are free running shall be shipped. The anchor bolts shall be shipped with the nuts and washers on the threads.

All steel components, including anchor bolts, shall be completely hot-dip galvanized, after fabrication, in accordance with ASTM A123 or ASTM A153, as applicable. Repairs to damaged areas of the hot-dip galvanized coatings shall conform to the requirements of ASTM A780 amended as follows:

Paints containing zinc dust, if used for repairs, shall contain either between 65% to 69% metallic zinc by weight or greater than 92% metallic zinc by weight in dry film.

The silicone sealant shall be a 1-component, 100% silicone sealant recommended for use with galvanized steel.

Neoprene gasket material for the access openings shall conform to ASTM D1056, Grade 2A2 or 2A3. Other grades of neoprene approved by the Engineer may be used.

Bare copper grounding conductor shall be #8 AWG stranded bare copper wire conforming to M.15.13. The grounding bolt shall be galvanized steel with a hex head.

All materials used in the finished structure shall be new. The use of materials that have been previously used in a structure or salvaged from a structure is not permitted.

The Contractor shall submit Certified Test Reports and Materials Certificates in conformance with Article 1.06.07 for the steel used in the support members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers). In addition, the following shall be submitted:

- a. Mill test reports that indicate the place where the material was melted and manufactured.
- b. High-strength bolt test results for proof load tests, wedge tests, and rotational-capacity tests that indicate where the tests were performed, date of tests, location of where the components were manufactured and lot numbers.
- c. Galvanized material test results that indicate the thickness of the galvanizing.

Prior to incorporation into the work, the Contractor shall submit samples in conformance with Article 1.06.02 for the steel used in the support members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers).

Construction Methods: The design and fabrication of the sign support structure, including its anchorage (into the foundation) and the hardware and structural members required to support the traffic appurtenances, shall conform to the requirements of the latest edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The dead load of the sign panels, sign panel support members and hardware shall be no less than the 8 psf.
- The design wind speed shall be 120 mph. The computation of wind pressures in accordance with Appendix C is not permitted.
- The minimum design life for the structures shall be 50 years.
- The wind importance factor, I_r , for wind pressure shall be 1.00.
- The wind drag coefficient, C_d , for traffic signs shall be 1.3.

- The height and exposure factor, K_z , shall be determined based on the highest elevation of the structure or the supported sign panels. The factor shall be considered constant in all pressure calculations required for the design of the structure. The height and exposure factor shall be no less than 1.05.
- The sign structure shall be designed for fatigue category I for noncantilevered structures. The sign structure shall be designed for the wind load effects due to natural wind gusts and truck-induced gusts. The design pressure for the truck-induced gust shall be based on a truck speed of 65 mph. The sign structure shall be designed assuming that vibration mitigation devices will not be installed.
- The vertical deflection of the span member due to the wind load effects of truck-induced gusts shall not exceed 8".
- The minimum effective length factor, K , shall be as follows:

For the poles, $k = 2.1$

For span member, $k \geq 1.2$

- The maximum stress ratio (the ratio of the computed stress to the allowable stress) or combined stress ratio in any sign structure component due to each group load shall not exceed 0.85. The purpose for limiting the CSR is to allow for future additional sign panel configurations.
- The maximum vertical deflection of the overhead span member due to dead load and ice load effects shall be no greater than $L/150$, where L is the span length of the overhead member measured from centerline to centerline of the poles.
- The overhead span member shall be cambered to compensate for the dead load deflections. The overhead span member shall have a permanent camber no less than $L/1000$ and no greater than $L/500$. L is the span length of the overhead member measured from centerline to centerline of the poles. The permanent camber is in addition to the dead load camber. The dead load camber shall be obtained with the use of a beveled connection/flange plate or a beveled shim plate in the pole to overhead member connection.
- The maximum span length of the overhead member shall be 125'-0", measured from centerline to centerline of the poles.
- The maximum diameter of the span and pole members shall be 2'-6".
- All tubular members on a structure shall have the same material designation.

- The span and pole members shall be tubular members with either round or multisided cross-sections. Span member components shall have the same cross-sectional shape. Multisided tubular members with other than 16 sides are not permitted. Multisided tubular members with fluted sides are not permitted.
- The minimum wall thickness of the tubular members shall be $\frac{5}{16}$ ". The wall thickness of the component members shall be uniform throughout their lengths. The use of multiple plies (laminations) to obtain the required member thickness is not permitted. The use of shop-fabricated stepped members is not permitted.
- The tubular members may be fabricated from multiple pieces. The pieces shall be joined using a complete joint penetration groove weld with a backing ring. The complete joint penetration groove weld shall be ground smooth and flush with the adjacent base metal. 100% of the complete joint penetration groove weld shall be non-destructively tested by the ultrasonic method.
- Slip-type field splices are not permitted in any member.
- The tubular members may be fabricated with no more than 2 longitudinal seam welds. The seam welds shall be ground smooth and flush with the adjacent base metal. The use of external longitudinal reinforcement bars at longitudinal seam welds is not permitted. The use of spiral seam welds is not permitted.
- The longitudinal seam welds within 6" of the member ends shall be complete joint penetration groove welds.
- 100% of partial joint penetration longitudinal seam welds shall be non-destructively tested in accordance with the magnetic particle method. 100 % of complete joint penetration seam welds shall be non-destructively tested in accordance with the ultrasonic method.
- All tubular member to transverse plate connections shall be made with a complete joint penetration groove weld with a backing ring attached to the plate with a continuous fillet weld. 100% of the complete joint penetration groove welds shall be non-destructively tested by the ultrasonic method after fabrication and prior to galvanizing. 100% of the complete joint penetration groove welds shall also be non-destructively tested by the ultrasonic method for toe cracks after galvanizing. 100% of backing ring fillet welds shall be non-destructively tested by the magnetic particle method after fabrication prior to galvanizing. After galvanizing, the joint between the backing ring and tubular member shall be sealed with silicone sealant to prevent the ingress of moisture.
- The use of stiffeners at tubular member to transverse plate connections is not permitted.

- The strength of a connection made with a complete joint penetration groove weld shall be no greater than the strength of the base metal. In connections joining base metal with different yield strengths, the base metal with the lower yield strength shall govern the design.
- The minimum connection/flange/splice thickness shall be 2". The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- All high-strength bolted connections shall be designed as slip critical connections with standard holes, unless otherwise noted. The high-strength bolts shall conform to the maximum spacing requirements for sealing and stitch fasteners. The high-strength bolts shall conform to the edge distance requirement for fasteners. Consideration should be given to the use of smaller diameter bolts since they require lower specified minimum bolt tensions.
- The minimum number of high-strength bolts in flange splices shall be 8.
- The minimum thickness of the ring plates and gusset plates in the ring stiffened, built-up box connection shall be $\frac{1}{2}$ ".
- The minimum size fillet weld shall be $\frac{1}{4}$ ", except the minimum size fillet welds in the ring stiffened, built-up box connection shall be $\frac{5}{16}$ ". The use of seal and tack welds is not permitted. No welding shall be performed after galvanizing.
- The minimum base plate thickness shall no less than 2 $\frac{1}{2}$ " or at least as thick as the anchor bolt diameter, whichever is greater. The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- The opening in the base plate shall be sized to allow for proper galvanizing and allow conduits projecting from the foundation to pass through it. The size of the opening shall be kept to a minimum to reduce the flexibility of the baseplate.
- The anchor bolt to base plate connection shall be designed as a double-nut connection with shear holes. The minimum distance from the center of the anchor bolt hole to the edge of the base plate shall be no less than 2 times the diameter of the anchor bolt. The anchor bolts shall use an embedded anchorage plate, $\frac{3}{4}$ " minimum thickness, to transmit loads from the pole base to the concrete

foundation. The use of hooked anchor bolts is not permitted. For poles less than 24" in diameter, the minimum number of anchor bolts shall be 8. For poles greater than or equal to 24, the minimum number of anchor bolts shall be 12. The minimum anchor bolt diameter shall be 2". The minimum anchor bolt embedment, the distance from the top of the foundation to the top of the embedded anchorage plate, shall be 3'-6" or the tension development length of the vertical foundation reinforcement plus the end concrete cover, which ever is greater. Each anchor bolt shall be supplied with 5 nuts and 4 washers. Washers shall be placed on the top and bottom surfaces of the pole base plate and anchorage plate. Welding to the anchor bolts is not permitted. The use of lock washers with the anchor bolt assembly is not permitted.

The approximate dimensions of the overhead span member and the pole heights are shown in plan and elevation on the traffic sheets. The actual sign support dimensions shall be determined by the Contractor based on a the horizontal and vertical clearances shown on the plans, a field survey of the finished grade at the site, the elevation of the top of the finished foundation, the locations of overhead and subsurface utilities, the location of the drainage facilities and noise barrier wall locations.

The minimum vertical clearance from the top of the finished road to the bottom of the sign panels and the centerline of the span member shall be as shown on the sign structure drawings as amended by the sign structure elevation on the traffic sheets.

Sign panels shall be installed symmetrically about the centerline of the overhead member. The bottom of all signs shall be level. Sign panels shall be installed at an angle of 5° from the vertical, with the top edge tilting toward oncoming traffic.

The sign panels and crown panels, if applicable, shall be connected to sign panel support members. The support members shall extend full height of the sign and crown panels. The number and spacing of support members shall be determined by the Contractor based on the width of the sign and crown panels and the support member spacing parameters shown on the plans. Sign panels shall be supported by no less than 3 support members. Crown panels shall be supported by no less than 2 support members. The faying surface between the sign panel support member and the rear face of the sign panel shall be a flange so that panel clips may be placed on both sides of the flange to connect the panel. The outside support members for each sign panel shall include a sign stop at the bottom of the member and a sign hook at the top of the member to support and carry the sign panels.

The sign panel support members shall be designed to be vertically adjustable to compensate for the overhead member camber. The supports members shall be designed to be installed at any location along the overhead member. The use fixed connection plates welded transversely to the longitudinal axis of the overhead member is not permitted. The use of U-bolts and clamps with threaded fasteners is permitted provided the fasteners are not subject to shear forces. No less than 2 U-bolts or 4 threaded rods shall be used at each overhead member connection. The

threaded ends of these fasteners shall have double nuts. The drilling of holes into the overhead member to prevent the panel support members from rotating is not permitted.

The minimum thickness of the sign panel support members and the plate and rolled shape components used in the connection to the sign support shall be 1/4".

The sign support shall be designed for the load effects due to the actual sign panels, including crown panels, as well as any future sign and crown panels that it will carry, as shown on the plans. The sign supports shall also be designed for the load effects of sign and crown panels during all stages of construction which may exist during the project under which the supports are installed. The load effects on the sign support from the sign and crown panels shall include forces and moments due to the eccentricity of the sign and crown panels and the unbalanced lateral loads on the crown panel. The sign support and its component parts shall also be designed for the load effects resulting from the transportation and erection of the support.

The sign support shall be designed so that the span member extends over and is connected to the top of the poles with a high-strength bolted, ring stiffened, built-up box connection. A minimum of 8 high-strength bolts shall be used to connect the pole connection plate to the built-up box connection plate. All bolts, nuts and washers used in the connection shall be visible. The use of tapped holes in the plates of the connection is not permitted.

The sign support and its component parts shall be designed for the governing load effects assuming the structure is rigidly connected at the span to pole connection **and** assuming the structure is free to rotate at the span to pole connection.

Vent and drain holes shall be provided for galvanizing. The number, size and location of vent and drain holes should be coordinated with the galvanizer prior to the submission of the sign support design. The area of vent and drain holes at each end of a member shall be at least 30% of the inside area of the member for members 3" in diameter and greater and 45% of the inside area of the member for members smaller than 3" in diameter. The vent and drain holes shall be strategically located for reducing stress and for proper galvanizing. The holes shall be made by drilling. Flame cut holes are not permitted. The edges of all holes shall be rounded by grinding. After galvanizing, exposed holes placed in the sign support components for galvanizing shall be sealed with neoprene plugs.

Each pole shall have a handhole located adjacent to base of the pole. One handhole shall be installed adjacent to each span member flange splice. All handholes shall be reinforced with a frame. The pole handholes shall be located with a normal direction that is 90° to the plane formed by the pole and overhead member. Handholes in the span member shall be oriented so that the opening faces down. In poles, the minimum clear distance from the top of the baseplate to the outside face of the bottom of the handhole frame shall be no less than the diameter of the tubular member or 2'-6", whichever is greater. In span members, the minimum clear distance from the flange splice plate to the outside face of the handhole frame shall be no less than the diameter of the tubular member or 1'-6", whichever is greater.

The handhole frame shall be fabricated from steel plate and bent to form a closed shape and joined with a complete joint penetration groove weld. All surfaces of the groove weld shall be ground smooth and flush with the adjacent base metal. The handhole frame shall have a minimum 4" wide by minimum 6" high clear opening. The maximum width of the handhole opening, the clear opening plus twice the frame thickness, shall not be greater than 40% of the tubular member diameter at that section. The inside corners of the handhole frame shall be rounded to a radius of 30% to 50% of the width of the clear opening. The minimum thickness of the handhole frame shall be no less than the thickness of the pole or 5/16", whichever is greater. The handhole frame shall be connected to the tubular member with a partial joint penetration groove weld reinforced with a fillet weld. The handhole weld shall start and end at the point that is coincident with the longitudinal axis of symmetry of the tubular member and the longitudinal axis of symmetry of the handhole frame. 100% of the weld shall be non-destructively tested in accordance with the magnetic particle method. The handhole shall be provided with a cover connected to the frame with no less than 4 stainless steel screws. The cover shall be installed with a neoprene gasket matching the dimensions of the cover. The cover shall also be attached to the frame with a 1'-6" long stainless steel chain. The stainless steel chain shall be bolted to the cover inside face of the cover with a stainless steel bolt with a lock nut and bolted to the inside side face of the handhole frame with a stainless steel bolt. On pole hand hole frames, the opposite side face of the handhole shall have a hole with a nut welded to outside face for a galvanized steel grounding bolt.

The ends of each span member shall be sealed with a removable end cap plate attached to the member with no less than 3 threaded fasteners. The joint between the member and plate shall be sealed with a neoprene gasket.

The design of the sign support and the anchorage shall be coordinated with the design of the foundation to ensure that the foundation is adequate for the support reactions and to avoid conflicts between the embedded anchorage and the foundation reinforcement.

Prior to performing a field survey for each sign support, the Contractor shall coordinate with the Engineer to locate and stake each support foundation. The foundations shall be located to avoid conflicts with both subsurface and overhead utilities and subsurface drainage structures. In accordance with Article 1.05.15, the Contractor shall contact "Call Before You Dig" to identify the subsurface utilities that are located in the vicinity of each foundation. Once the location of each foundation has been found acceptable to the Engineer, the Contractor shall perform a field survey to obtain the information necessary to prepare a roadway cross-section with details of each sign support and supporting foundation(s).

The Contractor shall prepare and submit one copy of a cross-section (elevation) drawing based on a field survey for each sign support to the Engineer for review. A cross-section drawing is a working drawing for permanent construction. The cross-section drawing for each support shall be submitted in an individual file in electronic portable document format (.pdf) with commenting enabled. The electronic portable document format (.pdf) cross-section drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller

without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 ¼" wide x 1 ¾" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. Only one sign support cross-section shall be shown on each drawing.

The cross-sections shall include, but not be limited to the following:

- Project number, town, location (route number, direction, mileage), station, structure number, sign location number, and site number
- Location and dimensions of travel lanes and shoulders
- Location and elevation of the high point of the road
- Top and bottom of slope elevations. Slope of finished grade at foundations
- Locations of utilities (both overhead and subsurface)
- Locations of drainage facilities
- Locations of noise barriers, including elevation of top of wall
- Type of protection (metal beam rail/barrier), and the dimension from the front face of metal beam rail /barrier to the edge of the foundation and centerline of the foundation
- Elevation of the top of the foundation(s). The top of the foundation(s) shall project 6" to 12" above the level ground or 6" to 12" above the finished grade at the high side of a sloping grade.
- Dimension from top foundation to finish grade (existing or proposed as applicable).
- Span, dimension from centerline to centerline of foundations
- Dimensions of sign panel(s)
- Location of sign panel(s) relative to the centerline of the foundations/poles
- Location of sign panel(s) relative to the roadway travel lanes
- Dimension from top of foundation to centerline of overhead member
- Minimum dimensions from high point of the road to the centerline of the overhead member and the bottom of the sign panel(s)

- Elevation of centerline of overhead member

The Contractor shall submit the cross-section drawings to the project's "Engineer of Record" for review. The project's "Engineer of Record" is identified in the signature block on the sign support traffic cross-section contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped cross-section drawings shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. The acceptance of cross-section drawings does not relieve the Contractor from verifying that all dimensions are correct. If there are any changes to the proposed location of the sign support and foundations prior to the construction of the foundations, the cross-section shall be re-submitted for review.

Prior to fabrication, the Contractor shall submit working drawings and design computations for each sign support, **based on the reviewed cross-section**, to the Engineer for review in accordance with Article 1.05.02. The working drawings and design computations for sign supports shall conform to working drawings for permanent construction. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and erection of the structure and its components, including a copy of the certificate of insurance, shall be prepared and submitted for **each** support. **A single set of drawings with tabulated data for multiple sign support locations is not permitted.** The alpha-numeric support identifier shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units. Each working drawing shall be sealed, signed and dated. The cover/first sheet for the computations shall be sealed, signed and dated.

The packaged set of working drawings and computations for each support shall be submitted in an individual file in electronic portable document format (.pdf) with appropriate bookmarks and commenting enabled. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer, fabricator and galvanizer – contact information should include name and address of each firm and the name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of fabricator's AISC certification
- copy of the **reviewed** cross-section
- sign support working drawings
- sign support design computations
- welding procedures
- sign support installation procedure, including the method to plumb the poles

The electronic portable document format (.pdf) working drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. The electronic files for the design computations, procedures and other supporting data shall be created on ANSI A (8 1/2" x 11"; Letter) sheets.

The working drawings shall include complete details of all sign support components. The drawings shall include, but not be limited to the following:

- the project number, town and support identification number
- reference to the design specifications, including interim specifications
- reference to the design specifications design criteria, such as design wind speed, minimum design life, etc.
- material specifications/designations for all components
- non-destructive weld testing requirements
- details of the location of the longitudinal seam weld in the span and pole members
- vent and drain holes for galvanizing
- dead load and permanent camber
- a plan view of the anchor bolt layout relative to the orientation of the span
- anchor bolt dimensions, including embedment and projection
- support installation procedure, including the method to plumb the poles

The design computations shall include, but not be limited to the following:

- the project number, town and support identification number
- references to design specifications, including interim specifications, and the applicable code section and articles

- description/documentation for all computer programs used in the design
- drawings/models of the structure, components and connections, with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- a tabulation of the section properties of the tubular members at each analyzed section. The tabulated values should include the diameter, D (if round member); effective width, b (if multisided member, AASHTO 5.5.2); equivalent diameter (if multisided member, AASHTO 5.6), wall thickness, t ; inside bend radius, r_b (if multisided member, AASHTO 5.5.2), cross-sectional area, A ; moment of inertia, I ; section modulus, S ; radius of gyration, r . AASHTO Table B-1 may be used to determine the section properties. If Table B-1 is used, the radius measured to the mid-thickness of the wall shall also be provided.
- coefficients and factors used in the design
- results of all group loads and load combinations all analysis models
- stress ratios and combined stress ratios for all group loads and load combinations
- maximum vertical deflection due to dead loads
- maximum vertical deflection due to ice loads
- vertical deflection of the span member due to the wind load effects of truck-induced gusts
- total camber and permanent camber

The Contractor shall submit the packaged set of working drawings and calculations to the project's "Engineer of Record". The project's "Engineer of Record" is identified in the signature block on the sign support structural contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped working drawings and calculations shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. After the District Construction office has reviewed the working drawings and calculations, ensured all comments have been addressed and have found the submittal to be acceptable, in addition to distributing copies of the working drawings and calculations to the Contractor and District offices, a copy of each packaged set of working drawings and calculations shall be sent to the following Department offices:

Bridge Safety and Evaluation
Research and Materials

Traffic Engineering
Engineer of Record

The Contractor shall make printed copies of the stamped working drawings and calculations, of the size and number determined by the Engineer, and deliver the copies as directed by the Engineer.

If the as-built condition of the foundation(s), such as the location or elevation, will impact the design, final erection or assembly of the sign support for conformance with the requirements herein, the cross-section shall be re-submitted for review. Subsequently, the working drawings and calculations shall be resubmitted to conform to the revised cross-section and the requirements herein.

The support shall be fabricated in accordance with the latest edition of the AASHTO LRFD Bridge Construction Specifications, including the latest interim specifications, amended herein.

The steel fabricator shall be AISC certified for the fabrication to the Standard for Bridge and Highway Metal Component Manufacturers (CPT).

Fabrication of the support may begin only after the working drawings and design computations have been reviewed and the Engineer has authorized fabrication to begin. The Contractor shall submit to the Engineer, no less than 2 weeks prior to the start of fabrication, the name and location of the fabrication shop where the work will be done so that arrangements can be made for an audit of the facility and the assignment of the Department Quality Assurance (QA) inspector. No fabrication will be accepted unless the QA inspector is present during fabrication. No changes may be made during fabrication without prior written approval by the Department.

The Contractor shall furnish facilities for the inspection of material and workmanship in the shop by the Engineer. The Engineer and his representative shall be allowed free access to the necessary parts of the premises.

The Engineer will provide QA inspection at the fabrication shop to assure that all applicable Quality Control plans and inspections are adequately adhered to and maintained by the Contractor during all phases of the fabrication. A thorough inspection of a random selection of elements at the fabrication shop may serve as the basis of this assurance.

Prior to shipment to the project, each individual piece of steel shall be marked in a clear and permanent fashion by a representative of the fabricators' Quality Control (QC) Department to indicate complete final inspection by the fabricator and conformance to the project specifications for that piece. The mark must be dated. A Materials Certificate in accordance with Article 1.06.07 may be used in lieu of individual stamps or markings, for all material in a single shipment. The Materials Certificate must list each piece within the shipment and accompany the shipment to the project site.

Following the final inspection by the fabricator's QC personnel, the Engineer may select pieces of steel for re-inspection by the Department's QA inspector. Should non-conforming pieces be identified, all similar pieces must be re-inspected by the fabricator and repair procedure(s) submitted to the Engineer for approval. Repairs will be made at the Contractor's expense.

The pieces selected for re-inspection and found to be in conformance, or adequately repaired pieces, may be marked by the QA inspector. Such markings indicate the Engineer takes no exception to the pieces being sent to the project site. Such marking does not indicate acceptance or approval of the material by the Engineer.

All welding details, procedures and nondestructive testing shall conform to the requirements of AWS D1.1 Structural Welding Code - Steel.

Personnel performing the nondestructive testing shall be certified as a NDT Level II technician in accordance with the American Society for Non Destructive Testing (ASNT), Recommended Practice SNT-TC-1A and approved by the Engineer.

All nondestructive testing shall be witnessed by Engineer. Certified reports of all tests shall be submitted to the Engineer for examination. Each certified report shall identify the structure, member, and location of weld or welds tested. Each report shall also list the length and location of any defective welds and include information on the corrective action taken and results of all retests of repaired welds.

The Department reserves the right to perform additional testing as determined by the Engineer. Should the Engineer require nondestructive testing on welds not designated in the contract, the cost of such inspection shall be borne by the Contractor if the testing indicates that any weld(s) are defective. If the testing indicates the weld(s) to be satisfactory, the actual cost of such inspection will be paid by the Department.

All members and components shall be hot-dip galvanized in a single dip. Double-dipping of members and components is not permitted. All exterior and interior surfaces of the sign support members and components, including the interior of the ring-stiffened built-up box connection, shall be completely galvanized.

Galvanized members and components shall be free from uncoated areas, blisters, flux deposits, and gross inclusions. Lumps, projections, globules, or heavy deposits of zinc which will interfere with the intended use of the material will not be permitted.

All damaged areas of the hot-dip galvanized surfaces shall be repaired in accordance with the requirements of ASTM A780. If paint containing zinc dust is used for repairs, the dry coating thickness shall be at least 50% greater than the thickness of the adjacent hot-dip galvanized coating, but no greater than 4.0 mils. The paint shall be brush applied. The use of aerosol spray cans shall not be permitted. The color of the finished repair area shall match the color of the adjacent hot-dip galvanized surface at the time of the repair to the satisfaction of the Engineer.

Prior to shipping, all galvanized surfaces of the members and components shall be inspected, in the presence of the Engineer, to determine the acceptability of the galvanized coating. Galvanized coatings may be found acceptable by the Engineer if all surfaces of the members and components meet the galvanizing requirements herein. Only sign support members and components with acceptable galvanized coatings shall be shipped. If the galvanized coating on any member or component is found not acceptable, the Contractor shall submit a repair procedure to the Engineer for review.

Unless provisions for the sign support structure number are otherwise included in the contract, the sign support structure number shall be stenciled in black paint on the right side pole (as determined by the direction of traffic traveling below the structure) centered approximately 5' off the ground and visible from the roadway. The numeric characters shall be 3" to 4" high and placed vertically so that they may be read from top to bottom.

After fabrication, the sign support components shall be assembled in the fabricator's shop, in the presence of the Engineer, to determine the acceptability of the bolted connections and to confirm the permanent camber. The faying surfaces of the connections shall be free of dirt, loose scale, burrs, other foreign material and other defects that would prevent solid seating of the parts. Prior to assembly, the galvanized faying surfaces shall be scored by wire brushing. The faying surfaces of the connection plates shall be checked with a straight edge to ensure that the surfaces are not distorted and the entire faying surface of each plate will be in contact when assembled. The high-strength bolts, including nuts and washers, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). A connection may be found acceptable by the Engineer if the faying surfaces of the connection plates are in firm, continuous contact after properly tensioning the bolts. Only sign supports with acceptable connections shall be shipped. If a bolted connection is found not acceptable, the Contractor shall submit a procedure to repair the connection to the Engineer for review. Galvanized surfaces damaged by the repair procedure shall be hot dip galvanized. Repair of the damaged galvanized surfaces in accordance with the requirements of ASTM A780 or with a galvanizing repair stick is not permitted. Bolts, nuts and washers used for the trial shop fit-up shall not be reused in the final field assembly. With the overhead member supported at the ends, the permanent camber shall be measured at mid-span and the structure shall be rejected if the camber does not meet the following:

$$L/1000 \leq \text{Permanent Camber} \leq L/500$$

where L is the span length of the overhead member measured from centerline to centerline of the poles.

The finished members and components shall be protected with sufficient dunnage and padding to protect them from damage and distortion during transportation. Damage to any material during transportation, improper storage, faulty erection, or undocumented fabrication errors may be cause for rejection of said material at the project site. All costs associated with any corrective action will be borne by the Contractor.

Following delivery to the project site, the Engineer will perform a visual inspection of all material to verify shipping documents, fabricator markings, and that there was no damage to the material or coatings during transportation and handling.

The Engineer is not responsible for approving or accepting any fabricated materials prior to final erection and assembly at the project site.

High-strength bolts, nuts and washers shall be stored in accordance with Subarticle 6.03.03-4(f).

The support shall be erected, assembled and installed in accordance with these specifications and the procedures and methods submitted with the working drawings. The Contractor and the support designer are responsible to ensure that the erection and assembly procedures and methods in this specification are acceptable for use with the support. Changes to these methods and procedures shall be submitted with the working drawings and computations.

Prior to installation of the support, the exposed threads of all the embedded anchor bolts shall be cleaned of accumulated dirt and concrete and lubricated. The threads and bearings surfaces of all the anchor bolt nuts shall be cleaned and lubricated. The anchor bolts and nuts are properly lubricated if the nuts can be turned by hand on the anchor bolt threads. The lubricant shall contain a visible dye of any color that contrasts with the color of the galvanizing. Re-lubricate the threads of the anchor bolts and nuts if more than 24 hours has elapsed since earlier lubrication, or if the anchor bolts and nuts have become wet since they were first lubricated.

The space between the bottom of the baseplate and the top of the foundation shall not be sealed with closed cell elastomer or filled with grout, unless otherwise noted.

Install (turn) the leveling nuts onto the anchor bolts and align the nuts to the same elevation or plane. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1". Place a structural hardened washer on top of each leveling nut, 1 washer on each anchor bolt.

The pole shall be erected so that the centerline of the pole will be plumb after the application of all the dead loads.

Install the pole base plate atop the washers resting on the leveling nuts, place a structural hardened washer on each anchor bolt resting it on the top of the base plate, and install (turn) a top nut on each anchor bolt until the nut contacts the washer. The leveling nuts and washers shall be inspected, and if necessary the nuts (turned), so that the washers are in full contact with the bottom surface of the base plate.

Tighten the top nuts to a snug tight condition in a star pattern. Snug tight is defined as the maximum rotation resulting from the full effort of one person using a 12" long wrench or equivalent. A star tightening pattern is one in which the nuts on opposite or near-opposite sides of the bolt circle are successively tightened in a pattern resembling a star (e.g., For an 8-bolt

circle with bolt sequentially numbered 1 to 8, tighten nuts in the following bolt order: 1, 5, 7, 3, 8, 4, 6, 2.).

Tighten leveling nuts to a snug tight condition in a star pattern.

Before final tightening of the top nuts, mark the reference position of each top nut in a snug-tight condition with a suitable marking on 1 flat with a corresponding reference mark on the base plate at each bolt. Then incrementally turn the top nuts using a star pattern one-sixth of a turn beyond snug tight. Turn the nuts in at least two full tightening cycles (passes). After tightening, verify the top nut rotation. The top nuts shall have full thread engagement. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1".

High-strength bolts, including nuts and washes, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). The overhead member shall be temporarily and fully supported while all the high-strength bolts are installed and tensioned. The temporary support of the overhead member shall not be removed until the Engineer has confirmed that the faying surfaces of the connection/flange plates are in firm, continuous contact and the high-strength bolts were properly installed and tensioned. All high-strength bolts in the bolted connections shall be inspected (in accordance with Subarticle 6.03.03-4(f)) to confirm the high-strength bolts were properly tensioned. The use or installation of galvanized hardened steel washer between the faying surfaces of the connection is not permitted.

After erecting the support, the support shall be electrically grounded by attaching the bare copper grounding conductor to the inside of the handhole frame with a galvanized steel bolt and to the ground rod with a ground clamp. The rigid metal conduit shall be electrically grounded by attaching the bare copper grounding conductor to the insulated bonding bushing and to the ground rod with a ground clamp.

After erection of the support and before the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall immediately stabilize the structure to the satisfaction of the Engineer. Stabilizing the structure may require the removal of a portion of the structure or the entire structure.

The sign panels shall be located and mounted on the span member as shown in the working drawings.

After installation of the sign panels, the anchor bolts nuts (leveling and top anchor nut) and washers shall be in full contact with the top and bottom surfaces of the pole baseplate and the centerline of the pole shall be plumb.

After erection of the support and after the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall design and construct devices to mitigate the movements. The Contractor is responsible for immediately stabilizing the structure to the satisfaction of the Engineer. Stabilizing the structure

may require the removal of the sign panels or the entire structure. Prior to installation of any mitigation device, the Contractor shall submit drawings, design computations other documentation to the Engineer for review in accordance with Article 1.05.02.

Method of Measurement: This work will be measured for payment by the number of monotube bridge sign structures, completed and accepted in place.

Basis of Payment: This work will be paid for at the contract unit price each for "Monotube Bridge Sign Structure", complete in place, which price shall include field survey, equipment, materials, tools and labor incidental to the design, fabrication and installation, including anchorage materials, sign panel support members and mitigation devices, if required, of the supports at the locations specified on the plans.

ITEM #1201802A - 4 CHORD TRUSS BRIDGE SIGN STRUCTURE

Description: Work under this item shall consist of designing, fabricating and installing a sign support structure to carry extruded aluminum traffic signs, on a prepared foundation, in accordance with the details shown on the plans, in accordance with these specifications and as ordered by the Engineer. For the purposes of this specification, the sign support structure shall be composed of a 4 chord truss supported on each end by a 2 post tower.

Materials: The tower posts, tower bracing, truss chords and truss bracing shall be tubular members fabricated from round steel pipe. The steel pipe shall have a tabulated yield stress no less than 35,000 psi.

Tower and truss members fabricated from multisided tubular members are not permitted.

The structural plate components, such as the baseplates, connection/flange/splice plates, gusset plates, handhole frames and plates in the truss to post connection, shall be made of steel that conforms to the requirements of ASTM A709, Grade 50T2.

Anchorage plates shall conform to the requirements of ASTM A709, Grade 50T2.

The non-structural components, such as hand hole covers and cap plates, shall conform to the requirements of ASTM A709, Grade 50. Sign panel support members shall conform to the requirements of ASTM A709, Grade 50.

The use of steel plate or rolled shapes with a tabulated yield stress less than 50 ksi is not permitted.

The steel for tower posts, truss chord members, structural plate components, such as the baseplates, connection/flange/splice plates, gusset plates, handhole frames and plates in the truss to tower connection, and shall meet the following Charpy V-notch impact testing requirements:

Yield Strength	Thickness in.	Minimum Test Value Energy ft.-lbs.	Minimum Average Energy, ft.-lbs.
$F_y \leq 36 \text{ ksi}$	≤ 4	20	25 at 40°F
$36 \text{ ksi} < F_y \leq 50 \text{ ksi}$	≤ 2	20	25 at 40°F
$36 \text{ ksi} < F_y \leq 50 \text{ ksi}$	$2 < t \leq 4$	24	30 at 40°F
$50 \text{ ksi} < F_y \leq 70 \text{ ksi}$	≤ 4	28	35 at -10°F
Charpy V-notch sampling and testing shall be in accordance with ASTM A673, "P" piece frequency.			

The filler metal shall have a matching strength relationship with the base metal.

All high strength bolts shall conform to ASTM A325, Type 1. Nuts shall conform to ASTM A563, Grade DH. Circular, flat, hardened steel washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Grade 50. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The high strength bolts shall conform to the requirements of Subarticle M.06.02-3.

Compressible-washer-type direct tension indicators shall conform to ASTM F959, Type 325, and shall be galvanized in accordance with ASTM B695, Class 50.

U-bolts and threaded rods shall conform to ASTM A449. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Grade 50. The nuts shall be overtapped to the minimum amount required for the fastener assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The threaded ends of all U-bolts and threaded rods shall be supplied with 1 washer and 2 nuts.

The anchor bolts shall conform to ASTM F1554, Grade 105. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. Prior to shipping the anchor bolts, the nuts and washers shall be installed by hand on the anchor bolts to ensure that the nuts can be run on the threads. Only anchor bolts on which the nuts are free running shall be shipped. The anchor bolts shall be shipped with the nuts and washers on the threads.

All steel components, including anchor bolts, shall be completely hot-dip galvanized, after fabrication, in accordance with ASTM A123 or ASTM A153, as applicable. Repairs to damaged areas of the hot-dip galvanized coatings shall conform to the requirements of ASTM A780 amended as follows:

Paints containing zinc dust, if used for repairs, shall contain either between 65% to 69% metallic zinc by weight or greater than 92% metallic zinc by weight in dry film.

The silicone sealant shall be a 1-component, 100% silicone sealant recommended for use with galvanized steel.

Neoprene gasket material for the access openings shall conform to ASTM D1056, Grade 2A2 or 2A3. Other grades of neoprene approved by the Engineer may be used.

Bare copper grounding conductor shall be #8 AWG stranded bare copper wire conforming to M.15.13. The grounding bolt shall be galvanized steel with a hex head.

All materials used in the finished structure shall be new. The use of materials that have been previously used in a structure or salvaged from a structure is not permitted.

The Contractor shall submit Certified Test Reports and Materials Certificates in conformance with Article 1.06.07 for the steel used in the tower and truss members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers). In addition, the following shall be submitted:

- a. Mill test reports that indicate the place where the material was melted and manufactured.
- b. High-strength bolt test results for proof load tests, wedge tests, and rotational-capacity tests that indicate where the tests were performed, date of tests, location of where the components were manufactured and lot numbers.
- c. Galvanized material test results that indicate the thickness of the galvanizing.

Prior to incorporation into the work, the Contractor shall submit samples in conformance with Article 1.06.02 for the steel used in the support members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers).

Construction Methods: The design and fabrication of the sign support structure, including its anchorage (into the foundation) and the hardware and structural members required to support the traffic appurtenances, shall conform to the requirements of the latest edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The dead load of the sign panels, sign panel support members and hardware shall be no less than the 8 psf.
- The design wind speed shall be 120 mph. The computation of wind pressures in accordance with Appendix C is not permitted.
- The minimum design life for the structures shall be 50 years.
- The wind importance factor, I_r , for wind pressure shall be 1.00.
- The wind drag coefficient, C_d , for traffic signs shall be 1.3.

- The height and exposure factor, K_z , shall be determined based on the highest elevation of the structure or the supported sign panels. The factor shall be considered constant in all pressure calculations required for the design of the structure. The height and exposure factor shall be no less than 1.05.
- The sign structure shall be designed for fatigue category I for noncantilevered structures. The sign structure shall be designed for the wind load effects due to natural wind gusts and truck-induced gusts. The design pressure for the truck-induced gust shall be based on a truck speed of 65 mph. The sign structure shall be designed assuming that vibration mitigation devices will not be installed.
- The vertical deflection of the truss due to the wind load effects of truck-induced gusts shall not exceed 8”.
- The fixity of the structure connections shall be as follows:

Welded gusset plate, bracing member to chord connections shall be considered rigid in the plane of the gusset plate and pinned perpendicular to the plane of the gusset plate.

Flange plate chord to chord connections shall be considered rigid with respect to both axes.

Baseplate to anchor bolt connection shall be considered rigid with respect to both axes.

- The minimum effective length factor, K , shall be as follows:

For the tower posts, $k = 2.1$

For truss chord and bracing, and tower bracing, $k \geq 1.0$

- The maximum stress ratio (the ratio of the computed stress to the allowable stress) or combined stress ratio in any sign structure component due to each group load shall not exceed 0.85. The purpose for limiting the CSR is to allow for future additional sign panel configurations.
- The maximum vertical deflection of the overhead truss due to dead load and ice load effects shall be no greater than $L/150$, where L is the span length of the truss measured from centerline to centerline of the tower posts.
- The truss shall be cambered to compensate for the dead load deflections. The truss shall have a permanent camber no less than $L/1000$ and no greater than $L/500$. L is the span length of the truss measured from centerline to centerline of the tower posts. The permanent camber is in addition to the dead load camber.

- The maximum span length of the truss shall be 200'-0", measured from the centerline to centerline of the towers.
- The truss chords shall be fabricated in sections and connected with chord flange splices. The chords within the sections shall be fabricated from a single piece of pipe. Chord sections fabricated from multiple pieces of pipe are not permitted. All truss chords shall have the same cross-sectional properties and material designations. The minimum wall thickness of the truss chord members shall be $\frac{5}{16}$ ".
- Tower posts shall be fabricated from a single piece of pipe. Posts fabricated from multiple pieces of pipe are not permitted. All tower posts shall have the same cross-sectional properties and material designations. The minimum wall thickness of the tower posts shall be $\frac{5}{16}$ ".
- Tower and truss bracing shall be fabricated from steel pipe. All tower bracing shall have the same cross-sectional properties. All truss bracing shall have the same cross-sectional properties. The cross-sectional properties of the tower and truss bracing may differ. All bracing shall have the same material designations. The bracing shall have a minimum nominal diameter of 2½". The bracing shall have a minimum thickness of 0.203". The bracing shall be connected to tower post and truss chord gusset plates with slotted tube connections. The bracing slot shall have a coped hole at the end of the slot. In a minimum of 25% of the bracing gusset plate to tower post connections, 100% of the fillet welds on each side of the connection, shall be non-destructively tested in accordance with the magnetic particle method. In a minimum of 25% of the bracing gusset plate to truss chord connections, 100% of the fillet welds on each side of the connection, shall be non-destructively tested in accordance with the magnetic particle method.
- At a minimum, internal diagonal bracing shall be provided at each end of each truss section to maintain the shape and stability the truss sections during shipping and handling of the sections and the erection of the completed truss. At a minimum, additional internal diagonal bracing shall be placed at a panel point at the midspan of the truss sections greater than 25'-0" in length. The internal diagonal bracing may be provided using either a single or multiple members.
- All tubular member to transverse plate connections shall be made with a complete joint penetration groove weld with a backing ring attached to the plate with a continuous fillet weld. 100% of the complete joint penetration groove welds shall be non-destructively tested by the ultrasonic method after fabrication and prior to galvanizing. 100% of the complete joint penetration groove welds shall also be non-destructively tested by the ultrasonic method for toe cracks after galvanizing. 100% of backing ring fillet welds shall be non-destructively tested by the

magnetic particle method after fabrication prior to galvanizing. After galvanizing, the joint between the backing ring and tubular member shall be sealed with silicone sealant to prevent the ingress of moisture.

- The use of stiffeners at tubular member to transverse plate connections is not permitted.
- The strength of a connection made with a complete joint penetration groove weld shall be no greater than the strength of the base metal. In connections joining base metal with different yield strengths, the base metal with the lower yield strength shall govern the design.
- The minimum flange splice plate thickness shall be 2". The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- All high-strength bolted connections shall be designed as slip critical connections with standard holes, unless otherwise noted. The high-strength bolts shall conform to the maximum spacing requirements for sealing and stitch fasteners. The high-strength bolts shall conform to the edge distance requirement for fasteners. Consideration should be given to the use of smaller diameter bolts since they require lower specified minimum bolt tensions.
- The minimum number of high-strength bolts in flange splices in the truss chords shall be 6.
- The minimum thickness of the tower and truss bracing gusset plates shall be 1/2".
- The minimum size fillet weld shall be 1/4", unless noted otherwise. The use of seal and tack welds is not permitted. No welding shall be performed after galvanizing.
- The minimum base plate thickness shall no less than 2" or at least as thick as the anchor bolt diameter, whichever is greater. The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- The opening in the base plate shall be sized to allow for proper galvanizing and allow conduits projecting from the foundation to pass through it. The size of the opening shall be kept to a minimum to reduce the flexibility of the baseplate.

- The anchor bolt to base plate connection shall be designed as a double-nut connection with shear holes. The minimum distance from the center of the anchor bolt hole to the edge of the base plate shall be no less than 2 times the diameter of the anchor bolt. The anchor bolts shall use an embedded anchorage plate, $\frac{3}{4}$ " minimum thickness, to transmit loads from the post base to the concrete foundation. The use of hooked anchor bolts is not permitted. The minimum number of anchor bolts shall be 4. The minimum anchor bolt diameter shall be 1 $\frac{1}{2}$ ". The minimum anchor bolt embedment, the distance from the top of the foundation to the top of the embedded anchorage plate, shall be 3'-6" or the tension development length of the vertical foundation reinforcement plus the end concrete cover, whichever is greater. Each anchor bolt shall be supplied with 5 nuts and 4 washers. Washers shall be placed on the top and bottom surfaces of the post base plate and anchorage plate. Welding to the anchor bolts is not permitted. The use of lock washers with the anchor bolt assembly is not permitted.

The approximate dimensions of the truss and the tower post heights are shown in plan and elevation on the traffic sheets. The actual sign support dimensions shall be determined by the Contractor based on a the horizontal and vertical clearances shown on the plans, a field survey of the finished grade at the site, the elevation of the top of the finished foundation, the locations of overhead and subsurface utilities, the location of the drainage facilities and noise barrier wall locations.

The minimum vertical clearance from the top of the finished road to the bottom of the sign panels and the centerline of the truss shall be as shown on the sign support drawings as amended by the sign support elevation on the traffic sheets.

Sign panels shall be installed symmetrically about the centerline of the truss. The bottom of all signs shall be level. Sign panels shall be installed at an angle of 5° from the vertical, with the top edge tilting toward oncoming traffic.

The sign panels and crown panels, if applicable, shall be connected to sign panel support members. The support members shall extend full height of the sign and crown panels. The number and spacing of support members shall be determined by the Contractor based on the width of the sign and crown panels and the support member spacing parameters shown on the plans. Sign panels shall be supported by no less than 3 support members. Crown panels shall be supported by no less than 2 support members. The faying surface between the sign panel support member and the rear face of the sign panel shall be a flange so that panel clips may be placed on both sides of the flange to connect the panel. The outside support members for each sign panel shall include a sign stop at the bottom of the member and a sign hook at the top of the member to support and carry the sign panels.

The sign panel support members shall be designed to be vertically adjustable to compensate for the truss camber. The supports members shall be designed to be installed at any location along

the truss. The use of U-bolts and threaded rods is permitted. No less than 2 U-bolts or 4 threaded rods shall be used at each chord connection. The threaded ends of these fasteners shall have double nuts.

The minimum thickness of the sign panel support members and the plate and rolled shape components used in the connection to the sign support shall be ¼”.

The sign support shall be designed for the load effects due to the actual sign panels, including crown panels, as well as any future sign and crown panels that it will carry, as shown on the plans. The sign supports shall also be designed for the load effects of sign and crown panels during all stages of construction which may exist during the project under which the supports are installed. The load effects on the sign support from the sign and crown panels shall include forces and moments due to the eccentricity of the sign and crown panels and the unbalanced lateral loads on the crown panel. The sign support and its component parts shall also be designed for the load effects resulting from the transportation and erection of the support.

The sign support shall be designed so that the 4 chords of the truss fit within the tower posts. Each truss chord shall be connected to a tower post. 100% of the fillet welds used in the truss to post connection shall be non-destructively tested in accordance with the magnetic particle method. All bolts, nuts and washers used in the connection shall be visible. The use of tapped holes in the plates of the connection is not permitted.

Vent and drain holes shall be provided for galvanizing. The number, size and location of vent and drain holes should be coordinated with the galvanizer prior to the submission of the sign support design. The area of vent and drain holes at each end of a member shall be at least 30% of the inside area of the member for members 3” in diameter and greater and 45% of the inside area of the member for members smaller than 3” in diameter. The vent and drain holes shall be strategically located for reducing stress and for proper galvanizing. The holes shall be made by drilling. Flame cut holes are not permitted. The edges of all holes shall be rounded by grinding. After galvanizing, exposed holes placed in the sign support components for galvanizing shall be sealed with neoprene plugs.

One post in each tower shall have a handhole located adjacent to base of the post. The handhole shall be reinforced with a frame. The handhole shall be located with a normal direction that is 90° to the plane formed by the post and overhead truss. The minimum clear distance from the top of the baseplate to the outside face of the bottom of the handhole frame shall be no less than the diameter of the post member or 2’-6”, whichever is greater.

The handhole frame shall be fabricated from steel plate and bent to form a closed shape and joined with a complete joint penetration groove weld. All surfaces of the groove weld shall be ground smooth and flush with the adjacent base metal. The handhole frame shall have a minimum 4" wide by minimum 6" high clear opening. The maximum width of the handhole opening, the clear opening plus twice the frame thickness, shall not be greater than 40% of the post diameter at that section. The inside corners of the handhole frame shall be rounded to a radius of 30% to 50% of the width of the clear opening. The minimum thickness of the handhole

frame shall be no less than the thickness of the post or 5/16", whichever is greater. The handhole frame shall be connected to the post with a partial joint penetration groove weld reinforced with a fillet weld. The handhole weld shall start and end at the point that is coincident with the longitudinal axis of symmetry of the post and the longitudinal axis of symmetry of the handhole frame. 100% of the weld shall be non-destructively tested in accordance with the magnetic particle method. The handhole shall be provided with a cover connected to the frame with no less than 4 stainless steel screws. The cover shall be installed with a neoprene gasket matching the dimensions of the cover. The cover shall also be attached to the frame with a 1'-6" long stainless steel chain. The stainless steel chain shall be bolted to the cover inside face of the cover with a stainless steel bolt with a lock nut and bolted to the inside side face of the handhole frame with a stainless steel bolt. On post hand hole frames, the opposite side face of the handhole shall have a hole with a nut welded to outside face for a galvanized steel grounding bolt.

The ends of each chord member shall be sealed with a removable end cap plate attached to the member with a threaded fastener. The joint between the member and plate shall be sealed with a neoprene gasket.

The design of the sign support and the anchorage shall be coordinated with the design of the foundation to ensure that the foundation is adequate for the support reactions and to avoid conflicts between the embedded anchorage and the foundation reinforcement.

Prior to performing a field survey for each sign support, the Contractor shall coordinate with the Engineer to locate and stake each support foundation. The foundations shall be located to avoid conflicts with both subsurface and overhead utilities and subsurface drainage structures. In accordance with Article 1.05.15, the Contractor shall contact "Call Before You Dig" to identify the subsurface utilities that are located in the vicinity of each foundation. Once the location of each foundation has been found acceptable to the Engineer, the Contractor shall perform a field survey to obtain the information necessary to prepare a roadway cross-section with details of each sign support and supporting foundation(s).

The Contractor shall prepare and submit one copy of a cross-section (elevation) drawing based on a field survey for each sign support to the Engineer for review and approval. The cross-section drawing for each support shall be submitted in an individual file in electronic portable document format (.pdf) with commenting enabled. The electronic portable document format (.pdf) cross-section drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. Only one sign support cross-section shall be shown on each drawing.

The cross-sections shall include, but not be limited to the following:

- Project number, town, location (route number, direction, mileage), station, structure number, sign location number, and site number
- Location and dimensions of travel lanes and shoulders
- Location and elevation of the high point of the road
- Top and bottom of slope elevations. Slope of finished grade at foundations
- Locations of utilities (both overhead and subsurface)
- Locations of drainage facilities
- Locations of noise barriers, including elevation of top of wall
- Type of protection (metal beam rail/barrier), and the dimension from the front face of metal beam rail /barrier to the edge of the foundation and centerline of the foundation
- Elevation of the top of the foundation(s). The top of the foundation(s) shall project 6” to 12” above the level ground or 6” to 12” above the finished grade at the high side of a sloping grade.
- Dimension from top foundation to finish grade (existing or proposed as applicable).
- Span, dimension from centerline to centerline of foundations
- Dimensions of sign panel(s)
- Location of sign panel(s) relative to the centerline of the foundations/posts
- Location of sign panel(s) relative to the roadway travel lanes
- Dimension from top of foundation to centerline of truss
- Minimum dimensions from high point of the road to the centerline of the truss and the bottom of the sign panel(s)
- Elevation of centerline of truss

The Contractor shall submit the cross-section drawings to the project’s “Engineer of Record” for review. The project’s “Engineer of Record” is identified in the signature block on the sign

support traffic cross-section contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped cross-section drawings shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. The acceptance of cross-section drawings does not relieve the Contractor from verifying that all dimensions are correct. If there are any changes to the proposed location of the sign support and foundations prior to the construction of the foundations, the cross-section shall be re-submitted for review.

Prior to fabrication, the Contractor shall submit working drawings and design computations for each sign support, **based on the reviewed cross-section**, to the Engineer for review in accordance with Article 1.05.02. The working drawings and design computations for sign supports shall conform to working drawings for permanent construction. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and erection of the structure and its components, including a copy of the certificate of insurance, shall be prepared and submitted for **each** support. **A single set of drawings with tabulated data for multiple sign support locations is not permitted.** The alpha-numeric support identifier shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units. Each working drawing shall be sealed, signed and dated. The cover/first sheet for the computations shall be sealed, signed and dated.

The packaged set of working drawings and computations for each support shall be submitted in an individual file in electronic portable document format (.pdf) with appropriate bookmarks and commenting enabled. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer, fabricator and galvanizer – contact information should include name and address of each firm and the name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of fabricator's AISC certification
- copy of the **reviewed** cross-section
- sign support working drawings
- sign support design computations
- welding procedures
- sign support installation procedure, including the method to plumb the tower posts

The electronic portable document format (.pdf) working drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a

rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. The electronic files for the design computations, procedures and other supporting data shall be created on ANSI A (8 1/2" x 11"; Letter) sheets.

The working drawings shall include complete details of all sign support components. The drawings shall include, but not be limited to the following:

- the project number, town and support identification number
- reference to the design specifications, including interim specifications
- reference to the design specifications design criteria, such as design wind speed, minimum design life, etc.
- material specifications/designations for all components
- non-destructive weld testing requirements
- vent and drain holes for galvanizing
- dead load and permanent camber
- a plan view of the anchor bolt layout relative to the orientation of the span
- anchor bolt dimensions, including embedment and projection
- support installation procedure, including the method to plumb the tower posts

The design computations shall include, but not be limited to the following:

- the project number, town and support identification number
- references to design specifications, including interim specifications, and the applicable code section and articles
- description/documentation for all computer programs used in the design
- drawings/models of the structure, components and connections, with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- Tabulation of the section properties of the tubular members at each analyzed section. The tabulated values should include the diameter, D; wall thickness,

t; cross-sectional area, A; moment of inertia, I; section modulus, S; radius of gyration, r. AASHTO Table B-1 may be used to determine the section properties. If Table B-1 is used, the radius measured to the mid-thickness of the wall shall also be provided.

- coefficients and factors used in the design
- results of all group loads and load combinations
- stress ratios and combined stress ratios for all group loads and load combinations
- maximum vertical deflection due to dead loads
- maximum vertical deflection due to ice loads
- vertical deflection of the truss due to the wind load effects of truck-induced gusts
- total camber and permanent camber

The Contractor shall submit the packaged set of working drawings and calculations to the project's "Engineer of Record". The project's "Engineer of Record" is identified in the signature block on the sign support structural contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped working drawings and calculations shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. After the District Construction office has reviewed the working drawings and calculations, ensured all comments have been addressed and have found the submittal to be acceptable, in addition to distributing copies of the working drawings and calculations to the Contractor and District offices, a copy of each packaged set of working drawings and calculations shall be sent to the following Department offices:

Bridge Safety and Evaluation
 Research and Materials
 Traffic Engineering
 Engineer of Record

The Contractor shall make printed copies of the stamped working drawings and calculations, of the size and number determined by the Engineer, and deliver the copies as directed by the Engineer.

If the as-built condition of the foundation(s), such as the location or elevation, will impact the design, final erection or assembly of the sign support for conformance with the requirements

herein, the cross-section shall be re-submitted for review. Subsequently, the working drawings and calculations shall be resubmitted to conform to the revised cross-section and the requirements herein.

The support shall be fabricated in accordance with the latest edition of the AASHTO LRFD Bridge Construction Specifications, including the latest interim specifications, amended herein.

The steel fabricator shall be AISC certified for the fabrication to the Standard for Bridge and Highway Metal Component Manufacturers (CPT).

Fabrication of the support may begin only after the working drawings and design computations have been reviewed and the Engineer has authorized fabrication to begin. The Contractor shall submit to the Engineer, no less than 2 weeks prior to the start of fabrication, the name and location of the fabrication shop where the work will be done so that arrangements can be made for an audit of the facility and the assignment of the Department Quality Assurance (QA) inspector. No fabrication will be accepted unless the QA inspector is present during fabrication. No changes may be made during fabrication without prior written approval by the Department.

The Contractor shall furnish facilities for the inspection of material and workmanship in the shop by the Engineer. The Engineer and his representative shall be allowed free access to the necessary parts of the premises.

The Engineer will provide QA inspection at the fabrication shop to assure that all applicable Quality Control plans and inspections are adequately adhered to and maintained by the Contractor during all phases of the fabrication. A thorough inspection of a random selection of elements at the fabrication shop may serve as the basis of this assurance.

Prior to shipment to the project, each individual piece of steel shall be marked in a clear and permanent fashion by a representative of the fabricators' Quality Control (QC) Department to indicate complete final inspection by the fabricator and conformance to the project specifications for that piece. The mark must be dated. A Materials Certificate in accordance with Article 1.06.07 may be used in lieu of individual stamps or markings, for all material in a single shipment. The Materials Certificate must list each piece within the shipment and accompany the shipment to the project site.

Following the final inspection by the fabricator's QC personnel, the Engineer may select pieces of steel for re-inspection by the Department's QA inspector. Should non-conforming pieces be identified, all similar pieces must be re-inspected by the fabricator and repair procedure(s) submitted to the Engineer for approval. Repairs will be made at the Contractor's expense.

The pieces selected for re-inspection and found to be in conformance, or adequately repaired pieces, may be marked by the QA inspector. Such markings indicate the Engineer takes no exception to the pieces being sent to the project site. Such marking does not indicate acceptance or approval of the material by the Engineer.

All welding details, procedures and nondestructive testing shall conform to the requirements of AWS D1.1 Structural Welding Code - Steel.

Personnel performing the nondestructive testing shall be certified as a NDT Level II technician in accordance with the American Society for Non Destructive Testing (ASNT), Recommended Practice SNT-TC-1A and approved by the Engineer.

All nondestructive testing shall be witnessed by Engineer. Certified reports of all tests shall be submitted to the Engineer for examination. Each certified report shall identify the structure, member, and location of weld or welds tested. Each report shall also list the length and location of any defective welds and include information on the corrective action taken and results of all retests of repaired welds.

The Department reserves the right to perform additional testing as determined by the Engineer. Should the Engineer require nondestructive testing on welds not designated in the contract, the cost of such inspection shall be borne by the Contractor if the testing indicates that any weld(s) are defective. If the testing indicates the weld(s) to be satisfactory, the actual cost of such inspection will be paid by the Department.

All members and components shall be hot-dip galvanized in a single dip. Double-dipping of members and components is not permitted. All exterior and interior surfaces of the sign support members and components shall be completely galvanized.

Galvanized members and components shall be free from uncoated areas, blisters, flux deposits, and gross inclusions. Lumps, projections, globules, or heavy deposits of zinc which will interfere with the intended use of the material will not be permitted.

All damaged areas of the hot-dip galvanized surfaces shall be repaired in accordance with the requirements of ASTM A780. If paint containing zinc dust is used for repairs, the dry coating thickness shall be at least 50% greater than the thickness of the adjacent hot-dip galvanized coating, but no greater than 4.0 mils. The paint shall be brush applied. The use of aerosol spray cans shall not be permitted. The color of the finished repair area shall match the color of the adjacent hot-dip galvanized surface at the time of the repair to the satisfaction of the Engineer.

Prior to shipping, all galvanized surfaces of the members and components shall be inspected, in the presence of the Engineer, to determine the acceptability of the galvanized coating. Galvanized coatings may be found acceptable by the Engineer if all surfaces of the members and components meet the galvanizing requirements herein. Only sign support members and components with acceptable galvanized coatings shall be shipped. If the galvanized coating on any member or component is found not acceptable, the Contractor shall submit a repair procedure to the Engineer for review.

Unless provisions for the sign support structure number are otherwise included in the contract, the sign support structure number shall be stenciled in black paint on the right side pole (as determined by the direction of traffic traveling below the structure) centered approximately 5'

off the ground and visible from the roadway. The numeric characters shall be 3" to 4" high and placed vertically so that they may be read from top to bottom.

After fabrication, the sign support components shall be assembled in the fabricator's shop, in the presence of the Engineer, to determine the acceptability of the bolted connections and to confirm the permanent camber. The faying surfaces of the connections shall be free of dirt, loose scale, burrs, other foreign material and other defects that would prevent solid seating of the parts. Prior to assembly, the galvanized faying surfaces shall be scored by wire brushing. The faying surfaces of the connection plates shall be checked with a straight edge to ensure that the surfaces are not distorted and the entire faying surface of each plate will be in contact when assembled. The high-strength bolts, including nuts and washes, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). A connection may be found acceptable by the Engineer if the faying surfaces of the connection plates are in firm, continuous contact after properly tensioning the bolts. Only sign supports with acceptable connections shall be shipped. If a bolted connection is found not acceptable, the Contractor shall submit a procedure to repair the connection to the Engineer for review. Galvanized surfaces damaged by the repair procedure shall be hot dip galvanized. Repair of the damaged galvanized surfaces in accordance with the requirements of ASTM A780 or with a galvanizing repair stick is not permitted. Bolts, nuts and washers used for the trial shop fit-up shall not be reused in the final field assembly. The permanent camber shall be measured at mid-span and the member shall be rejected if the camber does not meet the following:

$$L/1000 \leq \text{Permanent Camber} \leq L/500$$

where L is the span length of the overhead member measured from centerline to centerline of the tower posts.

The finished members and components shall be protected with sufficient dunnage and padding to protect them from damage and distortion during transportation. Damage to any material during transportation, improper storage, faulty erection, or undocumented fabrication errors may be cause for rejection of said material at the project site. All costs associated with any corrective action will be borne by the Contractor.

Following delivery to the project site, the Engineer will perform a visual inspection of all material to verify shipping documents, fabricator markings, and that there was no damage to the material or coatings during transportation and handling.

The Engineer is not responsible for approving or accepting any fabricated materials prior to final erection and assembly at the project site.

High-strength bolts, nuts and washers shall be stored in accordance with Subarticle 6.03.03-4(f).

The support shall be erected, assembled and installed in accordance with these specifications and the procedures and methods submitted with the working drawings. The Contractor and the support designer are responsible to ensure that the erection and assembly procedures and

methods in this specification are acceptable for use with the support. Changes to these methods and procedures shall be submitted with the working drawings and computations.

Prior to installation of the support, the exposed threads of all the embedded anchor bolts shall be cleaned of accumulated dirt and concrete and lubricated. The threads and bearings surfaces of all the anchor bolt nuts shall be cleaned and lubricated. The anchor bolts and nuts are properly lubricated if the nuts can be turned by hand on the anchor bolt threads. The lubricant shall contain a visible dye of any color that contrasts with the color of the galvanizing. Re-lubricate the threads of the anchor bolts and nuts if more than 24 hours has elapsed since earlier lubrication, or if the anchor bolts and nuts have become wet since they were first lubricated.

The space between the bottom of the baseplate and the top of the foundation shall not be sealed with closed cell elastomer or filled with grout, unless otherwise noted.

Install (turn) the leveling nuts onto the anchor bolts and align the nuts to the same elevation or plane. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1". Place a structural hardened washer on top of each leveling nut, 1 washer on each anchor bolt.

The tower shall be erected so that the centerline of the tower will be plumb after the application of all the dead loads.

Install the post base plate atop the washers resting on the leveling nuts, place a structural hardened washer on each anchor bolt resting it on the top of the base plate, and install (turn) a top nut on each anchor bolt until the nut contacts the washer. The leveling nuts and washers shall be inspected, and if necessary the nuts (turned), so that the washers are in full contact with the bottom surface of the base plate.

Tighten the top nuts to a snug tight condition in a star pattern. Snug tight is defined as the maximum rotation resulting from the full effort of one person using a 12" long wrench or equivalent. A star tightening pattern is one in which the nuts on opposite or near-opposite sides of the bolt circle are successively tightened in a pattern resembling a star (e.g., For an 8-bolt circle with bolt sequentially numbered 1 to 8, tighten nuts in the following bolt order: 1, 5, 7, 3, 8, 4, 6, 2.).

Tighten leveling nuts to a snug tight condition in a star pattern.

Before final tightening of the top nuts, mark the reference position of each top nut in a snug-tight condition with a suitable marking on 1 flat with a corresponding reference mark on the base plate at each bolt. Then incrementally turn the top nuts using a star pattern one-sixth of a turn beyond snug tight. Turn the nuts in at least two full tightening cycles (passes). After tightening, verify the top nut rotation. The top nuts shall have full thread engagement. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1".

High-strength bolts, including nuts and washes, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). The truss shall be temporarily and fully supported while all the high-strength bolts are installed and tensioned. The temporary support of the truss shall not be removed until the Engineer has confirmed that the faying surfaces of the connection/flange plates are in firm, continuous contact and the high-strength bolts were properly installed and tensioned. All high-strength bolts in the bolted connections shall be inspected (in accordance with Subarticle 6.03.03-4(f)) to confirm the high-strength bolts were properly tensioned.

After erecting the support, the support shall be electrically grounded by attaching the bare copper grounding conductor to the inside of the handhole frame with a galvanized steel bolt and to the ground rod with a ground clamp. The rigid metal conduit shall be electrically grounded by attaching the bare copper grounding conductor to the insulated bonding bushing and to the ground rod with a ground clamp.

After erection of the support and before the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall immediately stabilize the structure to the satisfaction of the Engineer. Stabilizing the structure may require the removal of a portion of the structure or the entire structure.

The sign panels shall be located and mounted on the truss as shown in the working drawings.

After installation of the sign panels, the anchor bolts nuts (leveling and top anchor nut) and washers shall be in full contact with the top and bottom surfaces of the post baseplate and the centerline of the post shall be plumb.

After erection of the support and after the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall design and construct devices to mitigate the movements. The Contractor is responsible for immediately stabilizing the structure to the satisfaction of the Engineer. Stabilizing the structure may require the removal of the sign panels or the entire structure. Prior to installation of any mitigation device, the Contractor shall submit drawings, design computations other documentation to the Engineer for review in accordance with Article 1.05.02.

Method of Measurement: This work will be measured for payment by the number of bridge sign structures, completed and accepted in place.

Basis of Payment: This work will be paid for at the contract unit price each for "4 Chord Truss Bridge Sign Structure", complete in place, which price shall include the field survey, equipment, materials, tools and labor incidental to the design, fabrication and installation, including anchorage materials, sign panel support members and mitigation devices, if required, of the supports at the locations specified on the plans.

ITEM #1201804A - 4 CHORD TRUSS CANTILEVER SIGN STRUCTURE

Description: Work under this item shall consist of designing, fabricating and installing a sign support structure to carry extruded aluminum traffic signs, on a prepared foundation, in accordance with the details shown on the plans, in accordance with these specifications and as ordered by the Engineer. For the purposes of this specification, the sign support structure shall be composed of a cantilevered 4 chord truss supported by a single linear tubular pole member.

Materials: The poles shall be tubular members with either a round or multisided cross-section. The round tubular members shall be fabricated from steel pipe with a tabulated yield stress no less than 35,000 psi. The multisided tubular members shall be fabricated from steel plate conforming to the requirements of ASTM A709, Grade 50T2.

The truss chord members shall be tubular members with a round cross-section fabricated from steel pipe with a tabulated yield stress no less than 35,000 psi. Truss chord members fabricated from tubular members with a multisided cross-section are not permitted.

The truss bracing members shall be tubular members with a round cross-section fabricated from steel pipe with a tabulated yield stress no less than 35,000 psi.

The structural plate components, such as the baseplates, connection/flange/splice plates, gusset plates, handhole frames and plates in the truss to pole connection, shall be made of steel that conforms to the requirements of ASTM A709, Grade 50T2.

Anchorage plates shall conform to the requirements of ASTM A709, Grade 50T2.

The non-structural components, such as hand hole covers and cap plates, shall conform to the requirements of ASTM A709, Grade 50. Sign panel support members shall conform to the requirements of ASTM A709, Grade 50.

The use of steel plate or rolled shapes with a tabulated yield stress less than 50 ksi is not permitted.

The steel for pole, truss chord members, structural plate components, such as the baseplates, connection/flange/splice plates, gusset plates, handhole frames and plates in the truss to pole connection, shall meet the following Charpy V-notch impact testing requirements:

Yield Strength	Thickness in.	Minimum Test Value Energy ft.-lbs.	Minimum Average Energy, ft.-lbs.
$F_y \leq 36$ ksi	≤ 4	20	25 at 40°F
36 ksi < $F_y \leq 50$ ksi	≤ 2	20	25 at 40°F
36 ksi < $F_y \leq 50$ ksi	$2 < t \leq 4$	24	30 at 40°F
50 ksi < $F_y \leq 70$ ksi	≤ 4	28	35 at -10°F

Charpy V-notch sampling and testing shall be in accordance with ASTM A673, "P" piece frequency.

The weld filler metal shall have a matching strength relationship with the base metal.

All high strength bolts shall conform to ASTM A325, Type 1. Nuts shall conform to ASTM A563, Grade DH. Circular, flat, hardened steel washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Class 50. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The high strength bolts shall conform to the requirements of Subarticle M.06.02-3.

Compressible-washer-type direct tension indicators shall conform to ASTM F959, Type 325, and shall be galvanized in accordance with ASTM B695, Class 50.

U-bolts and threaded rods shall conform to ASTM A449. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Class 50. The nuts shall be overtapped to the minimum amount required for the fastener assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The threaded ends of all U-bolts and threaded rods shall be supplied with 1 washer and 2 nuts.

The anchor bolts shall conform to ASTM F1554, Grade 105. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. Prior to shipping the anchor bolts, the nuts and washers shall be installed by hand on the anchor bolts to ensure that the nuts can be run on the threads. Only anchor bolts on which the nuts are free running shall be shipped. The anchor bolts shall be shipped with the nuts and washers on the threads.

All steel components, including anchor bolts, shall be completely hot-dip galvanized, after fabrication, in accordance with ASTM A123 or ASTM A153, as applicable. Repairs to damaged areas of the hot-dip galvanized coatings shall conform to the requirements of ASTM A780 amended as follows:

Paints containing zinc dust, if used for repairs, shall contain either between 65% to 69% metallic zinc by weight or greater than 92% metallic zinc by weight in dry film.

The silicone sealant shall be a 1-component, 100% silicone sealant recommended for use with galvanized steel.

Neoprene gasket material for the access openings shall conform to ASTM D1056, Grade 2A2 or 2A3. Other grades of neoprene approved by the Engineer may be used.

Bare copper grounding conductor shall be #8 AWG stranded bare copper wire conforming to M.15.13. The grounding bolt shall be galvanized steel with a hex head.

All materials used in the finished structure shall be new. The use of materials that have been previously used in a structure or salvaged from a structure is not permitted.

The Contractor shall submit Certified Test Reports and Materials Certificates in conformance with Article 1.06.07 for the steel used in the support members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers). In addition, the following shall be submitted:

- a. Mill test reports that indicate the place where the material was melted and manufactured.
- b. High-strength bolt test results for proof load tests, wedge tests, and rotational-capacity tests that indicate where the tests were performed, date of tests, location of where the components were manufactured and lot numbers.
- c. Galvanized material test results that indicate the thickness of the galvanizing.

Prior to incorporation into the work, the Contractor shall submit samples in conformance with Article 1.06.02 for the steel used in the support members and components, high-strength bolts (including nuts and washers), anchor bolts (including nuts and washers), U-bolts (including nuts and washers) and threaded rods (including nuts and washers).

Construction Methods: The design and fabrication of the sign support structure, including its anchorage (into the foundation) and the hardware and structural members required to support the traffic appurtenances, shall conform to the requirements of the latest edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The dead load of the sign panels, sign panel support members and hardware shall be no less than the 8 psf.
- The design wind speed shall be 120 mph. The computation of wind pressures in accordance with Appendix C is not permitted.

- The minimum design life for the structures shall be 50 years.
- The wind importance factor, I_r , for wind pressure shall be 1.00.
- The wind drag coefficient, C_d , for traffic signs shall be 1.3.
- The height and exposure factor, K_z , shall be determined based on the highest elevation of the structure or the supported sign panels. The factor shall be considered constant in all pressure calculations required for the design of the structure. The height and exposure factor shall be no less than 1.05.
- The sign structure shall be designed for fatigue category I for cantilevered structures. The sign structure shall be designed for the wind load effects due to natural wind gusts and truck-induced gusts. The design pressure for the truck-induced gust shall be based on a truck speed of 65 mph. The sign structure shall be designed assuming that vibration mitigation devices will not be installed.
- The vertical deflection of the free end of the truss due to the wind load effects of truck-induced gusts shall not exceed 8".
- The fixity of the structure connections shall be as follows:
 - Welded gusset plate, bracing member to chord connections shall be considered rigid in the plane of the gusset plate and pinned perpendicular to the plane of the gusset plate.
 - Flange plate chord to chord connections shall be considered rigid with respect to both axes.
 - Baseplate to anchor bolt connection shall be considered rigid with respect to both axes.
- The minimum effective length factor, K , shall be as follows:
 - For the pole, $k = 2.1$
 - For truss chord and bracing, $k \geq 1.0$
- The maximum stress ratio (the ratio of the computed stress to the allowable stress) or combined stress ratio in any sign structure component due to each group load shall not exceed 0.85. The purpose for limiting the CSR is to allow for future additional sign panel configurations.
- The truss shall be cambered to compensate for the dead load deflections. The truss shall have a permanent camber no less than $L/1000$ and no greater than $L/500$. L

is the span length of the cantilever truss measured from centerline of the pole to the end of the truss. The permanent camber is in addition to the dead load camber. The total camber shall be obtained with the use of through chord connection plates installed at an angle.

- The maximum span length of the truss shall be 45'-0", measured from the centerline of the pole to the end of the truss.
- The truss chords shall be fabricated in 1 or more sections and connected with chord flange splices. The chords within the sections shall be fabricated from single pieces of pipe. Chord sections fabricated from multiple pieces of pipe are not permitted. All truss chords shall have the same cross-sectional properties and material designations. The minimum wall thickness of the truss chord members shall be $\frac{5}{16}$ ".
- The truss bracing shall be fabricated from steel pipe. All truss bracing shall have the same cross-sectional properties and material designations. The bracing shall have a minimum nominal diameter of 2½". The bracing shall have a minimum thickness of 0.203". The bracing shall be connected to truss chord gusset plates with slotted tube connections. The bracing slot shall have a coped hole at the end of the slot. In a minimum of 25% of the bracing gusset plate to truss chord connections, 100% of the fillet welds on each side of the connection, shall be non-destructively tested in accordance with the magnetic particle method.
- At a minimum, internal diagonal bracing shall be provided at each end of each truss section to maintain the shape and stability the truss sections during shipping and handling of the sections and the erection of the completed truss. At a minimum, additional internal diagonal bracing shall be placed at a panel point at the midspan of the truss sections greater than 25'-0" in length. The internal diagonal bracing may be provided using either a single or multiple members.
- The minimum diameter of the pole shall be 2'-0". The maximum diameter of the pole shall be 2'-6".
- The pole shall be a tubular member with either a round or multisided cross-section. Multisided tubular members with other than 16 sides are not permitted. Multisided tubular member with fluted sides are not permitted.
- The minimum wall thickness of the pole shall be $\frac{5}{16}$ ". The wall thickness of the pole shall be uniform throughout its length. The use of multiple plies (laminations) to obtain the required member thickness is not permitted. The use of shop-fabricated stepped members is not permitted.

- Joining 2 tubular members together with a circumferential weld to fabricate a pole is not permitted.
- Slip-type field splices are not permitted in any member.
- The poles may be fabricated with no more than 2 longitudinal seam welds. The seam welds shall be ground smooth and flush with the adjacent base metal. The use of external longitudinal reinforcement bars at longitudinal seam welds is not permitted. The use of spiral seam welds is not permitted.
- The longitudinal seam welds within 6" of the member ends shall be complete joint penetration groove welds.
- 100% of partial joint penetration longitudinal seam welds shall be non-destructively tested in accordance with the magnetic particle method. 100 % of complete joint penetration seam welds shall be non-destructively tested in accordance with the ultrasonic method.
- All tubular member to transverse plate connections shall be made with a complete joint penetration groove weld with a backing ring attached to the plate with a continuous fillet weld. 100% of the complete joint penetration groove welds shall be non-destructively tested by the ultrasonic method after fabrication and prior to galvanizing. 100% of the complete joint penetration groove welds shall also be non-destructively tested by the ultrasonic method for toe cracks after galvanizing. 100% of backing ring fillet welds shall be non-destructively tested by the magnetic particle method after fabrication prior to galvanizing. After galvanizing, the joint between the backing ring and tubular member shall be sealed with silicone sealant to prevent the ingress of moisture.
- The use of stiffeners at tubular member to base plate connection is not permitted.
- The strength of a connection made with a complete joint penetration groove weld shall be no greater than the strength of the base metal. In connections joining base metal with different yield strengths, the base metal with the lower yield strength shall govern the design.
- The minimum flange splice plate thickness shall be 2". The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- All high-strength bolted connections shall be designed as slip critical connections with standard holes, unless otherwise noted. The high-strength bolts shall

conform to the maximum spacing requirements for sealing and stitch fasteners. The high-strength bolts shall conform to the edge distance requirement for fasteners. Consideration should be given to the use of smaller diameter bolts since they require lower specified minimum bolt tensions.

- The minimum number of high-strength bolts in flange splices in the truss chords shall be 6.
- The minimum thickness of the truss to pole connection plates shall be $\frac{3}{4}$ ". The minimum thickness of the truss bracing gusset plates and the stiffener plates shall be $\frac{1}{2}$ ".
- The minimum size fillet weld shall be $\frac{1}{4}$ ", unless noted otherwise. The use of seal and tack welds is not permitted. No welding shall be performed after galvanizing.
- The minimum base plate thickness shall no less than $2\frac{1}{2}$ " or at least as thick as the anchor bolt diameter, whichever is greater. The determination of the plate thickness in the tubular member to transverse plate connections shall consider the potential for the plate to warp due to the heat from welding. Consideration should be given to the use of thicker plates to allow for subsequent machining of warped plates to a flat surface so that removal of material will not compromise the required strength of the plate.
- The opening in the base plate shall be sized to allow for proper galvanizing and allow conduits projecting from the foundation to pass through it. The size of the opening shall be kept to a minimum to reduce the flexibility of the baseplate.
- The anchor bolt to base plate connection shall be designed as a double-nut connection with shear holes. The minimum distance from the center of the anchor bolt hole to the edge of the base plate shall be no less than 2 times the diameter of the anchor bolt. The anchor bolts shall use an embedded anchorage plate, $\frac{3}{4}$ " minimum thickness, to transmit loads from the pole base to the concrete foundation. The use of hooked anchor bolts is not permitted. The minimum number of anchor bolts shall be 12. The minimum anchor bolt diameter shall be 2". The minimum anchor bolt embedment, the distance from the top of the foundation to the top of the embedded anchorage plate, shall be 3'-6" or the tension development length of the vertical foundation reinforcement plus the end concrete cover, which ever is greater. Each anchor bolt shall be supplied with 5 nuts and 4 washers. Washers shall be placed on the top and bottom surfaces of the pole base plate and anchorage plate. Welding to the anchor bolts is not permitted. The use of lock washers with the anchor bolt assembly is not permitted.

The approximate dimensions of the truss and the pole heights are shown in plan and elevation on the traffic sheets. The actual sign support dimensions shall be determined by the Contractor

based on a the horizontal and vertical clearances shown on the plans, a field survey of the finished grade at the site, the elevation of the top of the finished foundation, the locations of overhead and subsurface utilities, the location of the drainage facilities and noise barrier wall locations.

The minimum vertical clearance from the top of the finished road to the bottom of the sign panels and the centerline of the truss shall be as shown on the sign support drawings as amended by the sign support elevation on the traffic sheets.

Sign panels shall be installed symmetrically about the centerline of the truss. The bottom of all signs shall be level. Sign panels shall be installed at an angle of 5° from the vertical, with the top edge tilting toward oncoming traffic.

The sign panels and crown panels, if applicable, shall be connected to sign panel support members. The support members shall extend full height of the sign and crown panels. The number and spacing of support members shall be determined by the Contractor based on the width of the sign and crown panels and the support member spacing parameters shown on the plans. Sign panels shall be supported by no less than 3 support members. Crown panels shall be supported by no less than 2 support members. The faying surface between the sign panel support member and the rear face of the sign panel shall be a flange so that panel clips may be placed on both sides of the flange to connect the panel. The outside support members for each sign panel shall include a sign stop at the bottom of the member and a sign hook at the top of the member to support and carry the sign panels.

The sign panel support members shall be designed to be vertically adjustable to compensate for the truss camber. The supports members shall be designed to be installed at any location along the truss. The use of U-bolts and threaded rods is permitted. No less than 2 U-bolts or 4 threaded rods shall be used at each chord connection. The threaded ends of these fasteners shall have double nuts.

The minimum thickness of the sign panel support members and the plate and rolled shape components used in the connection to the sign support shall be ¼”.

The sign support shall be designed for the load effects due to the actual sign panels, including crown panels, as well as any future sign and crown panels that it will carry, as shown on the plans. The sign supports shall also be designed for the load effects of sign and crown panels during all stages of construction which may exist during the project under which the supports are installed. The load effects on the sign support from the sign and crown panels shall include forces and moments due to the eccentricity of the sign and crown panels and the unbalanced lateral loads on the crown panel. The sign support and its component parts shall also be designed for the load effects resulting from the transportation and erection of the support.

The sign support shall be designed so that the pole extends into the truss and is connected at each chord. Connection plates, through each chord, shall be fastened with high-strength bolts to stiffened connection plates fillet welded to the pole. 100% of the fillet welds used in the truss to

pole connection shall be non-destructively tested in accordance with the magnetic particle method. All bolts, nuts and washers used in the connection shall be visible. The use of tapped holes in the plates of the connection is not permitted.

Vent and drain holes shall be provided for galvanizing. The number, size and location of vent and drain holes should be coordinated with the galvanizer prior to the submission of the sign support design. The area of vent and drain holes at each end of a member shall be at least 30% of the inside area of the member for members 3" in diameter and greater and 45% of the inside area of the member for members smaller than 3" in diameter. The vent and drain holes shall be strategically located for reducing stress and for proper galvanizing. The holes shall be made by drilling. Flame cut holes are not permitted. The edges of all holes shall be rounded by grinding. After galvanizing, exposed holes placed in the sign support components for galvanizing shall be sealed with neoprene plugs.

The pole shall have a handhole located adjacent to base of the pole. The handhole shall be reinforced with a frame. The handhole shall be located with a normal direction that is 90° to the plane formed by the pole and overhead truss. The minimum clear distance from the top of the baseplate to the outside face of the bottom of the handhole frame shall be no less than the diameter of the pole member or 2'-6", whichever is greater.

The handhole frame shall be fabricated from steel plate and bent to form a closed shape and joined with a complete joint penetration groove weld. All surfaces of the groove weld shall be ground smooth and flush with the adjacent base metal. The handhole frame shall have a minimum 4" wide by minimum 6" high clear opening. The maximum width of the handhole opening, the clear opening plus twice the frame thickness, shall not be greater than 40% of the pole diameter at that section. The inside corners of the handhole frame shall be rounded to a radius of 30% to 50% of the width of the clear opening. The minimum thickness of the handhole frame shall be no less than the thickness of the pole or 5/16", whichever is greater. The handhole frame shall be connected to the pole with a partial joint penetration groove weld reinforced with a fillet weld. The handhole weld shall start and end at the point that is coincident with the longitudinal axis of symmetry of the pole and the longitudinal axis of symmetry of the handhole frame. 100% of the weld shall be non-destructively tested in accordance with the magnetic particle method. The handhole shall be provided with a cover connected to the frame with no less than 4 stainless steel screws. The cover shall be installed with a neoprene gasket matching the dimensions of the cover. The cover shall also be attached to the frame with a 1'-6" long stainless steel chain. The stainless steel chain shall be bolted to the cover inside face of the cover with a stainless steel bolt with a lock nut and bolted to the inside side face of the handhole frame with a stainless steel bolt. On pole hand hole frames, the opposite side face of the handhole shall have a hole with a nut welded to outside face for a galvanized steel grounding bolt.

The ends of each chord member shall be sealed with a removable end cap plate attached to the member with a threaded fastener. The joint between the member and plate shall be sealed with a neoprene gasket.

The design of the sign support and the anchorage shall be coordinated with the design of the foundation to ensure that the foundation is adequate for the support reactions and to avoid conflicts between the embedded anchorage and the foundation reinforcement.

Prior to performing a field survey for each sign support, the Contractor shall coordinate with the Engineer to locate and stake each support foundation. The foundations shall be located to avoid conflicts with both subsurface and overhead utilities and subsurface drainage structures. In accordance with Article 1.05.15, the Contractor shall contact "Call Before You Dig" to identify the subsurface utilities that are located in the vicinity of each foundation. Once the location of each foundation has been found acceptable to the Engineer, the Contractor shall perform a field survey to obtain the information necessary to prepare a roadway cross-section with details of each sign support and supporting foundation(s).

The Contractor shall prepare and submit one copy of a cross-section (elevation) drawing based on a field survey for each sign support to the Engineer for review. A cross-section drawing is a working drawing for permanent construction. The cross-section drawing for each support shall be submitted in an individual file in electronic portable document format (.pdf) with commenting enabled. The electronic portable document format (.pdf) cross-section drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. Only one sign support cross-section shall be shown on each drawing.

The cross-sections shall include, but not be limited to the following:

- Project number, town, location (route number, direction, mileage), station, structure number, sign location number, and site number
- Location and dimensions of travel lanes and shoulders
- Location and elevation of the high point of the road
- Top and bottom of slope elevations. Slope of finished grade at foundations
- Locations of utilities (both overhead and subsurface)
- Locations of drainage facilities
- Locations of noise barriers, including elevation of top of wall

- Type of protection (metal beam rail/barrier), and the dimension from the front face of metal beam rail /barrier to the edge of the foundation and centerline of the foundation
- Elevation of the top of the foundation(s). The top of the foundation(s) shall project 6” to 12” above the level ground or 6” to 12” above the finished grade at the high side of a sloping grade.
- Dimension from top foundation to finish grade (existing or proposed as applicable).
- Span, dimension from centerline to centerline of foundations
- Dimensions of sign panel(s)
- Location of sign panel(s) relative to the centerline of the foundations/poles
- Location of sign panel(s) relative to the roadway travel lanes
- Dimension from top of foundation to centerline of truss
- Minimum dimensions from high point of the road to the centerline of the truss and the bottom of the sign panel(s)
- Elevation of centerline of truss

The Contractor shall submit the cross-section drawings to the project’s “Engineer of Record” for review. The project’s “Engineer of Record” is identified in the signature block on the sign support traffic cross-section contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped cross-section drawings shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. The acceptance of cross-section drawings does not relieve the Contractor from verifying that all dimensions are correct. If there are any changes to the proposed location of the sign support and foundations prior to the construction of the foundations, the cross-section shall be re-submitted for review.

Prior to fabrication, the Contractor shall submit working drawings and design computations for each sign support, **based on the reviewed cross-section**, to the engineer for review in accordance with Article 1.05.02. The working drawings and design computations for sign supports shall conform to working drawings for permanent construction. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and erection of the structure and its components, including a copy of the certificate of insurance, shall be prepared and submitted for **each** support. **A single**

set of drawings with tabulated data for multiple sign support locations is not permitted.

The alpha-numeric support identifier shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units. Each working drawing shall be sealed, signed and dated. The cover/first sheet for the computations shall be sealed, signed and dated.

The packaged set of working drawings and computations for each support shall be submitted in an individual file in electronic portable document format (.pdf) with appropriate bookmarks and commenting enabled. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer, fabricator and galvanizer – contact information should include name and address of each firm and the name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of fabricator's AISC certification
- copy of the **reviewed** cross-section
- sign support working drawings
- sign support design computations
- welding procedures
- sign support installation procedure, including the method to plumb the poles

The electronic portable document format (.pdf) working drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. The electronic files for the design computations, procedures and other supporting data shall be created on ANSI A (8 1/2" x 11"; Letter) sheets.

The working drawings shall include complete details of all sign support components. The drawings shall include, but not be limited to the following:

- the project number, town and support identification number
- reference to the design specifications, including interim specifications
- reference to the design specifications design criteria, such as design wind speed, minimum design life, etc.
- material specifications/designations for all components

- non-destructive weld testing requirements
- details of the location of the longitudinal seam weld in the pole
- vent and drain holes for galvanizing
- dead load and permanent camber
- a plan view of the anchor bolt layout relative to the orientation of the span
- anchor bolt dimensions, including embedment and projection
- support installation procedure, including the method to plumb the pole

The design computations shall include, but not be limited to the following:

- the project number, town and support identification number
- references to design specifications, including interim specifications, and the applicable code section and articles
- description/documentation for all computer programs used in the design
- drawings/models of the structure, components and connections, with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- Tabulation of the section properties of the tubular members at each analyzed section. The tabulated values should include the diameter, D (if round member); effective width, b (if multisided member, AASHTO 5.5.2); equivalent diameter (if multisided member, AASHTO 5.6), wall thickness, t ; inside bend radius, r_b (if multisided member, AASHTO 5.5.2), cross-sectional area, A ; moment of inertia, I ; section modulus, S ; radius of gyration, r . AASHTO Table B-1 may be used to determine the section properties. If Table B-1 is used, the radius measured to the mid-thickness of the wall shall also be provided.
- coefficients and factors used in the design
- results of all group loads and load combinations
- stress ratios and combined stress ratios for all group loads and load combinations

- maximum vertical deflection due to dead loads
- maximum vertical deflection due to ice loads
- vertical deflection of the free end of the truss due to the wind load effects of truck-induced gusts
- total camber and permanent camber

The Contractor shall submit the packaged set of working drawings and calculations to the project's "Engineer of Record". The project's "Engineer of Record" is identified in the signature block on the sign support structural contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped working drawings and calculations shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. After the District Construction office has reviewed the working drawings and calculations, ensured all comments have been addressed and have found the submittal to be acceptable, in addition to distributing copies of the working drawings and calculations to the Contractor and District offices, a copy of each packaged set of working drawings and calculations shall be sent to the following Department offices:

Bridge Safety and Evaluation
 Research and Materials
 Traffic Engineering
 Engineer of Record

The Contractor shall make printed copies of the stamped working drawings and calculations, of the size and number determined by the Engineer, and deliver the copies as directed by the Engineer.

If the as-built condition of the foundation(s), such as the location or elevation, will impact the design, final erection or assembly of the sign support for conformance with the requirements herein, the cross-section shall be re-submitted for review. Subsequently, the working drawings and calculations shall be resubmitted to conform to the revised cross-section and the requirements herein.

The support shall be fabricated in accordance with the latest edition of the AASHTO LRFD Bridge Construction Specifications, including the latest interim specifications, amended herein.

The steel fabricator shall be AISC certified for the fabrication to the Standard for Bridge and Highway Metal Component Manufacturers (CPT).

Fabrication of the support may begin only after the working drawings and design computations have been reviewed and the Engineer has authorized fabrication to begin. The Contractor shall submit to the Engineer, no less than 2 weeks prior to the start of fabrication, the name and location of the fabrication shop where the work will be done so that arrangements can be made for an audit of the facility and the assignment of the Department Quality Assurance (QA) inspector. No fabrication will be accepted unless the QA inspector is present during fabrication. No changes may be made during fabrication without prior written approval by the Department.

The Contractor shall furnish facilities for the inspection of material and workmanship in the shop by the Engineer. The Engineer and his representative shall be allowed free access to the necessary parts of the premises.

The Engineer will provide QA inspection at the fabrication shop to assure that all applicable Quality Control plans and inspections are adequately adhered to and maintained by the Contractor during all phases of the fabrication. A thorough inspection of a random selection of elements at the fabrication shop may serve as the basis of this assurance.

Prior to shipment to the project, each individual piece of steel shall be marked in a clear and permanent fashion by a representative of the fabricators' Quality Control (QC) Department to indicate complete final inspection by the fabricator and conformance to the project specifications for that piece. The mark must be dated. A Materials Certificate in accordance with Article 1.06.07 may be used in lieu of individual stamps or markings, for all material in a single shipment. The Materials Certificate must list each piece within the shipment and accompany the shipment to the project site.

Following the final inspection by the fabricator's QC personnel, the Engineer may select pieces of steel for re-inspection by the Department's QA inspector. Should non-conforming pieces be identified, all similar pieces must be re-inspected by the fabricator and repair procedure(s) submitted to the Engineer for approval. Repairs will be made at the Contractor's expense.

The pieces selected for re-inspection and found to be in conformance, or adequately repaired pieces, may be marked by the QA inspector. Such markings indicate the Engineer takes no exception to the pieces being sent to the project site. Such marking does not indicate acceptance or approval of the material by the Engineer.

All welding details, procedures and nondestructive testing shall conform to the requirements of AWS D1.1 Structural Welding Code - Steel.

Personnel performing the nondestructive testing shall be certified as a NDT Level II technician in accordance with the American Society for Non Destructive Testing (ASNT), Recommended Practice SNT-TC-1A and approved by the Engineer.

All nondestructive testing shall be witnessed by Engineer. Certified reports of all tests shall be submitted to the Engineer for examination. Each certified report shall identify the structure, member, and location of weld or welds tested. Each report shall also list the length and location

of any defective welds and include information on the corrective action taken and results of all retests of repaired welds.

The Department reserves the right to perform additional testing as determined by the Engineer. Should the Engineer require nondestructive testing on welds not designated in the contract, the cost of such inspection shall be borne by the Contractor if the testing indicates that any weld(s) are defective. If the testing indicates the weld(s) to be satisfactory, the actual cost of such inspection will be paid by the Department.

All members and components shall be hot-dip galvanized in a single dip. Double-dipping of members and components is not permitted. All exterior and interior surfaces of the sign support members and components shall be completely galvanized.

Galvanized members and components shall be free from uncoated areas, blisters, flux deposits, and gross inclusions. Lumps, projections, globules, or heavy deposits of zinc which will interfere with the intended use of the material will not be permitted.

All damaged areas of the hot-dip galvanized surfaces shall be repaired in accordance with the requirements of ASTM A780. If paint containing zinc dust is used for repairs, the dry coating thickness shall be at least 50% greater than the thickness of the adjacent hot-dip galvanized coating, but no greater than 4.0 mils. The paint shall be brush applied. The use of aerosol spray cans shall not be permitted. The color of the finished repair area shall match the color of the adjacent hot-dip galvanized surface at the time of the repair to the satisfaction of the Engineer.

Prior to shipping, all galvanized surfaces of the members and components shall be inspected, in the presence of the Engineer, to determine the acceptability of the galvanized coating. Galvanized coatings may be found acceptable by the Engineer if all surfaces of the members and components meet the galvanizing requirements herein. Only sign support members and components with acceptable galvanized coatings shall be shipped. If the galvanized coating on any member or component is found not acceptable, the Contractor shall submit a repair procedure to the Engineer for review.

Unless provisions for the sign support structure number are otherwise included in the contract, the sign support structure number shall be stenciled in black paint on the right side pole (as determined by the direction of traffic traveling below the structure) centered approximately 5' off the ground and visible from the roadway. The numeric characters shall be 3" to 4" high and placed vertically so that they may be read from top to bottom.

After fabrication, the sign support components shall be assembled in the fabricator's shop, in the presence of the Engineer, to determine the acceptability of the bolted connections and to confirm the permanent camber. The faying surfaces of the connections shall be free of dirt, loose scale, burrs, other foreign material and other defects that would prevent solid seating of the parts. Prior to assembly, the galvanized faying surfaces shall be scored by wire brushing. The faying surfaces of the connection plates shall be checked with a straight edge to ensure that the surfaces are not distorted and the entire faying surface of each plate will be in contact when assembled.

The high-strength bolts, including nuts and washes, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). A connection may be found acceptable by the Engineer if the faying surfaces of the connection plates are in firm, continuous contact after properly tensioning the bolts. Only sign supports with acceptable connections shall be shipped. If a bolted connection is found not acceptable, the Contractor shall submit a procedure to repair the connection to the Engineer for review. Galvanized surfaces damaged by the repair procedure shall be hot dip galvanized. Repair of the damaged galvanized surfaces in accordance with the requirements of ASTM A780 or with a galvanizing repair stick is not permitted. Bolts, nuts and washers used for the trial shop fit-up shall not be reused in the final field assembly. The permanent camber shall be measured at the end of the truss and the structure shall be rejected if the camber does not meet the following:

$$L/1000 \leq \text{Permanent Camber} \leq L/500$$

where L is the span length of the overhead member measured from centerline to the end of the truss.

The finished members and components shall be protected with sufficient dunnage and padding to protect them from damage and distortion during transportation. Damage to any material during transportation, improper storage, faulty erection, or undocumented fabrication errors may be cause for rejection of said material at the project site. All costs associated with any corrective action will be borne by the Contractor.

Following delivery to the project site, the Engineer will perform a visual inspection of all material to verify shipping documents, fabricator markings, and that there was no damage to the material or coatings during transportation and handling.

The Engineer is not responsible for approving or accepting any fabricated materials prior to final erection and assembly at the project site.

High-strength bolts, nuts and washers shall be stored in accordance with Subarticle 6.03.03-4(f).

The support shall be erected, assembled and installed in accordance with these specifications and the procedures and methods submitted with the working drawings. The Contractor and the support designer are responsible to ensure that the erection and assembly procedures and methods in this specification are acceptable for use with the support. Changes to these methods and procedures shall be submitted with the working drawings and computations.

Prior to installation of the support, the exposed threads of all the embedded anchor bolts shall be cleaned of accumulated dirt and concrete and lubricated. The threads and bearings surfaces of all the anchor bolt nuts shall be cleaned and lubricated. The anchor bolts and nuts are properly lubricated if the nuts can be turned by hand on the anchor bolt threads. The lubricant shall contain a visible dye of any color that contrasts with the color of the galvanizing. Re-lubricate the threads of the anchor bolts and nuts if more than 24 hours has elapsed since earlier lubrication, or if the anchor bolts and nuts have become wet since they were first lubricated.

The space between the bottom of the baseplate and the top of the foundation shall not be sealed with closed cell elastomer or filled with grout, unless otherwise noted.

Install (turn) the leveling nuts onto the anchor bolts and align the nuts to the same elevation or plane. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1". Place a structural hardened washer on top of each leveling nut, 1 washer on each anchor bolt.

The pole shall be erected so that the centerline of the pole will be plumb after the application of all the dead loads. The pole may be initially installed raked in the opposite direction of the overhead member to obtain the plumb condition. Raking the pole may be accomplished by installing the leveling nuts in a plane other than level.

Install the pole base plate atop the washers resting on the leveling nuts, place a structural hardened washer on each anchor bolt resting it on the top of the base plate, and install (turn) a top nut on each anchor bolt until the nut contacts the washer. The leveling nuts and washers shall be inspected, and if necessary the nuts (turned), so that the washers are in full contact with the bottom surface of the base plate.

Tighten the top nuts to a snug tight condition in a star pattern. Snug tight is defined as the maximum rotation resulting from the full effort of one person using a 12" long wrench or equivalent. A star tightening pattern is one in which the nuts on opposite or near-opposite sides of the bolt circle are successively tightened in a pattern resembling a star (e.g., For an 8-bolt circle with bolt sequentially numbered 1 to 8, tighten nuts in the following bolt order: 1, 5, 7, 3, 8, 4, 6, 2.).

Tighten leveling nuts to a snug tight condition in a star pattern.

Before final tightening of the top nuts, mark the reference position of each top nut in a snug-tight condition with a suitable marking on 1 flat with a corresponding reference mark on the base plate at each bolt. Then incrementally turn the top nuts using a star pattern one-sixth of a turn beyond snug tight. Turn the nuts in at least two full tightening cycles (passes). After tightening, verify the top nut rotation. The top nuts shall have full thread engagement. The distance from the bottom of the leveling nuts to the top of the foundation shall not exceed 1".

High-strength bolts, including nuts and washes, shall be installed and tensioned in accordance with Subarticle 6.03.03-4(f). The truss shall be temporarily and fully supported while all the high-strength bolts are installed and tensioned. The temporary support of the truss shall not be removed until the Engineer has confirmed that the faying surfaces of the connection/flange plates are in firm, continuous contact and the high-strength bolts were properly installed and tensioned. All high-strength bolts in the bolted connections shall be inspected (in accordance with Subarticle 6.03.03-4(f)) to confirm the high-strength bolts were properly tensioned.

After erecting the support, the support shall be electrically grounded by attaching the bare copper grounding conductor to the inside of the handhole frame with a galvanized steel bolt and to the ground rod with a ground clamp. The rigid metal conduit shall be electrically grounded by attaching the bare copper grounding conductor to the insulated bonding bushing and to the ground rod with a ground clamp.

After erection of the support and before the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall immediately stabilize the structure to the satisfaction of the Engineer. Stabilizing the structure may require the removal of a portion of the structure or the entire structure.

The sign panels shall be located and mounted on the truss as shown in the working drawings.

After installation of the sign panels, the anchor bolts nuts (leveling and top anchor nut) and washers shall be in full contact with the top and bottom surfaces of the pole baseplate and the centerline of the pole shall be plumb.

After erection of the support and after the installation of the sign panels, if the structure exhibits excessive vibration, oscillations or deflections as determined by the Engineer, the Contractor shall design and construct devices to mitigate the movements. The Contractor is responsible for immediately stabilizing the structure to the satisfaction of the Engineer. Stabilizing the structure may require the removal of the sign panels or the entire structure. Prior to installation of any mitigation device, the Contractor shall submit drawings, design computations other documentation to the Engineer for review in accordance with Article 1.05.02.

Method of Measurement: This work will be measured for payment by the number of cantilever sign structures, completed and accepted in place.

Basis of Payment: This work will be paid for at the contract unit price each for "4 Chord Truss Cantilever Sign Structure", complete in place, which price shall include field survey, equipment, materials, tools and labor incidental to the design, fabrication and installation, including anchorage materials, sign panel support members and mitigation devices, if required, of the supports at the locations specified on the plans.

ITEM #1202239A - OVERHEAD TRUSS SIGN SUPPORT FOUNDATION

Description: Work under this item shall consist of the subsurface investigation, design and construction of foundations to support a 4 chord truss bridge sign structure, in accordance with the details shown on the plans, in accordance with these specifications and as ordered by the Engineer. The foundation may be either a spread footing foundation or a drilled shaft foundation as selected by the Contractor.

For the purpose of bidding this item, the Contractor shall assume that the subsurface conditions for each foundation location consists of cohesionless medium dense granular soil (AASHTO A-1 or A-2) with cobbles present and a high groundwater table which requires the use of wet construction/concreting methods.

Materials: The reinforcing steel shall be uncoated, ASTM A615, Grade 60 reinforcement conforming to the requirements of Article M.06.01.

Granular fill shall conform to M.02.01.

Temporary Earth Retaining System: Materials of steel sheet piling shall conform to the requirements of ASTM A328. Timber sheet piling shall conform to the requirements of Subarticle M.09.01-1. Materials other than steel or timber, or a combination of these may be used provided they are properly designed for the purpose intended. Systems utilizing other material(s) shall conform to the manufacturer's specifications and project specifications. The parts list shall be furnished for the proprietary system and the Contractor shall provide the material certificates for the parts.

Concrete for the spread footing foundation, both footing and pedestal, and for the formed pedestals of the drilled shaft foundation shall conform to Article M.03 for Class 'F' Concrete. The 28 day minimum compressive strength of the concrete in the constructed pedestal shall be 4,400 psi. The concrete mix design, including admixtures, shall be submitted to the Engineer for approval.

The concrete for the drilled shaft shall be dense, homogeneous, fluid, resistant to segregation and consolidate under self-weight. The concrete for the drilled shaft shall be a Contractor designed Portland cement concrete with a 3/8" (No. 8) maximum coarse aggregate size and a minimum of 705 lbs/cubic yard of cementitious materials. The initial concrete slump shall be 7" \pm 1". The concrete shall maintain a minimum 4" slump for the duration of the concrete placement. The concrete shall contain 1% - 7% air entrainment. The 28 day minimum compressive strength of the concrete in the constructed foundation shall be 4,000 psi. The concrete mix design, including admixtures, shall be submitted to the Engineer for approval.

The slurry shall be Contractor designed mineral slurry that meets the range of values listed herein. The slurry mix design, including admixtures, shall be submitted to the Engineer for approval.

Rigid metal conduit, ground rod sleeves and related hardware, and end caps shall be galvanized steel conduit, conforming to the Plans and Article M.15.09.

Ground rods shall be 5/8" in diameter by 12'-0" long copper clad steel. The copper cladding shall be a minimum thickness of 0.128". The ground clamp shall be a square-head bolt type, approved for direct burial.

Bare copper wire shall conform to Article M.15.13.

Topsoil shall conform to Article M.13.01.

Fertilizer shall conform to Article M.13.03.

Seed mixture shall conform to Article M.13.04.

Mulch shall conform to Article M.13.05.

Erosion control matting shall conform to Article M.13.09.

Construction Methods:

Subsurface Conditions for Foundation Design: As early as possible and prior to preparation of the foundation design, the Contractor **shall** perform a subsurface investigation for **each** sign foundation location. The subsurface data obtained in the exploration program at each site shall be used in the design of the foundation at that site. Use of the assumed subsurface condition (that was provided for the purpose of bidding), an assumed conservative subsurface condition or any other assumed subsurface condition shall not be allowed for use in the foundation design nor shall any assumed subsurface condition relieve the Contractor from their responsibility of obtaining a test boring at each foundation site. The subsurface investigation program should be prepared and executed in accordance with the most recent editions of the AASHTO Manual on Subsurface Investigations and ConnDOT Geotechnical Engineering Manual. The Contractor shall provide a full-time inspector to oversee the subsurface exploration program. The subsurface investigations and all related cost will not be measured for payment and shall be included in the cost of the foundation.

The Contractor shall review results of their subsurface investigation to determine if subsurface conditions for sign foundation locations differ materially from those assumed at the time of bid. Should the subsurface investigation(s) encounter conditions that differ materially, the Contractor shall notify the Engineer in writing prior to the submission of the working drawings and calculations. All matters regarding increased cost relating to agreed upon change in subsurface conditions will be handled per Section 1.04.04 – Differing Site Conditions.

Design Requirements for Spread Footing Foundations: The design of spread footing traffic structure foundations shall conform to the requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals – latest edition, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The footing and pedestal shall be designed for the traffic structure support reactions of all group loads and load combinations. No reduction of the reactions or increase in the allowable stresses of the materials is permitted.
- The minimum concrete cover for the reinforcement in the footing and pedestal shall be 3”.
- The footing shall have a top and bottom mat of reinforcement. The reinforcement in each mat shall extend full length and width of the footing. Splicing of the footing reinforcement is not permitted. The minimum size and spacing of reinforcement in each direction of each mat shall be #5 @ 12”.
- The foundation shall have a single rectangular pedestal connected to the footing with dowels cast into the footing. The minimum size and spacing of reinforcement in each face of the pedestal shall be #5 @ 12”.
- The minimum factor of safety against overturning shall be 2.0. Resistance to overturning shall be based solely on applicable dead loads.
- The minimum factor of safety against sliding and torsion shall be 1.5. The maximum value for the coefficient of friction to be used in determining the sliding resistance shall be 0.6. Resistance to sliding and torsion shall be based solely on applicable dead loads.
- The use of soil or rock anchors to increase overturning or sliding resistance is not permitted.
- If ground water is present, the design of the foundation shall include the effects of buoyancy.
- The footing shall be founded on entirely on either level soil or level rock. Constructing a footing on a sloping substrate is not permitted. Footings founded on a combination of soil and rock and soil are not permitted.
- Footings on soil shall be placed on a minimum of 12” of granular fill.
- The minimum embedment for a foundation, founded entirely on soil, shall be no less than 4’ below the finished grade at the low side of a sloping grade. The

minimum embedment for a foundation, founded entirely on rock, shall be no less than 6" below the finished grade at the low side of a sloping grade.

- The design of the foundation shall account for the slope of the finished grade.
- The top of the pedestal shall project 6" to 12" above the level ground or 6" to 12" above the finished grade at the high side of a sloping grade.
- The design of the foundation shall be coordinated with the traffic structure support to avoid conflicts between the embedded support anchorage and the reinforcement.

Design Requirements for Drilled Shaft Foundations: The design of drilled shaft traffic structure foundations shall conform to the requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals – latest edition, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The foundation shall be designed for the soils and rock properties and parameters based on the subsurface conditions (character of the soil and rock, presence of ground water, etc.) in the location of, adjacent to and below the drilled shaft foundation excavation determined by the subsurface investigation.
- The specified compressive strength, f'_c , of the concrete used in the design shall be 4,000 psi. The concrete cover for reinforcing in a drilled shaft shall conform to the following:

Shaft Diameter	Minimum Cover
Less than or equal to 3'-0"	3"
Greater than 3'-0" and less than 5'-0"	4"
Greater than or equal to 5'-0"	6"

- The reinforcement shall be uncoated and conform to ASTM A615, Grade 60.
- The foundation shall be designed for the traffic structure support reactions of all group loads and load combinations. The reactions shall include axial, shear, flexural and torsional load effects. No reduction of the reactions or increase in the allowable stresses of the materials is permitted.
- For sign support foundations, the minimum drilled shaft diameter shall be 3'-0".
- The design of the drilled shaft foundation shall include embedment of the foundation in soil, the embedment of the foundation in rock or the embedment of the foundation partially in soil and partially in rock, as applicable.

- The design of the drilled shaft embedment depth shall account for the slope of the finished grade.
- The minimum embedment for a drilled shaft foundation, excavated entirely in soil, shall be no less than 15'-0" below the finished grade at the low side of a sloping grade. The minimum embedment for a drilled shaft foundation, excavated entirely in rock shall be no less than 10'-0" below the finished grade at the low side of a sloping grade.
- For sign support foundations, the top of the drilled shaft pedestal shall project 6" to 12" above the level ground or 6" to 12" above the finished grade at the high side of a sloping grade.
- The embedment depth for a drilled shaft foundation, determined by the Brom's design method, shall have a minimum factor of safety of 3.25 applied to the shear and moment load effects. The factor of safety applied to the torsional load effect shall be no less than 1.3.
- The load factor method shall be used for the structural design of the drilled shaft. The load factor applied to all loads, dead, wind and ice, and their effects, axial, shear, flexure and torsion, shall be no less than 1.6. The drilled shaft may be designed in accordance with the load factor method presented in the latest edition of the Building Code Requirements for Reinforced Concrete", ACI 318.
- The structural design of the drilled shaft shall be based on stress and strain compatibility in the circular drilled shaft cross section. The use of methods equating circular to rectangular drilled shaft cross sections is not permitted.
- The drilled shaft foundation shall be reinforced with longitudinal and transverse reinforcement. The area of longitudinal reinforcement should be no less than the sum of the reinforcement required for flexure and the longitudinal reinforcement required for torsion. The area of transverse reinforcement should be no less than the sum of the reinforcement required for shear and the transverse reinforcement required for torsion. Additional transverse reinforcement may be required at the top of the drilled shaft within the limits of the pedestal due to the torsional load on the anchor bolt group.
- The minimum number of longitudinal reinforcing bars shall be 16. The minimum size of longitudinal reinforcing bars shall be #8. The minimum area of longitudinal reinforcing bars shall be no less than 1% of the gross cross-sectional area of the shaft. The minimum clear distance between longitudinal reinforcing bars shall be no less than 5 times the maximum aggregate size or 5", whichever is greater. The reinforcement shall extend full length of the drilled shaft foundation, including the pedestal. Splicing of the longitudinal reinforcement is not permitted.

- The drilled shaft shall be transversely reinforced with spirals or circular, one piece, enclosed ties. The minimum size of the reinforcement shall be #4. The maximum spacing/pitch of the reinforcement shall be no more than 6". The spiral reinforcement shall be terminated at the top and the bottom with 1 ½ turns of the reinforcing and a 135° standard hook. Spirals may be spliced with lap splices or mechanical connectors. For spirals, the minimum lap splice length shall be 1.7 times the tension development length (including modification factors) of the bar or 48 bar diameters, whichever is greater. For spirals, the mechanical connectors shall develop both in tension and compression 125% of the specified yield strength of the bar and conform to the latest edition of the AASHTO LRFD Bridge Design Specifications, including the latest interim specifications. For ties, the minimum lap splice length shall be no less than 1.7 times the tension development length (including modification factors) of the bar. Tie lap splices shall be alternated. The ends of the bars in lap splices shall be anchored with a 135° standard hook around longitudinal reinforcement.
- For sign support foundations, the top of the drilled shaft shall be designed with a square pedestal to facilitate the installation of the anchor bolts and rigid metal conduits. The dimensions of the pedestal shall equal the diameter of the drilled shaft. The top and sides of the pedestal shall be reinforced with a grillage of reinforcement. The minimum size reinforcement shall be #5. The minimum concrete cover shall be 3"
- The design of the foundation shall be coordinated with the traffic structure support to avoid conflicts between the embedded support anchorage and the foundation reinforcement.

Submittal Requirements for Foundations: Prior to excavating for the foundation, the Contractor shall submit working drawings and design computations for the foundation(s) at each sign support, **based on the reviewed sign structure cross-section**, to the Engineer for review in accordance with Article 1.05.02. The working drawings and design computations for foundations shall conform to working drawings for permanent construction. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and construction, including a copy of the certificate of insurance, shall be prepared and submitted for the foundation(s) at **each** support. **A single set of drawings with tabulated data for multiple foundation locations is not permitted.** The alphanumeric support identifier shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units. Each working drawing shall be sealed, signed and dated. The cover/first sheet for the computations shall be sealed, signed and dated.

The packaged set of working drawings and computations for the foundations at each support shall be submitted in an individual file in electronic portable document format (.pdf) with appropriate bookmarks commenting enabled. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer – contact information should include name and address of design firm, name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of the **reviewed** cross-section
- results of subsurface investigation, including boring logs and geotechnical design recommendations
- foundation working drawings
- foundation design computations

The electronic portable document format (.pdf) working drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 ¼" wide x 1 ¾" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. The electronic files for the design computations, procedures and other supporting data shall be created on ANSI A (8 ½" x 11") letter sheets.

The working drawings shall include complete details of all foundation components. The drawings shall include, but not be limited to the following:

- the project number, town and support identification number
- selected type of foundation (spread footing or drilled shaft)
- reference to the design specifications, including interim specifications
- material specifications for all components
- embedment depths for foundation in soil, rock and a combination of soil and rock
- anchor bolt details, including dimensions, embedment and projection

The design computations shall include, but not be limited to the following:

- the project number, town and support identification number
- references to design specifications, including interim specifications, and the applicable code section and articles
- description/documentation for all computer programs used in the design

- drawings/models of the foundation with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- sign support reactions of all group loads and load combinations
- soil and rock design parameters
- computations demonstrating the geotechnical and structural capacity of the foundation for all applicable axial and lateral load combinations

The Contractor shall submit the packaged set of working drawings and calculations to the project's "Engineer of Record". The project's "Engineer of Record" is identified in the signature block on the sign support structural contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped working drawings and calculations shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. After the District Construction office has reviewed the working drawings and calculations, ensured all comments have been addressed and have found the submittal to be acceptable, in addition to distributing copies of the working drawings and calculations to the Contractor and District offices, a copy of each packaged set of working drawings and calculations shall be sent to the project's "Engineer of Record".

The Contractor shall make printed copies of the stamped working drawings and calculations, of the size and number determined by the Engineer, and deliver the copies as directed by the Engineer.

Drilled Shaft Foundation Construction: The Contractor performing the work described in this specification shall have installed drilled shafts of both diameter and length similar to those required for the traffic structures for a minimum of 3 years prior to the bid date for this project. The Contractor shall submit a list containing at least 3 projects completed in the last 3 years on which the Contractor has installed drilled shafts of a diameter and length similar to those shown on the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractors' participation on those projects. The Contractor shall provide a list identifying the on-site supervisor(s) and drill operator(s) for approval by the Engineer. The on-site supervisor(s) shall have a minimum 2 years experience in supervising the construction of drilled shafts of a diameter and length similar to those shown on the plans. The drill operator(s) shall have a minimum 1 year experience in drilling for the construction of drilled shafts of a diameter and length similar to those shown on the plans. The list shall contain a summary of each individual's experience. Should the Contractor elect to change personnel during construction of the shaft, the same approval process will need to be completed for the new personnel prior to them starting work on the project. The Contractor shall not be compensated for any delays resulting from their changing of personnel.

Prior to excavating for the foundation, the Contractor shall submit the following:

Reinforcing Steel Shop Drawings: Based on the accepted foundation design, the Contractor shall prepare reinforcing steel shop drawings for each foundation in accordance with Subarticle 1.05.02. The drawings shall be reviewed and stamped by the foundation designer. Four copies of each reviewed and stamped drawing shall be submitted to the Engineer at the District Construction office. One copy of each reviewed and stamped drawing shall be submitted to the project's "Engineer of Record".

Concrete and Slurry Mix Designs: The Contractor shall submit to the Engineer at the District Construction office the concrete mix designs and the slurry mix design, including admixtures, for review.

Drilled Shaft Foundation Construction Procedure: The Contractor shall submit to the Engineer at the District Construction office a written foundation construction procedure outlining the equipment; drilling procedure for soil and rock, including how spoils will be handled; temporary casing placement and removal; slurry placement; reinforcement, anchor bolt and conduit placement; and concrete placement required for the drilled shaft foundation construction for review. The procedure should include contingencies for the various soil, rock and subsurface water conditions that may be encountered during the foundation construction. Also required in this submission are the following:

- list of proposed equipment to be used, including cranes, drills, augers, bailing buckets, final cleaning equipment, desanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, casing, etc.
- details of overall construction operation sequence and the sequence of shaft construction in bents or groups
- details of shaft excavation methods
- when the use of slurry is anticipated, details of the mix design and its suitability for the subsurface conditions at the construction site, mixing and storage methods, maintenance methods, and disposal procedures
- details of methods to clean the shaft excavation
- details of reinforcement placement, including support and centralization methods
- details of concrete mix design and test results of both a trial mix and a slump loss test. The tests shall be conducted by an approved testing

laboratory using approved methods to demonstrate that the concrete meets slump loss requirements

- details of concrete placement, including proposed operational procedures for free fall, tremie or pumping methods, proposed concreting log form and computations for time duration of shaft pour estimates
- details of casing installation and removal methods
- details of methods for removal of obstructions. Obstructions the Contractor shall provide details of methods for removal include, but are not necessarily be limited to, boulders, concrete, riprap, steel, timber, etc.

The Engineer will evaluate the foundation construction procedure for conformance with the plans, specifications and special provisions and will then notify the Contractor of any additional information required and/or changes necessary to meet the contract requirements. All procedural approvals given by the Engineer shall be subject to trial in the field and shall not relieve the Contractor of the responsibility to satisfactorily complete the work as detailed in the plans and specifications. The Contractor shall not commence construction of the drilled shafts until the Engineer has accepted the foundation construction procedure.

Excavations required for shafts shall be performed through whatever materials are encountered, to the dimensions and elevations in the working drawings or as ordered by the Engineer. The methods and equipment used shall be suitable for the intended purpose and materials encountered. Shaft excavation may be performed by combinations of augering, rotary drilling, down-the-hole hammer, reverse circulation drilling, clamming, scraping, or other means approved by the Engineer. Generally, either the dry method, wet method, or temporary casing method may be used, as necessary, to produce sound, durable concrete foundation shafts free of defects. The Contractor shall select and use the method that is needed to properly accomplish the work, as determined by site conditions and subject to the approval of the Engineer. The Contractor is responsible for maintaining the stability of the shaft excavation during all phases of construction.

The dry method consists of drilling the shaft excavation, removing accumulated water and loose material from the excavation, and placing the shaft concrete in a relatively dry excavation. The dry construction method shall be used only at sites where the groundwater table and site conditions are suitable to permit construction of the shaft in a relatively dry excavation, and where the sides and bottom of the shaft are stable and may be visually inspected prior to placing the concrete. The use of the dry construction method is permitted if less than one foot of water accumulates in the bottom of a hole without pumping over a one hour period, the excavation remains stable and any loose material and water can be removed prior to placement of concrete.

The wet construction method shall be used at sites where a dry excavation cannot be maintained for placement of the shaft concrete. Wet construction methods consist of using a mineral slurry to maintain stability of the hole perimeter while advancing the excavation to final depth, placing the reinforcing cage and shaft concrete. This procedure may require desanding and cleaning the slurry; final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump or other devices; and placing the shaft concrete with a tremie. Unless it is demonstrated to the satisfaction of the Engineer that the surface casing is not required, temporary surface casings shall be provided to aid shaft alignment and position, and to prevent sloughing of the top of the shaft excavation. Surface casing is defined as the amount of casing required from the ground surface to a point in the shaft excavation where sloughing of the surrounding soil does not occur.

The temporary casing construction method shall be used at all sites where the dry or wet construction methods are inappropriate. Temporary casing construction method consists of advancing the excavation through caving material by the wet method. Temporary casing may be installed by driving or vibratory procedures in advance of excavation to the lower limits of the caving material. When a nearly impervious formation is reached, a casing is placed in the hole and sealed in the nearly impervious formation. After the drilling fluid is removed from the casing, drilling may proceed as with the dry method except that the casing is withdrawn when the shaft concrete is placed. If seepage conditions prevent use of the dry method, excavation is completed using the wet method. Temporary casing may be installed by driving or vibratory procedures in advance of excavation to the lower limits of the caving material. Slurry may be omitted if the casing can be installed with only minor caving of the hole.

If the Engineer determines that the foundation material encountered during excavation is unsuitable or differs from that anticipated in the design of the shaft, or if rock is encountered at an unanticipated elevation, the Contractor's foundation designer shall determine if the foundation embedment should be revised from that shown on the working drawings. If rock is encountered, the Engineer shall be notified to inspect and determine the elevation of the top of competent rock. Any revisions to the foundation embedment during construction shall be reviewed by the Engineer.

Excavated materials which are removed from the shaft excavation and any drilled fluids used shall be disposed of by the Contractor as directed by the Engineer and in accordance with Section 1.10.

Casings shall be metal, smooth, clean, watertight, and of ample strength to withstand both handling and driving stresses and the pressure of both concrete and the surrounding earth materials. The outside diameter of casing shall not be less than the specified size of the shaft. Temporary casings shall be removed while the concrete remains workable (i.e., a slump of 4" or greater). Before the casing is withdrawn and while the casing is being withdrawn, a 5'-0" minimum head of fresh concrete in the casing shall be maintained so that all the fluid trapped behind the casing is displaced upward without contaminating the shaft concrete. The required minimum concrete head may have to be increased to counteract groundwater head outside the casing. Separation of the concrete by hammering or otherwise vibrating the casing, during

withdrawal operations, shall be avoided. Casing extraction shall be at a slow, uniform rate with the pull in line with the shaft axis.

Slurry used in the drilling process shall be a mineral slurry. The slurry shall have both a mineral grain size that will remain in suspension and sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. The level of the slurry shall be maintained at a height sufficient to prevent caving of the hole.

The mineral slurry shall be premixed thoroughly with clean fresh water at a temperature above 41° F and adequate time allotted for hydration prior to introduction into the shaft excavation. The elevation of the slurry within the shaft foundation shall be maintained within 24” of the top casing and at least 48” above the existing water level during drilling and until the concrete placement is essentially complete. The slurry properties shall be maintained at all times, including non-working periods and stoppages. The slurry shall be circulated and agitated, continuously if necessary, to maintain the slurry properties and to prevent it from setting up in the shaft.

The Contractor, in the presence of the Engineer, shall perform control tests on the slurry to ensure that the density, viscosity, and pH fall within the acceptable limits tabulated below. The Contractor shall provide all equipment required to perform the tests. If desanding is required, sand content shall not exceed 4% (by volume) at any point in the shaft excavation as determined by the American Petroleum Institute sand content test.

Range of Values (at 68°F)

Property (Units)	Time of Slurry Introduction	Time of Concreting (in Hole)	Test Method
Density (pcf)	64.3 to 69.1	64.3 to 75.0	Density Balance
Viscosity (seconds per quart)	28 to 45	28 to 45	Marsh Cone
pH	8 to 11	8 to 11	pH paper or meter

The control tests to determine unit weight (density), viscosity, and pH values of the slurry shall be done during the shaft excavation to establish a consistent working pattern.

Prior to placing shaft concrete, slurry samples shall be taken from the bottom and at intervals not exceeding 10’-0” for the full height of slurry. Any heavily contaminated slurry that has accumulated at the bottom of the shaft shall be eliminated. The mineral slurry shall be within specification requirements immediately before shaft concrete placement.

The hole shall be covered when left unattended.

After completing the shaft excavation, all loose material existing at the bottom of the hole shall be removed.

Prior to placing the reinforcement into the shaft, the Contractor, in the presence of the Engineer, shall determine the shaft dimensions, depth and alignment of the shaft. The concrete shaft shall not be out of plumb by more than $\frac{1}{4}$ inch per foot of depth. The Contractor shall provide all equipment necessary for checking the shaft excavation. The Engineer shall inspect the shaft and verify that it has been properly cleaned.

The reinforcing steel shall be fabricated and assembled in accordance with Article 6.02.03. All reinforcement shall be assembled with wire ties. Welding to assemble the reinforcement is not permitted.

Immediately after the shaft excavation has been inspected and approved by the Engineer and prior to placement of the concrete, the assembled reinforcing steel cage, including cage stiffener bars, spacers, centralizers, and other necessary appurtenances, shall be carefully placed into the shaft excavation as a unit. Dropping or forcing cages into the shaft will not be allowed. The reinforcing steel in the shaft shall be tied and supported so that the reinforcing steel will remain within allowable tolerances of its intended position until the concrete will support the reinforcing steel. When concrete is placed by tremie methods, temporary hold-down devices shall be used to prevent uplifting of the reinforcing steel cage during concrete placement. Concrete spacers or other approved noncorrosive spacing devices shall be used at sufficient intervals not exceeding 5'-0" along the shaft to insure concentric location of the cage within the shaft excavation. When the size of the longitudinal reinforcing steel is larger than a #8 bar, such spacing shall not exceed 10'-0". After placement of the reinforcing cage, the Engineer shall inspect the shaft to ensure that it has remained clean. If the inspection indicates that loose material has accumulated at the bottom of shaft excavation, the Contractor shall remove the reinforcing cage and reclean the shaft.

Concrete shall be placed in the shaft excavation as soon as possible, but no more than 4 hours after completion of excavation and cleaning of the bottom of the excavation, and no more than 2 hours after placement of the reinforcing steel cage. Concrete shall be placed in a continuous operation to the top of the shaft. The concrete level shall be horizontal during the pouring operations. Concrete placement shall continue after the shaft is full until good quality concrete is evident at the top of the shaft. The elapsed time from the beginning of concrete placement in the shaft to the completion of placement shall not exceed 2 hours.

In dry construction, concrete shall be placed in a single continuous operation with the flow of concrete down the center of the shaft excavation so as to consolidate the concrete on impact. During placement operations, the concrete is not permitted to hit the reinforcing steel. A dropchute, consisting of a hopper and flexible hose, may be used to direct the concrete down the center of the foundation and prevent the concrete from hitting the reinforcing steel. Accumulated water shall be removed before placing the concrete. At the time of concrete

placement, no more than 2" of water may exist at the bottom of the excavation and loose sediment no more than 1/2" over one-half the base is acceptable.

In wet (slurry) construction, concrete to be placed by the tremie method, where the concrete displaces the slurry from bottom of the excavation to the top. The concrete shall be placed through a top metal hopper and into a rigid leak-proof elephant trunk tremie tube, sufficiently large enough to permit free flow of concrete. The tremie tube shall be positioned so that it can be removed without disturbing the reinforcing. Initially, the discharge end of the tremie tube shall be sealed closed (plugged) to prevent slurry from entering the tube after it is placed in the excavation and before the tube is filled with concrete. After concrete placement has started, the tremie tube shall be kept full of concrete to the bottom of the hopper to maintain a positive concrete head. The flow of concrete shall be induced by slightly raising the discharge end of the tube, always keeping the tube end in the deposited concrete. No horizontal movement of the tremie tube will be permitted.

The shaft concrete shall be vibrated or rodded to a depth of 5'-0" below the ground surface except where soft uncased soil or slurry remaining in the excavation will possibly mix with the concrete.

Exposed concrete shall be cured and finished in accordance with Subarticle 6.01.03-7, 9 and 10.

No construction operations that would cause soil movement adjacent to the shaft, other than mild vibration, shall be conducted for at least 48 hours after shaft concrete has been placed.

The top of the foundations shall be backfilled and the adjacent disturbed ground surfaces restored to match the surrounding area after the concrete has cured and the forms are removed. Placement of topsoil shall conform to Articles 9.44.01 and 9.44.03. Turf establishment shall conform to Article 9.50.03.

Construction of Spread Footing Foundations: Construction methods for spread footing foundations shall conform to the following:

Temporary earth retaining system shall be safely designed and shall be carried to adequate depths and braced as necessary for proper performance of the work. Construction shall be such as to permit excavation or fill as required. Interior dimensions shall be such as to give sufficient clearance for construction of forms and their inspection and for battered pile clearance when necessary. Movements of the system or bracing which prevent the proper completion of the substructure shall be corrected at the sole expense of the Contractor. No part of the temporary earth retaining system or bracing shall be allowed to extend into the substructure without written permission of the Engineer.

Working drawings and design calculations for temporary earth retaining system shall be submitted in accordance with the requirements of Article 1.05.02.

Unless otherwise ordered by the Engineer, all parts of the temporary earth retaining system shall be removed upon completion of the work for which it was provided. The excavation shall be backfilled and properly compacted, prior to removal of the system unless otherwise permitted by the Engineer. Temporary earth retaining system may be left in place at the option of the Contractor if so permitted by the Engineer, provided that it is cut off at an elevation as directed by the Engineer and the cutoffs removed from the site.

Excavation: Article 2.03.03.

Granular Fill: Article 2.13.03.

Class "F" Concrete: Article 6.01.03.

Deformed Steel Bars: Subarticles 6.02.03-2,3,4,7, and 8.

Additional construction provisions for all foundation types: Anchor bolt assemblies shall be embedded in the concrete as shown on the working drawings. A template plate shall be used to hold the anchor bolt assemblies, conduits and ground rod sleeve in the correct position. The anchor bolts shall be installed plumb.

All conduit ends terminating below grade shall be capped with a malleable iron caps. All above-grade conduit ends shall be terminated with an insulated bonding bushing with tinned insert.

Ground rod and ground wire shall be installed as shown on the plans.

After the foundation has cured, the Contractor shall submit the top of foundation elevations based on a field survey.

The traffic structures shall not be erected on the foundation unit until **all** concrete has attained a 28 day compressive strength, f'_c , greater than or equal to 4,000 psi.

Method of Measurement: This work will be measured for payment by the number of foundation units, each completely installed and accepted. Two foundation units are required to support each overhead truss sign support.

Basis of Payment: The work will be paid for at the contract unit price each for "Overhead Truss Sign Support Foundation," completed and accepted in place, which price shall include all equipment, materials, tools and labor incidental to the design, fabrication, construction and disposal of drilling spoils, of the foundations at the locations specified on the plans.

No additional payment will be made for the Contractor to test the slurry when it is used to construct a drilled shaft foundation. No additional payment will be made for subsurface investigations performed by the Contractor.

The removal of existing roadside barrier systems, installation and removal of temporary roadside barrier systems and resetting existing roadside barrier systems will not be paid for separately, but will be included as part of the work.

The support of excavation areas by temporary earth retaining system will not be paid for separately, but will be included as part of the work.

The temporary support, protection and restoration of utilities (if necessary), including existing underground wiring, conduits, drainage structures, pipes and underdrain systems within the excavation limits will not be paid for separately, but will be included as part of the work.

Backfilling and restoration of adjacent ground surfaces (pavement, slope protection, topsoil & seed, etc.) in all areas disturbed by the work will not be paid for separately, but will be included as part of the work. The Engineer will determine the type, thickness and horizontal limits of the surface treatments to be restored.

The installation of new or upgraded permanent roadside barrier systems, if required, will not be paid for as part of this work, but will be paid for under separate items.

ITEM #1202999A - DRILLED SHAFT TRAFFIC STRUCTURE FOUNDATION

Description: Work under this item shall consist of the subsurface investigation, design and construction of drilled shaft foundations for traffic structures, in accordance with the details shown on the plans, in accordance with these specifications and as ordered by the Engineer. For the purposes of this specification, a traffic structure support may be an overhead cantilever or bridge type sign support structure.

Materials: The reinforcing steel shall be uncoated, ASTM A615, Grade 60 reinforcement conforming to the requirements of Article M.06.01.

The concrete for the drilled shaft shall be dense, homogeneous, fluid, resistant to segregation and consolidate under self-weight. The concrete for the drilled shaft shall be a Contractor designed Portland cement concrete with a 3/8" (No. 8) maximum coarse aggregate size and a minimum of 705 lbs/cubic yard of cementitious materials. The initial concrete slump shall be 7" \pm 1". The concrete shall maintain a minimum 4" slump for the duration of the concrete placement. The concrete shall contain 1% - 7% air entrainment. The 28 day minimum compressive strength of the concrete in the constructed foundation shall be 4,000 psi. The concrete mix design, including admixtures, shall be submitted to the Engineer for approval.

The concrete for the formed pedestal shall conform to Article M.03 for Class 'F' Concrete. The 28 day minimum compressive strength of the concrete in the constructed pedestal shall be 4,400 psi. The concrete mix design, including admixtures, shall be submitted to the Engineer for approval.

The slurry shall be Contractor designed mineral slurry that meets the range of values listed herein. The slurry mix design, including admixtures, shall be submitted to the Engineer for approval.

Rigid metal conduit, ground rod sleeves and related hardware, and end caps shall be galvanized steel conduit, and shall conform to Article M.15.09.

Ground rods shall be 5/8" in diameter by 12'-0" long copper clad steel. The copper cladding shall be a minimum thickness of 0.128". The ground clamp shall be a square-head bolt type, approved for direct burial.

Bare copper wire shall conform to Article M.15.13.

Topsoil shall conform to Article M.13.01.

Fertilizer shall conform to Article M.13.03.

Seed mixture shall conform to Article M.13.04.

Mulch shall conform to Article M.13.05.

Erosion control matting shall conform to Article M.13.09.

Construction Methods:

Subsurface Conditions for Bidding: For the purpose of bidding this item, the Contractor shall assume that the subsurface conditions for each foundation location consists of cohesionless medium dense granular soil (AASHTO A-1 or A-2) with cobbles present and a high groundwater table which requires the use of wet construction/concreting methods.

Subsurface Conditions for Foundation Design: As early as possible and prior to preparation of the foundation design, the Contractor **shall** obtain subsurface information necessary to design the foundations as required. The Contractor **shall**, at a minimum, perform one soil boring for **each** sign foundation location. The boring shall extend a minimum of 10 feet below the bottom of drilled shaft for foundations in soil, and 10 feet below the bottom of rock socket for foundations in rock. The subsurface data obtained in the exploration program at each site shall be used in the design of the foundation at that site. Use of the assumed subsurface condition (that was provided for the purpose of bidding), an assumed conservative subsurface condition or any other assumed subsurface condition shall not be allowed for use in the foundation design nor shall any assumed subsurface condition relieve the Contractor from their responsibility of obtaining a test boring at each foundation site. The subsurface investigation program should be prepared and executed in accordance with the most recent editions of the AASHTO Manual on Subsurface Investigations and ConnDOT Geotechnical Engineering Manual. The Contractor shall provide a full-time inspector to oversee the subsurface exploration program. The subsurface investigations and all related cost will not be measured for payment and shall be included in the cost of the foundation.

The Contractor shall review results of their subsurface investigation to determine if subsurface conditions for sign foundation locations differ materially from those assumed at the time of bid. Should the subsurface investigation(s) encounter conditions that differ materially, the Contractor shall notify the Engineer in writing prior to the submission of the working drawings and calculations. All matters regarding increased cost relating to agreed upon change in subsurface conditions will be handled per Section 1.04.04 – Differing Site Conditions.

Foundation Design Requirements: The design of drilled shaft traffic structure foundations shall conform to the requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals – latest edition, including the latest interim specifications, available prior to the advertising date of the contract, amended as follows:

- The foundation shall be designed for the soils and rock properties and parameters based on the subsurface conditions (character of the soil and rock, presence of ground water, etc.) in the location of, adjacent to and below the drilled shaft foundation excavation determined by the subsurface investigation.

- The specified compressive strength, f'_c , of the concrete used in the design shall be 4,000 psi. The concrete cover for reinforcing in a drilled shaft shall conform to the following:

Shaft Diameter	Minimum Cover
Less than or equal to 3'-0"	3"
Greater than 3'-0" and less than 5'-0"	4"
Greater than or equal to 5'-0"	6"

- The reinforcement shall be uncoated and conform to ASTM A615, Grade 60.
- The foundation shall be designed for the traffic structure support reactions for all group loads and load combinations. The reactions shall include axial, shear, flexural and torsional load effects. No reduction of the reactions or increase in the allowable stresses of the materials is permitted.
- For sign support foundations, the minimum drilled shaft diameter shall be 3'-0".
- The design of the drilled shaft foundation shall include embedment of the foundation in soil, the embedment of the foundation in rock or the embedment of the foundation partially in soil and partially in rock, as applicable.
- The design of the drilled shaft foundation embedment depth shall account for the slope of the finished grade.
- The minimum embedment for a drilled shaft foundation, excavated entirely in soil, shall be no less than 15'-0" below the finished grade at the low side of a sloping grade. The minimum embedment for a drilled shaft foundation, excavated entirely in rock shall be no less than 10'-0" below the finished grade at the low side of a sloping grade.
- For sign support foundations, the top of the drilled shaft pedestal shall project 6" to 12" above the level ground or 6" to 12" above the finished grade at the high side of a sloping grade.
- The embedment depth for a drilled shaft foundation, determined by the Brom's design method, shall have a minimum factor of safety of 3.25 applied to the shear and moment load effects. The factor of safety applied to the torsional load effect shall be no less than 1.3.
- The load factor method shall be used for the structural design of the drilled shaft foundation. The load factor applied to all loads, dead, wind and ice, and their effects, axial, shear, flexure and torsion, shall be no less than 1.6. The drilled

shaft may be designed in accordance with the load factor method presented in the latest edition of the Building Code Requirements for Reinforced Concrete”, ACI 318.

- The structural design of the drilled shaft shall be based on stress and strain compatibility in the circular drilled shaft cross section. The use of methods equating circular to rectangular drilled shaft cross sections is not permitted.
- The drilled shaft foundation shall be reinforced with longitudinal and transverse reinforcement. The area of longitudinal reinforcement should be no less than the sum of the reinforcement required for flexure and the longitudinal reinforcement required for torsion. The area of transverse reinforcement should be no less than the sum of the reinforcement required for shear and the transverse reinforcement required for torsion.
- In drilled shaft foundations for cantilever sign structures, the area of transverse reinforcement provided shall prevent the concrete breakout at the edge of the foundation due to the torsional load on the anchor bolt group. The area of transverse reinforcement provided shall be considered adequate to prevent this condition if the nominal torsional strength of the foundation is greater than the concrete breakout strength. The concrete breakout strength shall be determined in accordance with the latest edition of the Building Code Requirements for Reinforced Concrete”, ACI 318, Appendix D.
- The minimum number of longitudinal reinforcing bars shall be 16. The minimum size of longitudinal reinforcing bars shall be #8. The minimum area of longitudinal reinforcing bars shall be no less than 1% of the gross cross-sectional area of the shaft. The minimum clear distance between longitudinal reinforcing bars shall be no less than 5 times the maximum aggregate size or 5”, whichever is greater. The reinforcement shall extend full length of the drilled shaft foundation, including the pedestal. Splicing of the longitudinal reinforcement is not permitted.
- The drilled shaft foundation shall be transversely reinforced with spirals or circular, one piece, enclosed ties. The minimum size of the transverse reinforcement shall be #4. The maximum spacing/pitch of the transverse reinforcement shall be no more than 6”. The minimum spacing/pitch of the transverse reinforcement shall be no more than 4”. The maximum spacing/pitch of the transverse reinforcement in the top 2'-0” of the foundation shall be no more than 4”. The spiral reinforcement shall be terminated at the top and the bottom with 1 ½ turns of the reinforcing and a 135° standard hook. Spirals may be spliced with lap splices or mechanical connectors. For spirals, the minimum lap splice length shall be 1.7 times the tension development length (including modification factors) of the bar or 48 bar diameters, whichever is greater. For spirals, the mechanical connectors shall develop both in tension and compression

125% of the specified yield strength of the bar and conform to the latest edition of the AASHTO LRFD Bridge Design Specifications, including the latest interim specifications. For ties, the minimum lap splice length shall be no less than 1.7 times the tension development length (including modification factors) of the bar. Tie lap splices shall be alternated. The ends of the bars in lap splices shall be anchored with a 135° standard hook around longitudinal reinforcement.

- For sign support foundations, the top of the drilled shaft shall be designed with a square pedestal to facilitate the installation of the anchor bolts and rigid metal conduits. The plan dimensions of the pedestal shall equal the diameter of the drilled shaft. The top and sides of the pedestal shall be reinforced with a grillage of reinforcement. The minimum size reinforcement shall be #5. The minimum concrete cover shall be 3”
- The design of the foundation shall be coordinated with the traffic structure support to avoid conflicts between the embedded support anchorage and the foundation reinforcement.

Submittal Requirements for Foundations: Prior to excavating for the foundation, the Contractor shall submit working drawings and design computations for the foundation(s) at each sign support, **based on the reviewed sign structure cross-section**, to the Engineer for review in accordance with Article 1.05.02. The working drawings and design computations for foundations shall conform to working drawings for permanent construction. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and construction, including a copy of the certificate of insurance, shall be prepared and submitted for the foundation(s) at **each** support. **A single set of drawings with tabulated data for multiple foundation locations is not permitted.** The alphanumeric support identifier shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units. Each working drawing shall be sealed, signed and dated. The cover/first sheet for the computations shall be sealed, signed and dated.

The packaged set of working drawings and computations for the foundation(s) at each support shall be submitted in an individual file in electronic portable document format (.pdf) with appropriate bookmarks commenting enabled. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer – contact information should include name and address of design firm, name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of the **reviewed** cross-section
- results of subsurface investigation, including boring logs and geotechnical design recommendations
- foundation working drawings

- foundation design computations

The electronic portable document format (.pdf) working drawings shall be created on ANSI D (22" x 34") full scale (1" electronic file = 1" paper) sheets. (The purpose of creating the drawings on ANSI D sheets is so that the sheets may be printed/plotted at that size or smaller without loss of legibility.) Each drawing shall have a border and title block. Located in the lower right hand corner of the drawing adjacent to the title block, each drawing shall have a rectangular box, 2 1/4" wide x 1 3/4" high, for the reviewers stamp. On the ANSI D full scale sheets, the minimum text height and width shall be 1/8". All letter characters shall be uppercase. The electronic files for the design computations, procedures and other supporting data shall be created on ANSI A (8 1/2" x 11") letter sheets.

The working drawings shall include complete details of all foundation components. The drawings shall include, but not be limited to the following:

- the project number, town and support identification number
- reference to the design specifications, including interim specifications
- material specifications for all components
- embedment depths for foundation in soil, rock and a combination of soil and rock
- anchor bolt details, including dimensions, embedment and projection

The design computations shall include, but not be limited to the following:

- the project number, town and support identification number
- references to design specifications, including interim specifications, and the applicable code section and articles
- description/documentation for all computer programs used in the design
- drawings/models of the foundation with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- sign support reactions of all group loads and load combinations
- soil and rock design parameters
- computations demonstrating the geotechnical and structural capacity of the drilled shaft is adequate for all group load combinations

The Contractor shall submit the packaged set of working drawings and calculations to the project's "Engineer of Record". The project's "Engineer of Record" is identified in the signature block on the sign support structural contract plans. A copy of the transmittal shall be sent to the District Construction office administering the project.

The reviewed and stamped working drawings and calculations shall be sent by the reviewer, along with a recommendation regarding acceptance, to the District Construction office for review, comment and distribution. After the District Construction office has reviewed the working drawings and calculations, ensured all comments have been addressed and have found the submittal to be acceptable, in addition to distributing copies of the working drawings and calculations to the Contractor and District offices, a copy of each packaged set of working drawings and calculations shall be sent to the project's "Engineer of Record".

The Contractor shall make electronic copies of the stamped working drawings and calculations, of the format determined by the Engineer, and deliver as directed by the Engineer.

Foundation Construction: The Contractor performing the work described in this specification shall have installed drilled shafts of both diameter and length similar to those required for the traffic structures for a minimum of 3 years prior to the bid date for this project. The Contractor shall submit a list containing at least 3 projects completed in the last 3 years on which the Contractor has installed drilled shafts of a diameter and length similar to those shown on the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractors' participation on those projects. The Contractor shall provide a list identifying the on-site supervisor(s) and drill operator(s) for approval by the Engineer. The on-site supervisor(s) shall have a minimum 3 years experience in supervising the construction of drilled shafts of a diameter and length similar to those shown on the plans. The drill operator(s) shall have a minimum 1 year experience in drilling for the construction of drilled shafts of a diameter and length similar to those shown on the plans. The list shall contain a summary of each individual's experience. Should the Contractor elect to change personnel during construction of the shaft, the same approval process will need to be completed for the new personnel prior to them starting work on the project. The Contractor shall not be compensated for any delays resulting from their changing of personnel.

Prior to excavating for the foundation, the Contractor shall submit the following:

Reinforcing Steel Shop Drawings: Based on the accepted foundation design, the Contractor shall prepare and submit reinforcing steel shop drawings for each foundation in accordance with Subarticle 1.05.02. The drawings shall be reviewed and stamped by the foundation designer.

Concrete and Slurry Mix Designs: The Contractor shall submit to the Engineer at the District Construction office the concrete mix designs and the slurry mix design, including admixtures, for review.

Foundation Construction Procedure: The Contractor shall submit to the Engineer at the District Construction office a written foundation construction procedure outlining the equipment; drilling procedure for soil and rock, including how spoils will be handled; temporary casing placement and removal; slurry placement; reinforcement, anchor bolt and conduit placement; and concrete placement required for the drilled shaft foundation construction for review. The procedure should include contingencies for the various soil, rock and subsurface water conditions that may be encountered during the foundation construction. Also required in this submission are the following;

- list of proposed equipment to be used, including cranes, drills, augers, bailing buckets, final cleaning equipment, desanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, casing, etc.
- details of overall construction operation sequence and the sequence of shaft construction in bents or groups
- details of shaft excavation methods
- when the use of slurry is anticipated, details of the mix design and its suitability for the subsurface conditions at the construction site, mixing and storage methods, maintenance methods, and disposal procedures
- details of methods to clean the shaft excavation
- details of reinforcement placement, including support and centralization methods
- details of concrete mix design and test results of both a trial mix and a slump loss test. The tests shall be conducted by an approved testing laboratory using approved methods to demonstrate that the concrete meets slump loss requirements
- details of concrete placement, including proposed operational procedures for free fall, tremie or pumping methods, proposed concreting log form and computations for time duration of shaft pour estimates
- details of casing installation and removal methods
- details of methods for removal of obstructions. Obstructions the Contractor shall provide details of methods for removal include, but are not necessarily be limited to, boulders, concrete, riprap, steel, timber, etc.
- details and plan for dewatering

- details and plan for dust control if rock drilling is proposed
- details and plan for slurry containment

The Engineer will evaluate the foundation construction procedure for conformance with the plans, specifications and special provisions and will then notify the Contractor of any additional information required and/or changes necessary to meet the contract requirements. All procedural approvals given by the Engineer shall be subject to trial in the field and shall not relieve the Contractor of the responsibility to satisfactorily complete the work as detailed in the plans and specifications. The Contractor shall not commence construction of the drilled shafts until the Engineer has accepted the foundation construction procedure.

Excavations required for shafts shall be performed through whatever materials are encountered, to the dimensions and elevations in the working drawings or as ordered by the Engineer. The methods and equipment used shall be suitable for the intended purpose and materials encountered. Shaft excavation may be performed by combinations of augering, rotary drilling, down-the-hole hammer, reverse circulation drilling, clamming, scraping, or other means approved by the Engineer. Generally, either the dry method, wet method, or temporary casing method may be used, as necessary, to produce sound, durable concrete foundation shafts free of defects. The Contractor shall select and use the method that is needed to properly accomplish the work, as determined by site conditions and subject to the approval of the Engineer. The Contractor is responsible for maintaining the stability of the shaft excavation during all phases of construction.

The dry method consists of drilling the shaft excavation, removing accumulated water and loose material from the excavation, and placing the shaft concrete in a relatively dry excavation. The dry construction method shall be used only at sites where the groundwater table and site conditions are suitable to permit construction of the shaft in a relatively dry excavation, and where the sides and bottom of the shaft are stable and may be visually inspected prior to placing the concrete. The use of the dry construction method is permitted if less than one foot of water accumulates in the bottom of a hole without pumping over a one hour period, the excavation remains stable and any loose material and water can be removed prior to placement of concrete.

The wet construction method shall be used at sites where a dry excavation cannot be maintained for placement of the shaft concrete. Wet construction methods consist of using a mineral slurry to maintain stability of the hole perimeter while advancing the excavation to final depth, placing the reinforcing cage and shaft concrete. This procedure may require desanding and cleaning the slurry; final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump or other devices; and placing the shaft concrete with a tremie. Unless it is demonstrated to the satisfaction of the Engineer that the surface casing is not required, temporary surface casings shall be provided to aid shaft alignment and position, and to prevent sloughing of the top of the shaft excavation. Surface casing is defined as the amount of casing required from the ground surface to a point in the shaft excavation where sloughing of the surrounding soil does not occur.

The temporary casing construction method shall be used at all sites where the dry or wet construction methods are inappropriate. Temporary casing construction method consists of advancing the excavation through caving material by the wet method. Temporary casing may be installed by driving or vibratory procedures in advance of excavation to the lower limits of the caving material. When a nearly impervious formation is reached, a casing is placed in the hole and sealed in the nearly impervious formation. After the drilling fluid is removed from the casing, drilling may proceed as with the dry method except that the casing is withdrawn when the shaft concrete is placed. If seepage conditions prevent use of the dry method, excavation is completed using the wet method. Temporary casing may be installed by driving or vibratory procedures in advance of excavation to the lower limits of the caving material. Slurry may be omitted if the casing can be installed with only minor caving of the hole.

If the Engineer determines that the foundation material encountered during excavation is unsuitable or differs from that anticipated in the design of the shaft, or if rock is encountered at an unanticipated elevation, the Contractor's foundation designer shall determine if the foundation embedment should be revised from that shown on the working drawings. If rock is encountered, the Engineer shall be notified to inspect and determine the elevation of the top of competent rock. Any revisions to the foundation embedment during construction shall be reviewed by the Engineer.

Excavated materials which are removed from the shaft excavation and any drilled fluids used shall be disposed of by the Contractor as directed by the Engineer and in accordance with Section 1.10.

Casings shall be metal, smooth, clean, watertight, and of ample strength to withstand both handling and driving stresses and the pressure of both concrete and the surrounding earth materials. The outside diameter of casing shall not be less than the specified size of the shaft. Temporary casings shall be removed while the concrete remains workable (i.e., a slump of 4" or greater). Before the casing is withdrawn and while the casing is being withdrawn, a 5'-0" minimum head of fresh concrete in the casing shall be maintained so that all the fluid trapped behind the casing is displaced upward without contaminating the shaft concrete. The required minimum concrete head may have to be increased to counteract groundwater head outside the casing. Separation of the concrete by hammering or otherwise vibrating the casing, during withdrawal operations, shall be avoided. Casing extraction shall be at a slow, uniform rate with the pull in line with the shaft axis.

Slurry used in the drilling process shall be a mineral slurry. The slurry shall have both a mineral grain size that will remain in suspension and sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. The level of the slurry shall be maintained at a height sufficient to prevent caving of the hole.

The mineral slurry shall be premixed thoroughly with clean fresh water at a temperature above 41° F and adequate time allotted for hydration prior to introduction into the shaft excavation. The elevation of the slurry within the shaft foundation shall be maintained within 24” of the top casing and at least 48” above the existing water level during drilling and until the concrete placement is essentially complete. The slurry properties shall be maintained at all times, including non-working periods and stoppages. The slurry shall be circulated and agitated, continuously if necessary, to maintain the slurry properties and to prevent it from setting up in the shaft.

The Contractor, in the presence of the Engineer, shall perform control tests on the slurry to ensure that the density, viscosity, and pH fall within the acceptable limits tabulated below. The Contractor shall provide all equipment required to perform the tests. If desanding is required, sand content shall not exceed 4% (by volume) at any point in the shaft excavation as determined by the American Petroleum Institute sand content test.

Range of Values (at 68°F)

Property (Units)	Time of Slurry Introduction	Time of Concreting (in Hole)	Test Method
Density (pcf)	64.3 to 69.1	64.3 to 75.0	Density Balance
Viscosity (seconds per quart)	28 to 45	28 to 45	Marsh Cone
pH	8 to 11	8 to 11	pH paper or meter

The control tests to determine unit weight (density), viscosity, and pH values of the slurry shall be done during the shaft excavation to establish a consistent working pattern.

Prior to placing shaft concrete, the Contractor shall take slurry samples from the bottom and at intervals not exceeding 10’-0” for the full height of slurry. Any heavily contaminated slurry that has accumulated at the bottom of the shaft shall be eliminated. The mineral slurry shall be within specification requirements immediately before shaft concrete placement.

The hole shall be covered when left unattended.

After completing the shaft excavation, all loose material existing at the bottom of the hole shall be removed.

Prior to placing the reinforcement into the shaft, the Contractor, in the presence of the Engineer, shall determine the shaft dimensions, depth and alignment of the shaft. The concrete shaft shall not be out of plumb by more than ¼ inch per foot of depth. The Contractor shall provide all equipment necessary for checking the shaft excavation. The Engineer shall inspect the shaft and verify that it has been properly cleaned.

The reinforcing steel shall be fabricated and assembled in accordance with Article 6.02.03. All reinforcement shall be assembled with wire ties. Welding to assemble the reinforcement is not permitted.

Immediately after the shaft excavation has been inspected and approved by the Engineer and prior to placement of the concrete, the assembled reinforcing steel cage, including cage stiffener bars, spacers, centralizers, and other necessary appurtenances, shall be carefully placed into the shaft excavation as a unit. Dropping or forcing cages into the shaft will not be allowed. The reinforcing steel in the shaft shall be tied and supported so that the reinforcing steel will remain within allowable tolerances of its intended position until the concrete will support the reinforcing steel. When concrete is placed by tremie methods, temporary hold-down devices shall be used to prevent uplifting of the reinforcing steel cage during concrete placement. Concrete spacers or other approved noncorrosive spacing devices shall be used at sufficient intervals not exceeding 5'-0" along the shaft to insure concentric location of the cage within the shaft excavation. When the size of the longitudinal reinforcing steel is larger than a #8 bar, such spacing shall not exceed 10'-0". After placement of the reinforcing cage, the Engineer shall inspect the shaft to ensure that it has remained clean. If the inspection indicates that loose material has accumulated at the bottom of shaft excavation, the Contractor shall remove the reinforcing cage and reclean the shaft.

Concrete shall be placed in the shaft excavation as soon as possible, but no more than 4 hours after completion of excavation and cleaning of the bottom of the excavation, and no more than 2 hours after placement of the reinforcing steel cage. Concrete shall be placed in a continuous operation to the top of the shaft. The concrete level shall be horizontal during the pouring operations. Concrete placement shall continue after the shaft is full until good quality concrete is evident at the top of the shaft. The elapsed time from the beginning of concrete placement in the shaft to the completion of placement shall not exceed 2 hours.

In dry construction, concrete shall be placed in a single continuous operation with the flow of concrete down the center of the shaft excavation so as to consolidate the concrete on impact. During placement operations, the concrete is not permitted to hit the reinforcing steel. A dropchute, consisting of a hopper and flexible hose, may be used to direct the concrete down the center of the foundation and prevent the concrete from hitting the reinforcing steel. Accumulated water shall be removed before placing the concrete. At the time of concrete placement, no more than 2" of water may exist at the bottom of the excavation and loose sediment no more than 1/2" over one-half the base is acceptable.

In wet (slurry) construction, concrete to be placed by the tremie method, where the concrete displaces the slurry from bottom of the excavation to the top. The concrete shall be placed through a top metal hopper and into a rigid leak-proof elephant trunk tremie tube, sufficiently large enough to permit free flow of concrete. The tremie tube shall be positioned so that it can be removed without disturbing the reinforcing. Initially, the discharge end of the tremie tube shall be sealed closed (plugged) to prevent slurry from entering the tube after it is placed in the excavation and before the tube is filled with concrete. After concrete placement has started, the tremie tube shall be kept full of concrete to the bottom of the hopper to maintain a positive

concrete head. The flow of concrete shall be induced by slightly raising the discharge end of the tube, always keeping the tube end in the deposited concrete. No horizontal movement of the tremie tube will be permitted.

The shaft concrete shall be vibrated or rodded to a depth of 5'-0" below the ground surface except where soft uncased soil or slurry remaining in the excavation will possibly mix with the concrete.

Exposed concrete shall be cured and finished in accordance with Subarticle 6.01.03-7, 9 and 10.

Anchor bolt assemblies shall be embedded in the concrete as shown on the working drawings. A template plate shall be used to hold the anchor bolt assemblies, conduits and ground rod sleeve in the correct position. The anchor bolts shall be installed plumb.

All conduit ends terminating below grade shall be capped with a malleable iron caps. All above-grade conduit ends shall be terminated with an insulated bonding bushing with tinned insert.

Ground rod and ground wire shall be installed as shown on the plans.

No construction operations that would cause soil movement adjacent to the shaft, other than mild vibration, shall be conducted for at least 48 hours after shaft concrete has been placed.

The top of the foundations shall be backfilled and the adjacent disturbed ground surfaces restored to match the surrounding area after the concrete has cured and the forms are removed. Placement of topsoil shall conform to Articles 9.44.01 and 9.44.03. Turf establishment shall conform to Article 9.50.03.

After the foundation has cured, the Contractor shall obtain the as-built top of foundation elevations based on a field survey.

The traffic structures shall not be erected on the foundation until both the pedestal concrete and the shaft concrete has attained a compressive strength, f'_c , greater than or equal to 4,000 psi.

Method of Measurement: This work will be measured for payment by the number of foundation units, each completely installed and accepted. One foundation unit is required to support each cantilever sign support. Two foundation units are required to support each bridge sign support.

Basis of Payment: The work will be paid for at the contract unit price each for "Drilled Shaft Traffic Structure Foundation," completed and accepted in place, which price shall include all equipment, materials, tools and labor incidental to the design, fabrication, construction and disposal of drilling spoils, of the foundations at the locations specified on the plans.

No additional payment will be made for the Contractor to test the slurry when it is used to construct a drilled shaft foundation. No additional payment will be made for subsurface investigations performed by the Contractor.

The removal of existing roadside barrier systems, installation and removal of temporary roadside barrier systems and resetting existing roadside barrier systems will not be paid for separately, but will be included as part of the work.

The temporary support, protection and restoration of utilities (if necessary), including existing underground wiring, conduits, drainage structures, pipes and underdrain systems within the excavation limits will not be paid for separately, but will be included as part of the work.

Backfilling and restoration of adjacent ground surfaces (pavement, slope protection, topsoil & seed, etc.) in all areas disturbed by the work will not be paid for separately, but will be included as part of the work. The Engineer will determine the type, thickness and horizontal limits of the surface treatments to be restored.

The installation of new or upgraded permanent roadside barrier systems, if required, will not be paid for as part of this work, but will be paid for under separate items.

No additional payment will be made for dewatering, slurry containment, dust control, and erosion and sedimentation controls.

ITEM #1203902A - STRUCTURE MOUNTED SIGN SUPPORT

Description:

Work under this item shall consist of fabricating, galvanizing, transporting and erecting a structural steel sign supports at the location(s) indicated, as shown on the plans and in accordance with these specifications. Included in this item shall be all work and materials incidental to the installation of the structure mounted sign support.

Materials:

A709, Grade 50T2. The tubular members shall conform to ASTM A500, Grade B. All steel shall be galvanized after fabrication in accordance with the requirements of ASTM A123. No welding shall be performed after galvanizing.

Anchor bolts shall conform to ASTM A307 (Grade 36) and shall be hot dip galvanized after fabrication in accordance with the requirements of ASTM A153. Length of the bolts, and the proper amount of threading shall be carefully determined by the Contractor to fit the proposed conditions. Any bolts whose threading is insufficient to achieve complete engagement of the nuts shall be rejected. The use of plate washers to compensate for insufficient threading shall not be allowed. The threaded ends of the bolts shall be supplied with 1 washer and 2 nuts.

All high strength bolts shall conform to ASTM A325, Type 1. Nuts shall conform to ASTM A563, Grade DH. Circular, flat, hardened steel washers shall conform to ASTM F436. Washers may be clipped if necessary to clear fillet welds. The bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or ASTM B695, Grade 50. The nuts shall be overtapped to the minimum amount required for the bolt assembly and all surfaces of the nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. The high strength bolts shall conform to the requirements of Subarticle M.06.02-3.

Compressible-washer-type direct tension indicators shall conform to ASTM F959, Type 325, and shall be galvanized in accordance with ASTM B695, Class 50.

Bolting materials are required to conform to Subarticle M.06.02-3 in the Supplemental Specifications, including all requirements for Certified Test Reports and Materials Certificates.

Zinc paint for repairing damaged galvanizing and for touch-up repairs shall conform to the requirements of ASTM A780.

Non-shrink, non-staining grout, when required by the Plans, shall conform to Form 816, Subarticle M.03.01-12.

Construction Methods:

The Contractor shall field measure/verify/locate the following items and provide the information to the Engineer prior to the preparation of shop drawings and the start of fabrication:

- Locations of any steel stiffener plates, diaphragms, or other element, attached to the web of the fascia girder, that are near area of work. Nearby elements may cause conflicts with the installation procedures.
- The exact angle (vertical and horizontal) at the back of the concrete parapet at the attachment locations. The angles are required for proper fabrication of the beveled plates.
- The exact angle (vertical and horizontal) between the bottom support members and fascia beam webs. The angles are required for proper fabrication of the support members.
- The exact angle (vertical and horizontal) between the top support members and face of parapet at each location. The angles are required for proper fabrication of the support members.
- Confirmation that the proposed core drilling locations do not conflict with existing Rigid Metal Conduit in the parapet, nor conflict with metal bridge railing anchorages.

Shop Drawings: Before fabrication, and after verification of field dimensions, the Contractor shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.02. These drawings shall include but not be limited to the following information:

- Field-verified dimensions, angles, and all hole locations.
- Details and dimensions of all components and hardware for the sign support, including the locations and sizes of all welds.
- Material lists and designations

Shop fabrication of the sign support shall conform to the requirements of Article 6.03.03. The steel fabricator shall be AISC certified for the fabrication of Simple Steel Bridges (SBr). The sign supports shall be located, positioned, and attached to the existing bridge as shown on the plans or as directed by the Engineer.

All welding details, procedures and nondestructive testing shall conform to the requirements of the AWS D1.1 Structural Welding Code - Steel.

Drilling Methods (thru Existing Concrete Parapet):

1. The Contractor shall core drill holes horizontally through the concrete parapet at the locations shown on the plans or as ordered by the Engineer. Core drilling shall not spall, crack, or otherwise damage concrete to remain. Conflicting steel reinforcement shall be drilled through if necessary. Existing Rigid Metal Conduits shall not be drilled through.
2. The Contractor shall submit the following to the Engineer for approval: type of drill, diameter of bit, and method of drilling holes through the concrete posts.

Steel webs shall be drilled through where required by the Plans. Drilling shall be done by magnetic drills.

The existing metal bridge rail, mounted to the top of the existing parapet, shall not be removed at any time during the work operations.

The Contractor shall touch up the field-drilled holes with zinc paint in accordance with ASTM A780 prior to the installation of the bolts. Silicone caulk shall be applied to the top and side edges of the steel plates at the interface with the girder web.

All connections made with the anchor bolts shall be made to a snug tight condition, followed by installation of a second nut, to prevent loosening of the first nut.

All connections that are made with high strength bolts shall conform to the requirements of "Section 6.03.03-4(f) – High Strength Bolted Connections". After field drilling of holes, the faying surfaces shall be cleaned of all deleterious materials, including cutting oils. The installation of the load indicator washers, if used, shall be in accordance with the manufacturer's specifications.

All connections, whether with anchor bolts or high strength bolts, shall be made such that there are no gaps present in the final condition between steel-steel and steel-concrete faying surfaces. Any such gaps will result in rejection of the structure mounted sign support. A rejection of the structure mounted support will require remedial actions by the Contractor, at the Contractor's expense, until a gap free condition is achieved that is acceptable to the Engineer. Such remedial action may include, but is not limited to, removal and reinstallation of the sign support until a no gap condition is achieved.

The Contractor shall take all necessary precautions to prevent debris from falling to the roadway below or to the adjacent lanes carried by the bridge.

Method of Measurement:

The work will be measured for payment by the number of structure mounted sign supports furnished, erected and accepted.

Basis of Payment:

The completed and accepted sign support, erected on the structure at the location(s) specified, will be paid for at the contract unit price each for "Structure Mounted Sign Support". The unit price shall include obtaining all field measurements, preparation of shop drawings, furnishing, fabricating, galvanizing, transporting and erecting the sign support, core drilling through concrete parapets, and all connection hardware including anchor bolts, high strength bolts, nuts, washers, beveled plates, anchorage plates, and all other materials, equipment, tools, and labor incidental thereto.

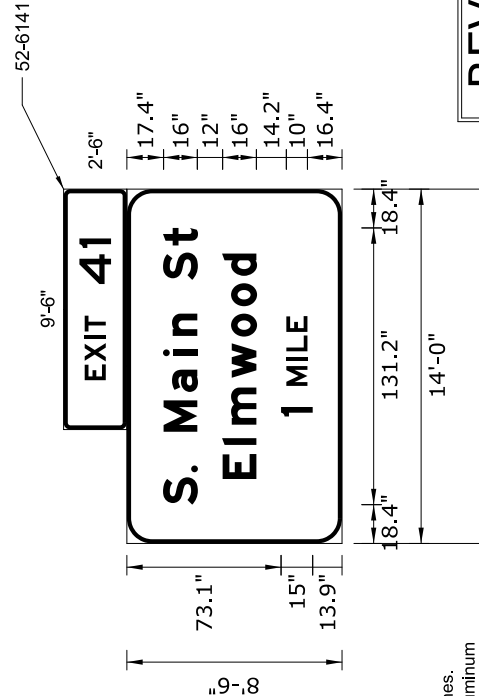
<u>Pay Item</u>	<u>Pay Unit</u>
Structure Mounted Sign Support	ea.

ITEM #1207039A – SIGN FACE - EXTRUDED ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

Article 12.07.01 – Description is revised as follows: Sign Face – Extruded Aluminum is supplemented with the sign details that follow.

Pay Item	Pay Unit
Sign Face - Extruded Aluminum (Type IX Retroreflective Sheeting)	S.F.

SIGN DETAIL
1:75



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21577
Location : West Hartford Route I-84 E.B. Mileage : 56.03
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_155_56.03_A
SIGN PANEL	119.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	142.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

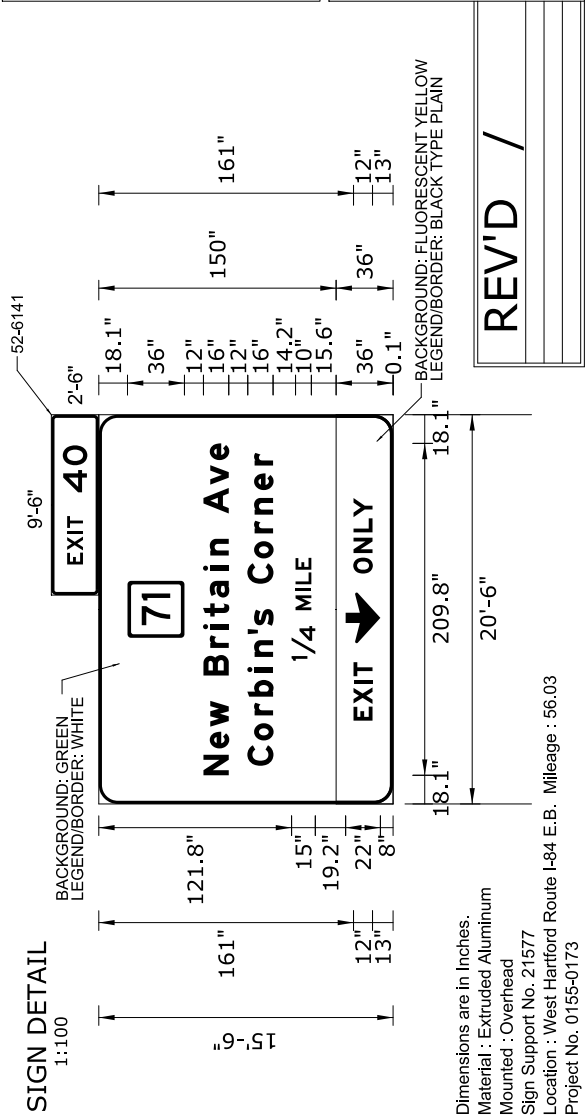
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

	S			t			n			d			E			L		
LENGTH	SERIES/SIZE																	
18.4	33.8	37	53	71.8	88.8	98.4	109	125	141.3									
30.6	46.7	56.3	78.6	98.1	112.5	126.9												
60.2	74.7	86.7	91.1	100.3														
EM 2000 16/12																		
EM 2000 16/12																		
E 2000 15,10																		

SIGN DETAIL
1:100



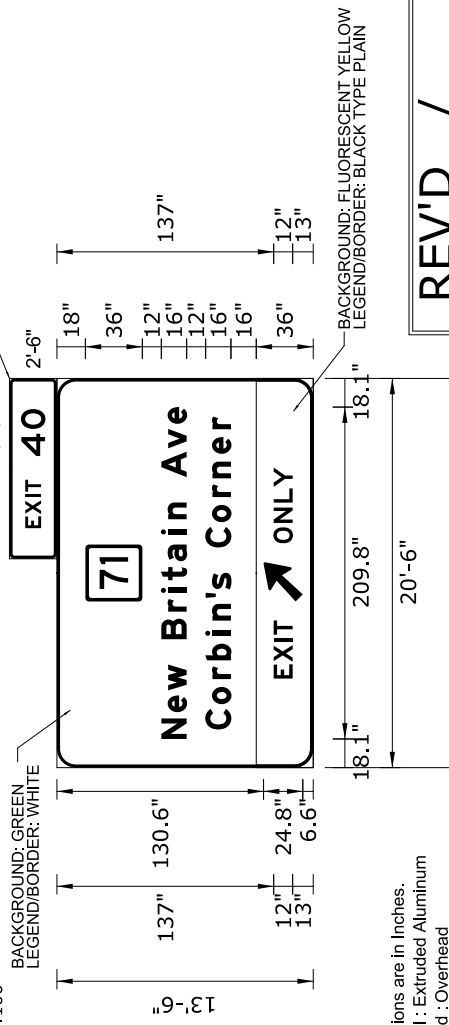
SIGN NUMBER	084E_155_56.03_B
SIGN PANEL	317.75 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	341.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	105	131.9	36	36
AR00WN	0	101.6	8	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)													LENGTH	SERIES/SIZE		
N	e	w	B	r	i	t	a	i	n	A	v	e		EM	2000	
18.1	35.1	48.8	65.2	81.2	98.6	110.4	118.4	130.4	147.4	157	167.6	183.6	201.8	217.3	209.8	16/12
C	o	r	b	i	n	'	s	C	o	r	e	r		EM	2000	
24.1	40.1	56	67.8	83.3	92.9	107.3	112.6	123.2	139.2	155.2	171	182.8	198.4	213.9	197.8	16/12
1/4	M	I	L	E											E	2000
90.5	122.4	134.4	138.8	148											65.1	15,10
E	X	I	T												EM	2000
52.6	63.2	76.2	80.7												37	12
O	N	L	Y												EM	2000
145.6	158.6	171.6	181.2												47.8	12

SIGN DETAIL
1:100



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21578
Location : West Hartford Route I-84 E.B. Mileage : 56.23
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

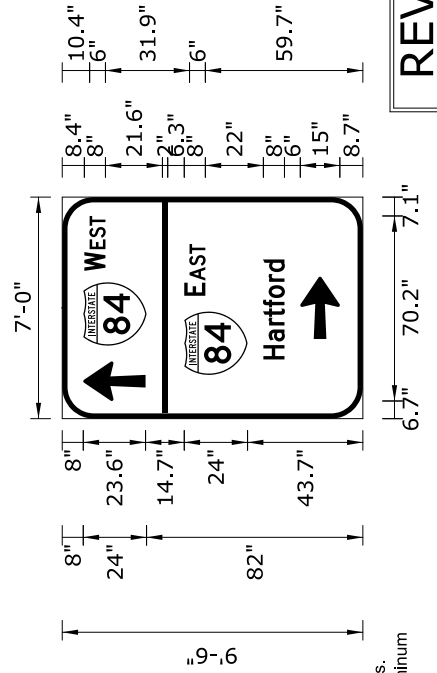
SIGN NUMBER	084E_155_56.23_A
SIGN PANEL	276.75 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	300.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	105	108	36	36
AR_Type A	315	105	6.6	20	31.5

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE	
N	e	w	b	i	n	r	i	t	a	i	n	A	v	e		EM 2000
18.1	35.1	48.8	65.2	81.2	98.6	110.4	118.4	130.4	147.4	157	167.6	183.6	201.8	217.3	209.8	16/12
C	o	r	b	i	n	'	s		C	o	r	n	e	r		EM 2000
24.1	40.1	56	67.8	83.3	92.9	107.3	112.6	123.2	139.2	155.2	171	182.8	198.4	213.9	197.8	16/12
E	X	I	T													E 2000
56.3	67	79.8	84												36.7	12
O	N	L	Y													E 2000
141.8	154.7	167.5	177.5												47.9	12

SIGN DETAIL
1:60



Dimensions are in Inches.

Material: Extruded Aluminum
Mounted: Ground

Sign Support No. N/A

Location: West Hartford Route I-84 E.B. Exit 40 Ramp 105

Project No. 155-173

Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

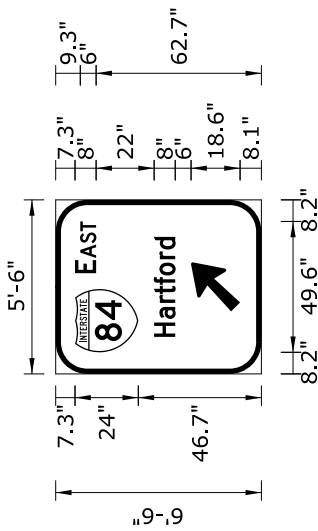
SIGN NUMBER	084E_155_EX40_R105_A
SIGN PANEL	66.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	66.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	0	6.7	82.4	15	23.6
M1.1	0	27.7	82	24	24
M1.1	0	16.6	43.7	24	24
AR_Type A	270	30.2	8.7	15	23.6

PLOTTED : 2/7/2019

			LETTER POSITIONS (X)		LENGTH		SERIES/SIZE	
W	E	S	T			D	2000	
56	64.3	68.6	73.1			20.8	8.6	
E	A	S	T				D 2000	
46.6	52.4	57.9	62.5			19.6	8.6	
H	a	r	t	f	o	r	d	D 2000
22.5	29.3	35.3	38.6	42.2	45.7	51.9	55.6	37.9 8/6

SIGN DETAIL
1:60



Dimensions are in inches.

Material : Extruded Aluminum

Mounted : Ground

Sign Support No. N/A

Location : West Hartford Route I-84 E.B. Exit 40 Ramp 105

Project No. 155-173

Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

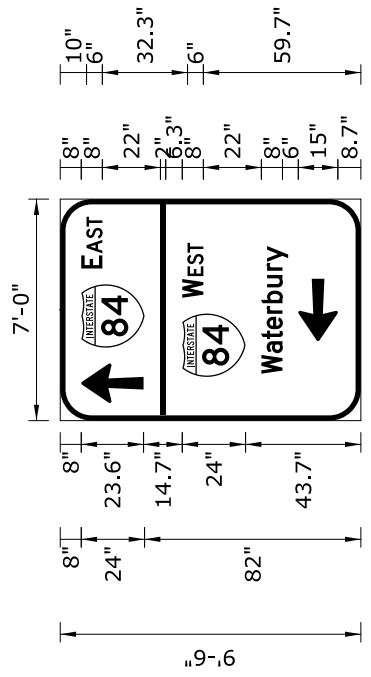
SIGN NUMBER	084E_155_EX40_R105_B
SIGN PANEL	35.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	35.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	46.7	24	24
AR_Type A	315	23.7	8.1	15	23.6

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
E	A S T		D 2000
38.2	44 49.5 54.1	19.6	8,6
H	a r t f o r d		D 2000
14	20.8 26.9 30.2 33.8 37.3 43.5 47.2	37.9	8/6

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : West Hartford Route I-84 E.B. Exit 40 Ramp 105
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

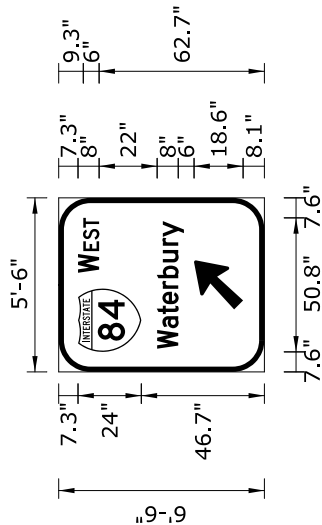
SIGN NUMBER	084E_155_EX40_R105_C
SIGN PANEL	66.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	66.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	0	6.7	82.4	15	23.6
M1.1	0	27.7	82	24	24
M1.1	0	16.6	43.7	24	24
AR_Type A	270	30.2	8.7	15	23.6

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
E	A	S	T		D 2000
57.7	63.5	69	73.6	19.6	8,6
W	E	S	T		D 2000
46.6	54.8	59.1	63.7	20.8	8,6
W	a	t	e	r	D 2000
17.8	25.6	30.9	34.7	40.5	44.5
				50.5	56.8
				60.2	

SIGN DETAIL
1:60



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : West Hartford Route I-84 W.B. Exit 40 Ramp 102
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_155_EX40_R102_A
SIGN PANEL	35.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	35.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

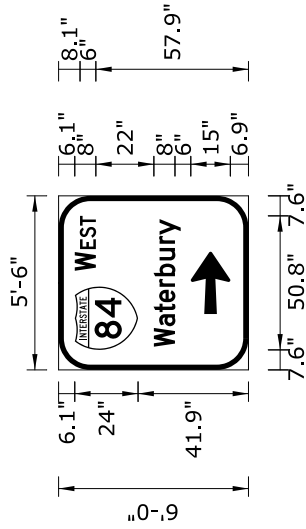
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	7.6	46.7	24	24
AR_Type A	315	23.7	8.1	15	23.6

PLOTTED : 2/7/2019

W	E	S	T	LENGTH		SERIES/SIZE
					D	
37.6	45.8	50.1	54.7	20.8	8.6	D 2000
8.8	16.6	21.9	25.7	48.4	8/6	D 2000

LETTER POSITIONS (X)

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : West Hartford Route I-84 W.B. Exit 40 Ramp 102
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_155_EX40_R102_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	7.6	41.9	24	24
AR_Type A	270	21.2	6.9	15	23.6

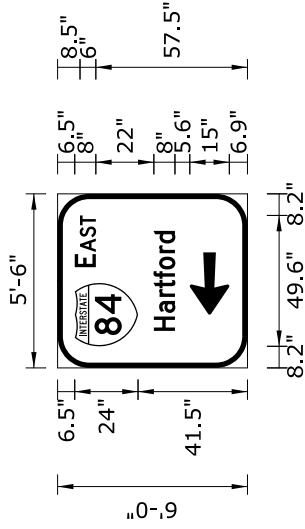
PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE	
W	E S T			D	
37.6	45.8 50.1 54.7		20.8 8.6	D	2000
W	a t e r	b u r y		D	2000
8.8	16.6 21.9 25.7 31.5 35.5 41.5 47.8 51.2		48.4 8/6		

LETTER POSITIONS (X)

SIGN DETAIL

1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : West Hartford Route I-84 E.B. Exit 41 Ramp 108
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

SIGN NUMBER	084E_155_EX41_R108_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

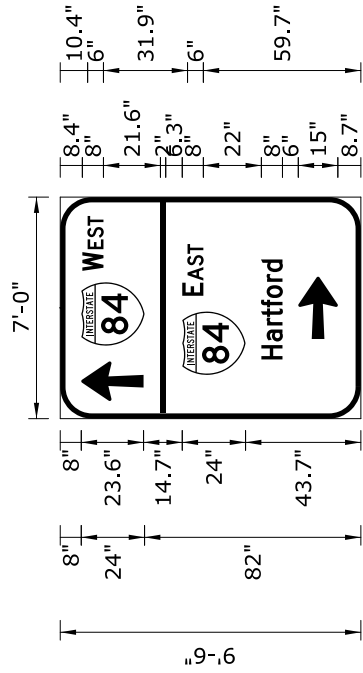
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	41.5	24	24
AR_Type A	270	20.2	6.9	15	23.6

LETTER POSITIONS (X)

		LENGTH	WIDTH	HEIGHT	SERIES/SIZE
E	A	49.5	54.1		D 2000
	38.2	44		19.6	8,6
H	a	26.9	30.2		D 2000
	14	20.8	30.2	33.8	37.3
					43.5
					47.2

SIGN DETAIL

1:60



Dimensions are in Inches.

Material: Extruded Aluminum

Mounted: Ground

Sign Support No. N/A

Location: West Hartford Route I-84 E.B. Exit 41 Ramp 108

Project No. 155-173

Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	084E_155_EX41_R108_B
SIGN PANEL	66.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	66.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	0	6.7	82.4	15	23.6
M1.1	0	27.7	82	24	24
M1.1	0	16.6	43.7	24	24
AR_Type A	270	30.2	8.7	15	23.6

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
W	E S T		D 2000
56	64.3 68.6 73.1	20.8	8,6
E	A S T		D 2000
46.6	52.4 57.9 62.5	19.6	8,6
H	a r t f o r d		D 2000
22.5	29.3 35.3 38.6 42.2 45.7 51.9 55.6	37.9	8/6

SIGN DETAIL

1:60

7'-0"
5'-9.6"

Dimensions are in inches.
Material: Extruded Aluminum
Mounted: Ground
Sign Support No. N/A
Location: West Hartford Route I-84 W.B. Exit 40 Ramp 106
Project No. 155-173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

SIGN NUMBER	084W_155_EX41_R106_B		
SIGN PANEL	66.5 Sq.Ft.		
EXIT CROWN	-		
TOTAL AREA	66.5 Sq.Ft.		
BDR INSET/WIDTH	0" / 2"		
CORNER RADIUS	12"		
BACKGROUND	TYPE:	IX	
LEGEND/BORDER	COLOR:	Green	
	TYPE:	IX	
	COLOR:	White/White	

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	0	6.7	82.4	15	23.6
M1.1	0	27.7	82	24	24
M1.1	0	16.6	43.7	24	24
AR_Type A	270	30.2	8.7	15	23.6

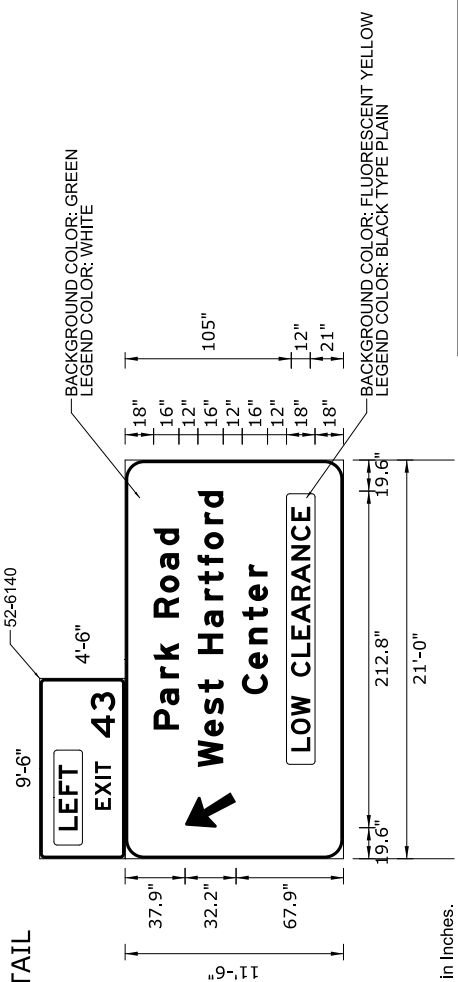
REV'D /

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

	LENGTH		SERIES/SIZE
E	A	S T	D 2000
57.7	63.5	69 73.6	19.6 8,6
W	E	S T	D 2000
46.6	54.8	59.1 63.7	20.8 8,6
W	a	t e r b u r y	D 2000
17.8	25.6	30.9 34.7 40.5 44.5 50.5 56.8 60.2	48.4 8/6

SIGN DETAIL
1:100



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21584
 Location : West Hartford Route I-84 E. B. Mileage : 57.84
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

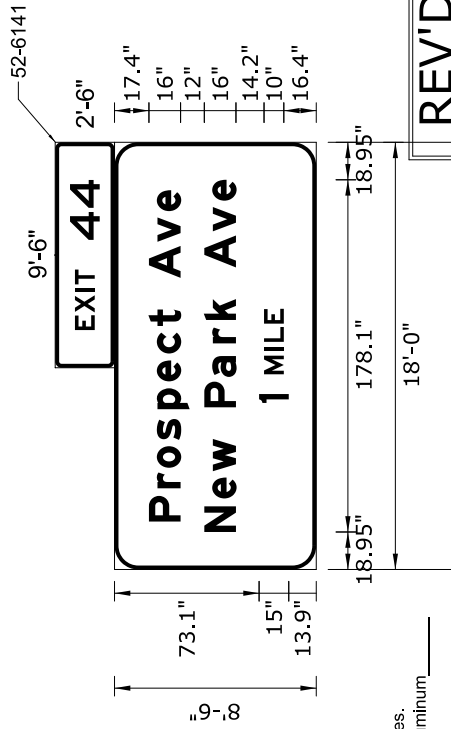
PLOTTED : 2/7/2019

SIGN NUMBER	084E_155_57.84_A
SIGN PANEL	241.5 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	284.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	19.6	67.9	22.2	35

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE							
P	a	r	k	R	o	a	d		EM 2000					
81.7	97	114	125.8	136.4	152.4	168.2	182.6	127	16/12					
W	e	s	t	H	a	r	t	f	o	r	d		EM 2000	
58	77.3	91.1	105	113.3	129.3	146.3	163.3	173.5	185.3	195.6	211.4	221.8	174.4	16/12
C	e	n	t	e	r									EM 2000
104	120	135.5	150.9	162.9	178.4								82.4	16/12
L	O	W		C	L	E	A	R	A	N	C	E		E 2000
67.9	78.6	90.3	103.1	115.1	127.5	138.6	148.9	163.2	174.2	188.5	201	213.5	154.6	12

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded_Aluminum
Mounted : Overhead
Sign Support No. 21585
Location : West Hartford Route I-84 E.B. Mileage : 57.97
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

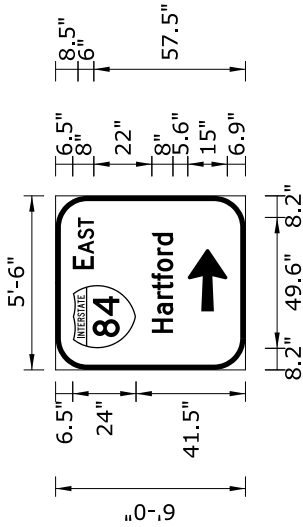
SIGN NUMBER	084E_155_57.97_A
SIGN PANEL	153.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	176.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)											LENGTH	SERIES/SIZE	
P	r	o	s	p	e	c	t	A	v	e		EM 2000	
24.2	41	51.4	65.5	81	95.1	109.2	123.1	131.4	147.4	165.7	181.2	167.5	16/12
N	e	w		P	a	r	k	A	v	e		EM 2000	
19	35.9	49.7	66	82	97.4	114.3	126.2	136.7	152.7	171	186.5	178.1	16/12
I	M	I	L	E									E 2000
84.2	98.7	110.7	115.1	124.3								47.6	15,10

SIGN DETAIL
1:60



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : West Hartford Route I-84 E.B. Exit 42 Ramp 203
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

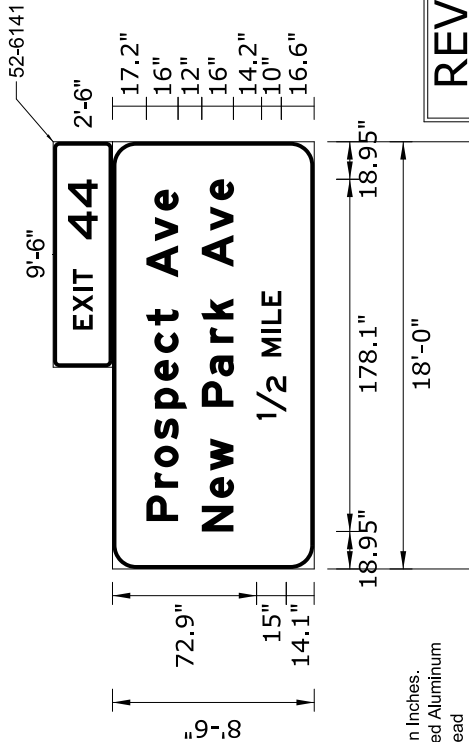
SIGN NUMBER	084E_155_EX42_R203_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	41.5	24	24
AR_Type A	270	22.2	6.9	15	23.6

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE
		LETTER POSITIONS (X)		
E	A	S	T	D 2000
38.2	44	49.5	54.1	19.6 8.6
H	a	r	t	D 2000
14	20.8	26.9	30.2	37.9 8/6

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21586
 Location : West Hartford Route I-84 E.B. Mileage : 58.52
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

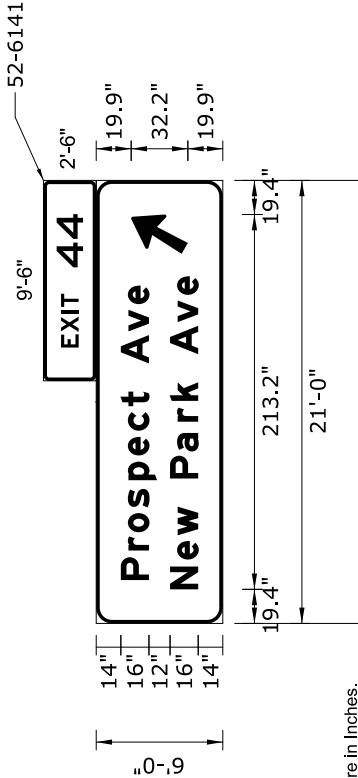
SIGN NUMBER	084E_155_58.52_A
SIGN PANEL	153.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	176.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)								LENGTH		SERIES/SIZE	
E	X	I	T	4	4	4	4					E	2000
19.1	28	38.7	42.2	64.7	80.9					75.9	10.15		
P	r	o	s	p	e	c	t	A	v	e			EM 2000
24.2	41	51.4	65.5	81	95.1	109.2	123.1	131.4	147.4	165.7	181.2	167.5	16/12
N	e	w		P	a	r	k	A	v	e			EM 2000
19	35.9	49.7	66	82	97.4	114.3	126.2	136.7	152.7	171	186.5	178.1	16/12
1/2	M	I	L	E									E 2000
75.5	107.4	119.4	123.8	133								65.1	15,10

SIGN DETAIL
1:90



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 22077
Location : West Hartford Route I-84 E.B. Mileage : 58.96
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

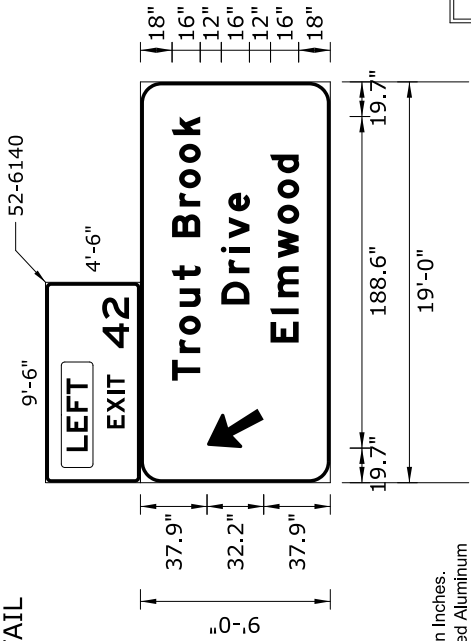
SIGN NUMBER	084E_155_58.96_A
SIGN PANEL	126.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	149.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
A1_Type A	330	210.3	19.9	22.2	35

LETTER POSITIONS (X)

		LETTER POSITIONS (X)													LENGTH	SERIES/SIZE
P	r	o	s	p	e	c	t	A	v	e						
24.7	41.5	51.9	65.9	81.5	95.5	109.6	123.5	131.9	147.9	166.1	181.6				167.5	EM 2000 16/12
N	e	w		P	a	r	k	A	v	e						
19.4	36.3	50.1	66.4	82.4	97.8	114.7	126.6	137.1	153.1	171.4	186.9				178.1	EM 2000 16/12

SIGN DETAIL
1:90



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21680
Location : West Hartford Route I-84 W.B. Mileage : 58.12
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

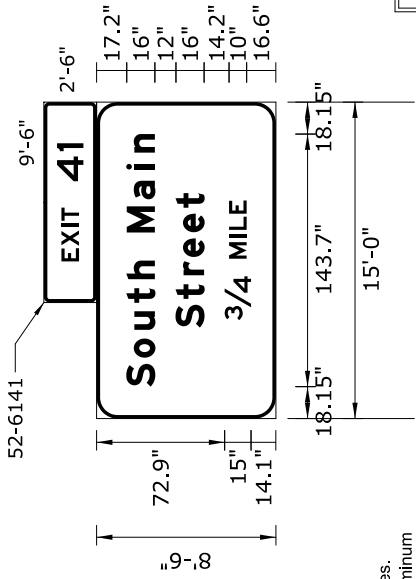
SIGN NUMBER	084W_155_58.12_A
SIGN PANEL	171.0 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	213.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	19.7	37.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE	
T	r	o	u	t	B	r	o	o	k		EM 2000	
58.1	73.7	84.1	100	115.3	123.7	139.7	157.1	167.5	181.9	197.7	150.2	16/12
D	r	i	v	e								EM 2000
101.4	119.2	131	138.9	154.4							63.5	16/12
E	l	m	w	o	d							EM 2000
79.7	95.9	105.5	127.7	147.3	161.7	176.1					106.9	16/12

SIGN DETAIL
1:90



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21680
 Location : West Hartford Route I-84 W.B. Mileage : 58.12
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

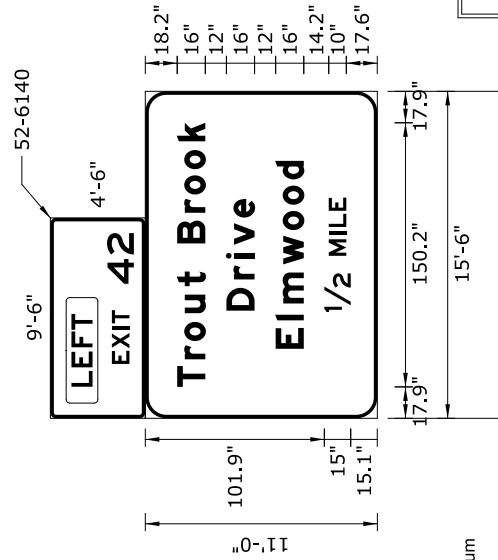
SIGN NUMBER	084W_155_58.12_B
SIGN PANEL	127.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	151.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)											LENGTH	SERIES/SIZE	
S	o	u	r	e	t	h	M	a	i	n		EM	2000
18.2	34.6	50.5	65.8	79.3	89.8	105.8	124.7	141.7	151.3		143.7	16/12	
S	t	r	e	e	t							EM	2000
51.8	68.1	81.5	91.9	106	119.9						76.5	16/12	
3/4	M	I	L	E								E	2000
56	90.9	102.9	107.3	116.5							68.1	15,10	

SIGN DETAIL
1:90



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21678
Location : West Hartford Route I-84 W.B. Mileage : 58.52
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

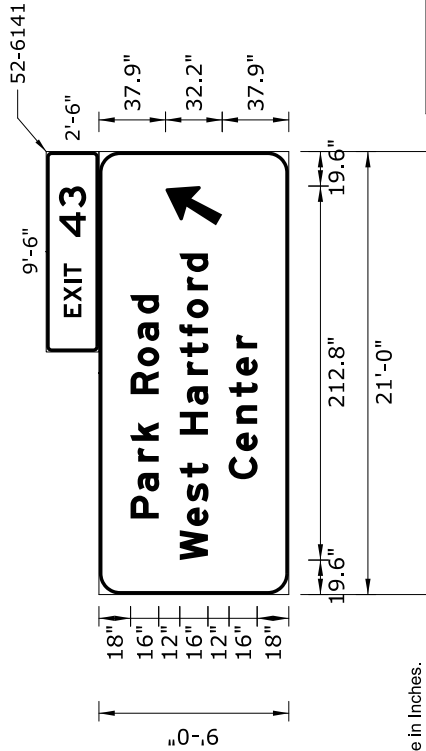
SIGN NUMBER	084W_155_58.52_A
SIGN PANEL	170.5 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	213.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

			LETTER POSITIONS (X)										LENGTH		SERIES/SIZE		
T	r	o	u	t	B	r	o	o	k								
17.9	33.6	44	59.8	75.2	83.5	99.5	116.9	127.3	141.7	157.6			150.2	16/12	EM	2000	
D	r	i	v	e													
61.2	79	90.8	98.7	114.2										63.5	16/12	EM	2000
E	l	m	w	o	d												
39.6	55.7	65.3	87.6	107.1	121.5	135.9							106.9	16/12	EM	2000	
1/2	M	I	L	E													
60.5	92.4	104.4	108.8	118										65.1	15,10	E	2000

SIGN DETAIL
1:90



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21678
 Location : West Hartford Route I-84 W.B. Mileage : 58.52
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_155_58.52_B
SIGN PANEL	21'-0" x 9'-0"
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	189.0 Sq.Ft.
BDR. INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	210	37.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
P	a r k	87.5	98
43.3	58.7	75.6	87.5
114	129.9	144.3	159.8
W	e s t	66.7	75
19.6	39	52.7	66.7
91	107.9	124.9	135.1
147	157.2	173.1	183.5
C	e n t e r	112.5	124.5
65.6	81.6	97.1	112.5
140	124.5	140	140
EM	2000	127	16/12
EM	2000	174.4	16/12
EM	2000	82.4	16/12

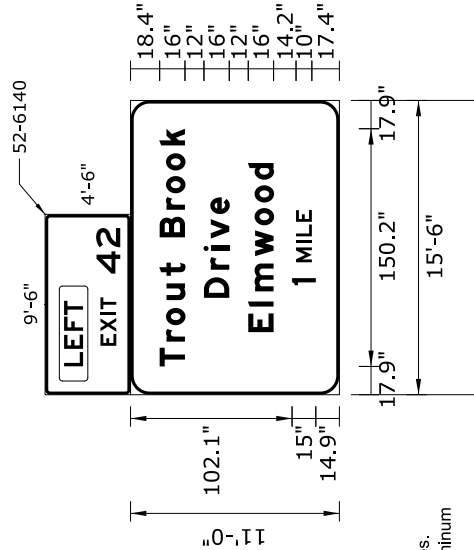
SIGN NUMBER	084W_155_58.96_A
SIGN PANEL	170.5 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	213.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

REV'D /

PLOTTED : 2/7/2019

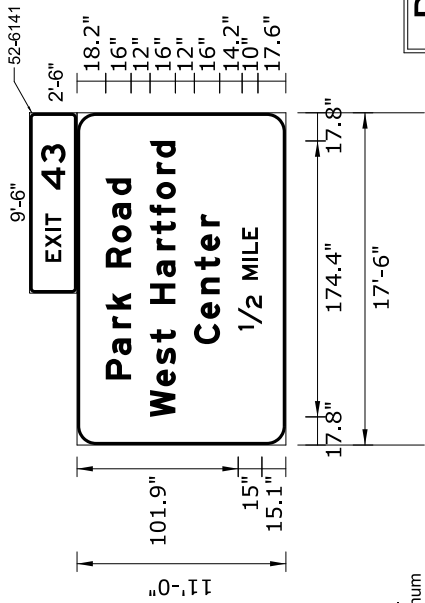
SIGN DETAIL
1:100



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 22078
 Location : West Hartford Route I-84 W.B. Mileage : 58.96
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE				
T	r	o	u	t	B	r	o	o	k	EM 2000
17.9	33.6	44	59.8	75.2	83.5	99.5	116.9	127.3	141.7	157.6
D	r	i	v	e						EM 2000
61.2	79	90.8	98.7	114.2						63.5 16/12
E	l	m	w	o	o	d				EM 2000
39.6	55.7	65.3	87.6	107.1	121.5	135.9				106.9 16/12
I	M	I	L	E						E 2000
69.2	83.7	95.7	100.1	109.3						47.6 15,10

SIGN DETAIL
1:100



Dimensions are in inches.
Material: Extruded Aluminum
Mounted: Overhead

Sign Support No. 22078
Location: West Hartford Route I-84 W.B. Mileage: 58.96
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

PLOTTED : 2/7/2019

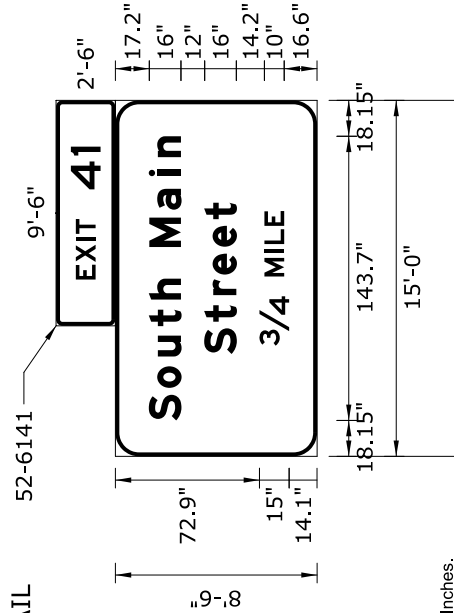
SIGN NUMBER	084W_155_58.96_B
SIGN PANEL	192.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	216.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)

LETTER	POSITION (X)	LENGTH	SERIES/SIZE												
P	41.5	56.8	73.8	85.6	96.2	112.2	128	142.4	158	EM 2000					
W	17.8	37.2	50.9	64.8	73.2	89.2	106.1	123.1	133.3	145.2	155.4	171.2	181.6	EM 2000	
C	63.8	79.8	95.3	110.7	122.7	138.2				82.4	16/12			EM 2000	
	72.5	104.4	116.4	120.8	130									E 2000	
														65.1	15,10

SIGN DETAIL
1:80



Dimensions are in inches.

Material: Extruded Aluminum
Mounted: Ground

Sign Support No. N/A

Location: West Hartford Route 501 S.B. Mileage: 0.32

Project No. 0155-0173

Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	501S_155_032_A
SIGN PANEL	127.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	151.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

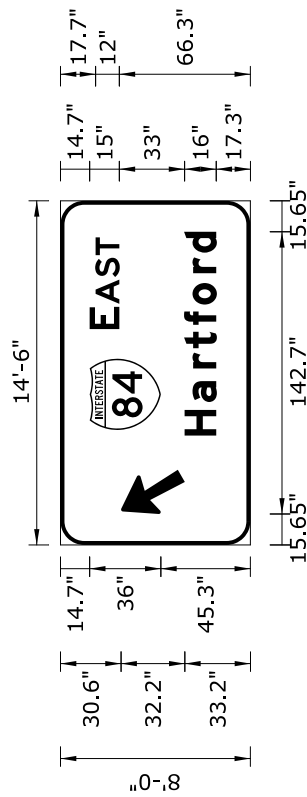
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

S	o	u	t	h	M	a	i	n	LENGTH	SERIES/SIZE
18.2	34.6	50.5	65.8	79.3	89.8	105.8	124.7	141.7	143.7	EM 2000 16/12
S	t	r	e	e	t					EM 2000 16/12
51.8	68.1	81.5	91.9	106	119.9				76.5	E 2000 15,10
3/4	M	I	L	E					68.1	
56	90.9	102.9	107.3	116.5						

SIGN DETAIL
1:80



SIGN NUMBER	501S_155_047_A
SIGN PANEL	116.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	116.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	58.1	45.3	36	36
AR_Type A	30	15.7	33.1	22.2	35

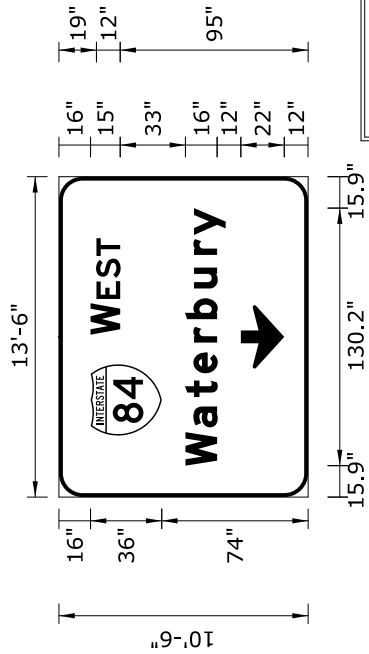
REV'D /

Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21778
Location : West Hartford Route 501 S.B. Mileage : 0.47
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

PLOTTED : 2/7/2019

LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
E	A	S	T		E 2000
109.1	121.9	135.5	146.5	46.4	15,12
H	a	r	t		EM 2000
55.3	72.3	89.2	99.5	111.3	16/12
				103	16/12

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21778
 Location : West Hartford Route 501 S.B. Mileage : 0.47
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	501S_155_047_B
SIGN PANEL	141.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	141.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

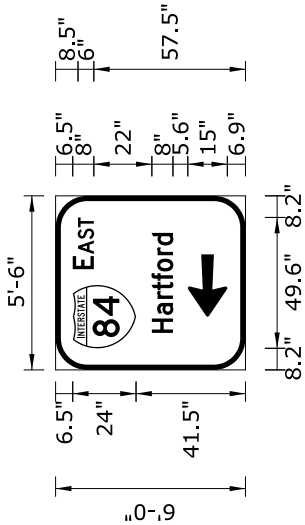
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	31.1	74	36	36
ARDDOWN	0	65	12.1	32	22

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
W	E	S	T				
82.1	100.2	110.9	121.9		48.8	E 2000 15,12	
15.9	35.2	50.6	62.6	78.1	90	105.5 122.4 132.5	
						EM 2000 16/12	

SIGN DETAIL

1:60



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : West Hartford Route I-84 E.B. Exit 44 Ramp 113
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_155_EX44_R113_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

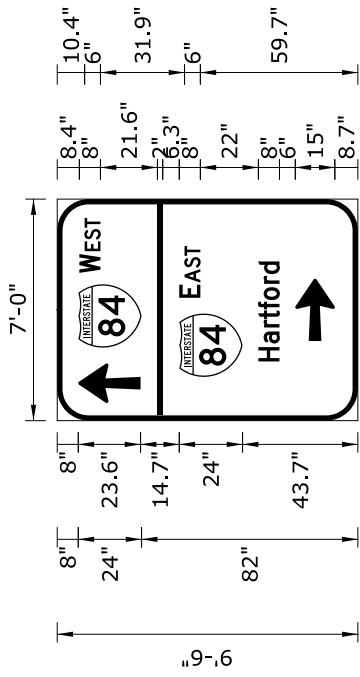
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	41.5	24	24
AR_Type A	270	20.2	6.9	15	23.6

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LENGTH		SERIES/SIZE
E	A	S	T	
38.2	44	49.5	54.1	D 2000 19.6 8.6
H	a	r	t	
14	20.8	26.9	30.2	D 2000 37.9 8/6

SIGN DETAIL
1:60



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : West Hartford Route I-84 E.B. Exit 44 Ramp 113
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_155_EX44_R113_B
SIGN PANEL	66.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	66.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

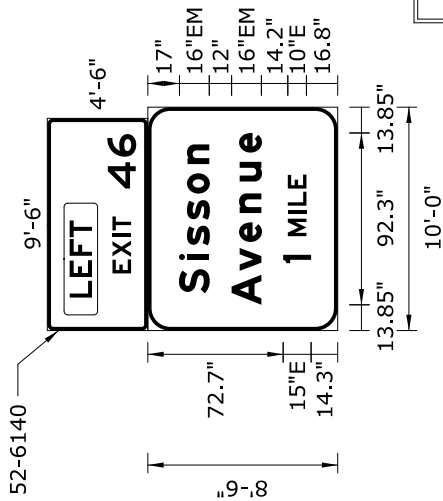
SYMBOL	ROT	X	Y	WID	HT
AR_Type A	0	6.7	82.4	15	23.6
M1.1	0	27.7	82	24	24
M1.1	0	16.6	43.7	24	24
AR_Type A	270	30.2	8.7	15	23.6

PLOTTED : 2/7/2019

		LENGTH		HEIGHT	SERIES/SIZE		
		LETTER POSITIONS (X)					
W	E	S	T		D 2000		
56	64.3	68.6	73.1	20.8	8,6		
E	A	S	T		D 2000		
46.6	52.4	57.9	62.5	19.6	8,6		
H	a	r	t	f	o	r	d
22.5	29.3	35.3	38.6	42.2	45.7	51.9	55.6

SIGN DETAIL

1:85



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21589
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 59.50
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By:

REV'D /

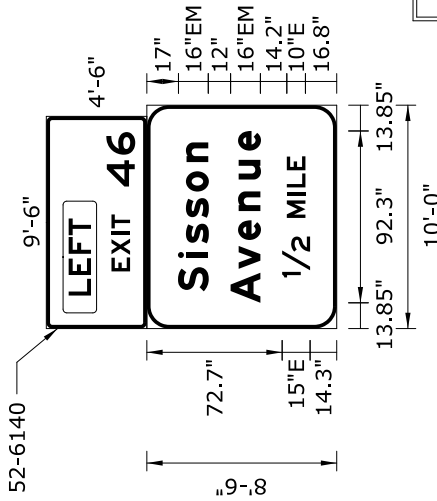
SIGN NUMBER	084E_063_59.50_A
SIGN PANEL	85.0 Sq.Ft.
EXIT CROWN	42.75
TOTAL (Sq.ft.)	127.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

S	i	s	s	o	n	n	L	E	LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
20	37.9	45.8	59.5	73.6	89.4					80	EM 2000	16/12
A	v	e	n	u	e							EM 2000
13.8	32.1	47.6	63.1	80.1	95.6					92.3	16/12	
1	M	I	L	E								E 2000
36.2	50.7	62.7	67.1	76.3						47.6	15,10	

SIGN DETAIL
1:85



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21590
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 59.93
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084E_063_59.93_A
SIGN PANEL	85.0 Sq.Ft.
EXIT CROWN	42.75
TOTAL (Sq.ft.)	127.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

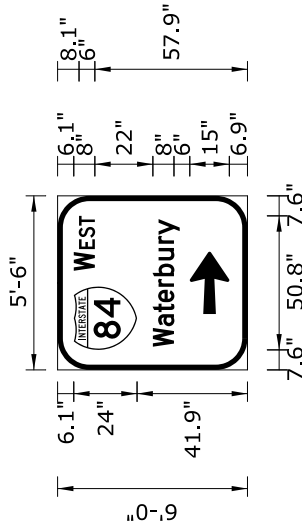
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

S	i	s	s	o	n								LENGTH	SERIES/SIZE
20	37.9	45.8	59.5	73.6	89.4								80	EM 2000 16/12
A	v	e	n	u	e									EM 2000
13.8	32.1	47.6	63.1	80.1	95.6								92.3	16/12
1/2	M	I	L	E										E 2000
27.5	59.4	71.4	75.8	85									65.1	15,10

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : West Hartford Route I-84 W.B. Exit 44 Ramp 111
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

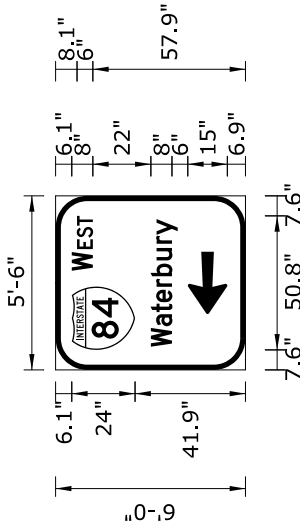
SIGN NUMBER	084W_155_EX44_R111_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	7.6	41.9	24	24
AR_Type A	270	21.2	6.9	15	23.6

PLOTTED : 2/7/2019

W	E	S	T	LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
				a	t	e	r		
37.6	45.8	50.1	54.7					20.8	D 2000
8.8	16.6	21.9	25.7	31.5	35.5	41.5	47.8	48.4	D 2000
									8/6

SIGN DETAIL
1:60



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : West Hartford Route I-84 W.B. Exit 44 Ramp 111
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_155_EX44_R111_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

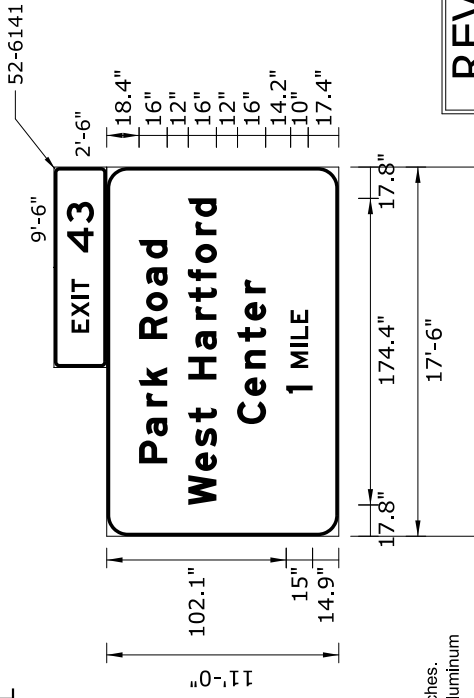
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	7.6	41.9	24	24
AR_Type A	270	21.2	6.9	15	23.6

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

W	E	S	T	L	E	N	G	T	H	S	I	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z		LENGTH	SERIES/SIZE													
37.6	45.8	50.1	54.7																																							20.8	8,6											
8.8	16.6	21.9	25.7	31.5	35.5	41.5	47.8	51.2																																										48.4	8/6			

SIGN DETAIL
1:90



REV'D /

Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 22079
 Location : Hartford Route I-84 W.B. Mileage : 59.38
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M Chachakis

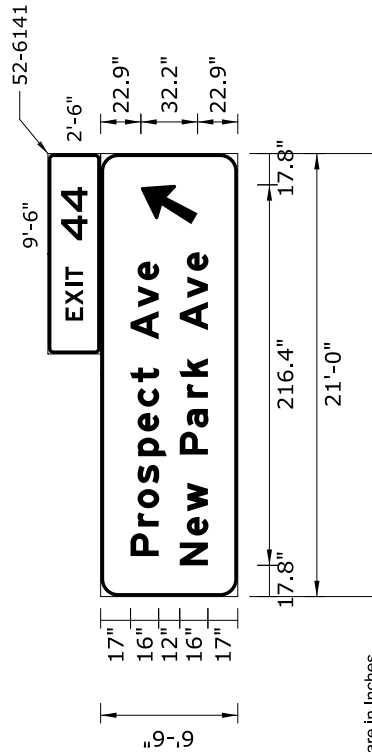
PLOTTED : 2/7/2019

SIGN NUMBER	084W_063_59.38_A
SIGN PANEL	192.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	216.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
P	a	r	k	R	o	a	d				EM 2000
41.5	56.8	73.8	85.6	96.2	112.2	128	142.4	158		127	16/12
W	e	s	t	H	a	r	t	f	o	r	EM 2000
17.8	37.2	50.9	64.8	73.2	89.2	106.1	123.1	133.3	145.2	155.4	16/12
C	e	n	t	e	r						EM 2000
63.8	79.8	95.3	110.7	122.7	138.2					82.4	16/12
1	M	I	L	E							E 2000
81.2	95.7	107.7	112.1	121.3						47.6	15,10

SIGN DETAIL
1:90



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 22079
Location: Hartford Route I-84 W.B. Mileage : 59.38
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	084W_063_59.38_B
SIGN PANEL	136.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	160.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	10"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

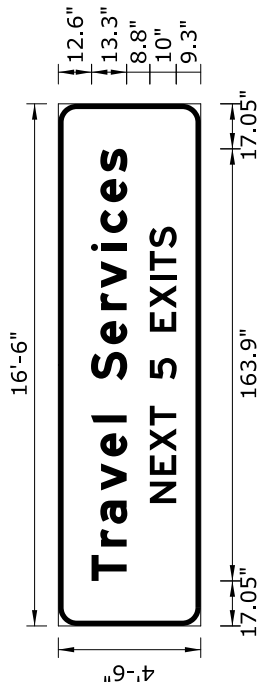
SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	211.9	22.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LETTER POSITIONS (X)														LENGTH	SERIES/SIZE
P	r	o	s	p	e	c	t	A	v	e					EM	2000	
23.1	39.9	50.3	64.3	79.9	93.9	108	121.9	130.3	146.3	164.5	180					167.5	16/12
N	e	w		P	a	r	k	A	v	e					EM	2000	
17.8	34.7	48.5	64.8	80.8	96.2	113.1	125	135.5	151.5	169.8	185.3					178.1	16/12

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : Hartford Route I-84 W.B. Mileage : 59.70
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

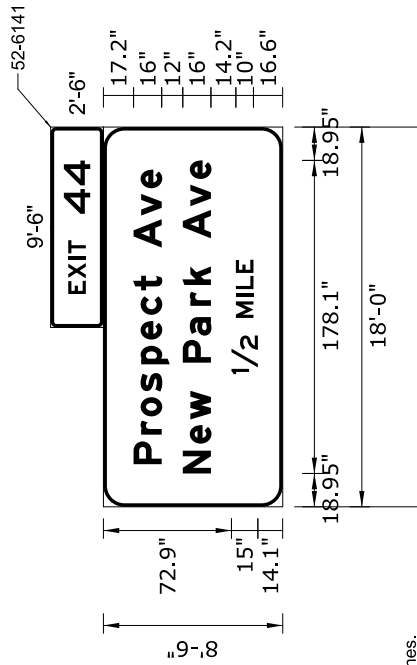
SIGN NUMBER	084E_051_55_084W_063_59.70_A
SIGN PANEL	74.25 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	74.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	7"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

T	LETTER POSITIONS (X)												LENGTH	SERIES/SIZE		
	r	a	v	e	l	S	e	r	v	i	c	e			s	
17.1	30.1	38.8	51.4	64.3	77.2	79.8	93.1	106.8	119.7	128.1	142.2	149	160.7	172.2	163.9	EM 2000 13.3/10
N	E	X	T		5		E	X	I	T	S					E 2000 104.8 10
46.6	57.3	66.2	76	83.5	93.5	101.6	111.6	120.5	131.2	134.7	143.3					

SIGN DETAIL
1:90



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21675
 Location : Hartford Route I-84 W.B. Mileage : 59.80
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

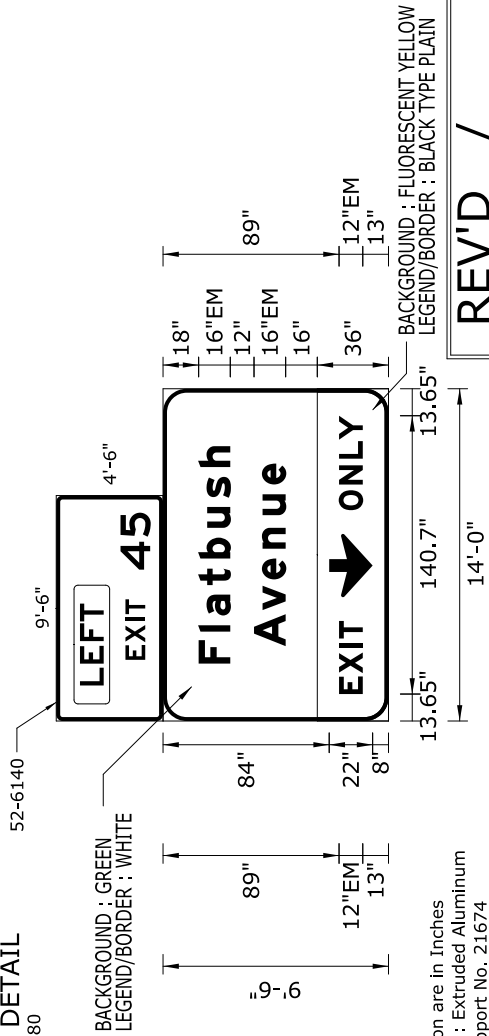
SIGN NUMBER	084W_063_59.80_A
SIGN PANEL	18'-0" x 8'-6"
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	153.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE										
P	r	o	s	p	e	c	t	A	v	e													EM	2000	
24.2	41	51.4	65.5	81	95.1	109.2	123.1	131.4	147.4	165.7	181.2													167.5	16/12
N	e	w		P	a	r	k	A	v	e													EM <td>2000</td>	2000	
19	35.9	49.7	66	82	97.4	114.3	126.2	136.7	152.7	171	186.5													178.1	16/12
1/2	M	I	L	E													E	2000							
75.5	107.4	119.4	123.8	133													65.1	15,10							

SIGN DETAIL
1:80

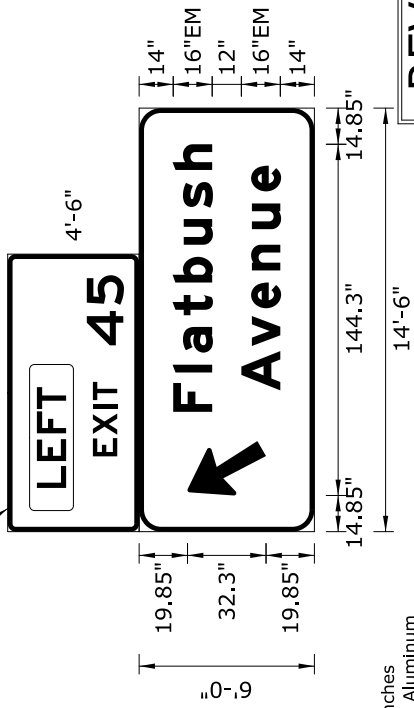


Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21674
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 59.98
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

PLOTTED : 2/7/2019

LETTER POSITIONS (X)												LENGTH	SERIES/SIZE
F	l	a	t	b	u	s	h					EM 2000	
29	16.2	8.2	15.4	13.4	15.5	15.2	15.5	10.6	29			109.9	16/12
A	v	e	n	u	e							EM 2000	
37.8	18.2	15.5	15.5	17	15.5	10.6	37.8					92.3	16/12
E	X	I	T									EM 2000	
13.6	10.6	13	4.6	8.9	117.4							37	12
O	N	L	Y									EM 2000	
106.6	13	13.1	9.6	12.1	13.6							47.8	12

SIGN DETAIL 52-6140
1:65



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21673
 Mounted : Overhead
 Location : Hartford Route I-84 W.B. Mileage : 60.17
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

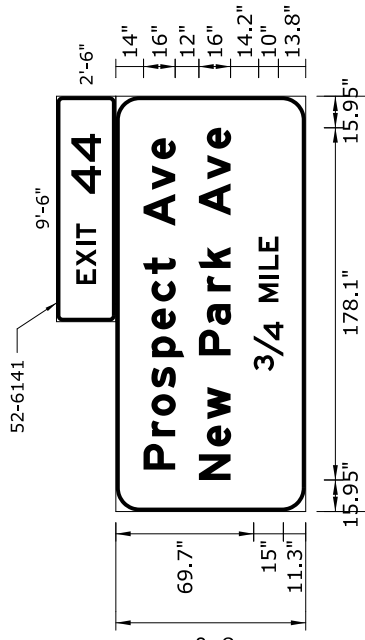
SIGN NUMBER	084W_063_60.17_A
SIGN PANEL	87.0 Sq.Ft.
EXIT CROWN	42.75
TOTAL (Sq.ft.)	129.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	14.9	19.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)											LENGTH	SERIES/SIZE
F	I	A	T	B	U	S	H					
49.2	16.2	8.2	15.4	13.4	15.5	15.2	15.5	10.6	14.9		109.9	EM 2000 16/12
58	18.2	15.5	15.5	17	15.5	10.6	23.7				92.3	EM 2000 16/12

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21673
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 60.17
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

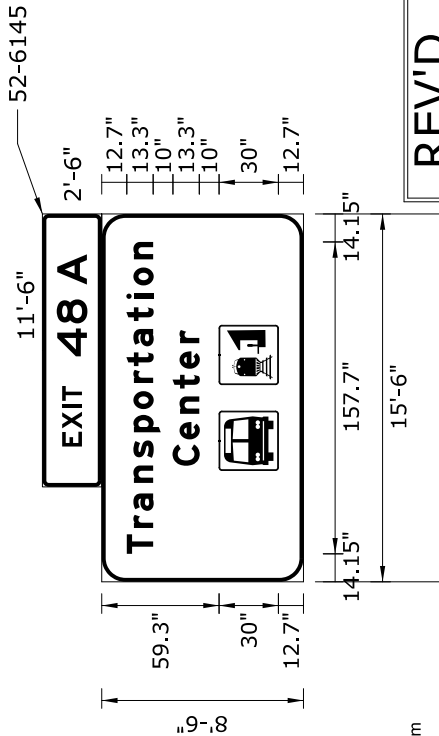
SIGN NUMBER	084W_063_60.17_B
SIGN PANEL	140.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	163.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)													LENGTH	SERIES/SIZE	
P	r	o	s	p	e	c	t							EM 2000	
51.4	16.8	10.4	14.1	15.5	14.1	14.1	13.9	8.3	51.4				107.2	16/12	
N	e	w		p	a	r	k		A	v	e			EM 2000	
16	17	13.8	16.3	16	15.4	17	11.8	10.6	16	18.2	15.5	10.6	16	178.1	16/12
3/4		M	I	L	E										E 2000
71	25	10	12	4.4	9.2	7.5	7.1							68.1	15,10

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : Hartford Route I-84 E.B. Mileage : 60.33
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

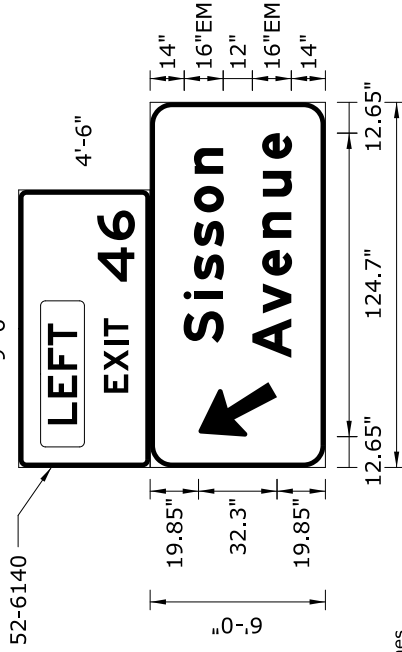
SIGN NUMBER	084E_063_60.33_A
SIGN PANEL	131.75 Sq.Ft.
EXIT CROWN	28.75 Sq.Ft.
TOTAL AREA	160.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
51-6091	0	56.3	12.7	30	30
51-6092	0	99.7	12.7	30	30

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)											LENGTH	SERIES/SIZE		
T	C	r	a	n	s	p	o	r	t	a	t	i	o	n		
14.2	27.2	35.9	50	62.7	75.6	87.3	100.5	109.1	119.1	131.9	143.1	149.9	163.1			EM 2000
58.7	72	84.9	97.7	107.7	120.7											EM 2000
																13.3/10
																68.7
																13.3/10

SIGN DETAIL
1:65



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21843
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 60.43
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

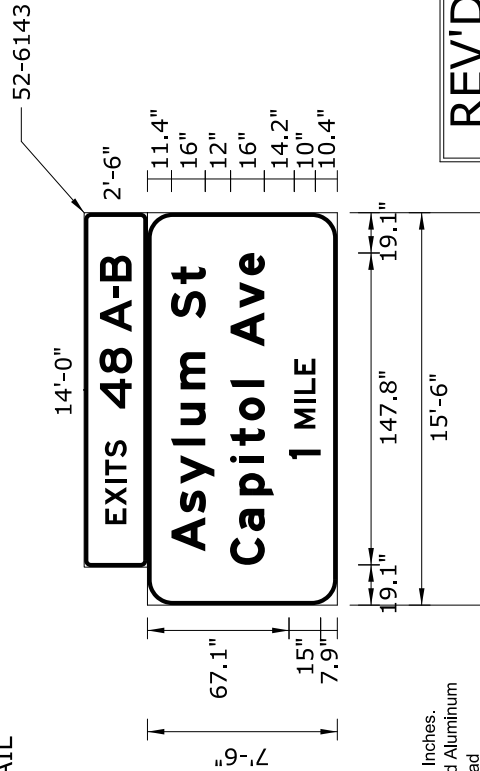
SIGN NUMBER	084E_063_60.43_A
SIGN PANEL	75.0 Sq.Ft.
EXIT CROWN	42.75
TOTAL (Sq.ft.)	117.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	12.7	19.9	22.2	35

PLOTTED : 2/7/2019

						LENGTH		SERIES/SIZE	
LETTER POSITIONS (X)									
S	i	s	s	o	n			EM 2000	
51.2	69.1	76.9	90.7	104.8	120.6		80	16/12	
A	v	e	n	u	e			EM 2000	
45	63.3	78.8	94.3	111.3	126.8		92.3	16/12	

SIGN DETAIL
1:75



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21843
Location : Hartford Route I-84 E.B. Mileage : 60.43
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chaachakis

SIGN NUMBER	084E_063_60.43_B
SIGN PANEL	116.75 Sq.Ft
EXIT CROWN	35.0 Sq.Ft.
TOTAL AREA	151.25 Sq.Ft.
BDR INSET/WIDTH	2" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

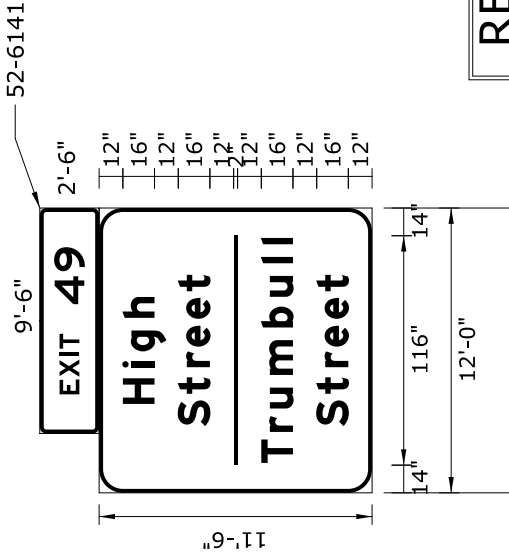
SYMBOL	ROT	X	Y	WID	HT

REV'D /

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
E	X	I	T	S	4	8	A	-	B				
20.4	29.3	40	43.5	52.1	75.2	91.8	111.5	127.8	135.5			127.3	E 2000 10,15
A	s	y	l	u	m		S	t					EM 2000 16/12
25.5	43.7	57.5	75.7	85.3	102.3	119.9	135.9	152.2				135	
C	a	p	i	t	o	l	A	v	e				EM 2000 16/12
19.1	35.1	52	67.6	75.6	87.6	103.4	106.6	122.6	140.8	156.4		147.8	
I	M	I	L	E									E 2000 15,10
69.2	83.7	95.7	100.1	109.3								47.6	

SIGN DETAIL
1:80



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Ground
Sign Support No. N/A
Location: Hartford Route I-84 E.B. Mileage: 60.77
Project No. 155-173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

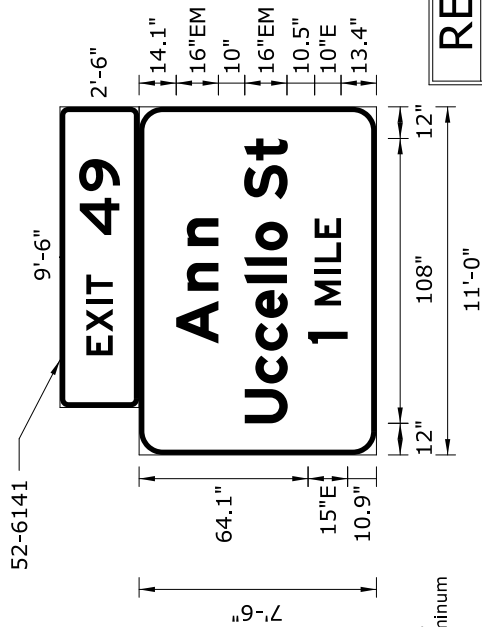
SIGN NUMBER	084E_063_60.77_A
SIGN PANEL	138.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	161.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH		SERIES/SIZE	
H	i	g	h	EM	2000
45	63.4	71.5	88.5	54.1	16/12
S	t	r	e	e	t
33.8	50.1	63.5	73.9	88	101.9
T	r	u	m	b	u
15.1	30.8	42.6	59.6	83.6	99.1
S	t	r	e	e	t
33.8	50.1	63.5	73.9	88	101.9

SIGN DETAIL
1:60



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21593
Mounted : Overhead
Location : Hartford Route 1-84 E.B. Mileage : 60.94
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084E_063_60.94_A
SIGN PANEL	82.5 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	106.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

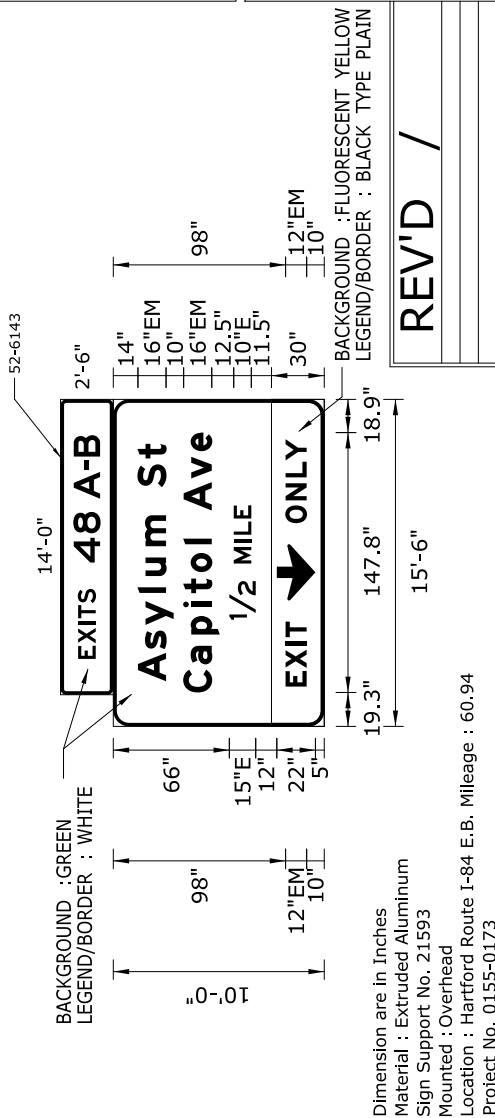
SIGN NUMBER	084E_063_60.94_A
SIGN PANEL	82.5 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	106.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

PLOTTED : 2/7/2019

					LENGTH	SERIES/SIZE
A	n	n				
42.2	62.2	79.2			EM 2000	
					47.5	16/12
U	c	e	l	o	S	t
12	27.1	39.5	51.9	65.1	71.7	77.6
					88.4	96.9
					111.7	
1	M	I	L	E		
42.2	56.7	68.7	73.1	82.3	E 2000	
					47.6	15,10

LETTER POSITIONS (X)

SIGN DETAIL
1:90



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21593
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 60.94
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

SIGN NUMBER	084E_063_60.94_B
SIGN PANEL	155.0 Sq.Ft.
EXIT CROWN	35.0
TOTAL (Sq.ft.)	190.0
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	71.6	5	32	22

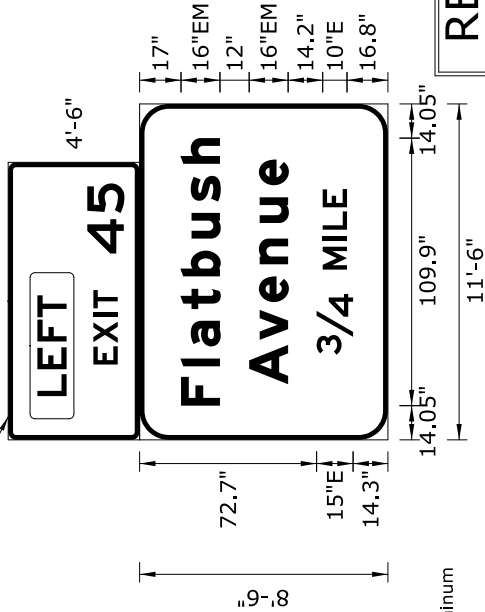
PLOTTED : 2/7/2019

LETTER POSITIONS (X)

												LENGTH	SERIES/SIZE		
A	s	y	i	l	u	m	s	t					EM 2000		
25.7	43.9	57.7	75.9	85.5	102.5	120.1	136.1	152.4				135	16/12		
C	a	p	i	t	o	l	A	v	e					EM 2000	
19.3	35.3	52.2	67.8	75.8	87.8	103.6	106.8	122.8	141	156.6				147.8	16/12
1/2	M	I	L	E									E 2000		
60.7	92.6	104.6	109	118.2								65.1	15,10		
E	X	I	T									EM 2000			
22.6	33.2	46.2	50.7								37	12			
O	N	L	Y									EM 2000			
115.6	128.6	141.6	151.2								47.8	12			

SIGN DETAIL
1:65

52-6140



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21672
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 60.81
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

PLOTTED : 2/7/2019

SIGN NUMBER	084W_063_60.81_A
SIGN PANEL	97.75 Sq.Ft.
EXIT CROWN	42.75
TOTAL (Sq.ft.)	140.5
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)

													LENGTH	SERIES/SIZE
14	16.2	8.2	15.4	13.4	15.5	15.2	15.5	10.6	14				109.9	EM 2000 16/12
22.8	18.2	15.5	15.5	17	15.5	10.6	22.8						92.3	EM 2000 16/12
35	25	10	12	4.4	9.2	7.5	35						68.1	E 2000 15,10

SIGN NUMBER	084W_063_60.81_B
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR_TypeA	315	63	3.6	20	31.5

SIGN DETAIL
1:65

BACKGROUND : FLUORESCENT YELLOW
LEGEND/BORDER : BLACK TYPE PLAIN

BACKGROUND : GREEN
LEGEND/BORDER : WHITE

EXIT 46

Sisson Avenue

EXIT ONLY

52-6141

2'-6"

13"

16"EM

9"

16"EM

12"

30"

12"E

10"

74"

14.3"

133.4"

14.3"

13'-6"

REV'D /

Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21672
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 60.81
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

S	i	s	s	o	n		
41	17.9	7.8	13.8	14.1	15.8	10.6	41
	A	v	e	n	u	e	
34.8	18.2	15.5	15.5	17	15.5	10.6	34.8
	E	X	I	T			
14.3	10.7	12.8	4.2	9	111		
	O	N	L	Y			
99.8	12.8	12.8	10	12.2	14.3		

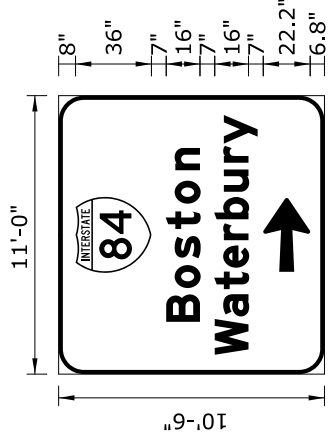
LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
		EM 2000
	80	16/12
		EM 2000
	92.3	16/12
		E 2000
	36.7	12
		E 2000
	47.9	12

PLOTTED : 2/7/2019

SIGN DETAIL
1:75

SIGN NUMBER	503E_063_0.00_A
SIGN PANEL	115.50 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	48	82	36	36
AR_Type A	270	48.5	6.8	22.2	35



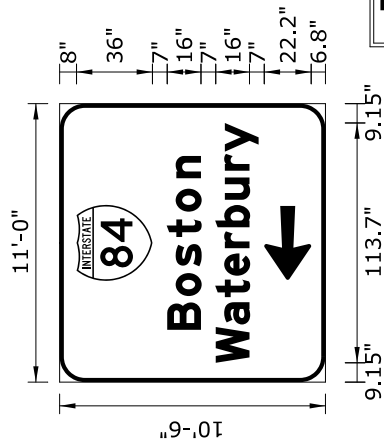
REV'D /

Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21185
 Location : Hartford Route 503 E.B. Mileage : 00.00
 Project No. 0171-0425
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chaachakis

PLOTTED : 2/7/2019

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
B	o	s	t	o	n					EM 2000	
24.8	40.8	54.9	68.8	80.8	96.6					82.4	16/12
W	a	t	e	r	b	u	r	y		EM 2000	
9.2	27.3	40.3	50.4	63.5	73.4	86.4	100.2	109.2		113.7	16/12

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21185
 Location : Hartford Route 503 E.B. Mileage : 00.00
 Project No. 0171-0425
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

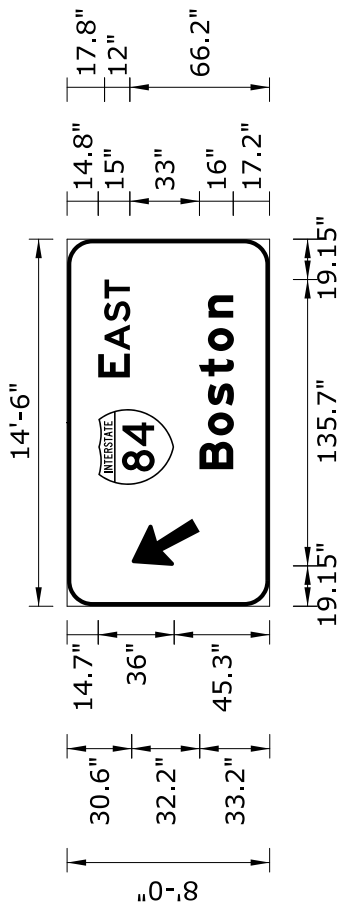
SIGN NUMBER	503E_063_0.00_B
SIGN PANEL	115.50 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	48	82	36	36
AR_Type A	90	48.5	6.8	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE			
B	o	s	t	o	n	EM 2000			
24.8	40.8	54.9	68.8	80.8	96.6	82.4 16/12			
W	a	t	e	r	b	u	r	y	EM 2000
9.2	27.3	40.3	50.4	63.5	73.4	86.4	100.2	109.2	113.7 16/12

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21186
 Location : Hartford Route 503 E.B. Mileage : 0.11
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

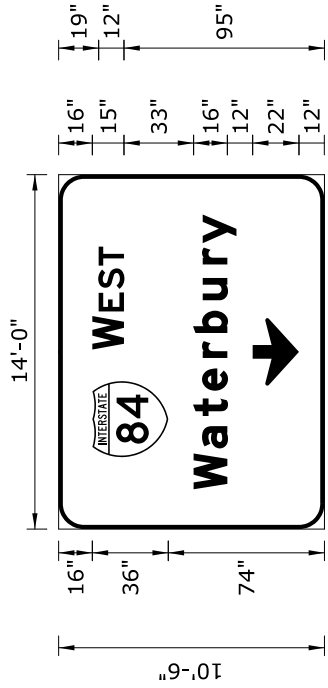
SIGN NUMBER	503E_063_0.11_A
SIGN PANEL	14'-6" x 8'-0"
EXIT CROWN	-
TOTAL AREA	116.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	57.5	45.3	36	36
AR_Type A	30	19.1	33.1	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
E	A S T		E 2000
108.5	121.3 134.8 145.9	46.4	15,12
B	o s t o n		EM 2000
65	81 95.1 109 121 136.8	82.4	16/12

SIGN DETAIL
1:75



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21186
Location : Hartford Route 503 E.B. Mileage : 0.11
Project No. 0155-0173
Engineer : DR / Designed by : DR / Checked by : MAC

REV'D /

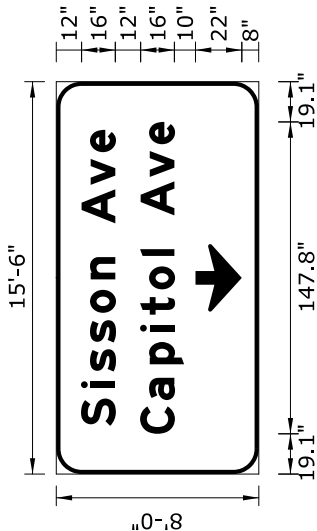
SIGN NUMBER	503E_063_0.11_B
SIGN PANEL	147.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	147.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	34.1	74	36	36
ARDDOWN	0	68	12.1	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
W	E	S	T				E 2000
85.1	103.2	113.9	124.9			48.8	15,12
W	a	t	e	r	u	r	EM 2000
18.9	38.2	53.6	65.6	81.1	93	108.5	125.4
						130.2	16/12

SIGN DETAIL
1:75



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21184
Location : Hartford Route 503 W.B. Mileage : 0.05
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	503W_063_0.05_A
SIGN PANEL	124.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	124.0 Sq.Ft.
BDR. INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

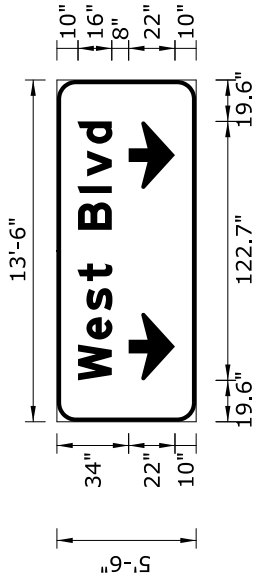
SYMBOL	ROT	X	Y	WID	HT
ARDOWN	0	77	8.1	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

																		LENGTH	SERIES/SIZE
S																			
22.8	40.8	48.6	62.4	76.4	92.3	102.8	118.8	137.1	152.6								140.3	EM 2000	16/12
C																			
19.1	35.1	52	67.6	75.6	87.6	103.4	106.6	122.6	140.8	156.4							147.8	EM 2000	16/12

SIGN DETAIL
1:75



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 21184
Location: Hartford Route 503 W.B. Mileage : 0.05
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chaachakis

REV'D /

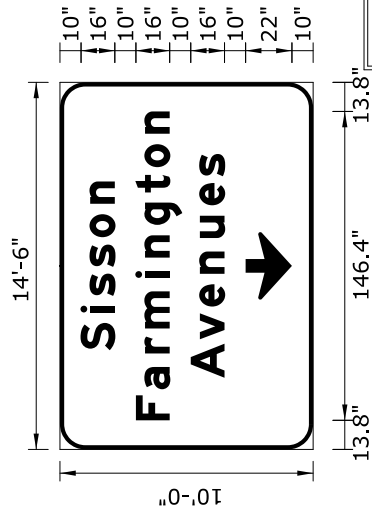
SIGN NUMBER	503W_063_0.05_B
SIGN PANEL	74.25 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	74.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
ARROW	0	19.6	10	32	22
ARROW	0	110.4	10	32	22

PLOTTED : 2/7/2019

	LETTER POSITIONS (X)								LENGTH	SERIES/SIZE
W									EM	2000
19.6	39	52.8	66.7	75	91	108.4	116.3	131.8	122.7	16/12

SIGN DETAIL
1:75



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 21184
Location: Hartford Route 503 W.B. Mileage: 0.05
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	503W_063_0.05_C
SIGN PANEL	145.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	145.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

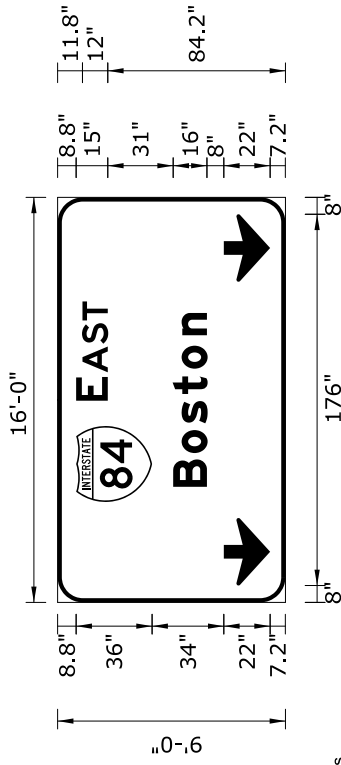
SYMBOL	ROT	X	Y	WID	HT
ARROW	0	71	10	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

						LENGTH	SERIES/SIZE
S	i	s	s	o	n		EM 2000
47	64.9	72.8	86.5	100.6	116.4	80	16/12
F	a	r	m	i	n	g	EM 2000
13.8	28.5	45.5	57.3	81.3	90.9	106.4	16/12
A	v	e	n	u	e	s	EM 2000
34	52.2	67.7	83.2	100.2	115.7	106.1	16/12

SIGN DETAIL
1:75



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21594
 Location : Hartford Route I-84 E.B. Mileage : 61.19
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chaachakis

REV'D /

SIGN NUMBER	084E_063_61.19_A
SIGN PANEL	144.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	144.0 Sq.Ft.
BDR. INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

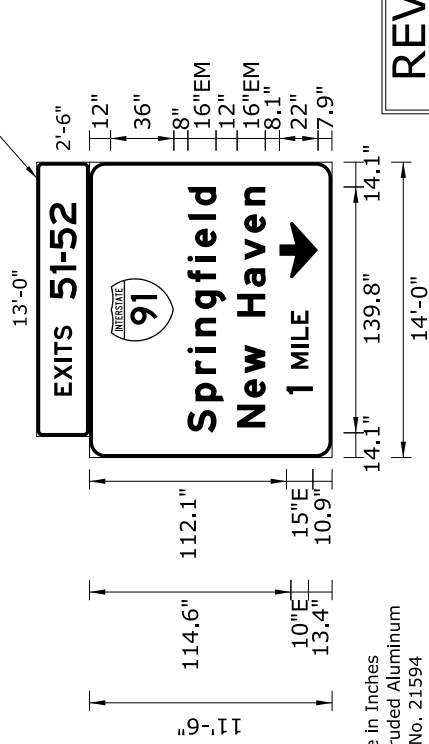
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	47.6	63.2	36	36
ARROWN	0	8	7.3	32	22
ARROWN	0	152	7.3	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

	LENGTH	SERIES/SIZE
E		E 2000
95.6	122.6	133.7
B		EM 2000
54.8	70.8	84.9
		98.8
		110.8
		126.6

SIGN DETAIL
1:90



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21594
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.19
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084E_063_61.19_B
SIGN PANEL	161.0 Sq.Ft.
EXIT CROWN	32.50 Sq.Ft.
TOTAL (Sq.ft.)	193.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

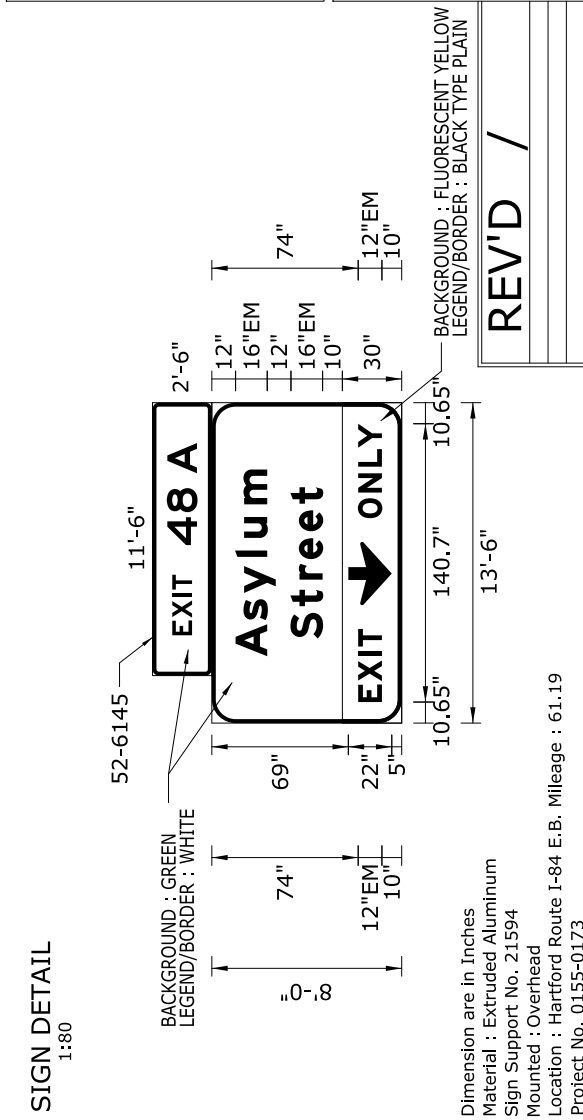
SYMBOL	ROT	X	Y	WID	HT
M1	0	66	90	36	36
AROWN	0	102	8	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)												
		LENGTH					SERIES/SIZE					
S	p	r	i	n	g	f	i	e	l	d		
14.1	32	47.5	59.4	69	84.5	99.8	111.5	119.7	135.2	143.4		EM 2000
N	e	w		H	a	v	e	n				EM 2000
17.1	34.1	47.8	64.2	80.2	97.1	112.3	127.8	143.4				136.8 16/12
1	M	I	L	E								E 2000
36	50.5	62.5	66.9	76.1								47.6 15,10

SIGN NUMBER	084E_063_61.19_C
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	28.75
TOTAL (Sq.ft.)	136.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

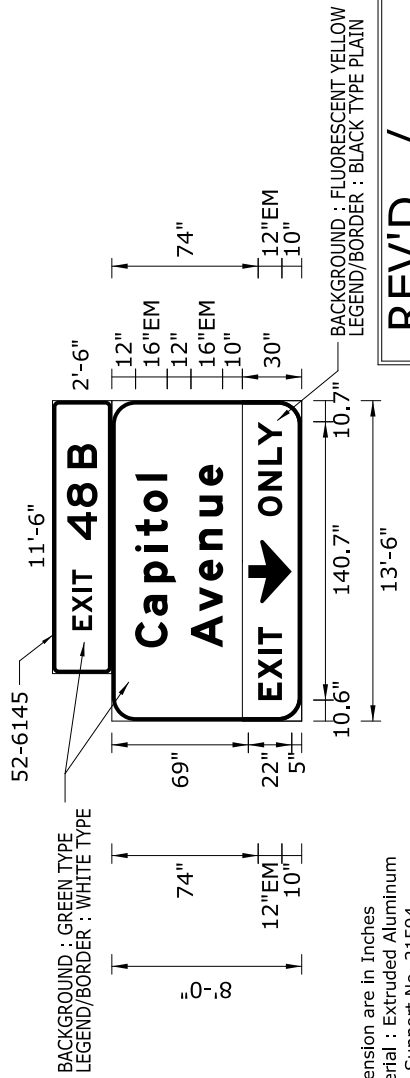
SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	59.6	5	32	22



SIGN DETAIL
1:80

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE
A	s	y	i	u	m	EM 2000
33.8	52	65.8	84	93.6	110.6	94.4 16/12
S	t	r	e	e	t	EM 2000
42.8	59.1	72.5	82.9	97	110.9	76.5 16/12
E	X	I	T			EM 2000
10.6	21.2	34.2	38.7			37 12
O	N	L	Y			EM 2000
103.6	116.6	129.6	139.2			47.8 12

SIGN DETAIL
1:80



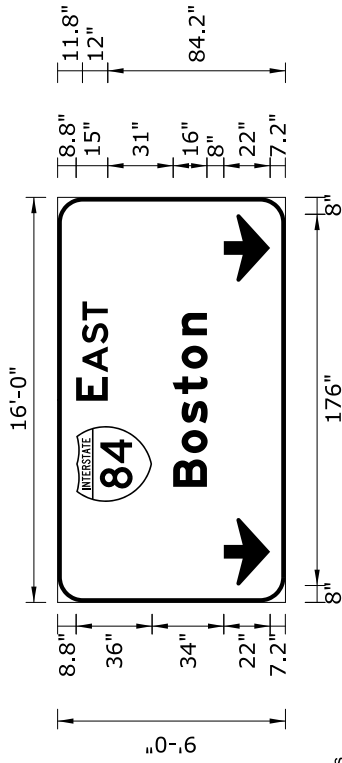
SIGN NUMBER	084E_063_61.19_D
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	28.75
TOTAL (Sq.ft.)	136.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUN D	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
ARDOWN	0	59.6	5	32	22

PLOTTED : 2/7/2019

C	a	p	i	t	o	l	EM	LENGTH		SERIES/
								SIZE	SIZE	
37.2	53.2	70.2	85.7	93.7	105.7	121.6		87.5	16/12	EM 2000
A	v	e	n	u	e					EM 2000
37.2	55.5	71	86.5	103.5	119			92.3	16/12	EM 2000
E	X	I	T							EM 2000
10.6	21.2	34.1	38.7					37	12	EM 2000
O	N	L	Y							EM 2000
103.6	116.6	129.6	139.2					47.8	12	EM 2000

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21595
 Location: Hartford Route I-84 E.B. Mileage: 61.38
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

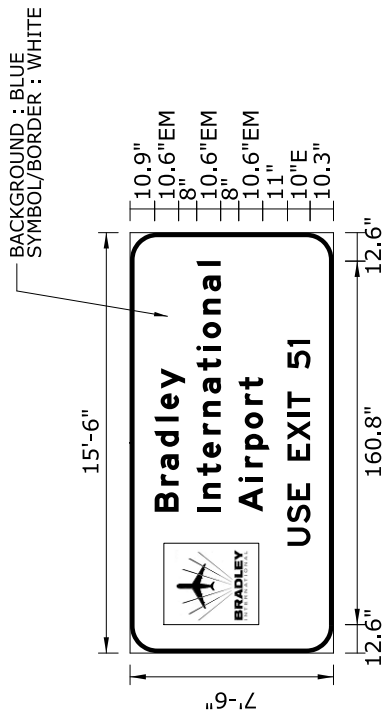
SIGN NUMBER	084E_063_61.38_A
SIGN PANEL	144.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	144.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	47.6	63.2	36	36
ARROWN	0	8	7.3	32	22
ARROWN	0	152	7.3	32	22

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE	
LETTER POSITIONS (X)					
E	A S T			E 2000	
95.6	109.1 122.6 133.7		47.1	15,12	
B	o s t o n			EM 2000	
54.8	70.8 84.9 98.8 110.8 126.6		82.4	16/12	

SIGN DETAIL
1:70



SIGN NUMBER	084E_063_61.38_B
SIGN PANEL	116.25 Sq.Ft.
EXIT CROWN	
TOTAL (Sq.ft.)	116.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
51-1406	0	12.6	33.1	36	42

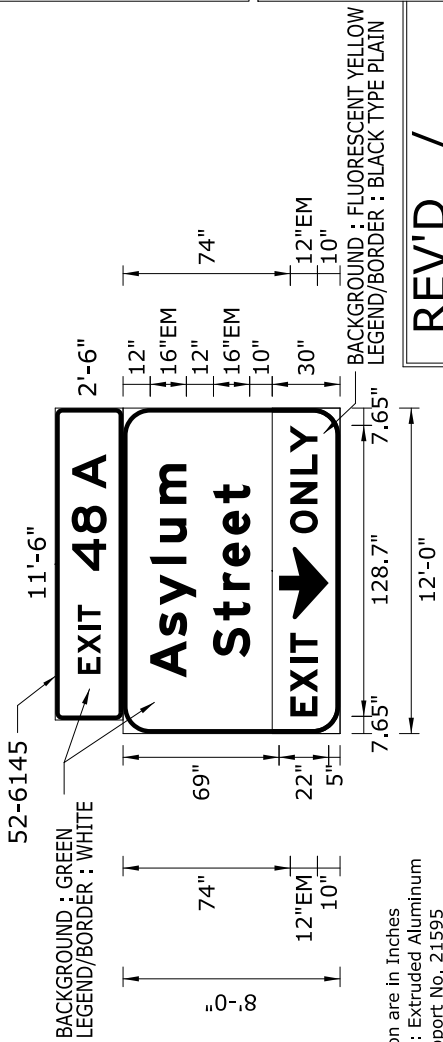
Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21595
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 61.38
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE	
B	r	a	d	i	e	y							EM 2000	
62.5	74.1	81	91.3	102.5	107.9	117						63.5	10.6/7.9	
I	n	t	e	r	n	a	t	i	o	n	a	l		EM 2000
62.5	68.3	78.4	86.4	96.7	104.5	114.8	125	133.9	139.3	149.8	160.1	171.3	110.9	10.6/7.9
A	i	r	p	o	r	t								EM 2000
62.5	75.8	82.1	90	99.3	109.8	116.6							59.6	10.6/7.9
U	S	E		E	X	I	T	5	1					E 2000
47.4	57.5	67.6	75.1	85.1	94	104.7	108.2	115.7	125.7	135.5			91.1	10

SIGN DETAIL
1:70



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21595
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 61.38
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

SIGN NUMBER	084E_063_61.38_C
SIGN PANEL	96.0 Sq.Ft.
EXIT CROWN	28.75
TOTAL (Sq.ft.)	124.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
LEGEND/BORDER	TYPE: IX
LEGEND/BORDER	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	50.6	5	32	22

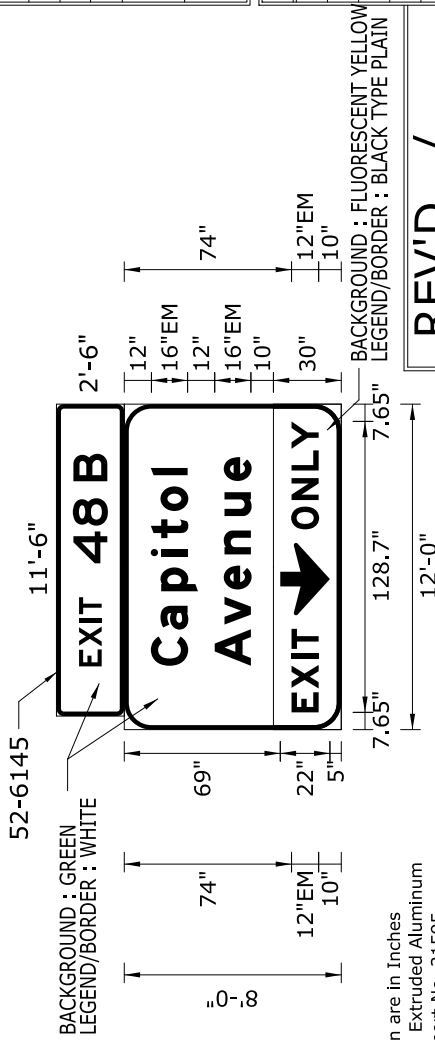
BACKGROUND : FLUORESCENT YELLOW
 LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

PLOTTED : 2/7/2019

LETTER POSITIONS (X)											
						LENGTH	LENGTH	SERIES/SIZE			
A	s	Y	l	u	m						EM 2000
24.8	43	56.8	75	84.6	101.6		94.4	16/12			EM 2000
S	t	r	e	e	t						EM 2000
33.8	50.1	63.5	73.9	88	101.9		76.5	16/12			EM 2000
E	X	I	T								EM 2000
7.6	18.2	31.2	35.7				37	12			EM 2000
O	N	L	Y								EM 2000
88.6	101.6	114.6	124.2				47.8	12			EM 2000

SIGN DETAIL
1:70



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21595
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 61.38
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

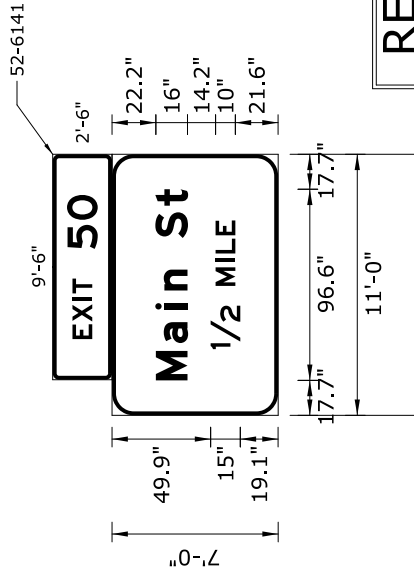
SIGN NUMBER	084E_063_61.38_D
SIGN PANEL	96.0 Sq.Ft.
EXIT CROWN	28.75
TOTAL (Sq.ft.)	124.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
LEGEND/BORDER	TYPE: IX
LEGEND/BORDER	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	50.6	5	32	22

PLOTTED : 2/7/2019

						LETTER POSITIONS (X)		LENGTH		SERIES/SIZE	
C	a	p	i	t	o	I					
28.2	44.2	61.2	76.7	84.7	96.7	112.6			87.5	16/12	EM 2000
A	v	e	n	u	e						EM 2000
28.2	46.5	62	77.5	94.5	110				92.3	16/12	EM 2000
E	X	I	T								EM 2000
7.6	18.2	31.2	35.7						37	12	EM 2000
O	N	L	Y								EM 2000
88.6	101.6	114.6	124.2						47.8	12	EM 2000

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21596
Location : Hartford Route I-84 E.B. Mileage : 61.58
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

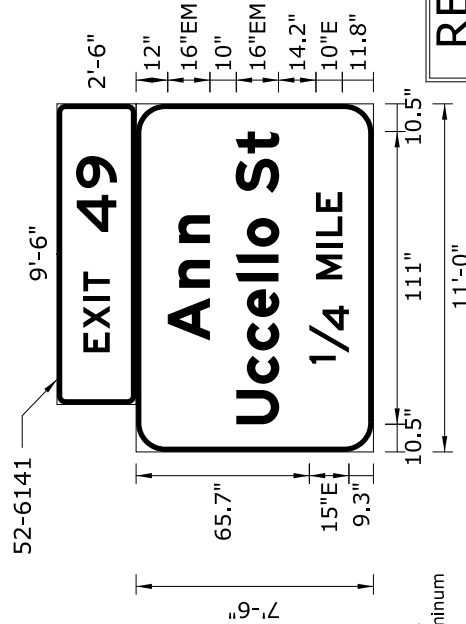
PLOTTED : 02/07/19

SIGN NUMBER	084E_063_61.58_A
SIGN PANEL	77.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	100.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)										LENGTH		SERIES/SIZE	
M	a	i	n	S	t						EM	2000	
17.7	36.6	53.5	63.1	73.7	89.7	106				96.6	16/12		
1/2	M	I	L	E							E	2000	
33.5	65.4	77.4	81.8	91						65.1	15,10		

SIGN DETAIL
1:60



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21596
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.58
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

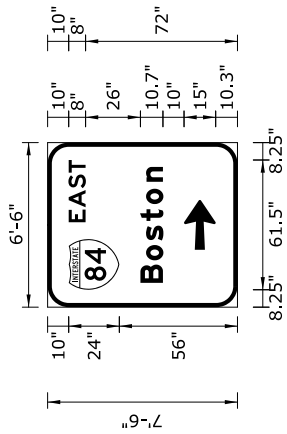
SIGN NUMBER	084E_063_61.58_B
SIGN PANEL	82.5 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	106.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

						LENGTH		SERIES/SIZE	
LETTER POSITIONS (X)									
A	n	n							
42.2	62.2	79.2					47.5	EM 2000	16/12
U	c	e	l	o	S	t		EM 2000	
10.5	25.8	38.5	51.1	64.7	71.7	77.8	88.7	111	16/12
1/4	M	I	L	E					E 2000
33.5	65.4	77.4	81.8	91			65.1	15,10	

SIGN DETAIL
1:75



Dimensions are in inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21763
 Location: Hartford Route I-84 E.B. Ramp 186 Exit 48
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chaachakis

REV'D /

PLOTTED : 2/7/2019

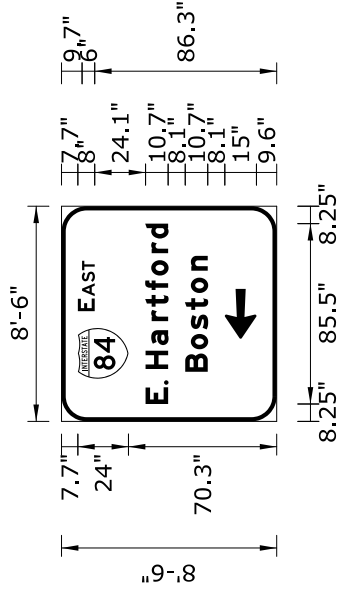
SIGN NUMBER	084E_063_EX48_R186_A
SIGN PANEL	48.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	48.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	10"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.3	56	24	24
AR_Type A	270	27.2	10.3	15	23.6

LETTER POSITIONS (X)

LENGTH	HEIGHT	CHARACTER	SPACING	SPACING	SPACING	SERIES/SIZE
40.3	47.4	E	A	S	T	E 2000
11.5	22.2	B	o	s	t	EM 2000
59.4	48.9	n	59.4			10.7/8

SIGN DETAIL
1:75



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21763
Location : Hartford Route I-84 E.B. Ramp 186 Exit 48
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

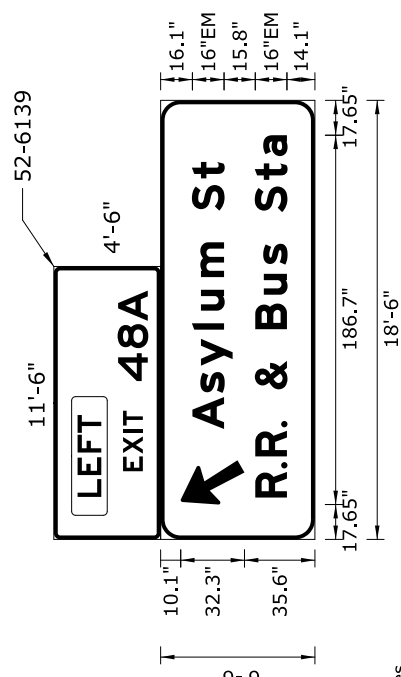
SIGN NUMBER	084E_063_Ex48_R186_B
SIGN PANEL	72.25 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	72.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M.I.1	0	20.2	70.3	24	24
AR_Type A	270	39.2	9.6	15	23.6

PLOTTED : 02/07/19

		LETTER POSITIONS (X)													LENGTH	SERIES/SIZE
E	A	S	T													E 2000
52.3	59.4	66.1	71.7													23.9 8,6
E	.	H	a	r	t	f	o	r	d							EM 2000
8.3	17.3	19.5	24.8	36.2	47.5	54.4	62.3	69.1	79.7	86.7						85.5 10.7/8
B	o	s	t	o	n											EM 2000
23.5	34.2	43.6	52.9	60.9	71.4											55 10.7/8

SIGN DETAIL
1:80



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21469
Mounted : Overhead
Location : Hartford Route 1-84 E.B. EXIT 48 RAMP #R190
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By:

REV'D /

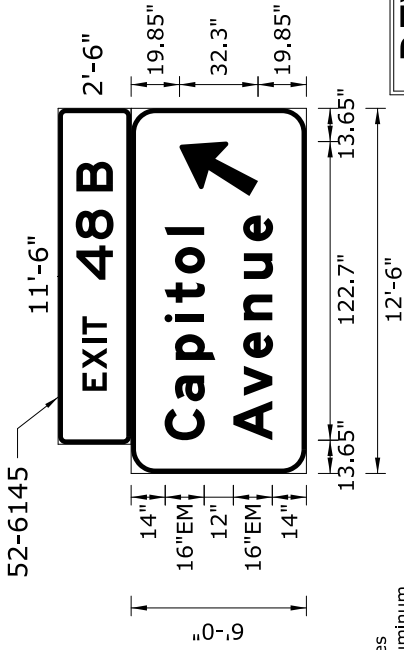
PLOTTED : 2/7/2019

SIGN NUMBER	084E_063_EX48_R190_A
SIGN PANEL	120.25 Sq.Ft.
EXIT CROWN	51.75
TOTAL (Sq.ft.)	172.0
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	10"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	17.6	35.6	22.2	35

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE			
A	s	Y	.	l	u	m	&	B	u	S	t			
55.8	74.1	87.8	106.1	115.7	132.6	150.2	166.2	182.5					EM 2000	
												135	16/12	
21.2	35.9	42	56.7	59.9	75.9	90.3	106.3	123.7	138.9	149.5	165.5	181.8	193.8	EM 2000
												183.2	16/12	

SIGN DETAIL
1:65



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21469
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. EXIT 48 RAMP #R190
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By:

REV'D /

SIGN NUMBER	084E_063_EX48_R190_B
SIGN PANEL	75.0 Sq.Ft.
EXIT CROWN	28.75
TOTAL (Sq.ft.)	103.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

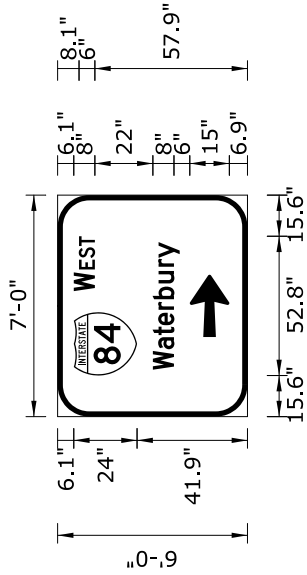
SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	114	19.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
C	a	p	i	t	o	l	EM 2000
13.7	29.7	46.6	62.1	70.1	82.1	98	87.5 16/12
A	v	e	n	u	e		EM 2000
13.7	31.9	47.4	62.9	79.9	95.4		92.3 16/12

SIGN DETAIL

1:60



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : Hartford Route I-84 W.B. Exit 48B Ramp 191
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

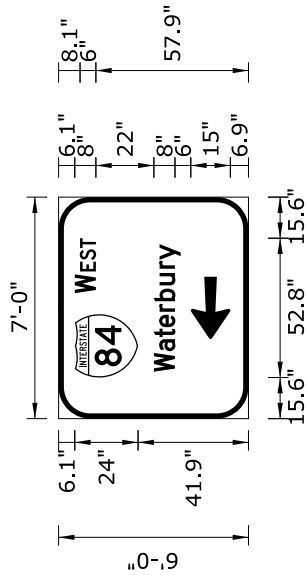
SIGN NUMBER	084W_063_EX48B_R191_A
SIGN PANEL	42.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	42.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	15.6	41.9	24	24
AR_Type A	270	30.2	6.9	15	23.6

LETTER POSITIONS (X)

		LENGTH		SERIES/SIZE	
W	E	S	T		D 2000
47.6	55.8	60.1	64.7	20.8	8,6
w	a	t	e	r	
17.8	25.6	30.9	34.7	40.5	D 2000
				48.4	8/6

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Ground
 Sign Support No. N/A
 Location: Hartford Route I-84 W.B. Exit 48B Ramp 191
 Project No. 155-173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	084W_063_EX48B_R191_B
SIGN PANEL	42.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	42.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	15.6	41.9	24	24
AR_Type A	270	30.2	6.9	15	23.6

PLOTTED : 2/7/2019

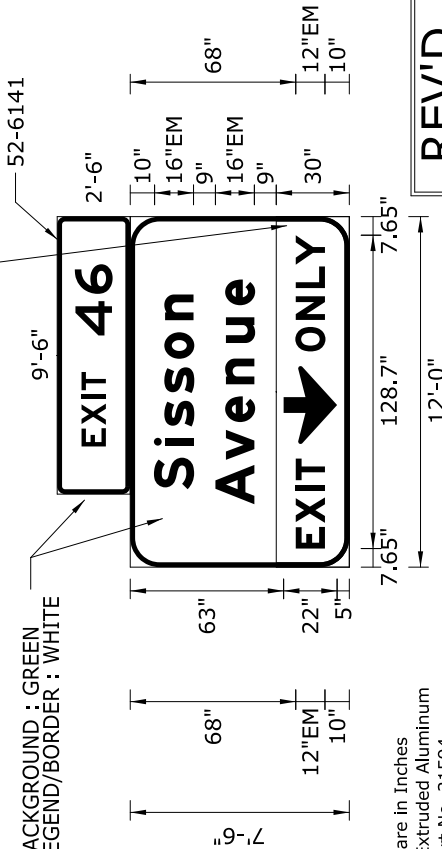
LETTER POSITIONS (X)

		LENGTH	HEIGHT	SPACING	CHARACTER	W	E	S	T
47.6	55.8	60.1	64.7						
17.8	25.6	30.9	34.7	40.5	44.5	50.5	56.8	60.2	

SIGN DETAIL
1:65

BACKGROUND : FLUORESCENT YELLOW
LEGEND/BORDER : BLACK TYPE PLAIN

BACKGROUND : GREEN
LEGEND/BORDER : WHITE



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21594
Mounted : Overhead
Location : Hartford Route 1-84 W.B. Mileage : 61.19
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084W_063_61.19_E
SIGN PANEL	90.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	113.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

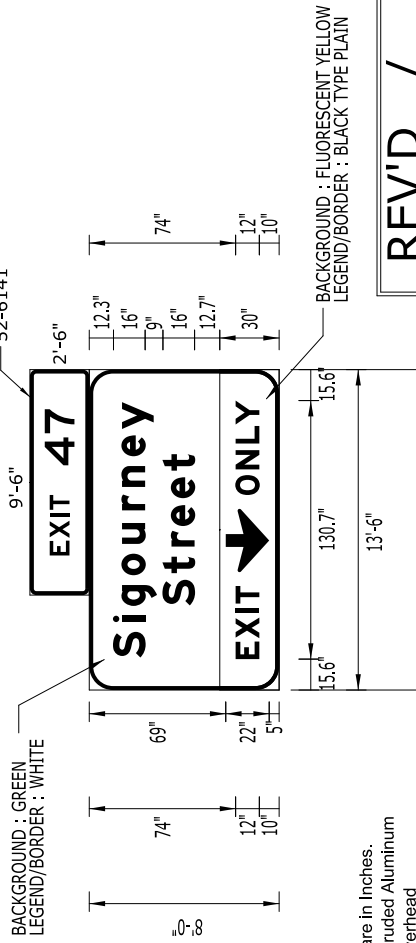
SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	50.6	5	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

										LENGTH	SERIES/SIZE
S	i	s	s	o	n						EM 2000
32	17.9	7.8	13.8	14.1	15.8	10.6	32			80	16/12
A	v	e	n	u	e						EM 2000
25.8	18.2	15.5	15.5	17	15.5	10.6	25.8			92.3	16/12
E	X	I	T								EM 2000
7.6	10.6	13	4.6	8.9	99.4					37	12
O	N	L	Y								EM 2000
88.6	13	13.1	9.6	12.1	7.6					47.8	12

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21594
Location : Hartford Route I-84 W.B. Mileage : 61.19
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

SIGN NUMBER	084W_063_61.19_F
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	131.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
ARDDWN	0	59.6	5	32	22

REV'D /

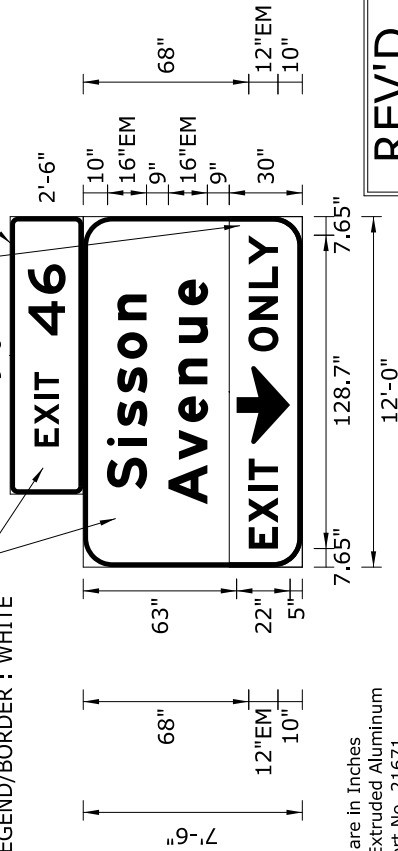
PLOTTED : 2/7/2019

		LETTER POSITIONS (X)					LENGTH	SERIES/SIZE	
S	i	g	o	u	r	n	e	y	EM 2000
16.4	34.4	42.5	58	73.9	90.8	102.7	118.2	132	129.1 16/12
S	t	r	e	e	t				EM 2000
42.8	59.1	72.5	82.9	97	110.9				76.5 16/12
E	X	I	T						EM 2000
15.6	26.2	39.2	43.7						37 12
O	N	L	Y						EM 2000
98.6	111.6	124.6	134.2						47.8 12

SIGN DETAIL
1:65

BACKGROUND : FLUORESCENT YELLOW
LEGEND/BORDER : BLACK TYPE PLAIN

BACKGROUND : GREEN
LEGEND/BORDER : WHITE



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21671
Mounted : Overhead
Location : Hartford Route 1-84 W.B. Mileage : 61.32
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084W_063_61.32_A
SIGN PANEL	90.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.Ft.)	113.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

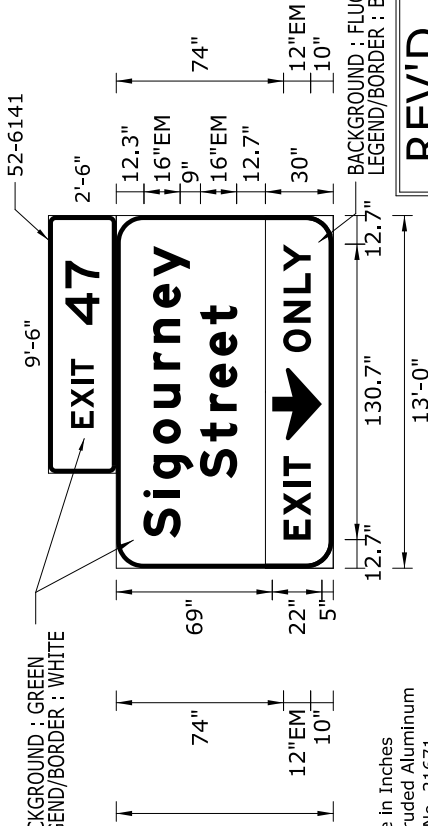
SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	50.6	5	32	22

PLOTTED : 2/7/2019

						LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
	S	i	s	s	o	n					
32	17.9	7.8	13.8	14.1	15.8	10.6	32			80	EM 2000 16/12
25.8	18.2	15.5	15.5	17	15.5	10.6	25.8			92.3	EM 2000 16/12
7.6	10.6	13	4.6	8.9	99.4					37	EM 2000 12
88.6	13	13.1	9.6	12.1	7.6					47.8	EM 2000 12

SIGN DETAIL
1:70

BACKGROUND : GREEN
LEGEND/BORDER : WHITE



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21671
Mounted : Overhead
Location : Hartford Route 1-84 W.B. Mileage : 61.32
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

SIGN NUMBER	084W_063_61.32_B
SIGN PANEL	104.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	123.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

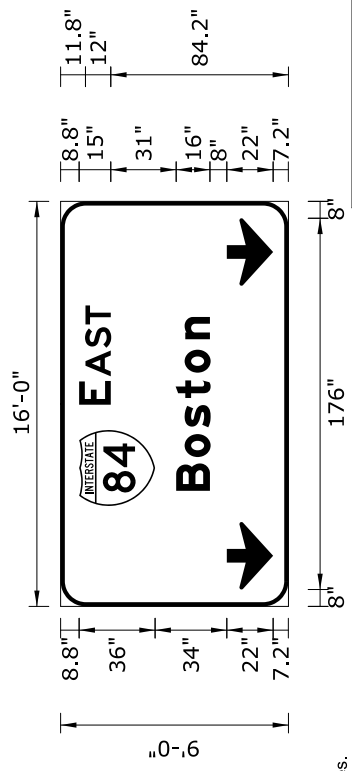
SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	56.6	5	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE	
		S	i	g	o	u	r	n	e	y						
	13.5	17.9	8.2	15.5	15.8	17	11.8	15.5	13.8	13.6	13.5					EM 2000
														129.1	16/12	
	39.8	16.3	13.4	10.4	14.1	13.9	8.3	39.8								EM 2000
														76.5	16/12	
																EM 2000
	12.7	10.6	13	4.6	8.9	106.4								37	12	
																EM 2000
	95.6	13	13.1	9.6	12.1	12.7								47.8	12	

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21597
 Location: Hartford Route I-84 E.B. Mileage: 61.71
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chaachakis

REV'D /

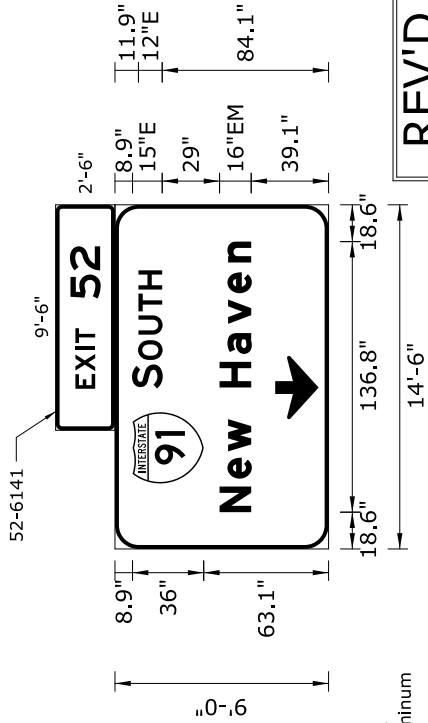
SIGN NUMBER	084E_063_61.71_A
SIGN PANEL	144.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	144.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	47.6	63.2	36	36
ARROWN	0	8	7.3	32	22
ARROWN	0	152	7.3	32	22

PLOTTED : 2/7/2019

				LENGTH	SERIES/SIZE
LETTER POSITIONS (X)					
E	A	S	T		E 2000
95.6	109.1	122.6	133.7	47.1	15,12
B	o	s	t	o	EM 2000
54.8	70.8	84.9	98.8	110.8	16/12
				82.4	

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21597
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.71
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: M. Chachakis

PLOTTED : 2/7/2019

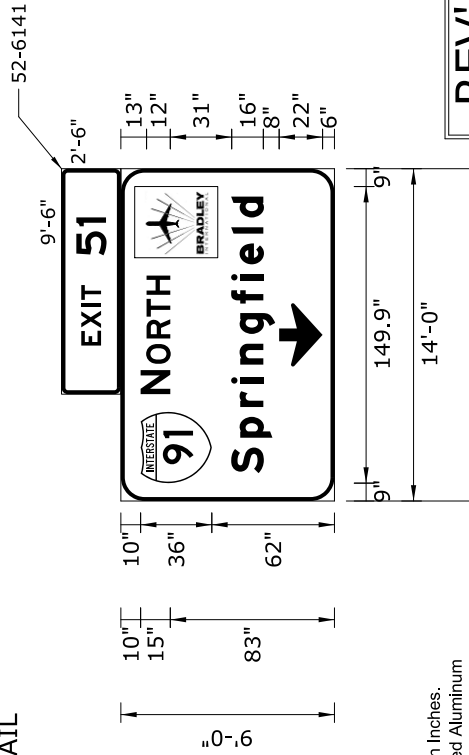
SIGN NUMBER	084E_063_61.71_B
SIGN PANEL	130.5 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	154.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White

SYMBOL	ROT	X	Y	WID	HT
M1	0	33.1	63.1	36	36
AROWN	0	65.6	5	32	22

LETTER POSITIONS (X)

											LENGTH	SERIES/SIZE
S	O	U	T	H								E 2000
81.1	95.5	108.4	120.1	131.2							59.8	15,12
N	e	w		H	a	v	e	n				EM 2000
18.6	35.6	49.3	65.6	81.6	98.6	113.8	129.3	144.8			136.8	16/12
E	X	I	T									EM 2000
16.6	27.2	40.2	44.7								37	12
O	N	L	Y									EM 2000
109.6	122.6	135.6	145.2								47.8	12

SIGN DETAIL
1:80



REV'D /

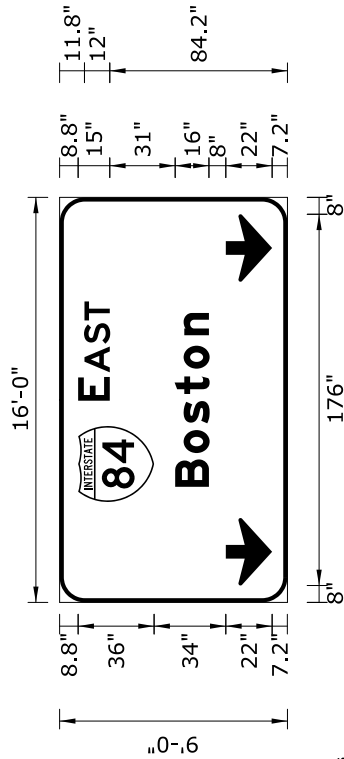
SIGN NUMBER	084E_063_61.71_C
SIGN PANEL	126.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	149.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	9	62	36	36
51-1406	0	123	59	36	42
AR00WN	0	68	6	32	22

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
N	O	R	T	H							E	2000	
54	69.3	82.2	93.2	104.3							59.9	15,12	
S	p	r	i	n	g	f	i	e	l	d			
14.1	32	47.5	59.4	69	84.5	99.8	111.5	119.7	135.2	143.4	139.8	EM 2000 16/12	

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21598
 Location : Hartford Route I-84 E.B. Mileage : 61.87
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chaachakis

REV'D /

SIGN NUMBER	084E_063_61.87_A
SIGN PANEL	144.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	144.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	47.6	63.2	36	36
ARROW	0	8	7.3	32	22
ARROW	0	152	7.3	32	22

PLOTTED : 2/7/2019

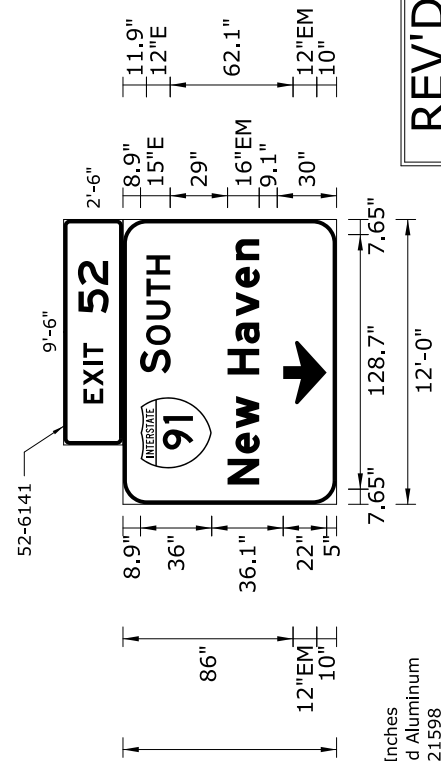
LETTER POSITIONS (X)		LENGTH	SERIES/SIZE				
E	A	S	T				E 2000
95.6	109.1	122.6	133.7			47.1	15,12
B	o	s	t	o	n		EM 2000
54.8	70.8	84.9	98.8	110.8	126.6	82.4	16/12

SIGN DETAIL
1:80

SIGN NUMBER	084E_063_61.87_B
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	4" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White

SYMBOL	ROT	X	Y	WID	HT
M1_1	0	18.1	63.1	36	36
AR000N	0	50.6	5	32	22

REV'D /

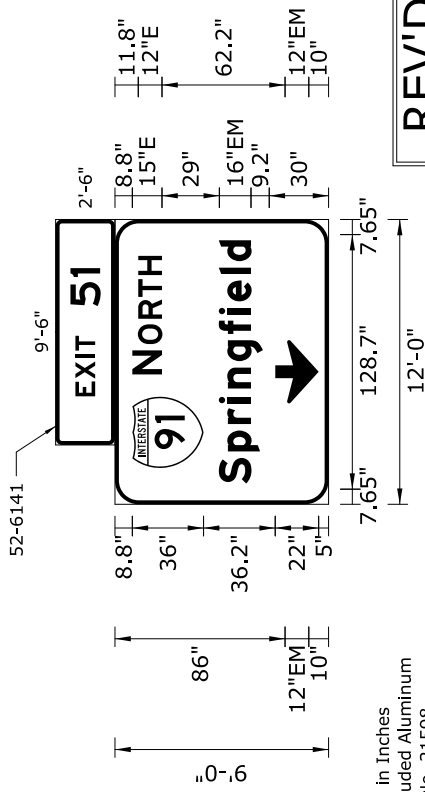


Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21598
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 61.87
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

PLOTTED : 2/7/2019

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE		
S	O	U	T	H		E 2000		
66.1	80.5	93.4	105.1	116.2	59.8	15,12		
N	e	w		H	a	v	e	n
10	25.7	38.4	54.7	65.6	81.3	95	109.5	123.4
E	X	I	T					
7.6	18.2	31.2	35.7					
O	N	L	Y					
88.6	101.6	114.6	124.2					
					124			

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21598
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.87
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

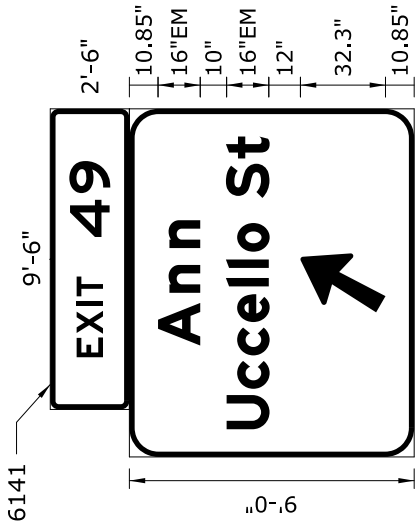
SIGN NUMBER	084E_063_61.87_C
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	18.4	63.2	36	36
AROWDN	0	51	5	32	22

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)			LENGTH	SERIES/SIZE					
N	O	R	T	H		E 2000					
65.7	81	93.8	104.8	115.9	59.9	15,12					
S	p	r	i	n	g	f	i	e	l	d	
10.5	26.7	40.6	51.1	58.5	72.4	86.1	96.1	102.6	116.4	122.9	EM 2000
E	X	I	T				123	16/12			EM 2000
8	18.6	31.6	36.1				37	12			EM 2000
O	N	L	Y								EM 2000
89	102	115.1	124.7				47.8	12			

SIGN DETAIL
1:60



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21598

Mounted : Overhead
Location : Hartford Route 1-84 E.B. Mileage : 61.87
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

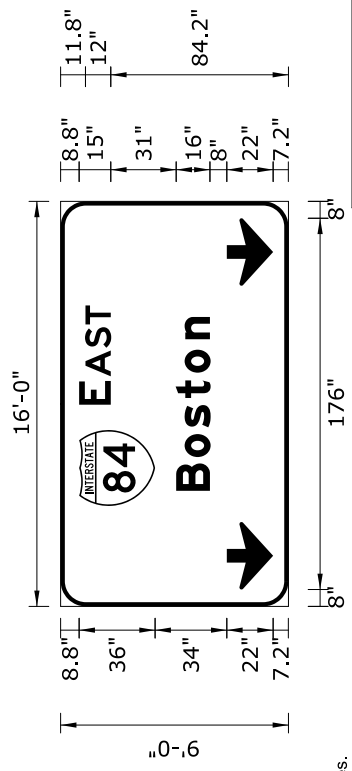
SIGN NUMBER	084E_063_61.87_D
SIGN PANEL	99.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	122.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	54.8	10.9	22.2	35

PLOTTED : 2/7/2019

					LENGTH		LENGTH	SERIES/SIZE
					LETTER POSITIONS (X)			
A	n	n					EM 2000	
42.2	62.2	79.2				47.5	16/12	
U	c	c	e	l	l	o	EM 2000	
10.5	25.8	38.5	51.1	64.7	71.7	77.8	16/12	

SIGN DETAIL
1:75



REV'D /

SIGN NUMBER	084E_063_61.98_A			
SIGN PANEL	144.0 Sq.Ft.			
EXIT CROWN	-			
TOTAL AREA	144.0 Sq.Ft.			
BDR INSET/WIDTH	0" / 2"			
CORNER RADIUS	12"			
BACKGROUND	TYPE:	IX		
LEGEND/BORDER	COLOR:	Green		
	TYPE:	IX		
	COLOR:	White/White		

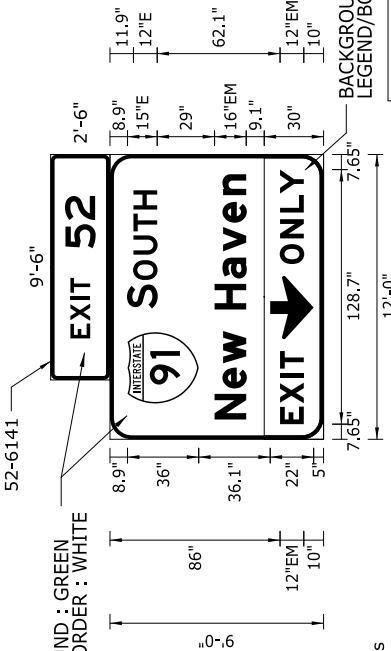
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	47.6	63.2	36	36
ARROW	0	8	7.3	32	22
ARROW	0	152	7.3	32	22

Dimensions are in inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21599
 Location: Hartford Route I-84 E.B. Mileage: 61.98
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
E	A	S	T		E 2000
95.6	109.1	122.6	133.7	47.1	15,12
B	o	s	t		EM 2000
54.8	70.8	84.9	98.8	110.8	126.6
				82.4	16/12

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21599
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 61.98
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
 LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

SIGN NUMBER	084E_063_61.98_B
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	4" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

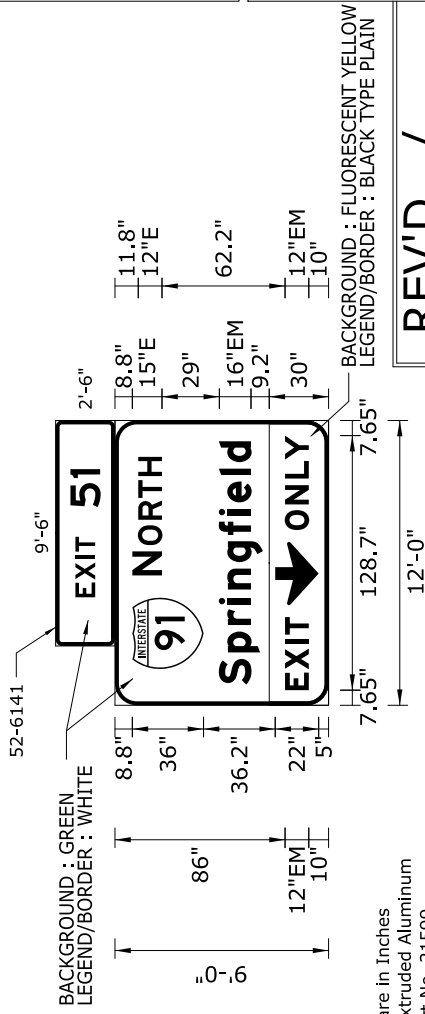
SYMBOL	ROT	X	Y	WID	HT
M1_1	0	18.1	63.1	36	36
ARROWN	0	50.6	5	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

	LENGTH			SERIES/SIZE				
S	O	U	T	H				
66.1	80.5	93.4	105.1	116.2		E 2000		
					59.8	15,12		
N	e	w		H	a	v	e	n
10	25.7	38.4	54.7	65.6	81.3	95	109.5	123.4
E	X	I	T					
7.6	18.2	31.2	35.7				37	12
O	N	L	Y					
88.6	101.6	114.6	124.2				47.8	12

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21599
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.98
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

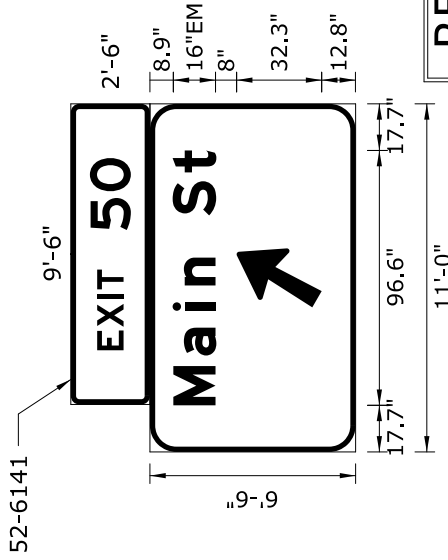
SIGN NUMBER	084E_063_61.98_C
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1	0	18.4	63.2	36	36
AROWN	0	51	5	32	22

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE							
		LETTER POSITIONS (X)									
N	O	R	T	H							
65.7	81	93.8	104.8	115.9	E 2000						
				59.9	15,12						
S	p	r	i	n	g	f	i	e	l	d	
10.5	26.7	40.6	51.1	58.5	72.4	86.1	96.1	102.6	116.4	122.9	EM 2000
											16/12
E	X	I	T								EM 2000
8	18.6	31.6	36.1							37	12
O	N	L	Y								EM 2000
89	102	115.1	124.7							47.8	12

SIGN DETAIL
1:60



SIGN NUMBER	084E_063_61.98_D
SIGN PANEL	71.5 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	95.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	10"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	54.8	12.9	22.2	35

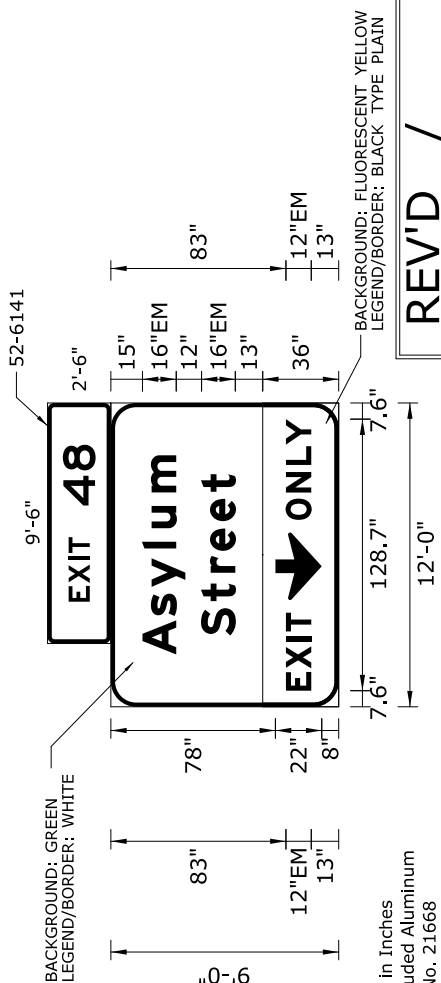
Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21599
 Mounted : Overhead
 Location : Hartford Route I-84 E.B. Mileage : 61.98
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE	
M	a	i	n	S	t										EM 2000	
17.7	36.6	53.5	63.1	73.7	89.7	106									96.6	16/12

SIGN DETAIL
1:75



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21668
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 61.75
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084W_063_61.75_A
SIGN PANEL	108.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	131.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

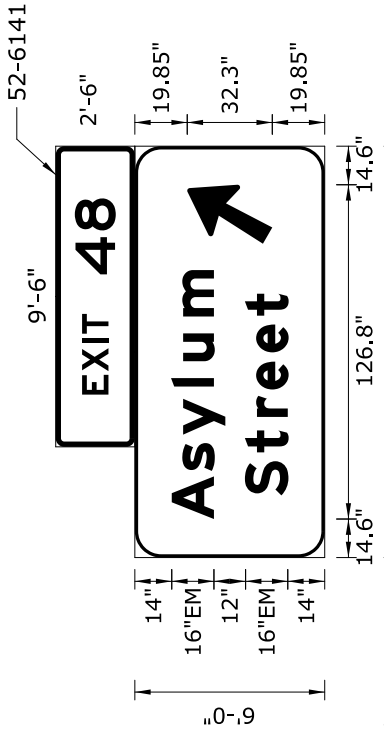
SYMBOL	ROT	X	Y	WID	HT
AR00WN	0	50.6	8	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

						LENGTH	SERIES/SIZE					
A	18.2	13.8	18.2	9.6	17	17.6	24.8					EM 2000
S	16.3	13.4	10.4	14.1	13.9	8.3	33.8					EM 2000
E	10.6	13	4.6	8.9	99.4							EM 2000
O	13	13.1	9.6	12.1	7.6							EM 2000

SIGN DETAIL
1:60



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21667
 Mounted : Overhead
 Location : Hartford Route 1-84 W.B. Mileage : 61.86
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

SIGN NUMBER	084W_063_61.86_A
SIGN PANEL	78.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	101.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	330	119	19.9	22.2	35

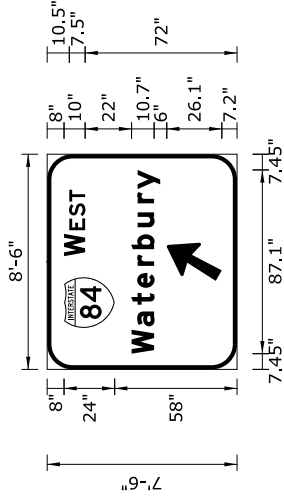
REV'D /

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

			LENGTH			SERIES/SIZE		
A	s	y	l	u	m			
14.6	18.2	13.8	18.2	9.6	17	17.6	47	EM 2000
23.6	16.3	13.4	10.4	14.1	13.9	8.3	55.9	EM 2000

SIGN DETAIL
1:75



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : Hartford Route I-84 W.B. Exit 49 Ramp 189
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

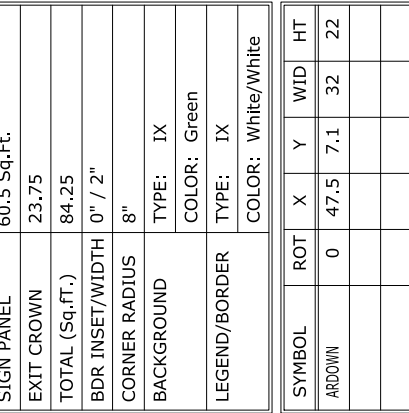
SIGN NUMBER	084W_063_Exit49_R189_A
SIGN PANEL	63.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	63.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
MI.1	0	19.7	58	24	24
AR_Type A	150	42	7.2	18	28.3

PLOTTED : 02/07/19

					LETTER POSITIONS (X)				LENGTH	SERIES/SIZE		
W	E	S	T									
53.7	66	72.6	79.5								E 2000	
											31.5	10.7, 5
W	a	t	e	r	b	u	r	y				EM 2000
7.5	20.4	30.7	38.7	49.1	57	67.4	78.7	85.5			87.1	10.7/8

SIGN DETAIL
1:55



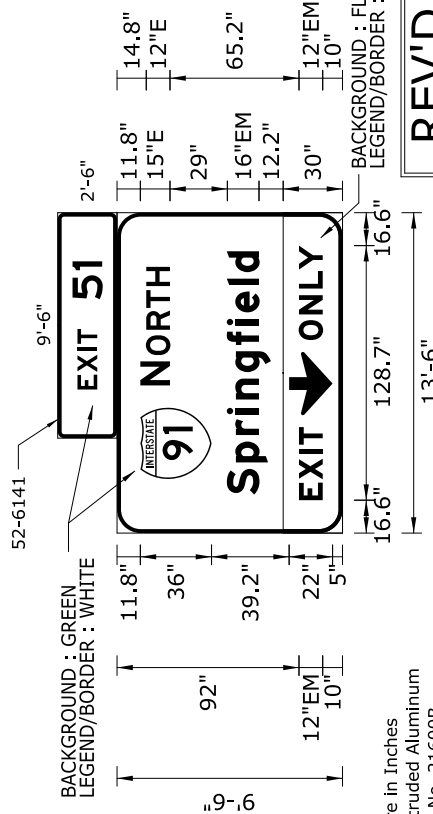
REV'D /

Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21600A
Mounted : Overhead
Location : Hartford Route 1-84 E.B. Mileage : 62.07
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By:

PLOTTED : 2/7/2019

					LENGTH		SERIES/SIZE	
					LETTER POSITIONS (X)			
M	a	i	n	S	t			
17.7	35.6	50.9	58.9	69.5	85.5	91.6	16/12	EM 2000

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21600B
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 62.07
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
 LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

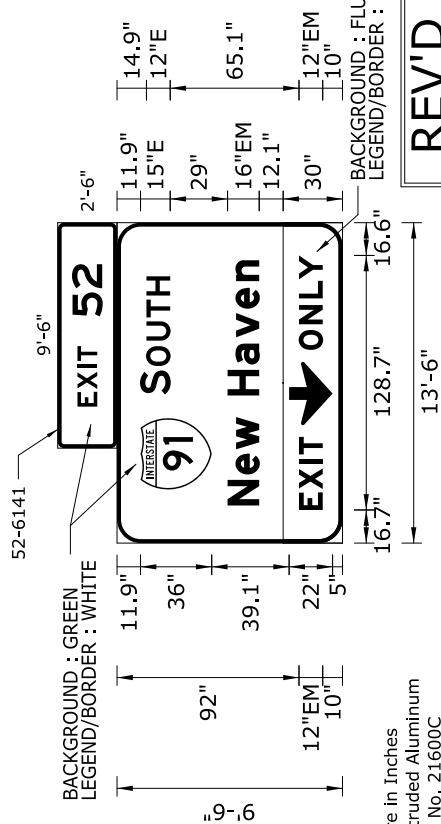
SIGN NUMBER	084E_063_62.07_B
SIGN PANEL	128.25 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	152.0
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
LEGEND/BORDER	TYPE: IX
LEGEND/BORDER	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1	0	27.4	66.2	36	36
AROWDN	0	59.6	5	32	22

PLOTTED : 2/7/2019

				LETTER POSITIONS (X)		LENGTH	SERIES/SIZE									
N	O	R	T	H			E 2000									
74.7	90	102.8	113.8	124.9		59.9	15,12									
S	p	r	i	n	g	f	i	e	l	d						EM 2000
19.5	35.7	49.6	60.1	67.5	81.4	95.1	105.1	111.6	125.4	131.9				123	16/12	
E	X	I	T													EM 2000
16.6	27.2	40.1	44.7											37	12	
O	N	L	Y													EM 2000
97.6	110.6	123.6	133.2											47.8	12	

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21600C
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 62.07
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

SIGN NUMBER	084E_063_62.07_C
SIGN PANEL	128.25 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	152.0
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1	0	27.1	66.1	36	36
ARROW	0	59.6	5	32	22

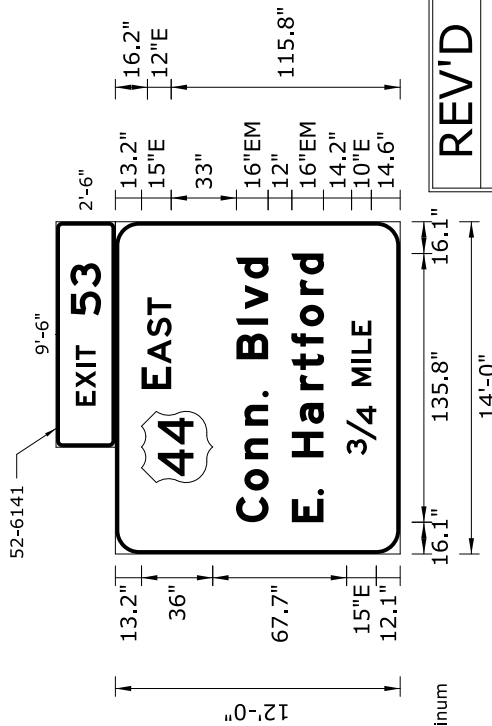
BACKGROUND : FLUORESCENT YELLOW
 LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
S	O	U	T	H	E 2000
75.1	89.5	102.4	114.1	125.2	59.8 15,12
N	e	w		H	EM 2000
19	34.7	47.4	63.7	74.6	124 16/12
E	X	I	T		EM 2000
16.6	27.2	40.1	44.7	37	12
O	N	L	Y		EM 2000
97.6	110.5	123.6	133.2	47.8	12

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21601
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 62.17
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

SIGN NUMBER	084E_063_62.17_A
SIGN PANEL	168.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	191.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

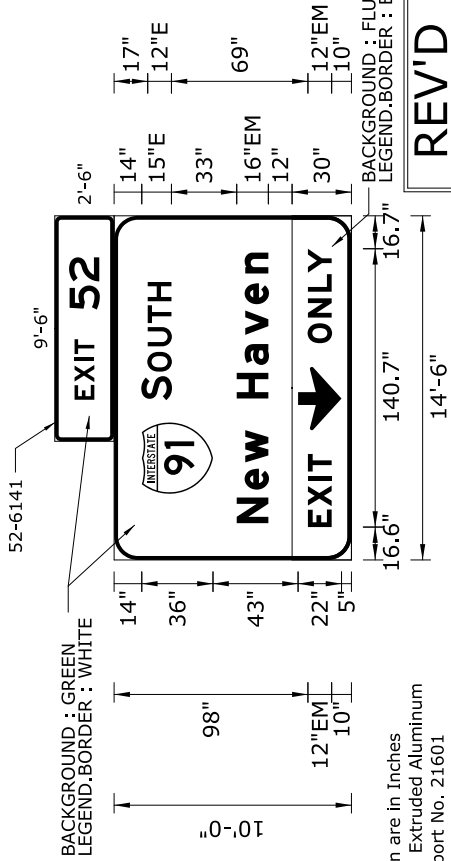
SYMBOL	ROT	X	Y	WID	HT
M1.4	0	36.1	94.8	36	36

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LENGTH												SERIES/SIZE				
E	A	S	T													E	2000	
83.4	96.2	109.8	120.8													46.4	15,12	
C	o	n	.		B	l	v	d									EM	2000
16.1	32.1	47.9	64.9	79.3	82.5	98.5	115.9	123.8	139.3					133.8	16/12			
E	.	H	a	r	t	f	o	r	d							EM	2000	
16.1	29.7	32.9	48.9	65.8	82.8	93	104.9	115.1	131	141.4					135.8	16/12		
3/4	M	I	L	E												E	2000	
50	84.9	96.9	101.3	110.5												68.1	15,10	

SIGN DETAIL
1:80



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21601
 Mounted : Overhead
 Location : Hartford Route 1-84 E.B. Mileage : 62.17
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
 LEGEND BORDER : BLACK TYPE PLAIN

REV'D /

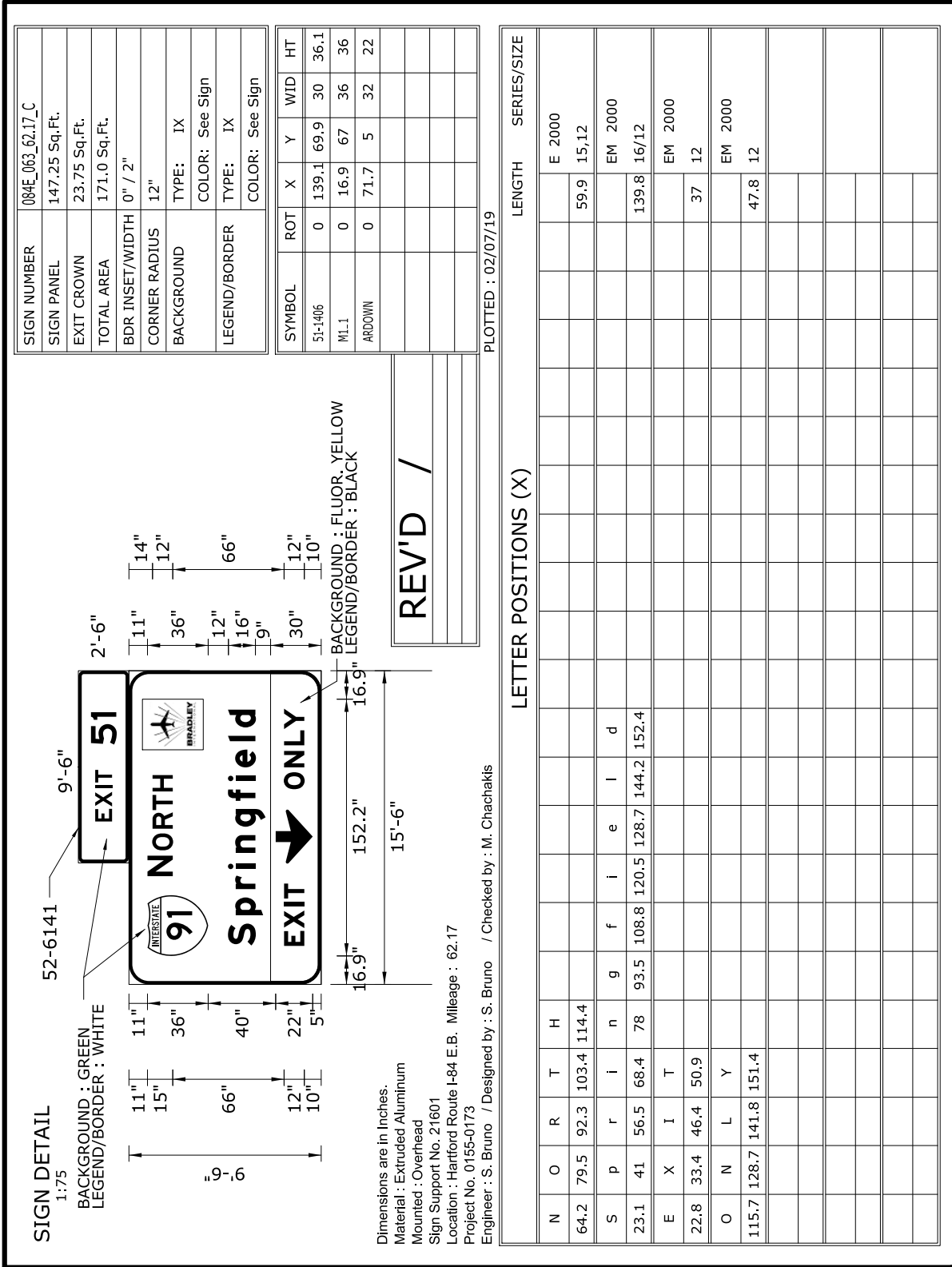
SIGN NUMBER	084E_063_62.17_B
SIGN PANEL	145.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	168.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1_1	0	33.5	70	36	36
ARDDWN	0	65.6	5	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

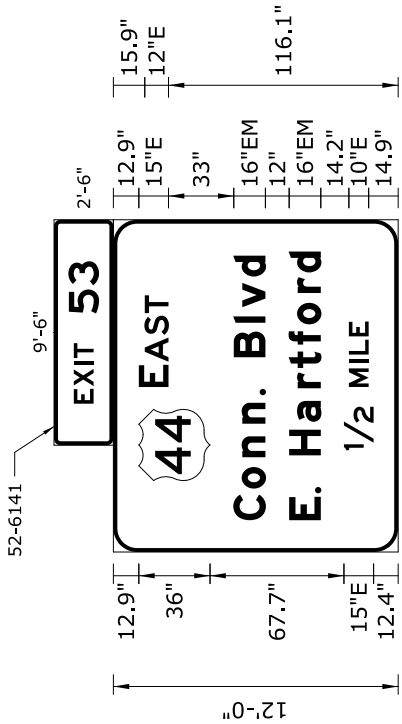
		LENGTH		SERIES/SIZE	
S	O	U	T	H	E
80.8	95.2	108	119.8	130.8	15.12
N	e	w		H	a
18.6	35.6	49.3	65.6	81.6	98.6
E	X	I	T		
16.6	27.2	40.2	44.7		
O	N	L	Y		
109.6	122.6	135.6	145.2		



SIGN DETAIL
1:80

SIGN NUMBER	084E_063_62.46_A
SIGN PANEL	168.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.Ft.)	191.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.4	0	36.1	95.1	36	36



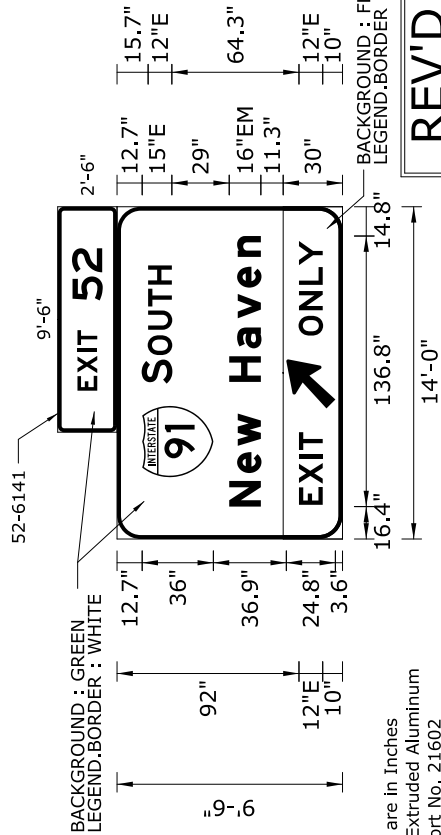
Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21602
Mounted : Overhead
Location : Hartford Route 1-84 E.B. Mileage : 62.46
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

PLOTTED : 2/7/2019

LETTER POSITIONS (X)											
										LENGTH	SERIES/SIZE
E	A	S	T								E 2000
83.4	96.2	109.8	120.8							46.4	15,12
C	o	n	.		B	l	v	d			EM 2000
16.1	32.1	47.9	64.9	79.3	82.5	98.5	115.9	123.8	139.3	133.8	16/12
E	.	H	a	r	t	f	o	r	d		EM 2000
16.1	29.7	32.9	48.9	65.8	82.8	93	104.9	115.1	131	141.4	16/12
1/2	M	I	L	E							E 2000
51.5	83.4	95.4	99.8	109						65.1	15,10

SIGN DETAIL
1:80



SIGN NUMBER	084E_063_62.46_B
SIGN PANEL	133.0 Sq.Ft.
EXIT CROWN	23.75
TOTAL (Sq.ft.)	156.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1_1	0	31.3	65.3	36	36
AR_Type A	315	66	3.6	20	31.5

BACKGROUND : GREEN
LEGEND.BORDER : WHITE

BACKGROUND : FLUORESCENT YELLOW
LEGEND.BORDER : BLACK TYPE PLAIN

REV'D /

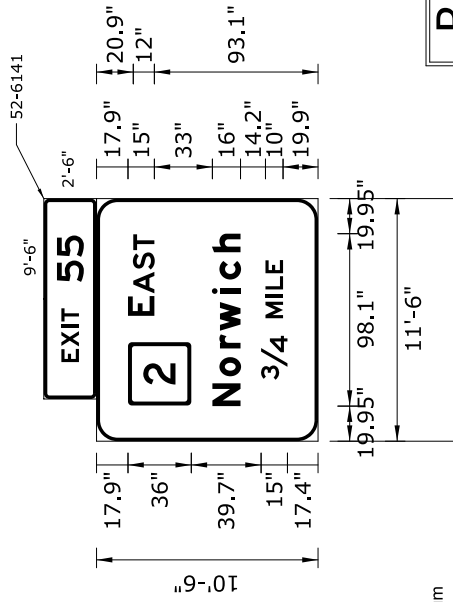
Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21602
Mounted : Overhead
Location : Hartford Route 1-84 E.B. Mileage : 62.46
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

PLOTTED : 2/7/2019

LETTER POSITIONS (X)										
									LENGTH	SERIES/SIZE
S	O	U	T	H						E 2000
78.6	93	105.8	117.6	128.6					59.8	15,12
N	e	w		H	a	v	e	n		EM 2000
16.4	33.4	47.1	63.4	79.4	96.4	111.6	127.1	142.6	136.8	16/12
E	X	I	T							E 2000
17.3	28	40.8	45						36.7	12
O	N	L	Y							E 2000
102.8	115.7	128.5	138.5						47.9	12

SIGN DETAIL

1:90



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Bridge (01428A)
 Sign Support No. 21603A
 Location : Hartford Route I-84 E.B. Mileage : 62.54
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

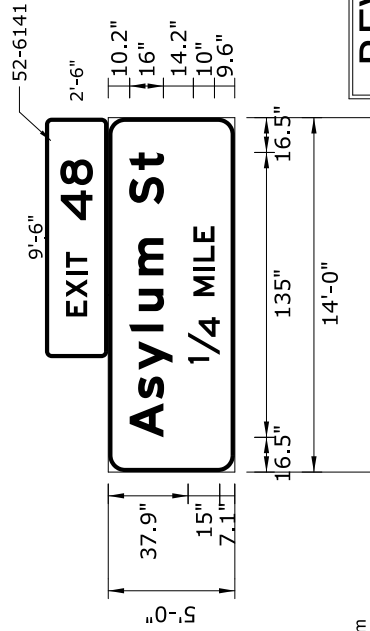
SIGN NUMBER	084E_063_62.54_A
SIGN PANEL	120.75 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	144.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1_1	0	20.3	72.1	36	36

LETTER POSITIONS (X)

					LENGTH	SERIES/SIZE
E	A	S	T			E 2000
71.3	84.1	97.7	108.7		46.4	15,12
N	o	r	w	i	c	h
20	36.9	52.8	62.8	83.8	92	107.5
3/4	M	I	L	E		
35	69.9	81.9	86.3	95.5		
					98.1	16/12
					68.1	15,10

SIGN DETAIL
1:75



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21600E
 Location : Hartford Route I-84 W.B. Mileage : 62.11
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by :

REV'D /

SIGN NUMBER	084W_063_62.11_E
SIGN PANEL	70 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	93.75 Sq.Ft.
BDR INSET/WIDTH	2" / 2"
CORNER RADIUS	8"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

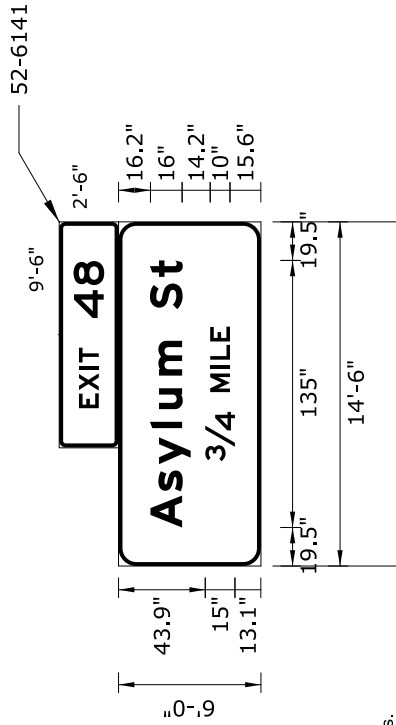
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
E	X	I	T	4	8		E 2000
19.8	28.7	39.4	42.9	65.4	82	74.4	10,15
A	s	y	l	u	m		EM 2000
16.5	34.7	48.5	66.7	76.3	93.3	135	16/12
1/4	M	I	L	E			E 2000
51.5	83.4	95.4	99.8	109		65.1	15,10

SIGN DETAIL

1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Bridge (01428A)
 Sign Support No. 21603B
 Location : Hartford Route I-84 W.B. Mileage : 62.55
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_063_62.55_A
SIGN PANEL	87.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	110.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

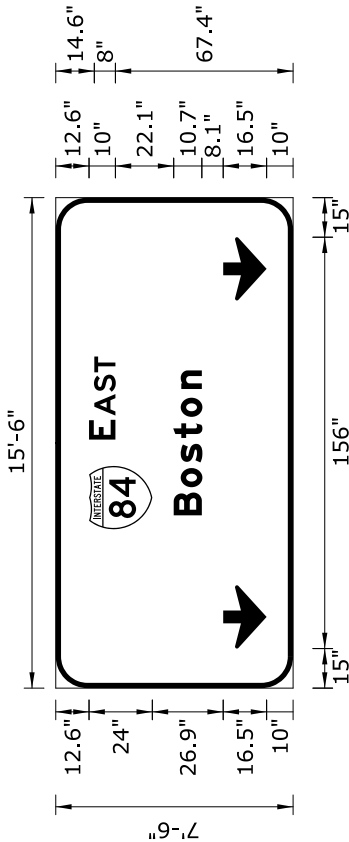
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

A	s	M	3/4	53	37.7	51.5	69.7	79.3	96.3	113.9	129.9	146.2	S	t	LENGTH		SERIES/SIZE
															135	16/12	

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21766
 Location : Hartford Route 44 E.B. Mileage : 53.67
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

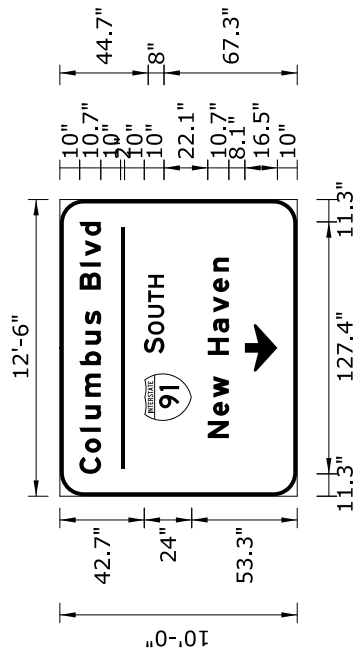
SIGN NUMBER	044E_063_53.67_A
SIGN PANEL	116.25 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	116.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	60.3	53.4	24	24
ARDDOWN	0	15	10	24	16.5
ARDDOWN	180	147	10	24	16.5

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE
LETTER	POSITIONS (X)			
E	A S T			E 2000
94.3	103.4 112.4 119.8		31.5 10.8	
B	o s t o n			EM 2000
65.5	76.2 85.6 94.9 102.9 113.4		55 10.7/8	

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21766
 Location : Hartford Route 44 E.B. Mileage : 53.67
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

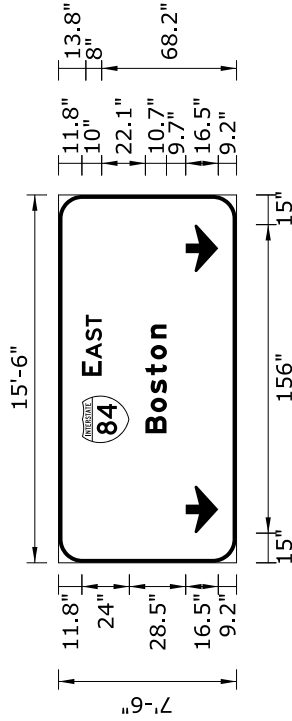
SIGN NUMBER	044E_063_53.67_B
SIGN PANEL	12'-6" x 10'-0"
EXIT CROWN	-
TOTAL AREA	125.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	38.1	53.3	24	24
ARDDOWN	0	63	10	24	16.5

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
C	O	I	U	M	B	S	U	B	I	V	D		
11.3	22	32.6	39	50.3	66.3	76.6	86.8	93.8	104.5	116.1	121.3	131.7	EM 2000
													127.4
													EM 2000
													39.8
													10.8
													EM 2000
													91.2
													10.7/8

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21767
 Location: Hartford Route 44 E.B. Mileage: 53.73
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

SIGN NUMBER	044E_063_53.73_A
SIGN PANEL	116.25 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	116.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	60.5	54.2	24	24
ARDDOWN	0	15	9.2	24	16.5
ARDDOWN	0	147	9.2	24	16.5

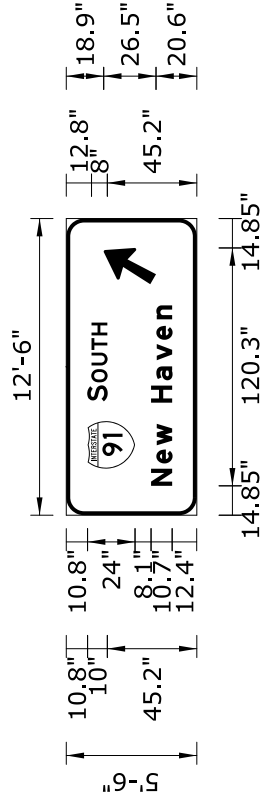
PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LENGTH	SERIES/SIZE
E	A S T		E 2000
94.5	103.1 112.1 119.5	30.9	10,8
B	o s t o n		EM 2000
65.5	76.2 85.6 94.9 102.9 113.4	55	10.7/8

SIGN DETAIL

1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21767
 Location : Hartford Route 44 E.B. Mileage : 53.73
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	044E_063_53.73_B
SIGN PANEL	12'-6" x 5'-6"
EXIT CROWN	-
TOTAL AREA	68.8 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	9"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

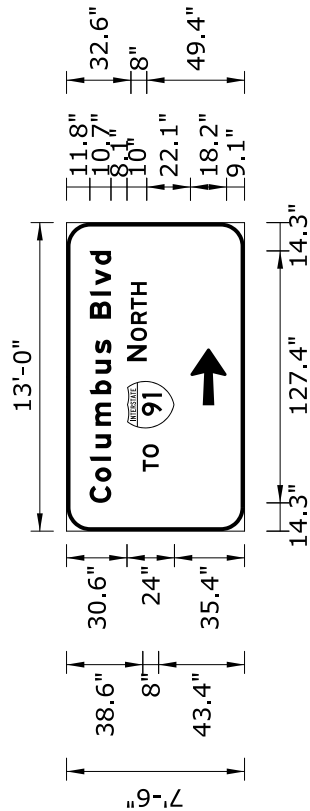
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	23.6	31.2	24	24
AR_Type A	330	116.8	20.6	18.2	28.7

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

S	O	U	T	H	LENGTH		SERIES/SIZE	
					X	Y		
57.6	67.2	75.7	83.6	90.9			E 2000	
						39.8	10.8	
N	e	w		H	a	v	e	n
14.9	26.2	35.4	46.2	56.9	68.2	78.4	88.7	99
								EM 2000
								10.7/8

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21767
Location : Hartford Route 44 E.B. Mileage : 53.73
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

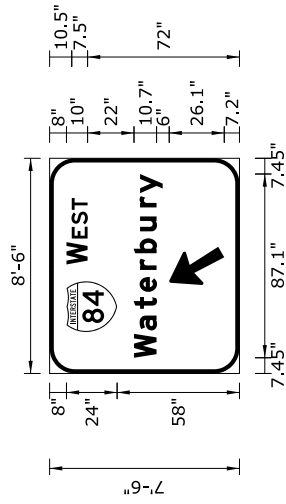
SIGN NUMBER	044E_063_53.73_C
SIGN PANEL	13'-0" x 7'-6"
EXIT CROWN	-
TOTAL AREA	97.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	51.9	35.4	24	24
AR_Type A	270	63.6	9.1	18.2	28.7

PLOTTED : 2/7/2019

LETTER POSITIONS (X)												
											LENGTH	SERIES/SIZE
C	o	l	u	m	b	u	s	B	l	v	d	EM 2000
14.3	25	35.5	41.9	53.2	69.3	79.6	89.7	96.8	107.5	119.1	124.3	134.7
N	O	R	T	H								E 2000
85.9	96.1	104.7	112.1	119.4							40	10,8
T	O											E 2000
30.1	37.2										13.8	8

SIGN DETAIL
1:75



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 21764
Location: Hartford Route I-84 W.B. Exit 50 Ramp 231
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chaachakis

REV'D /

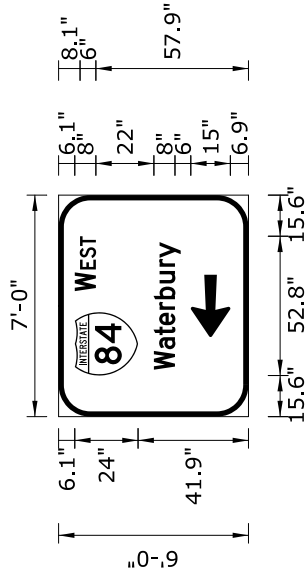
SIGN NUMBER	084W_063_EX50_R231_A
SIGN PANEL	63.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	63.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	19.7	58	24	24
AR_Type A	30	42	7.2	18	28.3

PLOTTED : 2/7/2019

				LENGTH	SERIES/SIZE
W	E	S	T		E 2000
51.7	64	70.6	77.5	31.5	10.7.5
W	a	t	e		EM 2000
7.5	20.4	30.7	38.7	87.1	10.7/8

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : Hartford Route I-84 W.B. Exit 49 Ramp 189
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

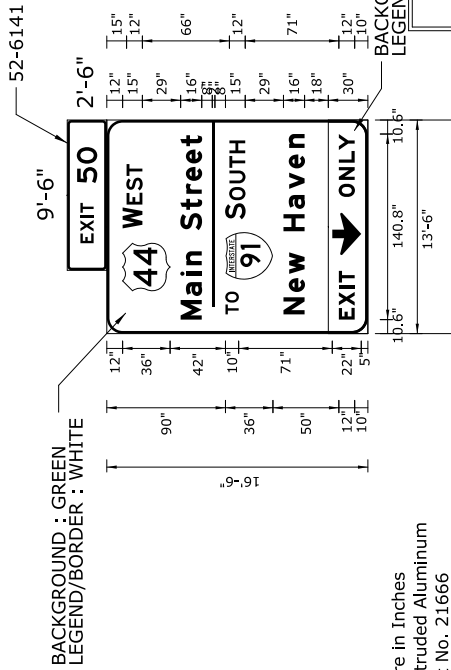
SIGN NUMBER	084WE_063_EX49_R189_B
SIGN PANEL	42.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	42.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	15.6	41.9	24	24
AR_Type A	270	30.2	6.9	15	23.6

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
W	E	S	T		D 2000
47.6	55.8	60.1	64.7	20.8	8.6
W	a	t	e	r	D 2000
17.8	25.6	30.9	34.7	40.5	48.4
				44.5	8/6
				50.5	
				56.8	
				60.2	

SIGN DETAIL
1:120



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21666
Mounted : Overhead
Location : Hartford Route I-84 W.B. Mileage : 62.62
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
LEGEND.BORDER : BLACK TYPE PLAIN

REV'D /

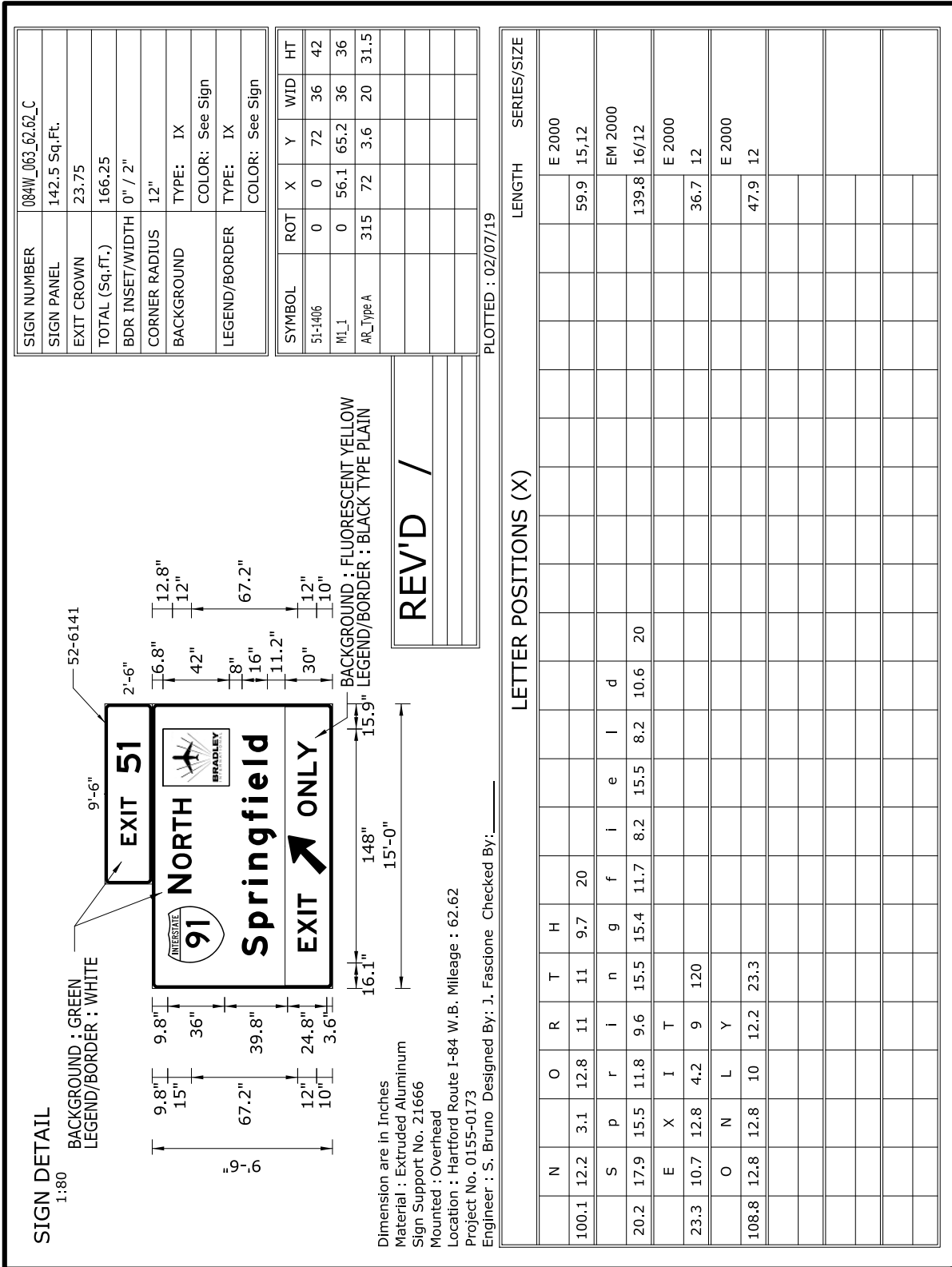
SIGN NUMBER	084W_063_62.62_B
SIGN PANEL	222.75 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL (Sq.Ft.)	246.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1_4	0	32.5	150	36	36
M1_1	0	40.9	72	36	36
AR00WN	0	59.6	5	32	22

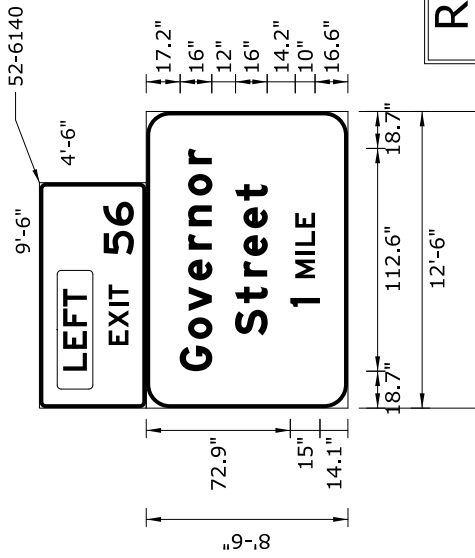
PLOTTED : 02/07/19

LETTER POSITIONS (X)

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
W													E 2000
79.8	15.9	2.2	10.7	11	9	33.4						48.8	15,12
M	a	i	n			S	t	r	e	e	t		EM 2000
10.6	17.9	15.4	8	10.6	16	15.5	12.2	9.8	13.2	13.1	8.3	11.5	16/12
T	O		S			O	U	T	H				E 2000
14.6	8.9	8.4	54.8	12.2	2.3	12.8	11.8	11	9.7	15.5		131.9	10,15,12
N	e	w				H	a	v	e	n			EM 2000
14.6	17	13.8	16.3	16	17	15.2	15.5	15.5	10.6	10.6		136.8	16/12
E	X	I	T										EM 2000
10.6	10.6	13	4.6	8.9	114.4							37	12
O	N	L	Y										EM 2000
103.6	13	13.1	9.6	12.1	10.6							47.8	12



SIGN DETAIL
1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21604
 Location : East Hartford Route I-84 E.B. Mileage : 62.84
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

SIGN NUMBER	084E_042_62.84_A
SIGN PANEL	106.25 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	149.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

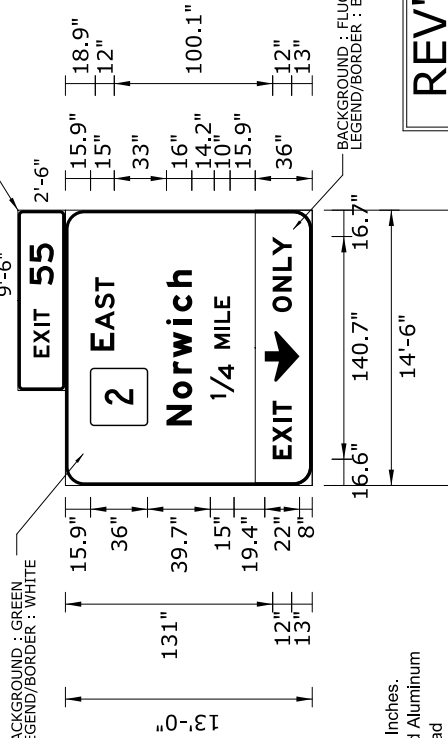
SYMBOL	ROT	X	Y	WID	HT

REV'D /

PLOTTED : 02/07/19

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE					
G	o	v	e	r	n	o	r	EM 2000
18.7	35	49.1	64.6	80.1	92	107.5	123.3	16/12
S	t	r	e	e	t			EM 2000
36.8	53.1	66.5	76.9	91	104.9			16/12
1	M	I	L	E				E 2000
51.2	65.7	77.7	82.1	91.3				15,10

SIGN DETAIL
1:100



SIGN NUMBER	084E_042_62.84_B
SIGN PANEL	188.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	212.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
MISCT	0	38	104.1	36	36
ARDDWN	0	65.6	8	32	22

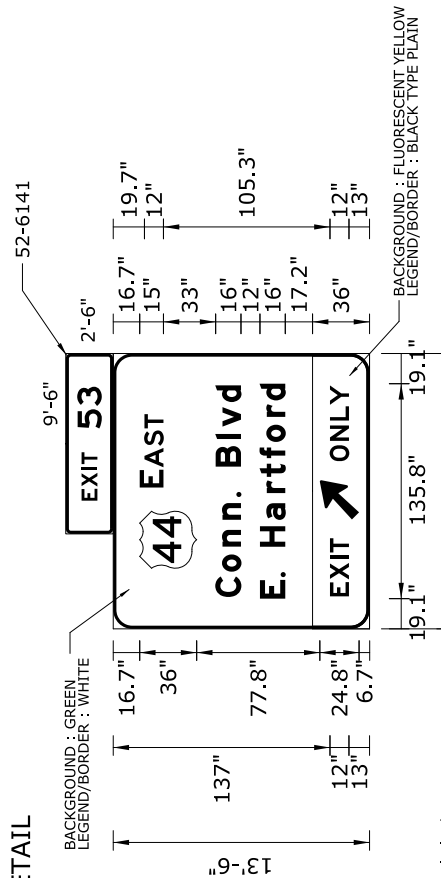
REV'D /

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

SYMBOL	ROT	X	Y	WID	HT	LENGTH	SERIES/SIZE
E							E 2000
85.3	98	111.6	122.6			46.4	15,12
N							EM 2000
38	54.9	70.8	80.8	101.8	110	98.1	16/12
1/4	M	I	L	E			E 2000
54.5	86.4	98.4	102.8	112		65.1	15,10
E	X	I	T				EM 2000
16.6	27.2	40.1	44.7			37	12
O	N	L	Y				EM 2000
109.6	122.5	135.6	145.2			47.8	12

SIGN DETAIL
1:100



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21604
Location : East Hartford Route I-84 E.B. Mileage : 62.84
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_042_62.84_C
SIGN PANEL	195.75 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	219.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: See Sign
	TYPE: IX
	COLOR: See Sign

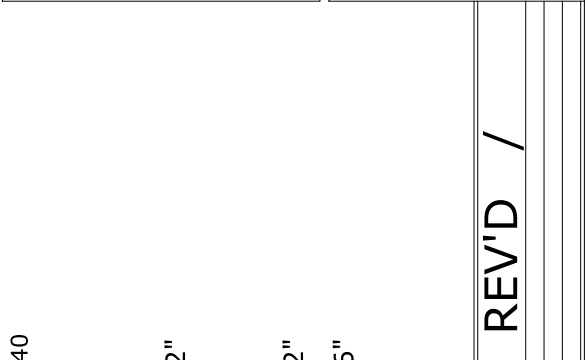
SYMBOL	ROT	X	Y	WID	HT
M1.4	0	38.3	109.3	36	36
AR_Type A	315	69.1	6.6	20	31.5

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE	
LETTER POSITIONS (X)					
E	A	S	T		E 2000
89.3	102.1	115.7	126.7	46.4	15,12
C	o	n	.	B	EM 2000
20.1	36.1	52	68.9	83.3	133.8
				120	16/12
E	.	H	a	r	EM 2000
19.1	32.7	35.9	51.9	68.9	135.8
				85.8	16/12
E	X	I	T		E 2000
20.5	31.2	44.1	48.3	36.7	12
O	N	L	Y		E 2000
106	118.8	131.7	141.6	47.9	12

SIGN NUMBER	084E_042_63.15_A
SIGN PANEL	106.25 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	149.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

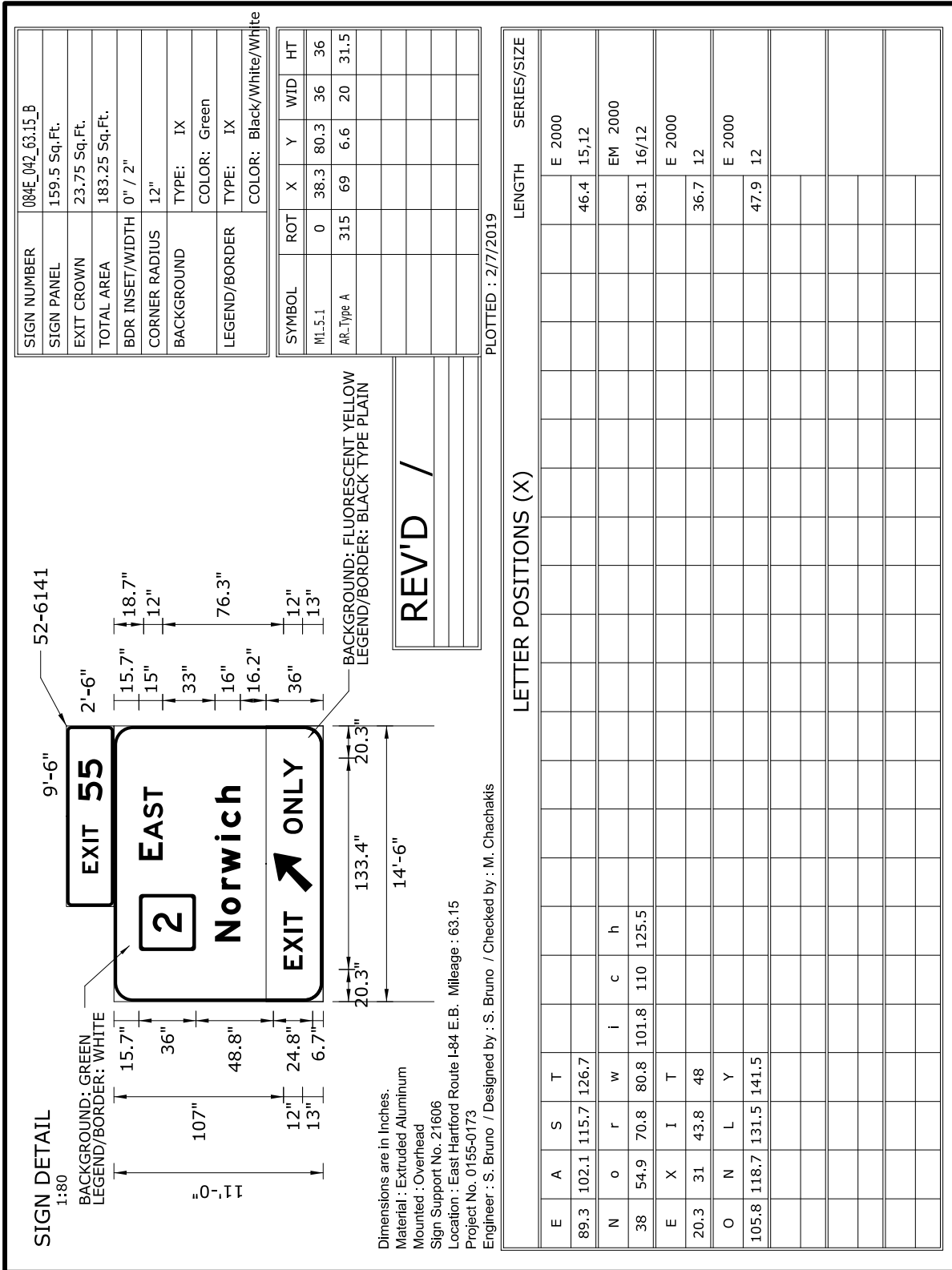
SYMBOL	ROT	X	Y	WID	HT



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21606
Location : East Harford Route I-84 E.B. Mileage : 63.15
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

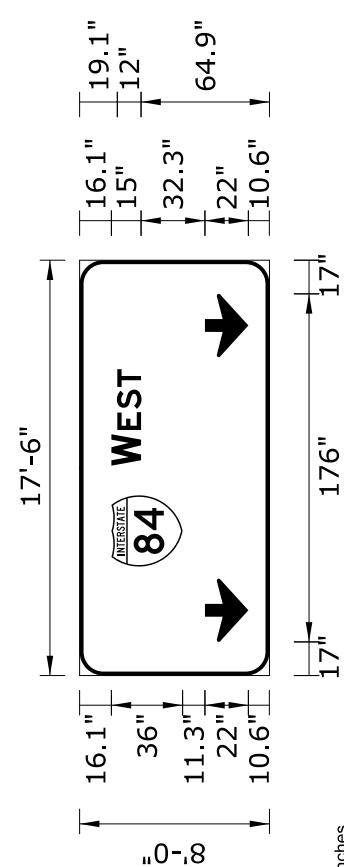
PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
G	o	18.7	EM 2000
o	n	107.5	16/12
n	r	123.3	
r	e	80.1	
e	e	91	EM 2000
e	t	104.9	16/12
t			E 2000
1/2	M	65.1	15,10
42.5	74.4	86.4	
90.8	100		



SIGN NUMBER	084W_042_62.84_D
SIGN PANEL	17'-6" x 8'-0"
EXIT CROWN	-
TOTAL AREA	140.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	55.1	43.9	36	36
ARDDWN	0	17	10.7	32	22
ARDDWN	0	161	10.7	32	22



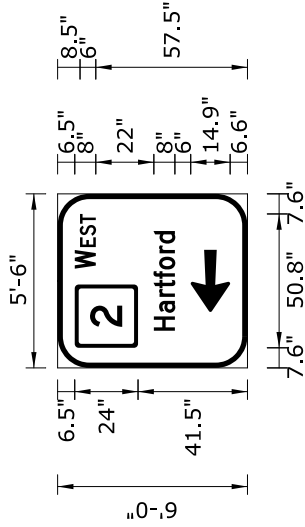
REV'D /

Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21604
Location : East Harford Route I-84 W.B. Mileage : 62.84
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

PLOTTED : 2/7/2019

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE
W	E	S	T			
106.1	124.2	134.9	145.9	48.8	E 2000	15,12

SIGN DETAIL
1:60



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : East Hartford Route I-84 E.B. Exit 53 Ramp 208
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_042_EX53_R208_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

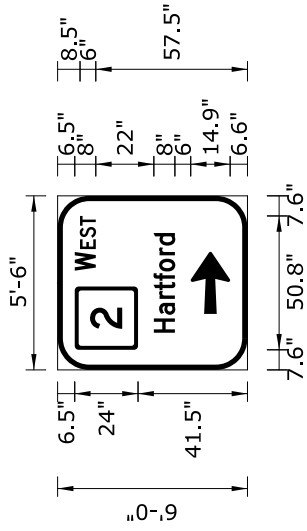
SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	7.6	41.5	24	24
AR_Type A	270	21.2	6.6	14.9	23.5

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LENGTH		SERIES/SIZE	
W	E	S	T	D	2000
37.6	45.8	50.1	54.7	20.8	8.6
H	a	r	t	f	o
14.1	20.9	26.9	30.2	33.8	37.3
				43.5	47.1
				37.8	8/6

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : East Hartford Route 1-84 E.B. Exit 53 Ramp 208
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

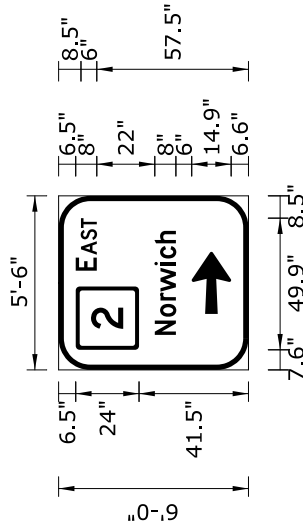
SIGN NUMBER	084E_042_EX53_R208_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	7.6	41.5	24	24
AR_Type A	270	21.2	6.6	14.9	23.5

PLOTTED : 2/7/2019

					LETTER POSITIONS (X)			
					LENGTH		SERIES/SIZE	
W	E	S	T					
37.6	45.8	50.1	54.7			D 2000		
					20.8	8,6		
H	a	r	t	f	o	r	d	
14.1	20.9	26.9	30.2	33.8	37.3	43.5	47.1	D 2000
						37.8	8/6	

SIGN DETAIL
1:60



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : East Hartford Route I-84 E.B. Exit 55 Ramp 076
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084E_042_EX55_R076_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

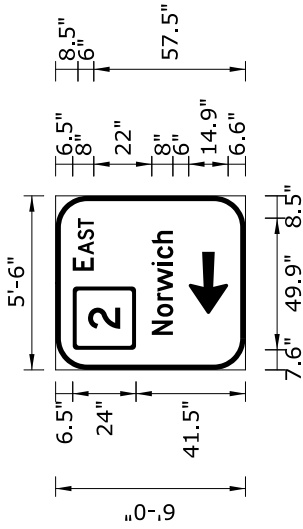
SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	7.6	41.5	24	24
AR_Type A	270	21.2	6.6	14.9	23.5

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

							LENGTH	SERIES/SIZE
E	A	S	T					D 2000
37.6	43.7	49.3	53.8				19.9	8,6
N	o	r	w	i	c	h		D 2000
13.3	20.2	26.3	29.7	39.7	42.2	48	39.4	8/6

SIGN DETAIL
1:60



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : East Hartford Route I-84 E.B. Exit 55 Ramp 076
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

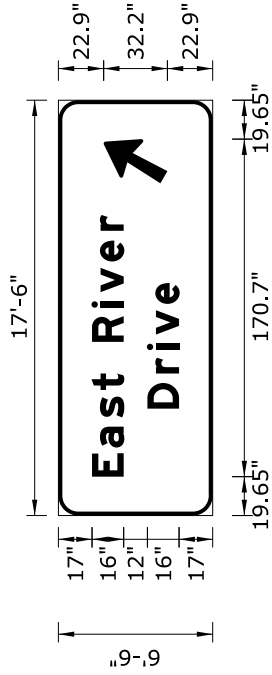
SIGN NUMBER	084E_042_EX55_R076_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	7.6	41.5	24	24
AR_Type A	270	21.2	6.6	14.9	23.5

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE							
E	A	S	T							D 2000
37.6	43.7	49.3	53.8							19.9 8.6
N	o	r	w	i	c	h				D 2000
13.3	20.2	26.3	29.7	39.7	42.2	48				39.4 8/6

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21156
Location : East Harford Route I-84 W.B. Ramp 829 Mileage : 0.13
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

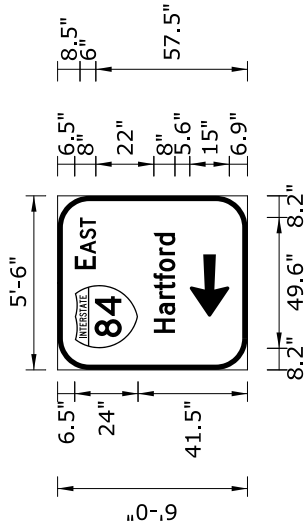
SIGN NUMBER	084W_042_R829_EX54_A
SIGN PANEL	113.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	113.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	10"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
A8_Type A	330	168	22.9	22.2	35

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE								
E	a	s	t	R	i	v	e	r				EM	2000
19.7	34.4	49.6	63.5	71.8	87.8	105.1	112.9	128.5	144			132.3	16/12
D	r	i	v	e								EM	2000
54.1	71.8	83.7	91.5	107								63.5	16/12

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : East Hartford Route I-84 W.B. Exit 56 Ramp 232
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

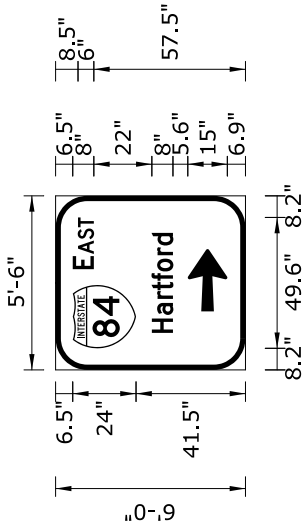
SIGN NUMBER	084W_042_EX56_R232_A
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	41.5	24	24
AR_Type A	270	20.2	6.9	15	23.6

PLOTTED : 2/7/2019

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
E	A	S	T				D 2000
38.2	44	49.5	54.1			19.6	8,6
H	a	r	t	f	o	r	d
14	20.8	26.9	30.2	33.8	37.3	43.5	47.2
						37.9	8/6

SIGN DETAIL
1:60



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : East Hartford Route I-84 W.B. Exit 56 Ramp 232
 Project No. 155-173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

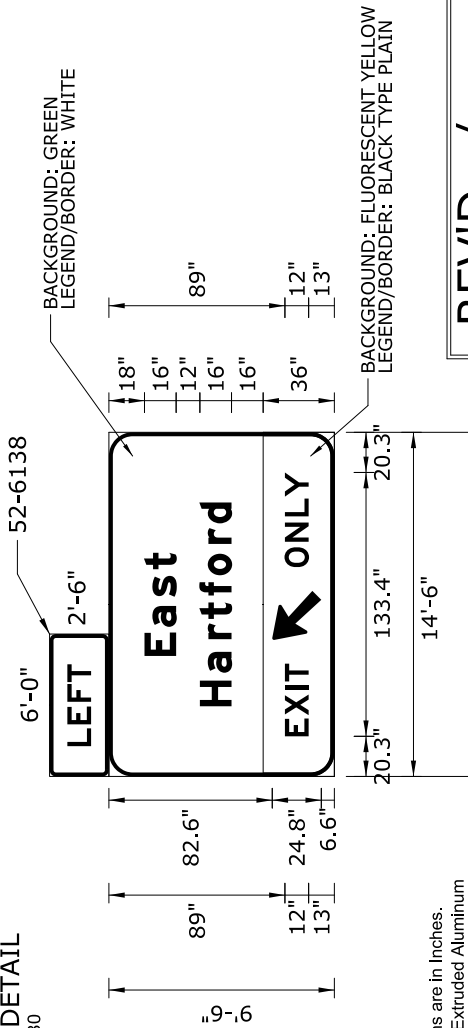
SIGN NUMBER	084W_042_EX56_R232_B
SIGN PANEL	33.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	33.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	8.2	41.5	24	24
AR_Type A	270	22.2	6.9	15	23.6

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
E	A	S	T					D 2000	
38.2	44	49.5	54.1				19.6	8,6	
H	a	r	t	f	o	r	d	D 2000	
14	20.8	26.9	30.2	33.8	37.3	43.5	47.2	8/6	

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21159
Location : East Hartford Route I-84 Ramp 833 Exit 54
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

SIGN NUMBER	084E_042_R833_EX54_A
SIGN PANEL	137.75 Sq.Ft.
EXIT CROWN	15.0 Sq.Ft.
TOTAL AREA	152.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

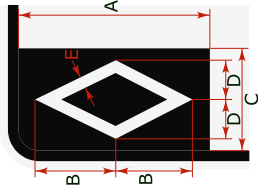
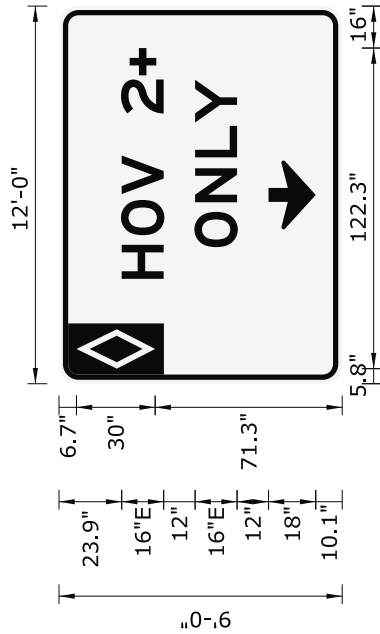
SYMBOL	ROT	X	Y	WID	HT
Ab_Type A	45	69	6.6	20	31.5

REV'D /

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE	
		LETTER POSITIONS (X)			
E	a s t			EM	2000
60.9	75.6 90.8 104.8	52.2	16/12		
H	a r t f o r d			EM	2000
35.5	52.4 69.4 79.6 91.5 101.7 117.6 128	103	16/12		
E	X I T			E	2000
20.3	31 43.8 48	36.7	12		
O	N L Y			E	2000
105.8	118.7 131.5 141.5	47.9	12		

SIGN DETAIL
1:60



A	B	C	D	E
36.75	15	19.75	17.5	2

REV'D /

Dimensions are in Inches
 Material : Extruded Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	32-0908
PANEL SIZE	12'-0" x 9'-0"
SIGN AREA	108.0 Sq.Ft.
MUTCD	R2-14b (CT)
BDR INSET/WIDTH	1.25" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
HOV Diamond	0	5.8	71.3	15	30
ARROWN	0	58.9	10.1	26.2	18

FILE : 32-0908 Dec 26, 2018

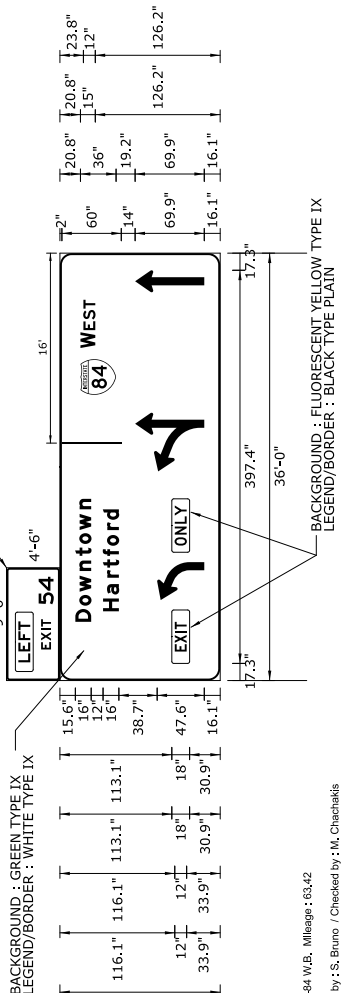
LETTER POSITIONS (X)

		LENGTH			SERIES/SIZE	
H	O	V	+		E	2000
13	13.4	14.7	13	10.4	88	16
O	N	L	Y		E	2000
13.4	13	12	16.3	63.8	16	

SIGN DETAIL
1:100

SIGN NUMBER	08HW_042_65.42_ B
SIGN PANEL	486.0 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL (Sq.Ft.)	528.75 Sq.Ft.
BOR INSET / WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: See Sign COLOR: See Sign
LEGEND/BORDER	TYPE: See Sign COLOR: See Sign

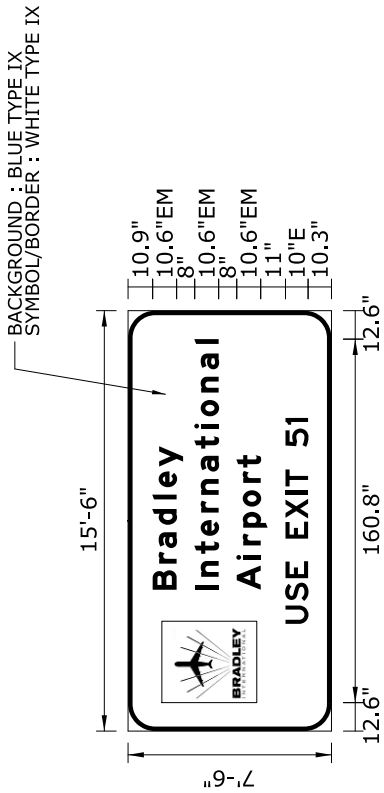
SYMBOL	ROT	X	Y	WID	HT
M1-1	0	288.8	105.3	36	36
AR-LEFT_ONLY	0	81.3	16.1	38.4	47.6
AR-THRU-LEFT	0	211.4	16.1	59.3	69.9
AR-THRU	0	392.5	16.1	22.2	69.9



Dimensions are in Inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 21684
Location: 1000 West Main Street
City: Hartford, CT 06150
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chababakis

LETTER POSITIONS (X)									
D	O	W	N	T	O	W	N	SERIES/SIZE	
59.3	75.7	89.7	110.7	126.1	138.1	152.4	173.1	EM	2000
								124.3	16/12
W	E	S	T					E	2000
336.1	354.2	364.9	375.9					48.8	15/12
H	A	R	T	F	O	R	D		
70	86.9	103.9	114.1	126	136.2	152.1	162.5	EM	2000
E	X	I	T					103	16/12
29.3	38	46.2	51.9					D	2000
O	N	L	Y					30	12
136.3	147.5	158.5	166.7					D	2000
								40.7	12

SIGN DETAIL
1:70



Dimension are in Inches
 Material : Extruded Aluminum
 Sign Support No. 21664
 Mounted : Overhead
 Location : East Hartford Route I-84 W.B. Mileage : 63.42
 Project No. 0155-0173
 Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

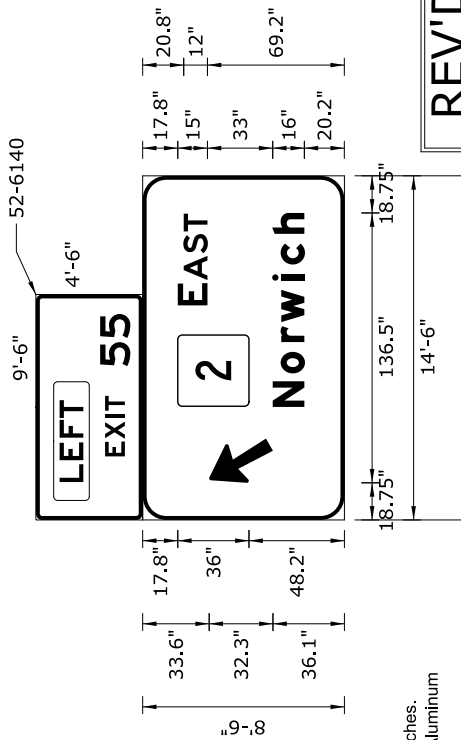
SIGN NUMBER	084W_042_63.42_C
SIGN PANEL	116.25 Sq.Ft.
EXIT CROWN	
TOTAL (Sq.ft.)	116.25
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: See Sign COLOR: See Sign
LEGEND/BORDER	TYPE: See Sign COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
51-1406	0	12.6	33.1	36	42

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE	
B	r	a	d	i	e	y							EM 2000	
62.5	74.1	81	91.3	102.5	107.9	117						63.5	10.6/7.9	
I	n	t	e	r	n	a	t	i	o	n	a	l		EM 2000
62.5	68.3	78.4	86.4	96.7	104.5	114.8	125	133.9	139.3	149.8	160.1	171.3	110.9	10.6/7.9
A	i	r	p	o	r	t								EM 2000
62.5	75.8	82.1	90	99.3	109.8	116.6							59.6	10.6/7.9
U	S	E		E	X	I	T	5	1					E 2000
47.4	57.5	67.6	75.1	85.1	94	104.7	108.2	115.7	125.7	135.5			91.1	10

SIGN DETAIL
1:80



SIGN NUMBER	084W_042_63.54_A
SIGN PANEL	123.25 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	166.0 Sq.Ft.
BDR. INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
LEGEND/BORDER	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M152CT	0	57.5	48.2	36	36
AR_Type A	30	18.8	36.1	22.2	35

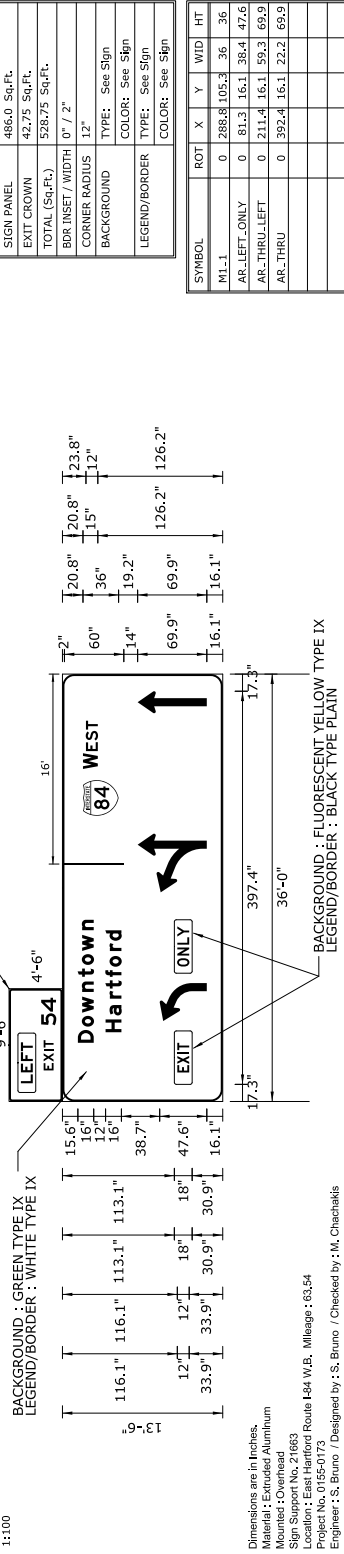
REV'D /

Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21663
 Location : East Harford Route I-84 W.B. Mileage : 63.54
 Project No. 0155-0173
 Engineer : DR / Designed by : DR / Checked by : MAC

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
E	A S T		E 2000
108.5	121.3 134.8 145.9		
		46.4	15,12
N	o r w i c h		EM 2000
57.1	74.1 89.9 100 121 129.1 144.7		
		98.1	16/12

SIGN DETAIL
1:100



SIGN NUMBER	08HW_042_653.54.B
SIGN PANEL	486.0 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL (Sq.Ft.)	528.75 Sq.Ft.
BOR INSET / WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: See Sign
LEGEND/BORDER	COLOR: See Sign
	TYPE: See Sign
	COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
M1-1	0	288.8	105.3	36	36
AR_LEFT_ONLY	0	81.3	16.1	38.4	47.6
AR_THRU_LEFT	0	211.4	16.1	59.3	69.9
AR_THRU	0	392.4	16.1	22.2	69.9

BACKGOUND : GREEN TYPE IX
LEGEND/BORDER : WHITE TYPE IX

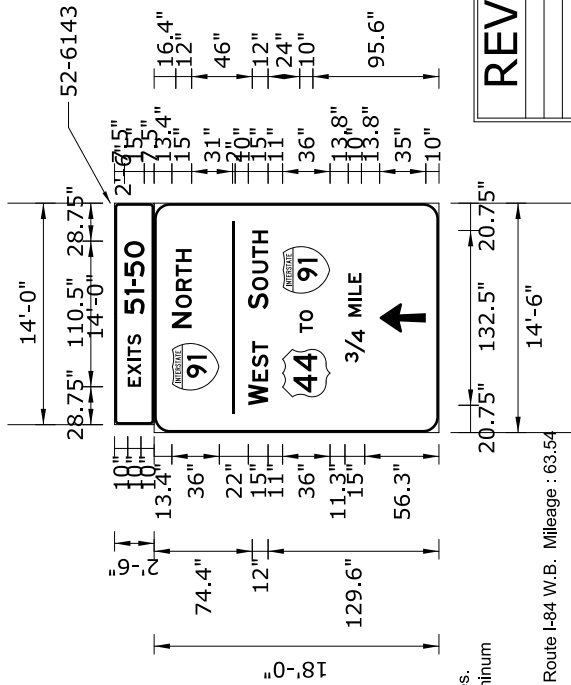
BACKGOUND : FLUORESCENT YELLOW TYPE IX
LEGEND/BORDER : BLACK TYPE PLAIN

LENGTH		SERIES/SIZE	
		EM	2000
			16/12
		E	2000
			15/12
		EM	2000
			16/12
		D	2000
			12
		D	2000
			12

LETTER POSITIONS (X)

D	o	w	n	t	o	w	n
59.3	75.7	89.7	110.7	126.1	138.1	152.1	173.1
W	E	S	T				
336.1	354.2	364.8	375.9				
H	a	r	t	f	o	r	d
70	86.9	103.9	114.1	126	136.2	152.1	162.5
E	X	I	T				
29.3	38	46.2	51.9				
O	N	L	Y				
136.3	147.5	158.5	166.7				

SIGN DETAIL
1:120



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21663
Location : East Harford Route I-84 W.B. Mileage : 63.54
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

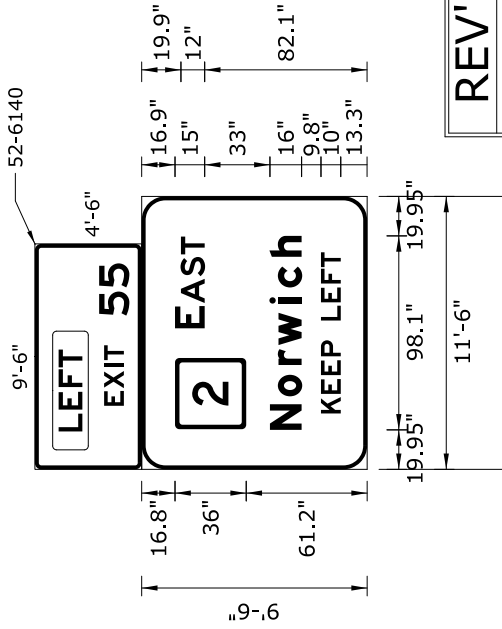
SIGN NUMBER	084W_155_63.54_C
SIGN PANEL	14'-6" x 18'-0"
EXIT CROWN	35.0 Sq.Ft.
TOTAL AREA	296.0 Sq.Ft.
BDR INSET/WIDTH	2" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	31.9	166.6	36	36
M1.4	0	27.1	82.6	36	36
M1.1	0	105.4	82.6	36	36
AR_Type A	0	75.9	9.9	22.2	35

PLOTTED : 2/7/2019

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
E	X	I	T	S	5	1	-	5	0		E 2000
28.8	37.7	48.4	51.9	60.5	83.6	98.3	105.2	111.9	126.6	110.5	10,15
N	O	R	T	H							E 2000
79.2	94.5	107.4	118.4	129.4						59.9	15,12
W	E	S	T								E 2000
20.7	38.8	49.5	60.5							48.8	15,12
S	O	U	T	H							E 2000
93.5	107.9	120.8	132.5	143.6						59.8	15,12
T	O										E 2000
75.6	84.5									17.3	10
3/4	M	I	L	E							E 2000
53	87.9	99.9	104.3	113.5						68.1	15,10

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21662
 Location: East Harford Route I-84 W.B. Mileage: 63.67
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

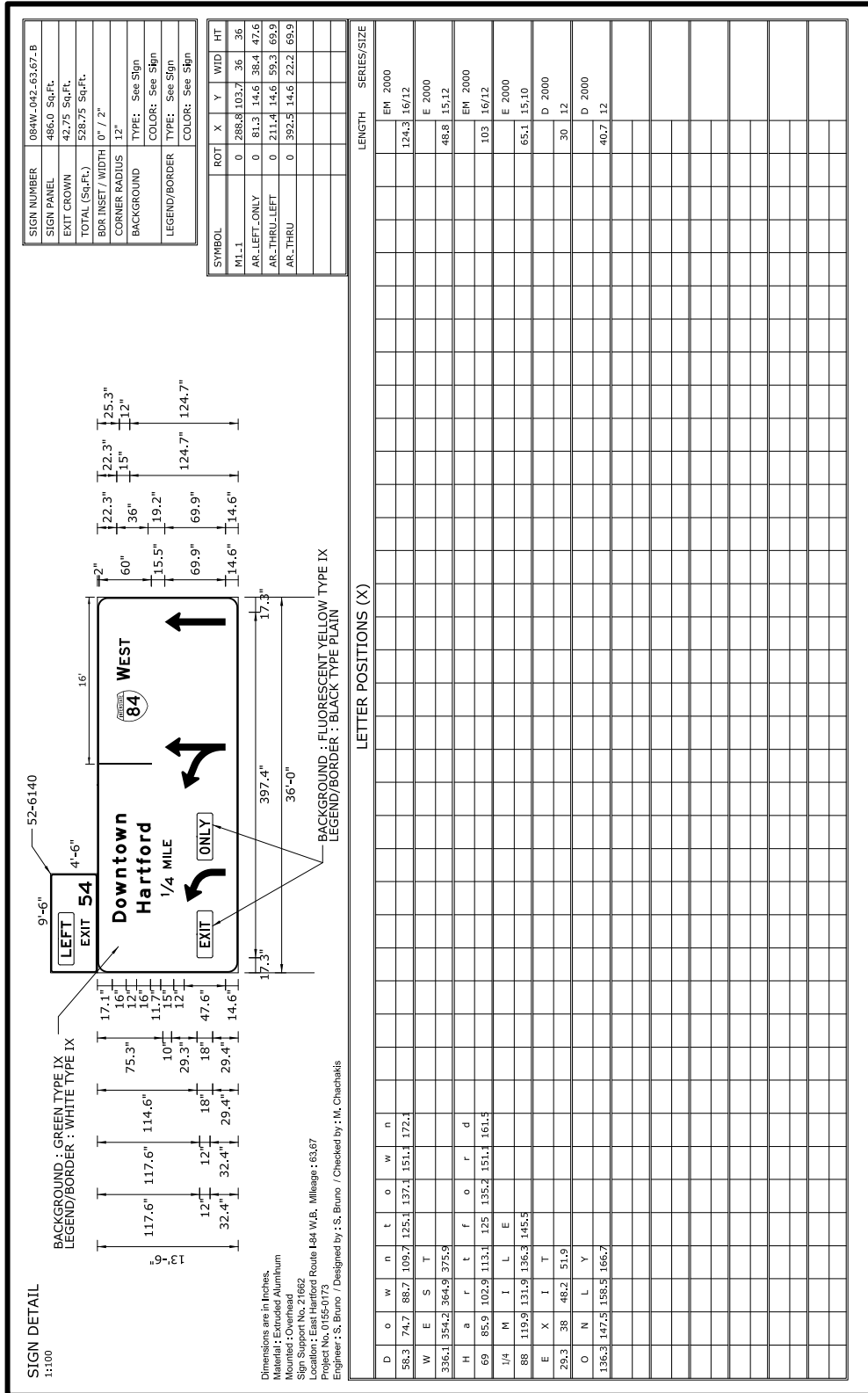
SIGN NUMBER	084W_042_63.67_A
SIGN PANEL	109.25 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	152.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	20.3	61.2	36	36

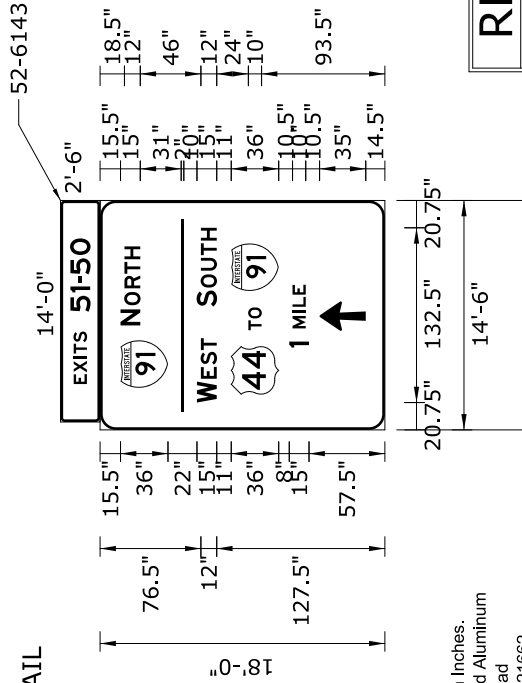
PLOTTED : 2/7/2019

LETTER POSITIONS (X)

		LENGTH		SERIES/SIZE	
E	A	S	T		E 2000
71.3	84.1	97.7	108.7	46.4	15,12
N	o	r	w	i	EM 2000
20	36.9	52.8	62.8	83.8	92
				c	107.5
K	E	E	P	L	E F T
28.3	38.2	47.7	57.2	65.3	75.3
				84.5	94
				102.3	
				81.5	10



SIGN DETAIL
1:120



Dimensions are in inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21662
 Location : East Harford Route I-84 W.B. Mileage : 63.67
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_042_63.67_C
SIGN PANEL	261.0 Sq.Ft.
EXIT CROWN	35.0 Sq.Ft.
TOTAL AREA	296.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

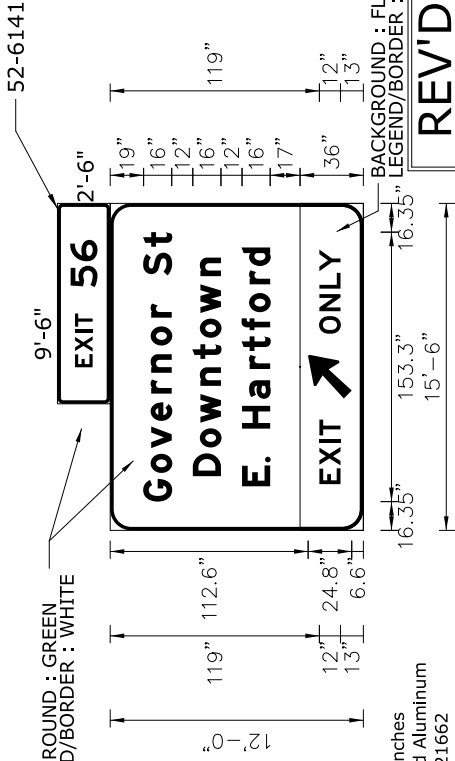
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	31.9	164.5	36	36
M1.4	0	27.1	80.5	36	36
M1.1	0	105.4	80.5	36	36
AR_Type A	0	75.1	14.5	22.2	35

PLOTTED : 2/7/2019

				LENGTH	SERIES/SIZE
LETTER POSITIONS (X)					
N	O	R	T	H	E 2000
79.2	94.5	107.4	118.4	129.4	59.9 15,12
W	E	S	T		E 2000
20.7	38.8	49.5	60.5	48.8 15,12	
S	O	U	T	H	E 2000
93.5	107.9	120.8	132.5	143.6	59.8 15,12
T	O				E 2000
75.6	84.5				17.3 10
I	M	I	L	E	E 2000
62.5	77	89	93.4	102.6	47.6 15,10

SIGN DETAIL
1:90

BACKGROUND : GREEN
LEGEND/BORDER : WHITE



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21662
Mounted : Overhead
Location : West Hartford Route I-84 W.B. Mileage : 63.67
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

BACKGROUND : FLUORESCENT YELLOW
LEGEND/BORDER : BLACK TYPE PLAIN

REV'D /

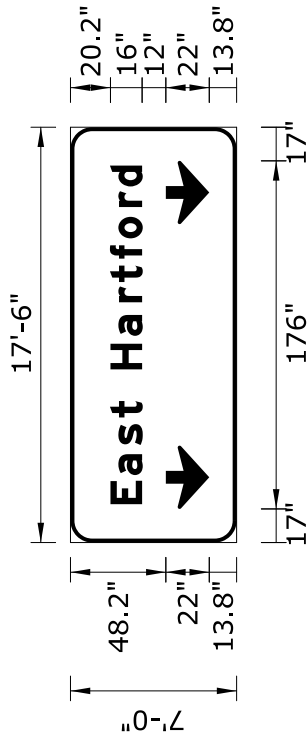
SIGN NUMBER	084W_042_63.67_D
SIGN PANEL	186.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL (Sq.ft.)	209.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: See Sign
LEGEND/BORDER	TYPE: IX COLOR: See Sign

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	315	72	6.6	20	31.5

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)													LENGTH	SERIES/SIZE
G	O	V	E	R	N	O	R	S	T							
13.4	16.3	14.1	15.5	11.8	15.5	15.8	8	16	16.3	8.3	13.4			EM 2000		
														153.3	16/12	
27.8	16.3	14.1	21	15.4	12	14.1	21	10.6	27.8					EM 2000		
														124.3	16/12	
22.1	13.6	3.2	16	17	10.2	11.8	10.2	15.8	10.4	10.6	22.1			EM 2000		
														135.8	16/12	
23.3	10.7	12.8	4.2	9	120									E 2000		
														36.7	12	
108.8	12.8	12.8	10	12.2	23.3									E 2000		
														47.9	12	

SIGN DETAIL
1:80



Dimensions are in inches.
Material: Extruded Aluminum
Mounted: Overhead
Sign Support No. 21155
Location: East Hartford Route 500 N.B. Ramp 801 Mileage : 0.10
Project No. 0155-0173
Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

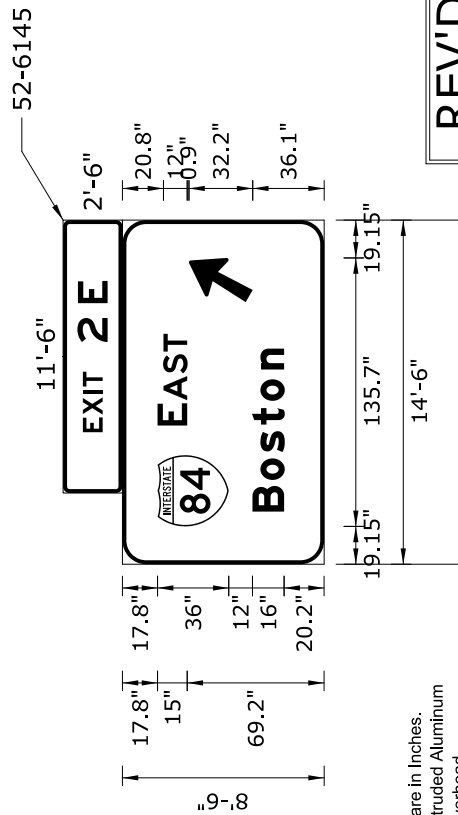
SIGN NUMBER	500N_042_R801_0.10_A
SIGN PANEL	122.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	122.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
AROUND	0	17	13.8	32	22
AROUND	0	161	13.8	32	22

PLOTTED : 2/7/2019

	LETTER POSITIONS (X)							LENGTH	SERIES/SIZE										
	E	a	s	t	H	a	r												
19.4	34.1	49.3	63.2	71.6	87.6	104.5	121.5	131.7	143.6	153.8	169.6	180						EM	2000
													171.2	16/12					

SIGN DETAIL
1:80



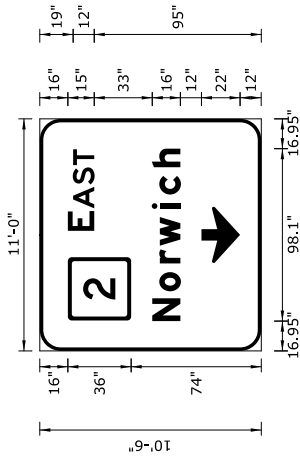
REV'D /

Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21155
 Location: East Harford Route 500 N.B. Ramp 801 Mileage : 0.10
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

PLOTTED : 2/7/2019

		LENGTH		SERIES/SIZE	
E	A	S	T	E	2000
70.1	82.9	96.5	107.5	46.4	15,12
B	o	s	t	o	n
26.6	42.6	56.7	70.6	82.6	98.5
				82.4	16/12

SIGN DETAIL
1:90



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21759
Location : East Harford Route 500 S.B. Mileage : 0.04
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	500S_042_0.04_A
SIGN PANEL	115.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

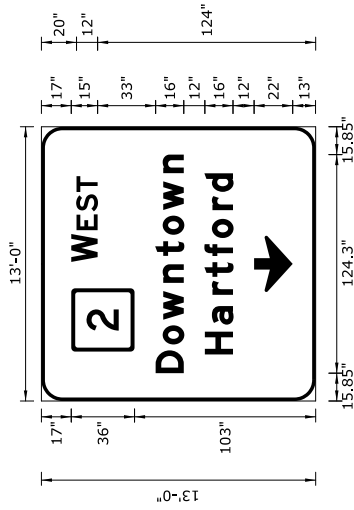
SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	17.3	74	36	36
ARROW	0	50	12.1	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

	LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
	A	S	T			
E	81.1	94.7	105.7		46.4	E 2000 15,12
N	33.9	49.8	59.8	80.8	89	EM 2000
17					98.1	16/12

SIGN DETAIL
1:90



Dimensions are in inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21759
Location : East Hartford Route 500 S.B. Mileage : 0.04
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

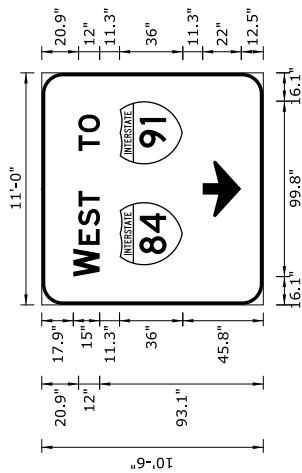
SIGN NUMBER	500S_042_0.04_B
SIGN PANEL	169.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	169.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

	SYMBOL	ROT	X	Y	WID	HT
	M1.5.1	0	28.1	103	36	36
	ARDDWN	0	62	13.1	32	22

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
W	E	S	T		E 2000
79.1	97.2	107.9	118.9	48.8	15,12
D	o	w	n		EM 2000
15.8	32.2	46.2	67.2	82.6	124,3
					16/12
H	a	r	t		EM 2000
26.5	43.4	60.4	70.6	82.5	103
					16/12

SIGN DETAIL
1:90



Dimensions are in Inches.
 Material: Extruded Aluminum
 Mounted: Overhead
 Sign Support No. 21759
 Location: East Hartford Route 500 S.B. Mileage: 0.04
 Project No. 0155-0173
 Engineer: S. Bruno / Designed by: S. Bruno / Checked by: M. Chachakis

REV'D /

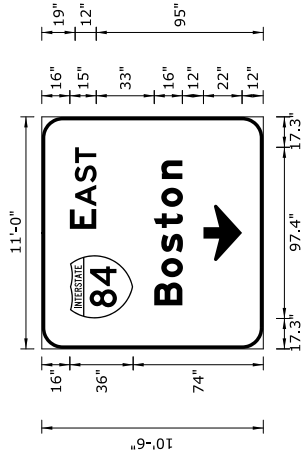
SIGN NUMBER	500S_042_0.04_C
SIGN PANEL	115.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	22.5	45.8	36	36
M1.1	0	79.9	45.8	36	36
ARDDOWN	0	50	12.5	32	22

PLOTTED : 2/7/2019

					LENGTH	SERIES/SIZE
LETTER POSITIONS (X)						
W	E	S	T		E 2000	
16.1	34.2	44.9	55.9	48.8	15,12	
T	O				E 2000	
87.5	98.2			20.8	12	

SIGN DETAIL
1:90



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Overhead
 Sign Support No. 21758
 Location : East Hartford Route 500 S.B. Mileage : 0.44
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	500S_042_044_A
SIGN PANEL	115.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

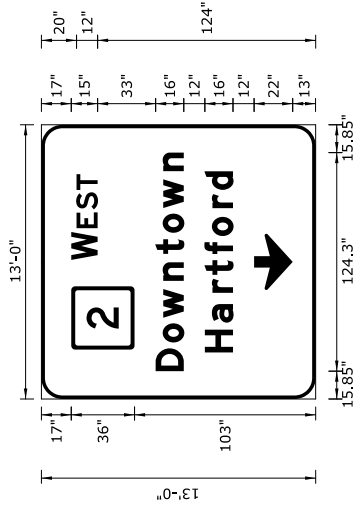
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	17.3	74	36	36
AROUNDN	0	50	12.1	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

			LENGTH	SERIES/SIZE		
E	A	S	T	E 2000		
68.3	81.1	94.7	105.7	46.4 15,12		
B	o	s	t	o	n	EM 2000
24.8	40.8	54.9	68.8	80.8	96.6	82.4 16/12

SIGN DETAIL
1:90



REV'D /

Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21758
Location : East Hartford Route 500 S.B. Mileage : 0.44
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

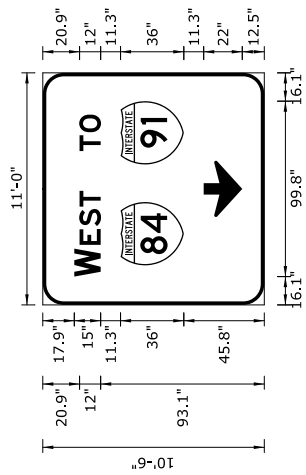
SIGN NUMBER	500S_042_044_C
SIGN PANEL	169.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	169.0 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	28.1	103	36	36
ARDDOWN	0	62	13.1	32	22

PLOTTED : 2/7/2019

			LENGTH			SERIES/SIZE		
LETTER POSITIONS (X)								
W	E	S	T					
79.1	97.2	107.9	118.9					E 2000 48.8 15,12
D	o	w	n	t	o	w	n	EM 2000 124.3 16/12
15.8	32.2	46.2	67.2	82.6	94.6	108.6	129.6	
H	a	r	t	f	o	r	d	EM 2000 103 16/12
26.5	43.4	60.4	70.6	82.5	92.7	108.6	119	

SIGN DETAIL
1:90



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21758
Location : East Hartford Route 500 S.B. Mileage : 0.44
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

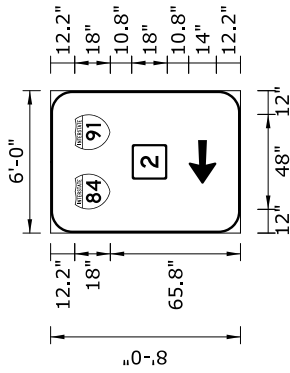
SIGN NUMBER	500S_042_044_D
SIGN PANEL	115.5 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	115.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	22.5	45.8	36	36
M1.1	0	79.9	45.8	36	36
ARDDWN	0	50	12.5	32	22

LETTER POSITIONS (X)

W	E	S	T	E	S	T	E	S	T	E	S	T	E	S	T	LENGTH		SERIES/SIZE
																44.9	55.9	E 2000
16.1	34.2	44.9	55.9				48.8	15,12										E 2000
T	O																	E 2000
87.5	98.2						20.8	12										

SIGN DETAIL
1:80



Dimensions are in Inches.
 Material : Extruded Aluminum
 Mounted : Ground
 Sign Support No. N/A
 Location : East Harford Route 500 S.B. Mileage : 0.51
 Project No. 0155-0173
 Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

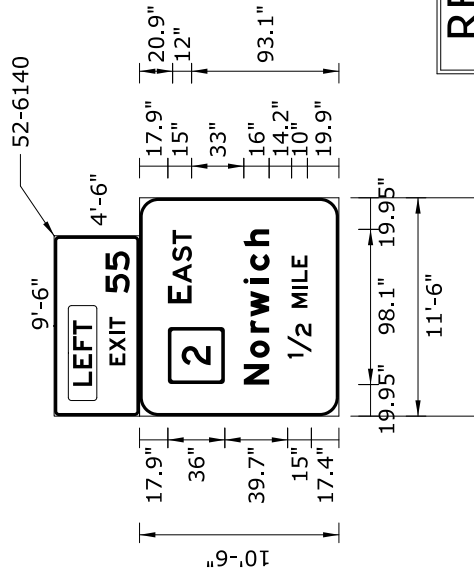
SIGN NUMBER	500S_042_0.51_B
SIGN PANEL	48.0 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	48.0 Sq.Ft.
BDR INSET/WIDTH	0" / 1.25"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: /White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	12	65.8	18	18
M1.1	0	42	65.8	18	18
M1.5.1	0	27	37	18	18
AR_Type A	90	25	12.2	14	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE

SIGN DETAIL
1:100



REV'D /

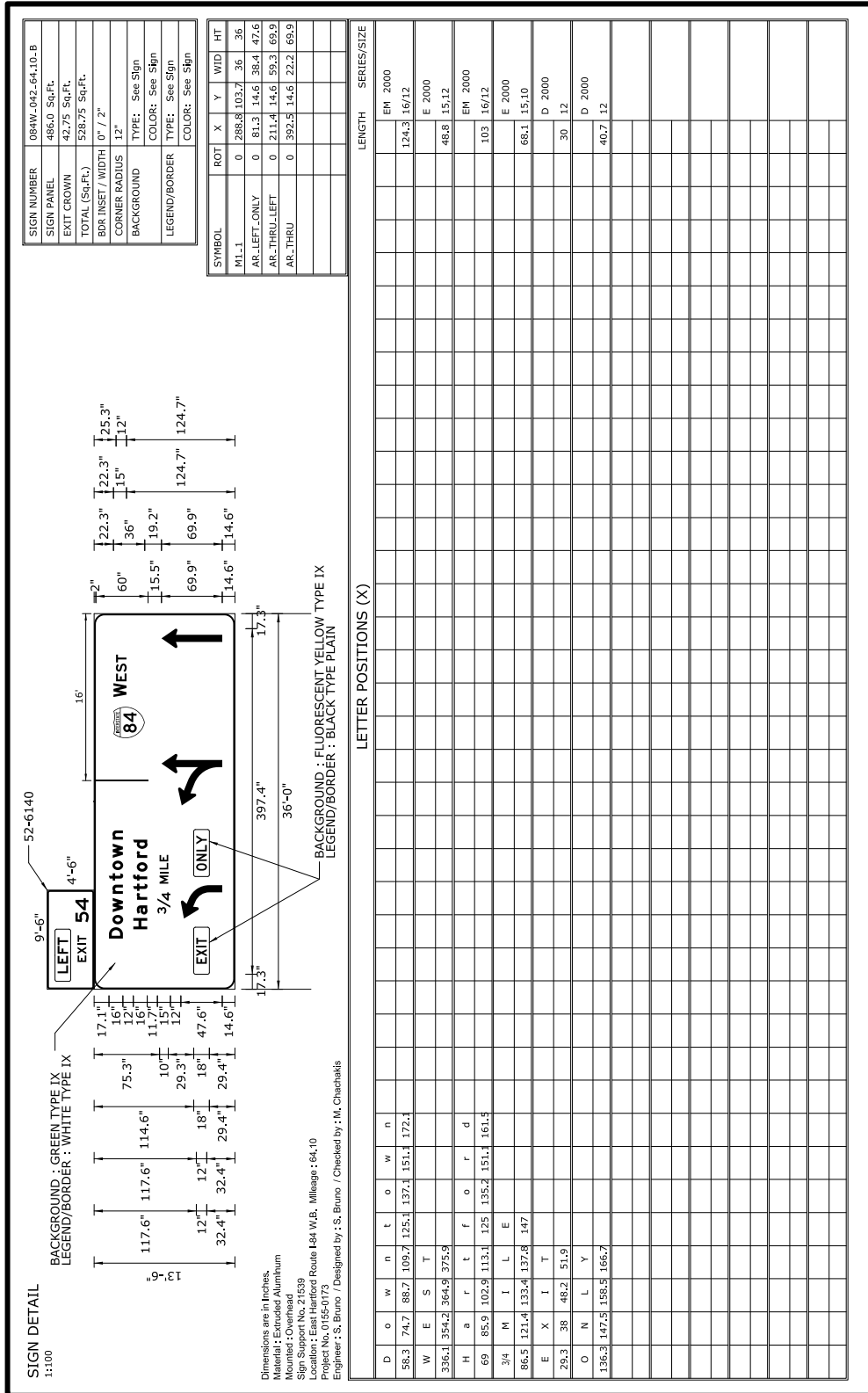
SIGN NUMBER	084W_042_64.10_A
SIGN PANEL	120.75 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	163.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.5.1	0	20.3	72.1	36	36

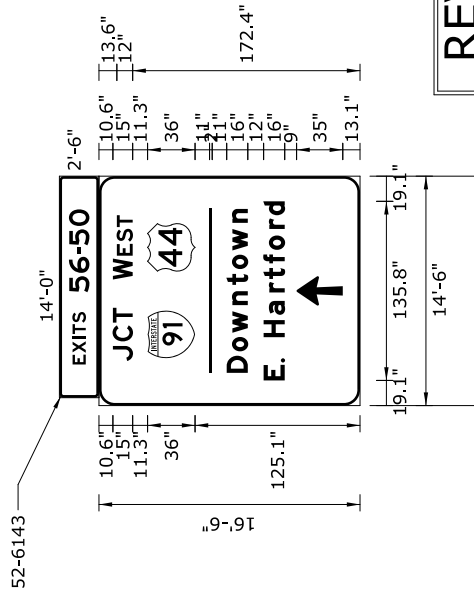
PLOTTED : 2/7/2019

LETTER POSITIONS (X)

											LENGTH	SERIES/SIZE
E	A	S	T									E 2000
71.3	84.1	97.7	108.7								46.4	15,12
N	o	r	w	i	c	h						EM 2000
20	36.9	52.8	62.8	83.8	92	107.5					98.1	16/12
1/2	M	I	L	E								E 2000
36.5	68.4	80.4	84.8	94							65.1	15,10



SIGN DETAIL
1:120



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21539
Location : East Hartford Route I-84 W.B. Mileage : 64.10
Project No. 155-173
Engineer : S. Bruno / Designed by : J.Fascione / Checked by : M. Chachakis

REV'D /

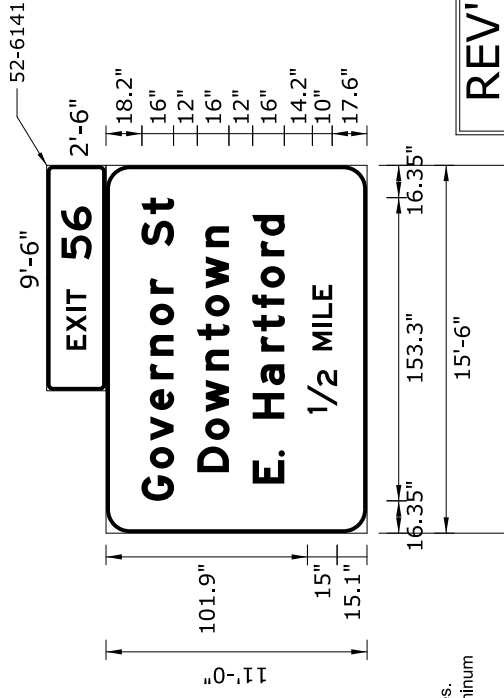
SIGN NUMBER	084W_155_64.10_C
SIGN PANEL	239.25 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	239.3 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
LEGEND/BORDER	COLOR: Green
	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	36	125.1	36	36
M1.4	0	102	125.1	36	36
AR_Type A	0	75.9	13.1	22.2	35

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)		LENGTH	SERIES/SIZE							
J	C	T			E 2000							
33.8	48.7	62.9		40.4	15							
W	E	S	T		E 2000							
95.6	113.7	124.4	135.4	48.8	15,12							
D	o	w	n	t	o	w	n	EM 2000				
24.8	41.2	55.2	76.2	91.6	103.6	117.6	138.6	124.3	16/12			
E	.	H	a	r	t	f	o	r	d	EM 2000		
19.1	32.7	35.9	51.9	68.8	85.8	96	107.9	118.1	134	144.4	135.8	16/12

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 22075
Location : East Hartford Route I-84 W.B. Mileage : 64.28
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

SIGN NUMBER	084W_042_64.28_A
SIGN PANEL	170.5 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	194.25 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

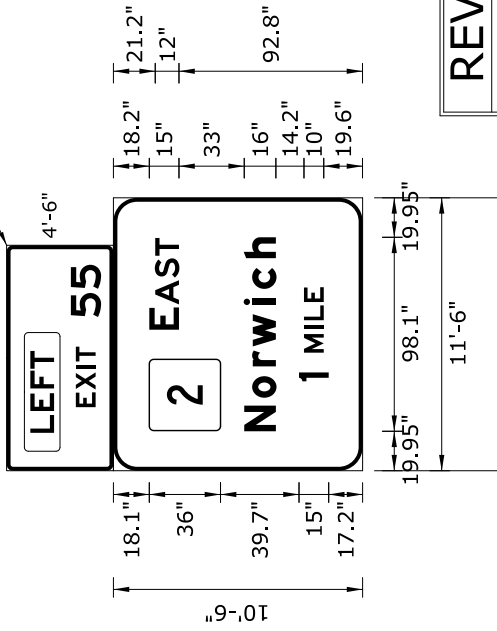
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE		
G	o	v	e	r	n	o	r	S	t							EM	2000
16.4	32.7	46.8	62.3	77.8	89.6	105.2	121	129	145	161.3					153.3	16/12	
D	o	w	n	t	o	w	n									EM	2000
30.8	47.2	61.2	82.2	97.6	109.6	123.6	144.6								124.3	16/12	
E	.		H	a	r	t	f	o	r	d						EM	2000
25.1	38.7	41.9	57.9	74.8	91.8	102	113.9	124.1	140	150.4					135.8	16/12	
1/2	M	I	L	E												E	2000
60.5	92.4	104.4	108.8	118											65.1	15,10	

SIGN DETAIL
1:80

52-6140



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21659
Location : East Hartford Route I-84 W.B. Mileage : 64.49
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

PLOTTED : 2/7/2019

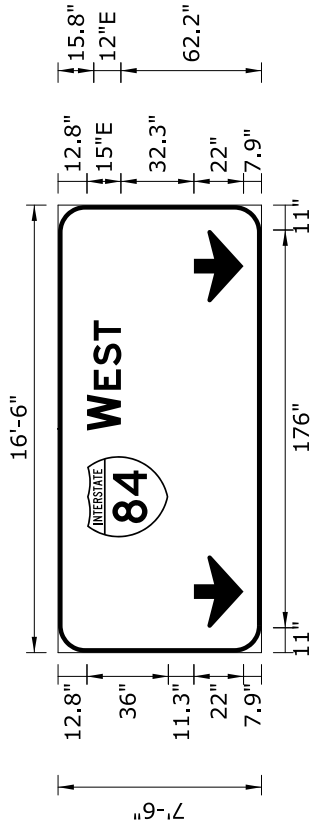
SIGN NUMBER	084W_042_64.49_A
SIGN PANEL	120.75 Sq.Ft.
EXIT CROWN	42.75 Sq.Ft.
TOTAL AREA	163.5 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M152CT	0	20.3	71.9	36	36

LETTER POSITIONS (X)

					LENGTH	SERIES/SIZE
E	A	S	T			E 2000
71.3	84.1	97.7	108.7		46.4	15,12
N	o	r	w	i	c	h
20	36.9	52.8	62.8	83.8	92	107.5
1	M	I	L	E		EM 2000
45.2	59.7	71.7	76.1	85.3	98.1	16/12
						E 2000
					47.6	15,10

SIGN DETAIL
1:70



Dimension are in Inches
Material : Extruded Aluminum
Sign Support No. 21659

Mounted : Overhead
Location : West Hartford Route I-84 W.B. Mileage : 64.49
Project No. 0155-0173
Engineer : S. Bruno Designed By: J. Fascione Checked By: _____

REV'D /

SIGN NUMBER	084W_042_64.49_B
SIGN PANEL	123.75 Sq.Ft.
EXIT CROWN	
TOTAL (Sq.ft.)	123.75
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	11"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

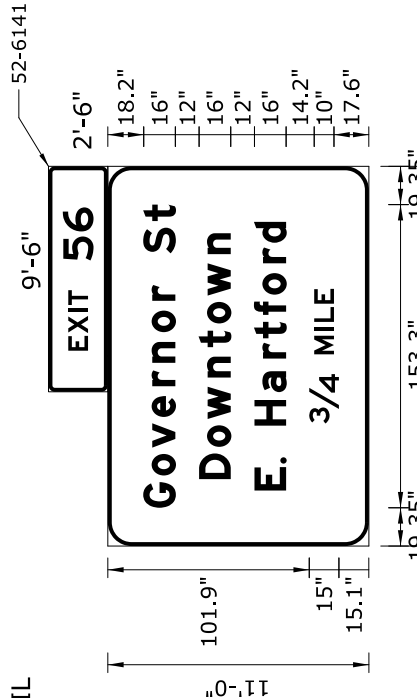
SYMBOL	ROT	X	Y	WID	HT
M1.1	0	51	41.2	36	36
ARROW	0	11	7.9	32	22
ARROW	0	155	7.9	32	22

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

							LENGTH	HEIGHT	SERIES/SIZE
W	E	S	T						E 2000
98.3	15.9	2.2	10.7	11	9	51	48.8	15.12	

SIGN DETAIL
1:80



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Overhead
Sign Support No. 21659
Location : East Hartford Route I-84 W.B. Mileage : 64.49
Project No. 0155-0173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_042_64.49_C
SIGN PANEL	176.0 Sq.Ft.
EXIT CROWN	23.75 Sq.Ft.
TOTAL AREA	199.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX COLOR: Green
LEGEND/BORDER	TYPE: IX COLOR: White/White

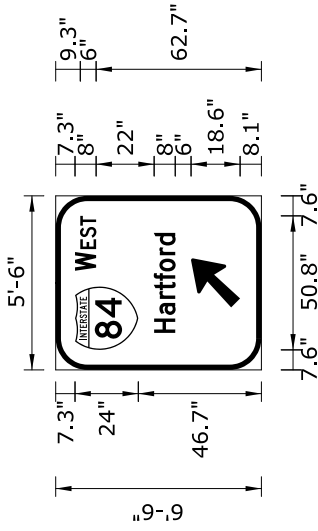
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 2/7/2019

LETTER POSITIONS (X)

																							LENGTH	SERIES/SIZE
G	o	v	e	r	n	o	r	S	t														EM	2000
19.4	35.7	49.8	65.3	80.8	92.6	108.2	124	132	148	164.3												153.3	16/12	
D	o	w	n	t	o	w	n																EM	2000
33.8	50.2	64.2	85.2	100.6	112.6	126.6	147.6															124.3	16/12	
E	.		H	a	r	t	f	o	r	d													EM	2000
28.1	41.7	44.9	60.9	77.8	94.8	105	116.9	127.1	143	153.4												135.8	16/12	
3/4	M	I	L	E																			E	2000
62	96.9	108.9	113.3	122.5																			68.1	15,10

SIGN DETAIL
1:60



Dimensions are in Inches.
Material : Extruded Aluminum
Mounted : Ground
Sign Support No. N/A
Location : East Hartford Route I-84 W.B. Exit 56 Ramp 116
Project No. 155-173
Engineer : S. Bruno / Designed by : S. Bruno / Checked by : M. Chachakis

REV'D /

SIGN NUMBER	084W_042_EX56_R116_A
SIGN PANEL	35.75 Sq.Ft.
EXIT CROWN	-
TOTAL AREA	35.75 Sq.Ft.
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1.1	0	7.6	46.7	24	24
AR_Type A	315	23.7	8.1	15	23.6

PLOTTED : 2/7/2019

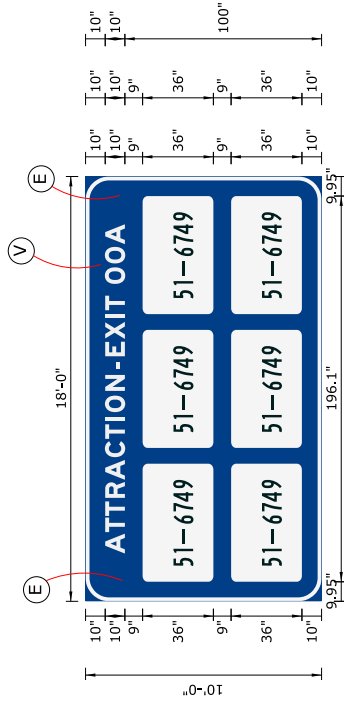
LETTER POSITIONS (X)

						LENGTH	SERIES/SIZE
W	E	S	T			D 2000	
37.6	45.8	50.1	54.7			20.8	8,6
H	a	r	t	f	o	r	D 2000
14	20.8	26.9	30.2	33.8	37.3	43.5	37.9 8/6

SIGN DETAIL

1:80

- (E) EQUAL SPACING
- (V) VARIABLE EXIT NO.



REV'D 7/18
 Removed the "S" from
 "ATTRATIONS".

Dimensions are in Inches
 Material : Extruded Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	52-6747
PANEL SIZE	18'-0" x 10'-0"
SIGN AREA	180.0 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0" / 2"
CORNER RADIUS	12"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
M1_53A	0	9.9	55	60	36
M1_53A	0	78	55	60	36
M1_53A	0	146	55	60	36
M1_53A	0	9.9	10	60	36
M1_53A	0	78	10	60	36

M1_53A	0	146	10	60	36
--------	---	-----	----	----	----

		LETTER POSITIONS (X)											LENGTH		SERIES/SIZE			
A	T	R	A	C	T	I	O	N	E	X	I	T						
24.3	10.9	8.2	9.2	9.2	9.2	4.4	10.8	8.1	3	3.5	3	8.8	10.8	3.8	7.4	6		
												0	0	A		EM 2000		
												10.4	9.8	10.1	24.3	167.4	10	

ITEM #1208931A – SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

ITEM #1208932A – SIGN FACE - SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)

Section 12.08 is supplemented and amended as follows:

12.08.01—Description:

Add the following:

This item shall also include field testing of metal sign base posts as directed by the Engineer.

12.08.03—Construction Methods:

Delete the last sentence and add the following:

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

12.08.04—Method of Measurement:

Add the following:

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

12.08.05—Basis of Payment:

Replace the entire Article with the following:

This work will be paid for at the Contract unit price per square foot for “Sign Face - Sheet Aluminum” of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted brackets, mounting hardware, including reinforcing plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

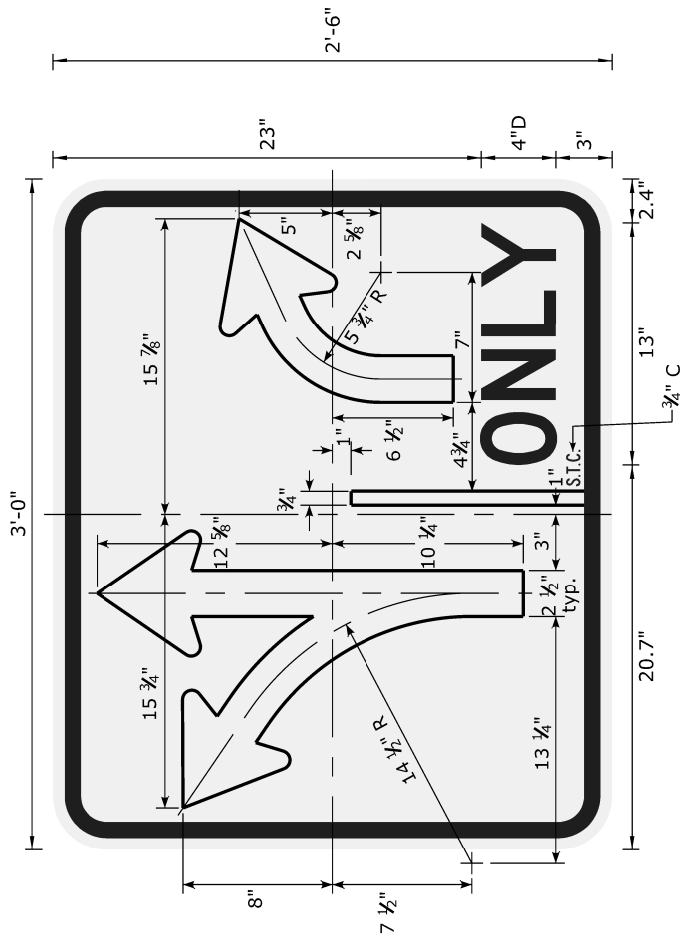
Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	51-100	101-250	251-1000	>1000
Sample Size=>	5 Posts	10 Posts	40 Posts	60 Posts
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933
5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing

SIGN DETAIL
1:10



SIGN NUMBER	31-0283
SIGN PANEL	7.5
EXIT CROWN	--
TOTAL (Sq.Ft.)	7.5
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

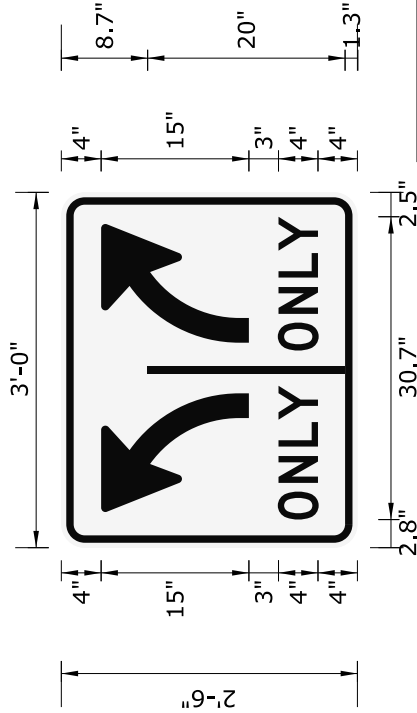
SYMBOL	ROT	X	Y	WID	HT

REV'D 9/10
REVISED SHEETING TYPE.

ARROWHEAD DOT D-6
SYMBOLS AND BARS ARE SOLID
DIMENSIONS ARE IN INCHES
MATERIAL : .080 THK.SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : LNC

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE
O	N	L	Y			D 2000
20.7	24.1	27.6	30.2	13.0	4	

SIGN DETAIL
1:17



REV'D 12/17
Revised sign size from 30" x 24" to 36" x 30"

DOT Arrow D6
Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: B.A.S.
Ground Mounted

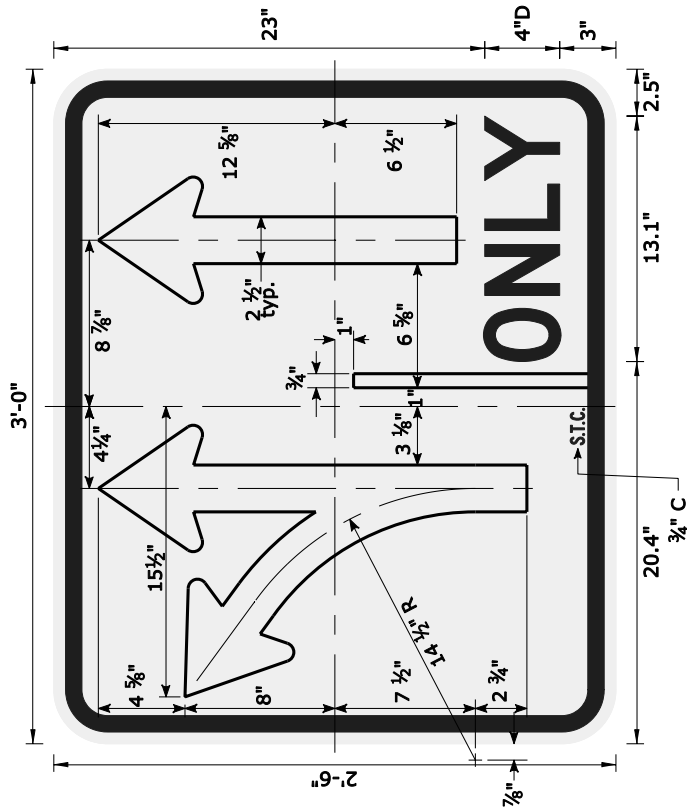
FILE : 310290 Dec 07, 2017

SIGN NUMBER	310290
PANEL SIZE	3'-0" x 3'-0"
SIGN AREA	9.0 Sq.Ft.
MUTCD	R3-8
BDR INSET/WIDTH	0.5" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
ARPCR1	180	3.6	11	12	15
ARPCR1	0	20.7	11	12	15

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
2.8	O	N	L	Y									D 2000
												13.6	4
20	O	N	L	Y									D 2000
												13.6	4

SIGN DETAIL
1:10



SIGN NUMBER	31-0295
SIGN PANEL	7.5
EXIT CROWN	--
TOTAL (Sq.Ft.)	7.5
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

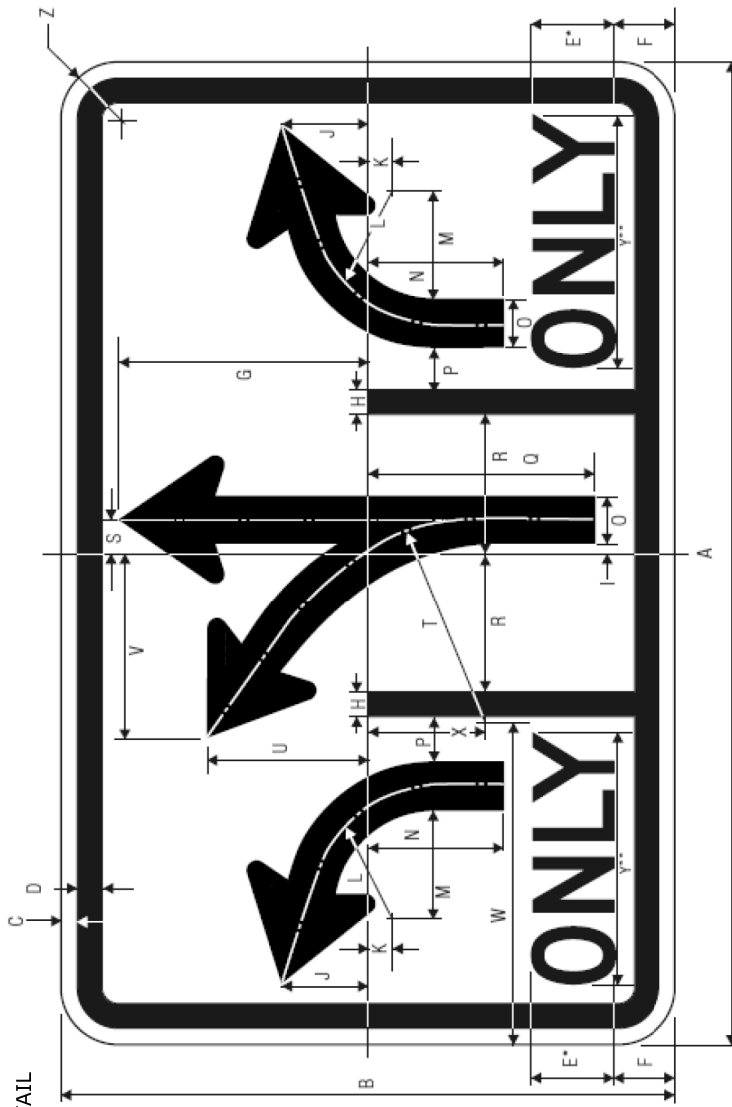
REV'D 10/10
REVISED SHEETING TYPE.

ARROWHEAD DOT D-6
SYMBOLS AND BARS ARE SOLID
DIMENSIONS ARE IN INCHES
MATERIAL : .080 THK.SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION :N/A
ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : LNC

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE
O	N	L	Y			D 2000
20.4	23.9	27.4	30.1	13.1	4	

SIGN NUMBER	31-0331
SIGN PANEL	10.0
EXIT CROWN	--
TOTAL (Sq.Ft.)	10.0
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D	/

PLOTTED : 6/13/2013



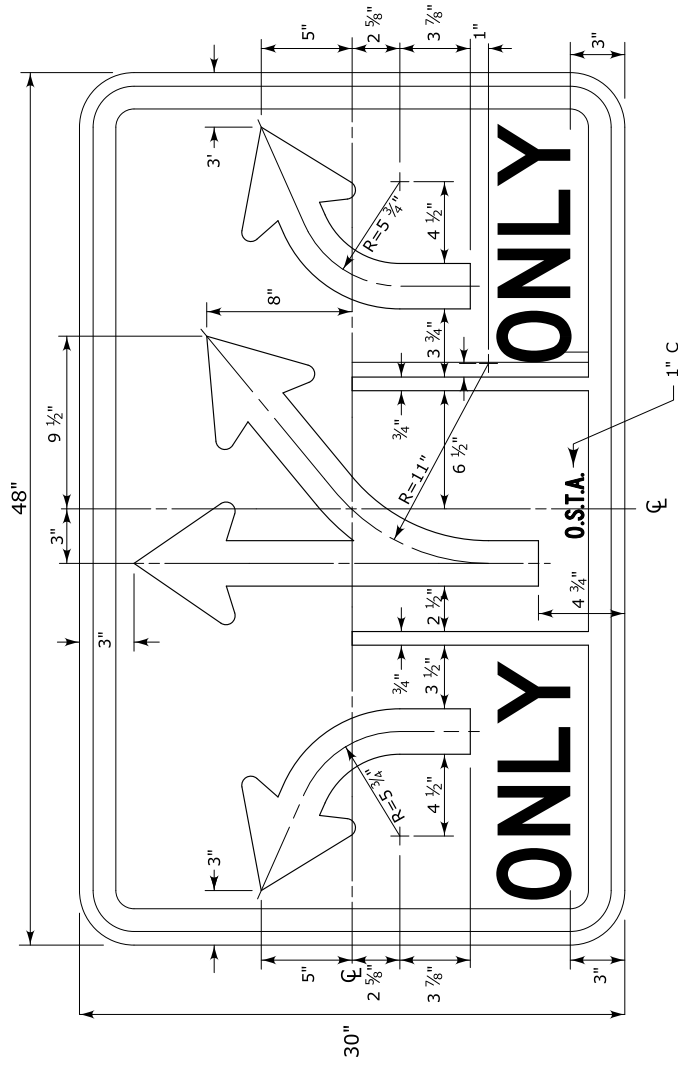
R3-8a

ADVANCE INTERSECTION LANE CONTROL

A	B	C	D	E	F	G	H	I	J	K	L	M
48	30	.75	1.25	4D	3	12.125	1.188	.438	4	3.375	5.813	4.625
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6.625	2.5	1.688	11.063	6.813	1.688	11	7.5	9.75	14.641	6.45	12.313	3

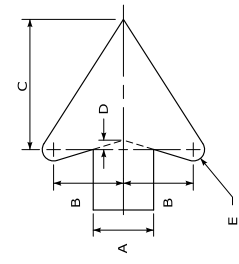
ARROWHEAD DOT D-6
 DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : LNC DESIGNED BY : _____
 GMF CHECKED BY : _____

SIGN DETAIL



LETTER POSITIONS (X)		LENGTH	SERIES/SIZE	
O	N	L	Y	D 2000
2.5	6	9.5	12.2	13.1 4
O	N	L	Y	D 2000
32	35.6	39	41.7	13.1 4

ARROWHEAD DOT D-6
 SYMBOLS AND BARS ARE SOLID
 DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : LNC DESIGNED BY : GMF CHECKED BY :



ARROWHEAD D-6 DETAIL
 N.T.S.

A	B	C	D	E
2.5	2.875	5.0625	.375	.5

SIGN NUMBER	31-0345
SIGN PANEL	10.0
EXIT CROWN	--
TOTAL (SQ.FT.)	10.0
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 6/13	
REVISED SHEETING TYPE, BORDER INSET, BORDER THICKNESS & BORDER RADIUS.	
PLOTTED : 8/6/2013	

SIGN DETAIL

REV'D 12/17

Revised Height from 24" to 30" per MUTCD.

PLOTTED : 12/19/17

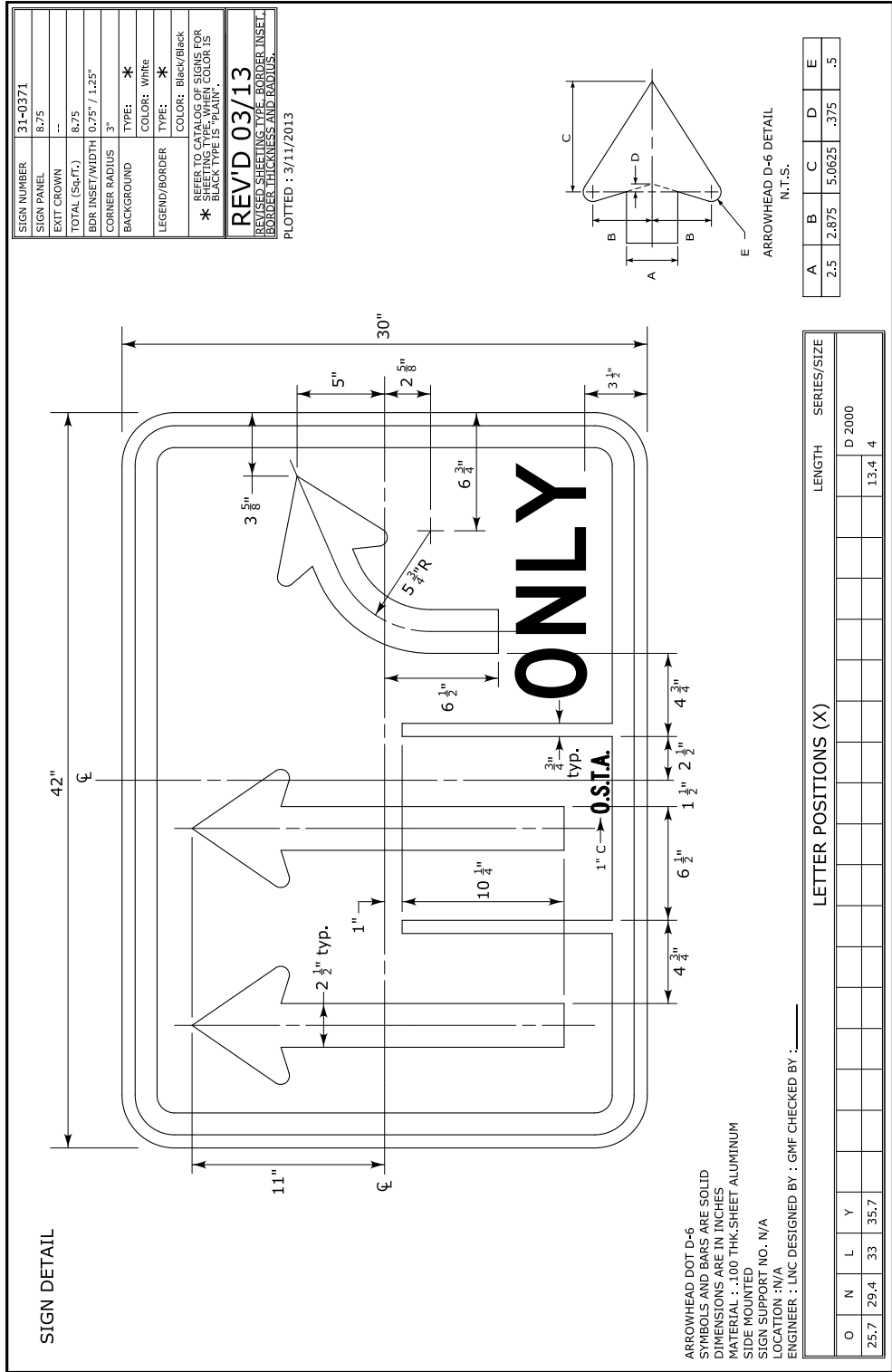
SIGN NUMBER	31-0368
SIGN PANEL	4'-0" x 2'-6"
EXIT CROWN	--
TOTAL (Sq.Ft.)	10.0
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR BLACK TYPE IS "PLAIN" COLOR IS	

ARROWHEAD D-6 DETAIL

N.T.S.

A	B	C	D	E
2.5	2.875	5.0625	.375	.5

ARROWHEAD DOT D-6
SYMBOLS AND BARS ARE SOLID
DIMENSIONS ARE IN INCHES
MATERIAL : .100 THK. SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : LNC DESIGNED BY : GMF CHECKED BY :

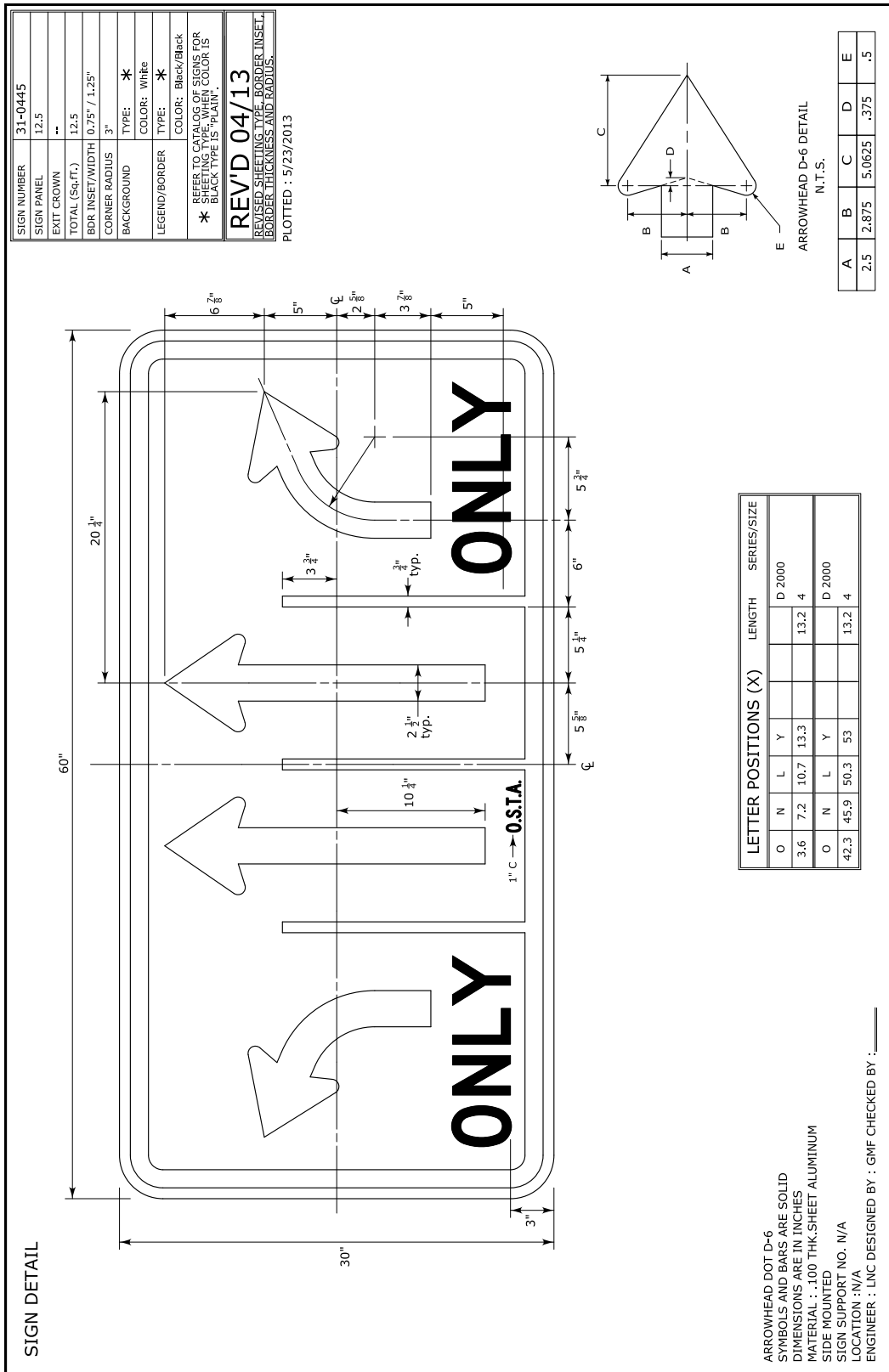


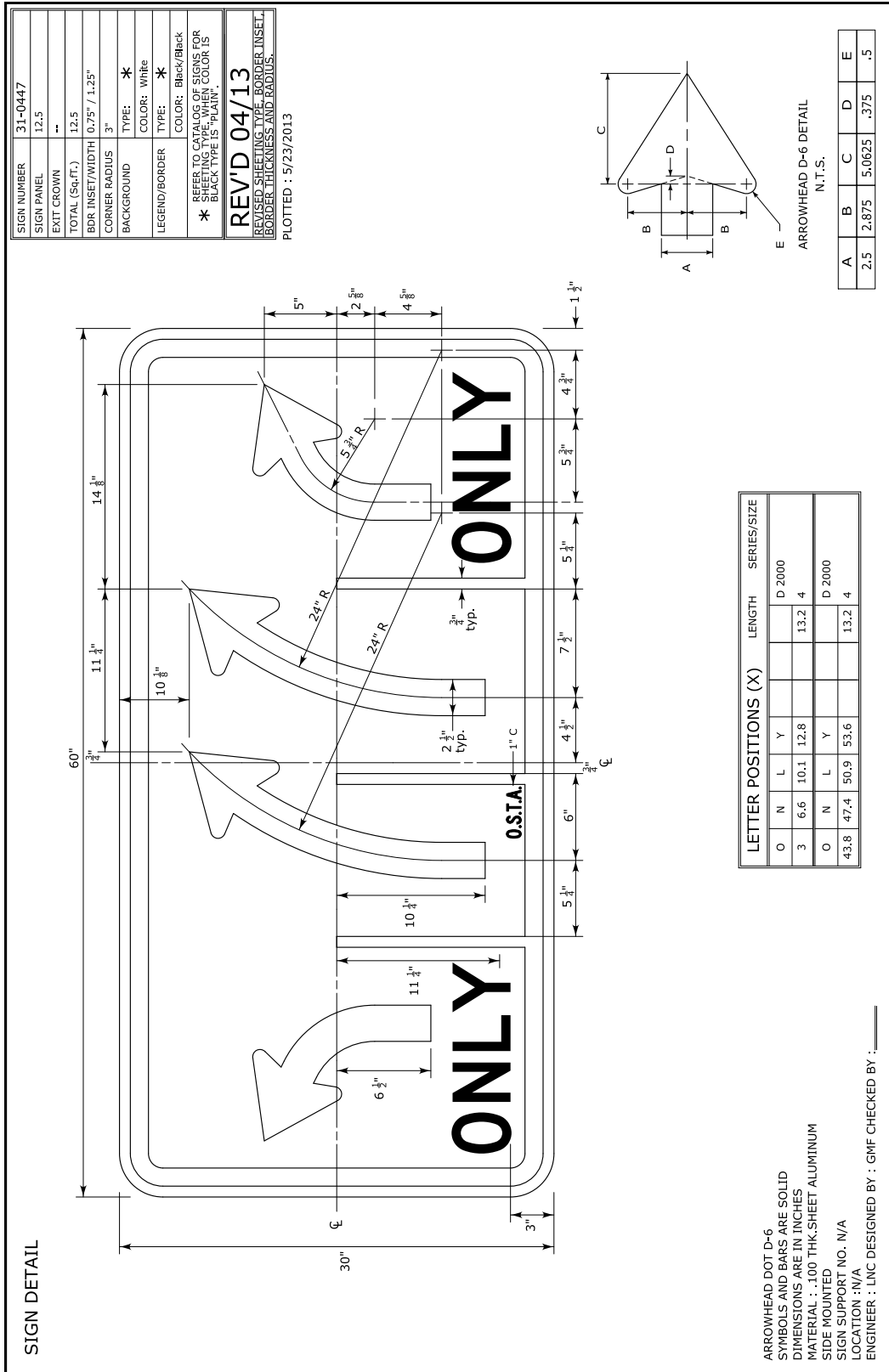
SIGN NUMBER	31-0371
SIGN PANEL	8.75
EXIT CROWN	--
TOTAL (SQ.FT.)	8.75
BDK INSET/WIDTH	0.75' / 1.25'
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR BORDERS. TYPE IS "PLAIN".	

REV'D 03/13
REVISED SHEETING TYPE, BORDER INSET,
BORDER THICKNESS AND RADIUS.
PLOTTED : 3/11/2013

A	B	C	D	E
2.5	2.875	5.0625	.375	.5

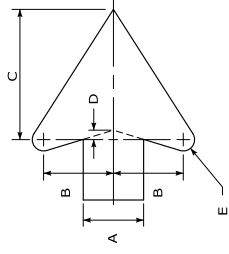
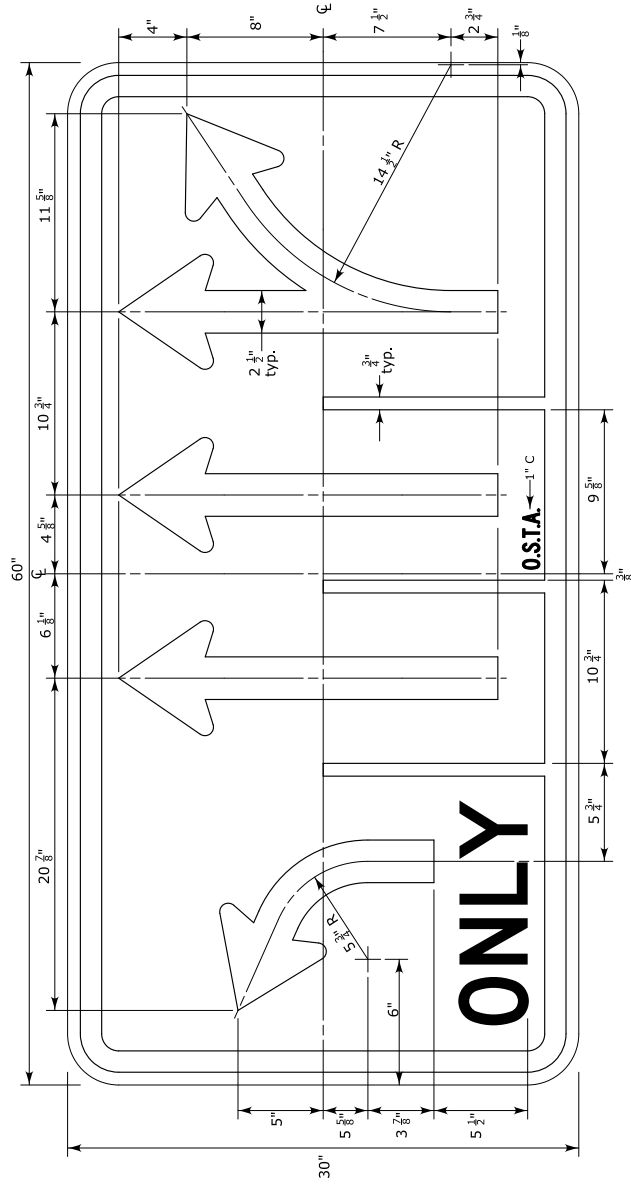
LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
O	N	29.4	33
L	Y	35.7	
		13.4	D 2000
		4	





ARROWHEAD DOT D-6
 SYMBOLS AND BARS ARE SOLID
 DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : _____

SIGN DETAIL



ARROWHEAD D-6 DETAIL
N.T.S.

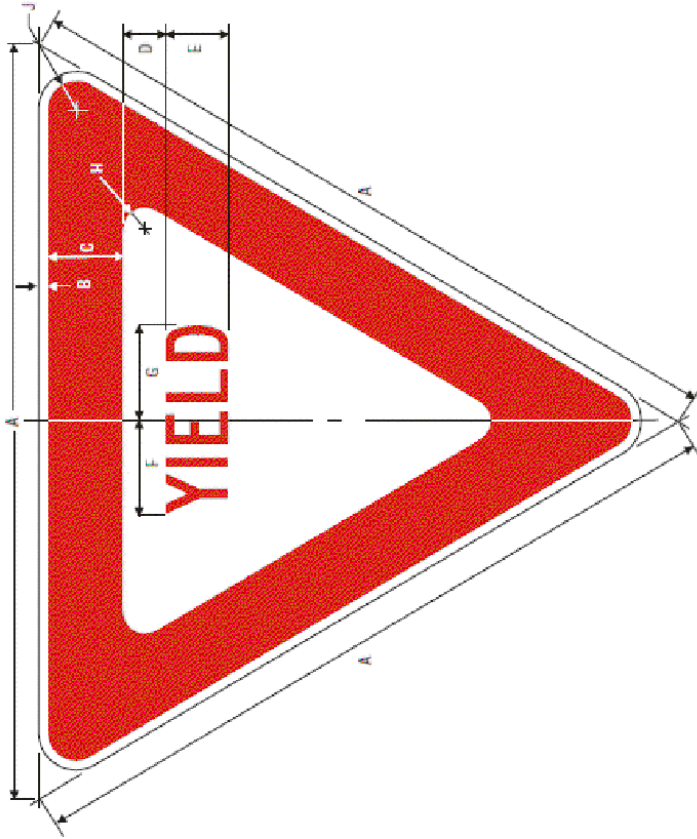
LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
O	N	L	Y
3.5	7.1	10.6	13.3
			13.2
			4

ARROWHEAD DOT D-6
SYMBOLS AND BARS ARE SOLID
DIMENSIONS ARE IN INCHES
MATERIAL : .100 THK. SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : _____

A	B	C	D	E
2.5	2.875	5.0625	.375	.5

SIGN NUMBER	31-0480
SIGN PANEL	12.5
EXIT CROWN	--
TOTAL (SQ.FT.)	12.5
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 6/13	
REVISED SHEETING TYPE, BORDER INSET, BORDER THICKNESS AND RADIUS.	
PLOTTED : 6/17/2013	

SIGN DETAIL



R1-2
YIELD

A	B	C	D	E	F	G	H	J
48	1	6	2.75	4C	6.25	5.875	2	3

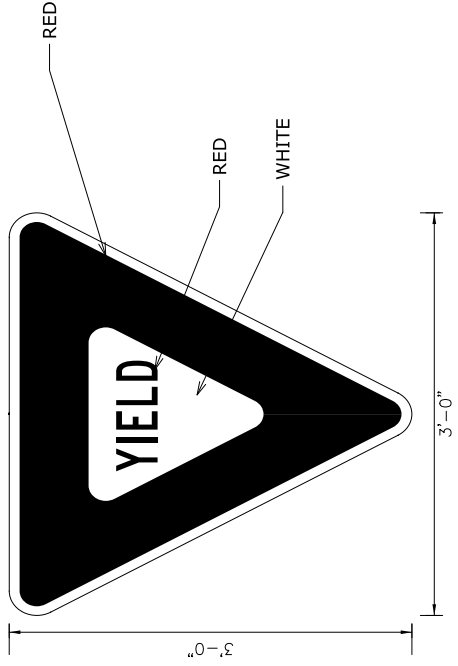
DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK.SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : SPC DESIGNED BY : GMF CHECKED BY : _____

SIGN NUMBER	31_0522
SIGN PANEL	6.77
EXIT CROWN	--
TOTAL (Sq.ft.)	6.77
BDR INSET/WIDTH	See Chart
CORNER RADIUS	See Chart
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: White
	TYPE: *
	COLOR: Red
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D /

SIGN DETAIL
1:15



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Sign Support No. N/A
 Location : N/A
 Engineer : B. Schilling Designed By: J. Fascione Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	31-0523
PANEL SIZE	3'-0" x 3'-0"
TOTAL (Sq.ft.)	9.0 Sq.Ft.
DATE	Jun 24, 2017
BDR INSET/WIDTH	0.92" / 0.82"
CORNER RADIUS	2.18"
BACKGROUND	TYPE: * COLOR: RED
LEGEND/BORDER	TYPE: * COLOR: RED/WHITE
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

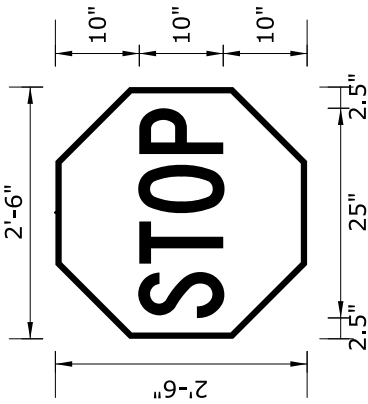
SYMBOL	ROT	X	Y	WID	HT

FILE : TR_MSH_SIN_31_0523.dgn

LETTER POSITIONS (X)							LENGTH	SERIES/SIZE
Y	I	E	L	D			C	
12.9	15.5	16.6	18.8	21		9.9	3.7	

SIGN DETAIL

1:20



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Sign Support No. N/A
 Location : N/A
 Engineer : B.Schilling Designed By: J. Fascione Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	31-0552
PANEL SIZE	2'-6" x 2'-6"
TOTAL (Sq.ft.)	5.17 Sq.Ft.
DATE	Jun 24, 2017
BDR INSET/WIDTH	0" / .75"
CORNER RADIUS	0"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Red TYPE: *
	COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

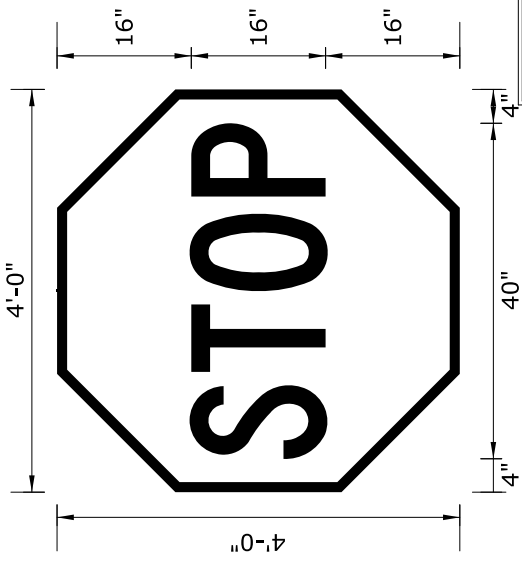
SYMBOL	ROT	X	Y	WID	HT

FILE :TR_MSH_SIN_31_0552.dgn

LETTER POSITIONS (X)

		LENGTH		SERIES/SIZE	
S	T	O	P		
2.5	9	15	22	25	10

SIGN DETAIL
1:20



Dimension are in Inches
Material : .080 Thick Sheet Aluminum
Sign Support No. N/A
Location : N/A
Engineer : B.Schilling Designed By: J. Fascione Checked By: _____
Ground Mounted

REV'D /

FILE :TR_MSH_SIN_31_0557.dgn

SIGN NUMBER	31-0557
PANEL SIZE	4'-0" x 4'-0"
TOTAL (Sq.ft.)	13.24
DATE	Jun 24, 2017
BDR. INSET/WIDTH	0" / 1"
CORNER RADIUS	0"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Red
	TYPE: *
	COLOR : White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

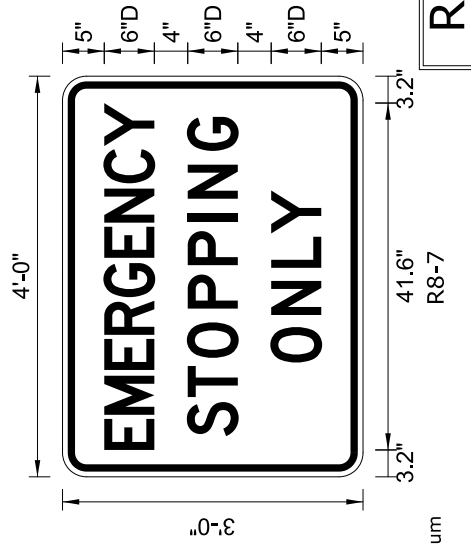
SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)

S	T	O	P	LENGTH		SERIES/SIZE
				X	Y	
4	14.3	24	35.2	40	16	C

SIGN DETAIL

1:20



Dimension are in Inches
 Material : .100 Thick Sheet Aluminum
 Sign Support No. N/A
 Location : N/A
 Engineer : ASM Designed By: JMF Checked By: MFM
 Side Mounted

REV'D /

SIGN NUMBER	31-0670
PANEL SIZE	4'-0" x 3'-0"
TOTAL (Sq.Ft.)	12.0 Sq.Ft.
DATE	Apr 29, 2015
BDR INSET/WIDTH	0.63" / 0.88"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

FILE : TR_MSH_SIN_31_0670.dgn

LETTER POSITIONS (X)

		LENGTH											SERIES/SIZE	
3.2	E	M	E	R	G	E	N	C	Y			D	2000	
												41.6	6	
4.9	S	T	O	P	P	I	N	G			D	2000		
												38.3	6	
13.7	O	N	L	Y							D	2000		
												20.6	6	

SIGN DETAIL 1:12



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	31-0689
PANEL SIZE	2'-6" x 1'-6"
SIGN AREA	3.8 Sq.Ft.
DATE	Jul 17, 2017
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: White
	TYPE: *
	COLOR: Red/Red

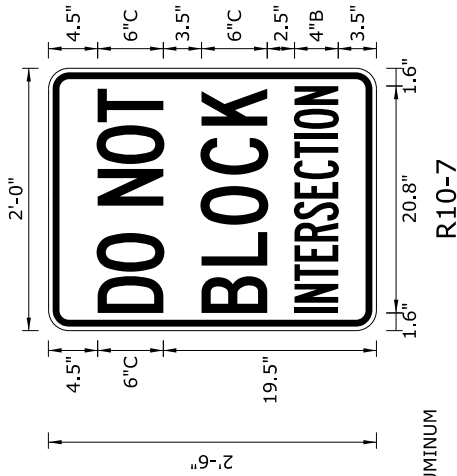
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE :TR_MSH_SIN_31_0689

	LETTER POSITIONS (X)	LENGTH											SERIES/SIZE				
		P	A	R	K	I	N	G	E	R	T	Y		O	F		
2.9	N O	2.2	3	2.6	2.6	1.2	2.7	2	2.9								D 2000
4.9	P E R	M	I	T	T	E	D	2	4.9								D 2000
3.8	S T	A T E		P	R	O		1.7	1.6	1.5	1.4	1.7	3.7				D 2000
9	C O	M M I	S	S	I	O	N	E	R	O	F						D 2000

SIGN DETAIL
1:15



DIMENSIONS ARE IN INCHES
 MATERIAL : .080 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

REV'D 12/13

REMOVED "STATE TRAFFIC COMMISSION".

SIGN NUMBER	31_0806
SIGN PANEL	5.0
EXIT CROWN	--
TOTAL (Sq.ft.)	5.0
BDR INSET/WIDTH	0.375" / 0.625"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS 'PLAIN'.	

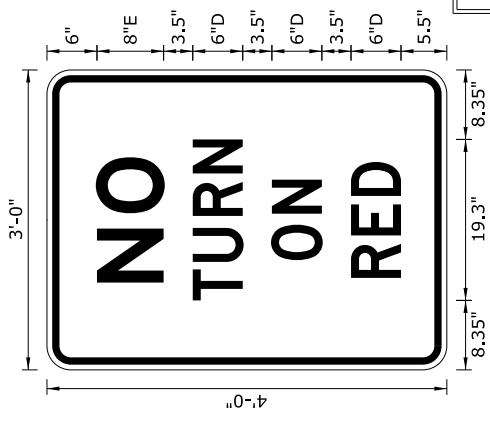
SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 12/16/13

LETTER POSITIONS (X)												LENGTH	SERIES/SIZE
D	O	N	O	T									C 2000
1.6	5.4	11.4	15.3	19.1								20.5	6
B	L	O	C	K									C 2000
1.6	6	9.7	14.3	18.8								20.5	6
I	N	T	E	R	S	E	C	T	I	O	N		B 2000
1.6	2.6	4.5	6.3	8.2	10.1	12.1	13.9	15.8	17.6	18.5	20.7	20.8	4

SIGN DETAIL

1:20



DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINIUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : SPC DESIGNED BY : _____
 GMF CHECKED BY : _____

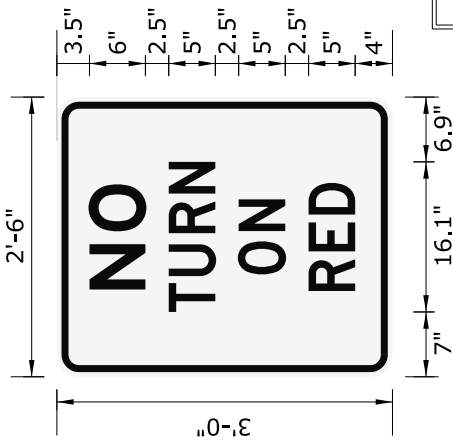
REV'D /

SIGN NUMBER	31_0819
SIGN PANEL	12.0
MUTCD	R10-11a
TOTAL (Sq.Ft.)	12.0
BDR INSET/WIDTH	0.63" / 0.88"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: White
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

		LETTER POSITIONS (X)					LENGTH	SERIES/SIZE
N	O						E 2000	
10.5	18.8					15	8	
T	U	R	N				D 2000	
8.3	13	18.5	23.6			19.3	6	
O	N						D 2000	
13.2	18.8					9.7	6	
R	E	D					D 2000	
11	16.1	20.9				13.9	6	

SIGN DETAIL
1:18



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	31-0830
PANEL SIZE	2'-6" x 3'-0"
SIGN AREA	7.5 Sq.Ft.
MUTCD	R10-11a
BDR. INSET/WIDTH	0.5" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: *
	COLOR: White
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

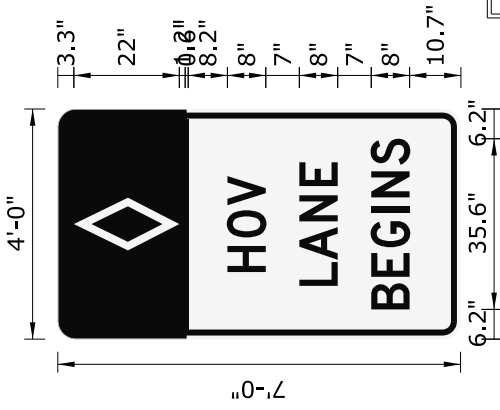
SYMBOL	ROT	X	Y	WID	HT

FILE : 31_0830

LETTER POSITIONS (X)

											LENGTH	SERIES/SIZE
9.4	N	O	5	9.4							11.3	E 2000 6
7	T	U	4.6	4.3	R	N					16.1	D 2000 5
11	O	N									8.1	D 2000 5
9.2	R	E	4	3.4	D						11.6	D 2000 5

SIGN DETAIL
1:35



Dimensions are in Inches
Material : .125 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D 6/18

Revised overall sign layout
to match MUTCD.

SIGN NUMBER	31-0901
PANEL SIZE	4'-0" x 7'-0"
SIGN AREA	28.0 Sq.Ft.
MUTCD	R3-12a
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White / Black
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

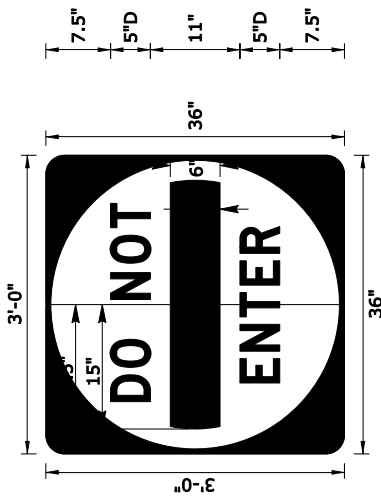
SYMBOL	ROT	X	Y	WID	HT
HOV Diamond	0	18.5	58.7	11	22

FILE : 31_0901 Jun 13, 2018

LETTER POSITIONS (X)

	H	O	V																LENGTH	SERIES/SIZE
14	7.2	6.7	6.1	14															20	D 2000 8
11.1	5.4	8	7.4	5															25.8	D 2000 8
6.2	6.8	6.2	7.2	3.2															35.6	D 2000 8

SIGN DETAIL
1:20



DIMENSIONS ARE IN INCHES
MATERIAL : .080 THK. SHEET ALUMINIUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : SPC DESIGNED BY : _____
GMF CHECKED BY : _____

REV'D /

SIGN NUMBER	31_1120
SIGN PANEL	9.0
EXIT CROWN	--
TOTAL (Sq.ft.)	9.0
BDR. INSET/WIDTH	0" / 0"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: White
LEGEND/BORDER	TYPE: *
	COLOR: White/White
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE WHEN COLOR IS BLACK TYPE IS "PLAIN".	

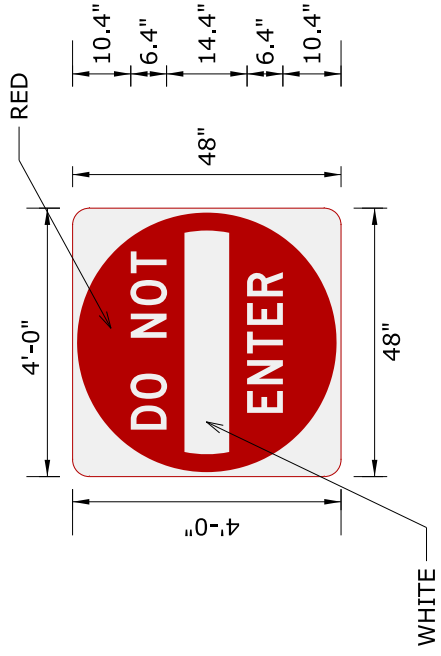
SYMBOL	ROT	X	Y	WID	HT

			LENGTH		SERIES/SIZE
D	O	N O T			D
6.3	10.4	13.8 18.6 23	27.3	23.9	4.8
E	N T	E R			D
8.6	12.4	16.5 20.3 24.2		18.9	4.8

LETTER POSITIONS (X)

SIGN DETAIL
1:30

THIS SIGN TO BE USED ON EXPRESSWAYS ONLY.



REV'D /

Dimension are in Inches
Material : .100 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN NUMBER	31-1121
PANEL SIZE	4'-0" x 4'-0"
SIGN AREA	16.0 Sq.Ft.
MUTCD	R5-1
BDR INSET/WIDTH	0" / 0"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: /White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
R5_1B	0	0	0	48	48

FILE :TR_MSH_SIN_31_1121

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
8.4	D	5.5	4.5	6.4	5.8	5.7	3.9	7.7				31.9	D 6.4
11.4	E	5.1	5.5	5.1	5.1	4.3	11.4					25.2	D 6.4

SIGN DETAIL

A	B	C	D	E	F	G	H	J
42	30	.875	5	8D	4	17.75	10.75	1.875

R5-1a
WRONG WAY

DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK.SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION :N/A
 ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

SIGN NUMBER	31-1123
SIGN PANEL	8.75
EXIT CROWN	--
TOTAL (Sq.ft.)	8.75
BDR INSET/WIDTH	0"/.875"
CORNER RADIUS	1.875"
BACKGROUND	TYPE: *
LEGEND/SYMBOL	COLOR: Red
	TYPE: *
	COLOR: White/White
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 8/12	
REVISED TO MATCH MUTCD.	

PLOTTED : 8/28/2012

SIGN DETAIL

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
54	18	1	5.5	3.5	5	4	12.309	2.929	12.762	13	4	5D	1.875	17

DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

SIGN NUMBER	31-1178
SIGN PANEL	6.75
EXIT CROWN	--
TOTAL (Sq.ft.)	6.75
BDR INSET/WIDTH	0"/1"
CORNER RADIUS	1.875"
BACKGROUND/ LEGEND	TYPE: * COLOR: Black/Black
BORDER/ARROW	TYPE: * COLOR: White/White
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 9/12	
REVISED TO MATCH MUTCD.	

PLOTTED : 9/19/2012

SIGN DETAIL

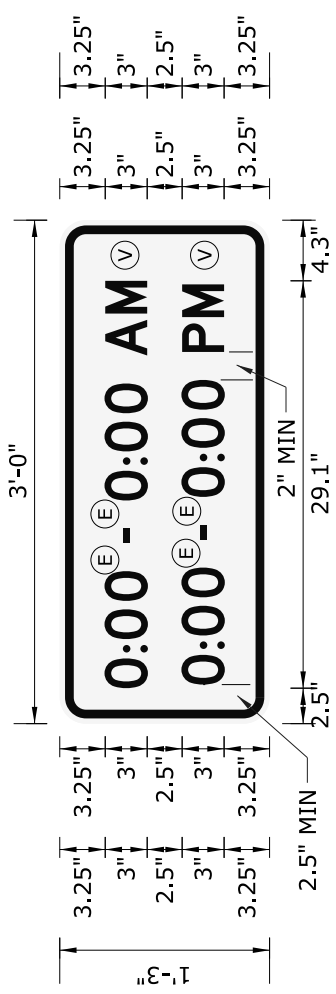
A	B	C	D	E	F	G	H	J	K	L	M	N	P
54	18	1	5.5	3.5	4	13	12.309	2.929	12.762	4	5	5D	1.875

DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

SIGN NUMBER	31-1189
SIGN PANEL	6.75
EXIT CROWN	--
TOTAL (Sq.ft.)	6.75
BDR INSET/WIDTH	0"1"
CORNER RADIUS	1.875"
BACKGROUND/ LEGEND	TYPE: * COLOR: Black/Black
BORDER/ARROW	TYPE: * COLOR: White/White
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 9/12	
REVISED TO MATCH MUTCD.	
PLOTTED : \$DATE\$	

SIGN DETAIL

1:12



(E) Equal Spacing

(E) Variable Legend

Dimension are in Inches

Material : .080 Thick Sheet Aluminum

Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____

Ground Mounted

REV'D /

SIGN NUMBER	31-1605
PANEL SIZE	3'-0" x 1'-3"
SIGN AREA	3.8 Sq.Ft.
MUTCD	
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
	0	10.7	10.8	2	2
	0	14	10.8	2	2
	0	11.2	5	2	2
	0	14.2	4.9	2	2

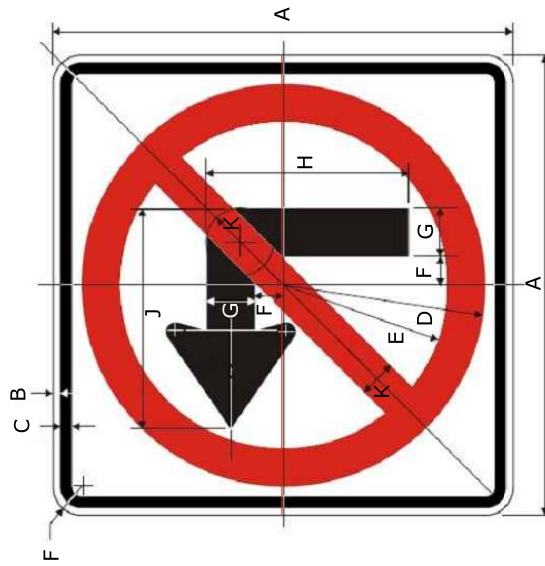
FILE :31-1605

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE							
0	:	0	0	-	0	:	0	0	A	M		D 2000						
2.5	2.5	1	2.7	2.1	2	1.1	2	2.6	1	2	2.1	2	2.3	4.3	29.1	3		
0	:	0	0	-	0	:	0	0	P	M		D 2000						
2.8	2.5	1	2.7	2.1	2	1.1	2	2.6	1	2	2.1	2	2.5	2.3	4.6	28.6	3	

SIGN DETAIL
1:20



SIGN NUMBER	311629
PANEL SIZE	3'-0" x 3'-0"
SIGN AREA	9.0 Sq.Ft.
MUTCD	R3-1
BDR INSET/WIDTH	0.63" / 0.88"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: White
SYMBOL/BORDER/ CIRCLE	TYPE: *
	COLOR: Black/Black/Red
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.	
* WHEN COLOR IS BLACK TYPE IS "PLAIN".	



A	B	C	D	E	F	G	H	J	K
36	.625	.875	15.75	12.75	2.25	3.75	12.75	17.25	3

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

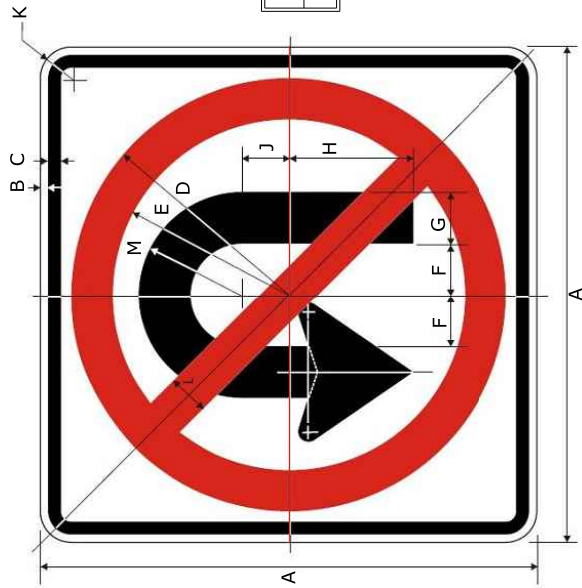
SIGN DETAIL
1:10



SIGN NUMBER	31-1632
PANEL SIZE	2'-0" x 2'-0"
SIGN AREA	4.0 Sq.Ft.
MUTCD	R3-4
BDR. INSET/WIDTH	0.375" / 0.625"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
	COLOR: White
LEGEND/BORDER/ CIRCLE	TYPE: *
	COLOR: Black/Black/Red
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.	
* WHEN COLOR IS BLACK TYPE IS "PLAIN".	

FILE : 311622

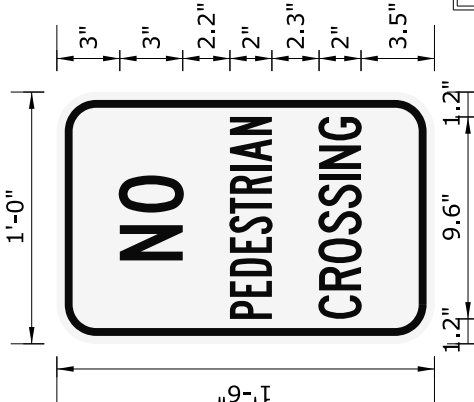
Aug 26, 2017



A	B	C	D	E	F	G	H	J	K	L	M
36	.625	.875	15.75	12.75	3.75	3.75	9	3.375	2.25	3	7.5

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN DETAIL
1:8



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 1/18
 Revised size of sign to 12" x 18".

SIGN NUMBER	311702
PANEL SIZE	1'-0" x 1'-6"
SIGN AREA	1.5 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0.375" / 0.375"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

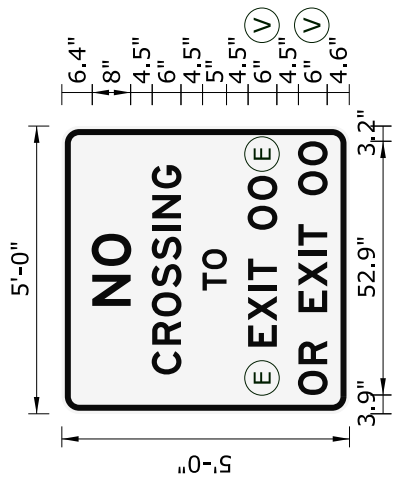
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 311702 Jan 08, 2018

		LETTER POSITIONS (X)											LENGTH	SERIES/SIZE		
4	N O	2.3	1.8	4												C 2000
	P E D E S T R I A N	1.1	1	1.1	0.9	1	1	1.1	0.5	1.3	0.9	1.2				B 2000
	C R O S S I N G	1.4	1.3	1.3	0.5	1.4	1.1	1.2								C 2000
1.2																
1.2																

SIGN DETAIL
1:35



- (E) Equal Spacing
 - (V) Variable Legend
- Dimension are in Inches
Material : .100 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

SIGN NUMBER	31-1748
PANEL SIZE	5'-0" x 5'-0"
SIGN AREA	25.0 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0.63" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

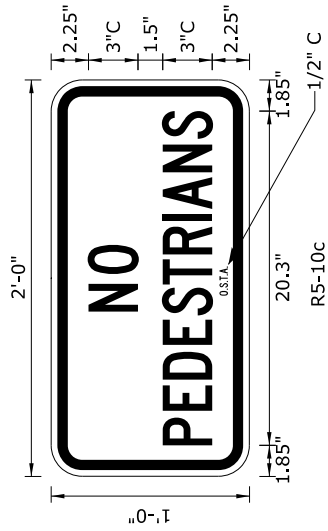
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 31-1747 Aug 04, 2017

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE
N	O													15	E 2000 8
22.5	8.3	6.7	22.5												
C	R	O	S	I	N	G									E 2000 6
8.2	6.2	5.9	6.1	5.7	6.1	2.6	6.2	4.9	8.1					43.7	6
T	O														E 2000 5
25.7	4.5	4.2	25.7											8.7	5
E	X	I	T		0	0									E 2000 6
14	5.3	6.4	2.1	4.5	6	6.2	5	10.4						35.6	6
O	R		E	X	I	T		0	0						E 2000 6
3.9	6.4	4.9	6	5.3	6.4	2.1	4.5	6	6.2	5	3.2			52.9	6

SIGN DETAIL
1:10



DIMENSIONS ARE IN INCHES
MATERIAL : .080 THK. SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : TLF DESIGNED BY : JMF CHECKED BY :

REV'D /

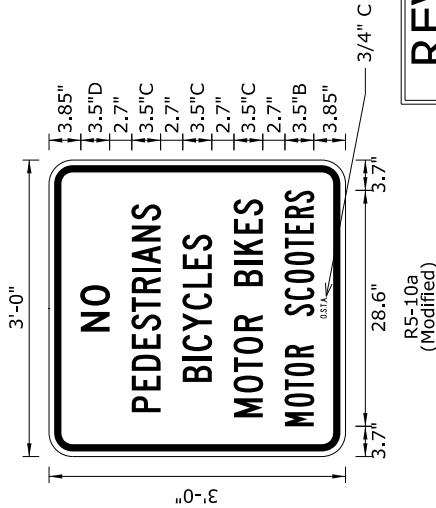
SIGN NUMBER	31-1774
SIGN PANEL	2.0
EXIT CROWN	--
TOTAL (Sq.ft.)	2.0
BDR INSET/WIDTH	0.375" / 0.625"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

PLOTTED : 12/13/2013

		LETTER POSITIONS (X)													LENGTH	SERIES/SIZE	
N	O															C 2000	
10	12.3															4.1	3
P	E	D	E	S	T	R	I	A	N	S						C 2000	
1.9	4	5.9	8	9.7	11.6	13.4	15.5	16.2	18.4	20.4						20.3	3

SIGN DETAIL
1:20



DIMENSIONS ARE IN INCHES
MATERIAL : .080 THK.SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO. N/A
LOCATION : N/A
ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

REV'D /

PLOTTED : 12/13/13

SIGN NUMBER	31-1775
SIGN PANEL	9.0
EXIT CROWN	--
TOTAL (Sq.Ft.)	9.0
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

		LETTER POSITIONS (X)												LENGTH	SERIES/SIZE	
N	O														D 2000	
15.2	18.3														5.6	3.5
P	E	D	E	S	T	R	I	A	N	S					C 2000	
5.4	8	10.4	13.1	15.3	17.6	19.8	22.4	23.4	26.1	28.7					25.2	3.5
B	I	C	Y	C	L	E	S								C 2000	
9.1	11.6	12.8	15.2	17.8	20.5	22.8	25								17.9	3.5
M	O	T	O	R		B	I	K	E	S					C 2000	
4.8	7.8	10.3	12.5	15.2	17.2	20.7	23.3	24.5	27.1	29.3					26.5	3.5
M	O	T	O	R		S	C	O	O	T	E	R	S		B 2000	
3.7	6.1	8.1	9.8	12.1	13.6	17.1	19	21.1	23.3	25.2	27.1	29	30.8		28.6	3.5

SIGN DETAIL
1:18



Dimensions are in Inches
 Material : .100 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 9/18
 Revised legend and sign size
 to match MUTCD R5-11.

SIGN NUMBER	31-1792
PANEL SIZE	4'-0" x 3'-0"
SIGN AREA	12.0 Sq.Ft.
MUTCD	R5-11
BDR INSET/WIDTH	0.63" / 0.88"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 31-1792 Sep 21, 2018

LETTER POSITIONS (X)												LENGTH	SERIES/SIZE
A	U	T	H	O	R	I	Z	E	D				C 2000
3.9	8.6	12.8	16.7	21.3	26	30.4	32.3	36.6	40.7			40.1	6
V	E	H	I	C	L	E	S						C 2000
8.5	13.1	17.2	21.8	23.9	28.4	32.3	36.1					31	6
O	N	L	Y										C 2000
15.7	20.4	25.1	28.5									16.7	6

SIGN DETAIL
1:20



Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN NUMBER	41-5003
PANEL SIZE	0'-4" x 4'-0"
SIGN AREA	1.3 Sq.Ft.
MUTCD	R5-1 (CT)
BDR INSET/WIDTH	0" / 0"
CORNER RADIUS	0"
BACKGROUND IX	TYPE: * COLOR: Red
LEGEND/BORDER	TYPE: * COLOR: /Red
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

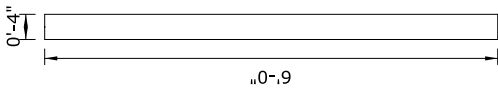
SYMBOL	ROT	X	Y	WID	HT

FILE : 31-5003 Dec 12, 2018

REV'D /

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE

SIGN DETAIL
1:25



DIMENSIONS ARE IN INCHES
 MATERIAL : .080 THK.SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : CB DESIGNED BY : JMF CHECKED BY : _____

REV'D /

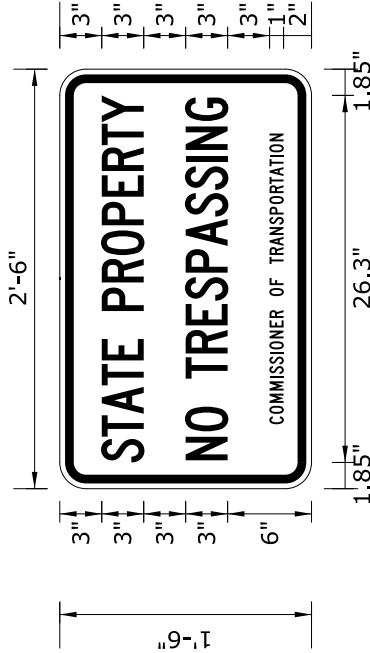
SIGN NUMBER	31-5004
SIGN PANEL	2.0
EXIT CROWN	
TOTAL (Sq.ft.)	2.0
BDR INSET/WIDTH	0" / 0"
CORNER RADIUS	0"
BACKGROUND	TYPE: IV
LEGEND/BORDER	COLOR: Red
	TYPE: *
	COLOR: N/A
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

PLOTTED :8/6/2013

	LETTER POSITIONS (X)										LENGTH	SERIES/SIZE	
	1	2	3	4	5	6	7	8	9	10			

SIGN DETAIL
1:12



SIGN NUMBER	315476
PANEL SIZE	2'-6" x 1'-6"
SIGN AREA	3.8 Sq.Ft.
MUTCD	
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

REV'D /

FILE : 315476 Sep 13, 2017

LETTER POSITIONS (X)

		LETTER POSITIONS (X)														LENGTH	SERIES/SIZE	
S	T	A	T	E		P	R	O	P	E	R	T	Y				C 2000	
1.9	1.8	1.6	2	1.8	1.5	2	2	2.1	2	1.8	1.8	1.6	1.9	1.9		26.3	3	
N	O	T		R	E	S	P	A	S	S	I	N	G				C 2000	
2	2.1	1.8	2	1.8	2	1.8	2	1.9	2.1	1.9	2	0.8	2.1	1.7	2	25.9	3	
C	O	M	M	I	S	S	I	O	N	E	R	O		F				
4.6	0.7	0.8	0.9	0.3	0.7	0.7	0.3	0.8	0.8	0.7	0.6	1	0.8	0.5	1			
		T	R	A	N	S	P	O	R	T	A	T	I	O	N			C 2000
		0.6	0.6	0.8	0.7	0.7	0.7	0.8	0.8	0.6	0.6	0.6	0.7	0.3	0.8	0.6	4.6	20.8

SIGN DETAIL



R2-1
SPEED LIMIT (ENGLISH)

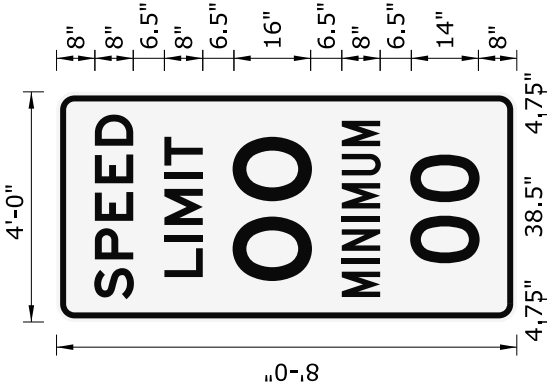
DIMENSIONS ARE IN INCHES
 MATERIAL : .100 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : TLF DESIGNED BY : JMF CHECKED BY : _____

A	B	C	D	E	F	G	H	J	K	L
48	60	.75	1.25	8	8E	6	16E	19.125	14.625	3

SIGN NUMBER	31-5507
SIGN PANEL	20-0
EXIT CROWN	--
TOTAL (Sq.ft.)	20.0
BDR INSET/WIDTH	0.75"/1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D 8/12	
REVISED TO MATCH MUTCD.	

PLOTTED : 8/28/2012

SIGN DETAIL
1:35



Dimensions are in Inches
Material : .125 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

SIGN NUMBER	31-5510
PANEL SIZE	4'-0" x 8'-0"
SIGN AREA	32.0 Sq.Ft.
MUTCD	R3-4a
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

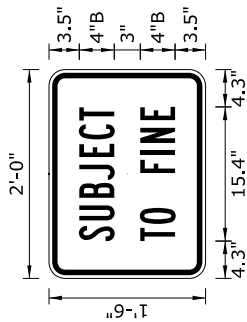
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE :31_5510 Jul 11, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE							
4.8	8.3	8	7.8	7.8	6.5	4.8	E 2000			
9.4	7.4	3.5	9.6	2.8	6	9.4	E 2000			
8.5	16.6	13.4	9.4				E 2000			
5.2	6.9	2.7	6.1	2.7	6.9	6.1	5.3	6	C 2000	
12.2	12.7	9.9	13.1						D 2000	

SIGN DETAIL



REV'D 12/13
CHANGED WHITE TYPE I TO TYPE III.

PLOTTED : 12/16/13
DIMENSIONS ARE IN INCHES
MATERIAL - .080 THK. SHEET ALUMINUM
SIGN TO BE SUBMOUNTED ON SIGN No. 31-0806 "DO NOT BLOCK INTERSECTION"
FOR DO NOT BLOCK THE BOX BY MUNICIPALITY BY PERMIT.
SIGN SUPPORT NO. N/A
ENGINEER J.P.O. DESIGNED BY : M.J.C. CHECKED BY _____

SIGN NUMBER	31-5517		
SIGN PANEL	3.0		
EXIT CROWN	--		
TOTAL (Sq.Ft)	3.0		
BORDER WIDTH	0.375"	0.625"	
CORNER RADIUS	1.5"		
BACKGROUND	TYPE:	III	
	COLOR:	White	
LEGEND/BORDER	TYPE:	Plain	
	COLOR:	Black	
SYMBOL	X	Y	HT

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
S	U	B	J	E	C	T	B 2000
4.3	6.7	9.3	11.3	13.9	16	18.1	15.4 4
T	O		F	I	N	E	B 2000
4.3	6.3	8.1	12.1	14.2	15.6	18.2	15.4 4

SIGN DETAIL

ATTENUATOR REFLECTORS

Dimensions are in inches.
 Material : Not Specified
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

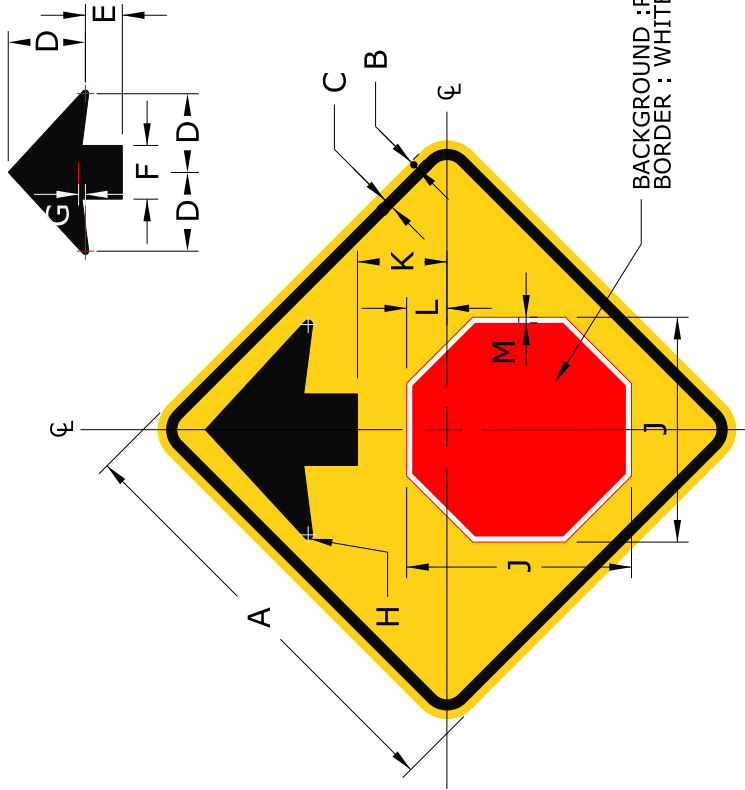
SIGN NUMBER	40-4266
SIGN PANEL	Variable
TOTAL (Sq.ft.)	variable
MUTCD	OM3 (CT)
BDR INSET/WIDTH	N/A
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: See Sign TYPE: * COLOR: See sign

* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".

REV'D /

PLOTTED : 9/18/2018

SIGN DETAIL
1:25



SIGN NUMBER	410503
PANEL SIZE	4'-0" X 4'-0"
SIGN AREA	16.0 Sq.Ft.
MUTCD	W3-1
BDR INSET/WIDTH	.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
ARROW/BORDER	TYPE: * COLOR: /Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

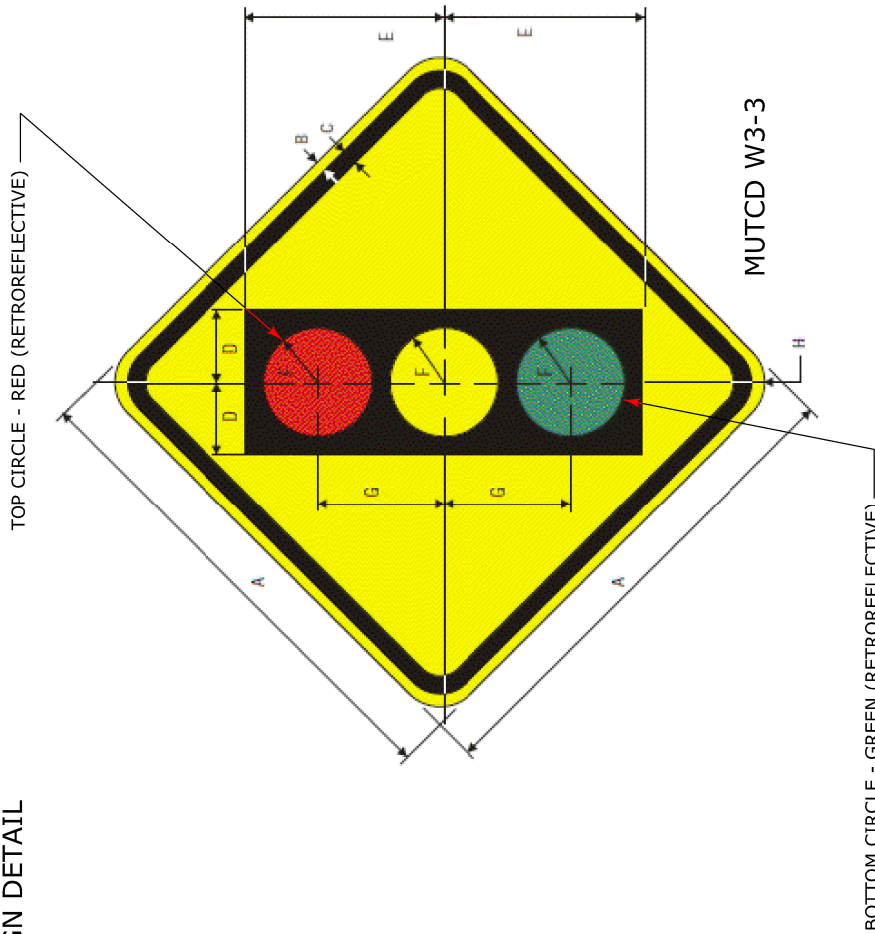
SYMBOL	ROT	X	Y	WID	HT
ARROW	180	20.1	42.3	24.5	17
STOP SYM.	0	19.75	11.69	25.125	25.125

FILE :410503 Oct 06, 2017

A	B	C	D	E	F	G	H	J	K	L	M	N
48	.75	1.25	12	6	8	1	.5	25.125	10	4.5	.75	3

Dimensions are in Inches
Material : .100 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN DETAIL



A	B	C	D	E	F	G	H
30	.5	.75	5	13.75	3.75	8.75	1.875

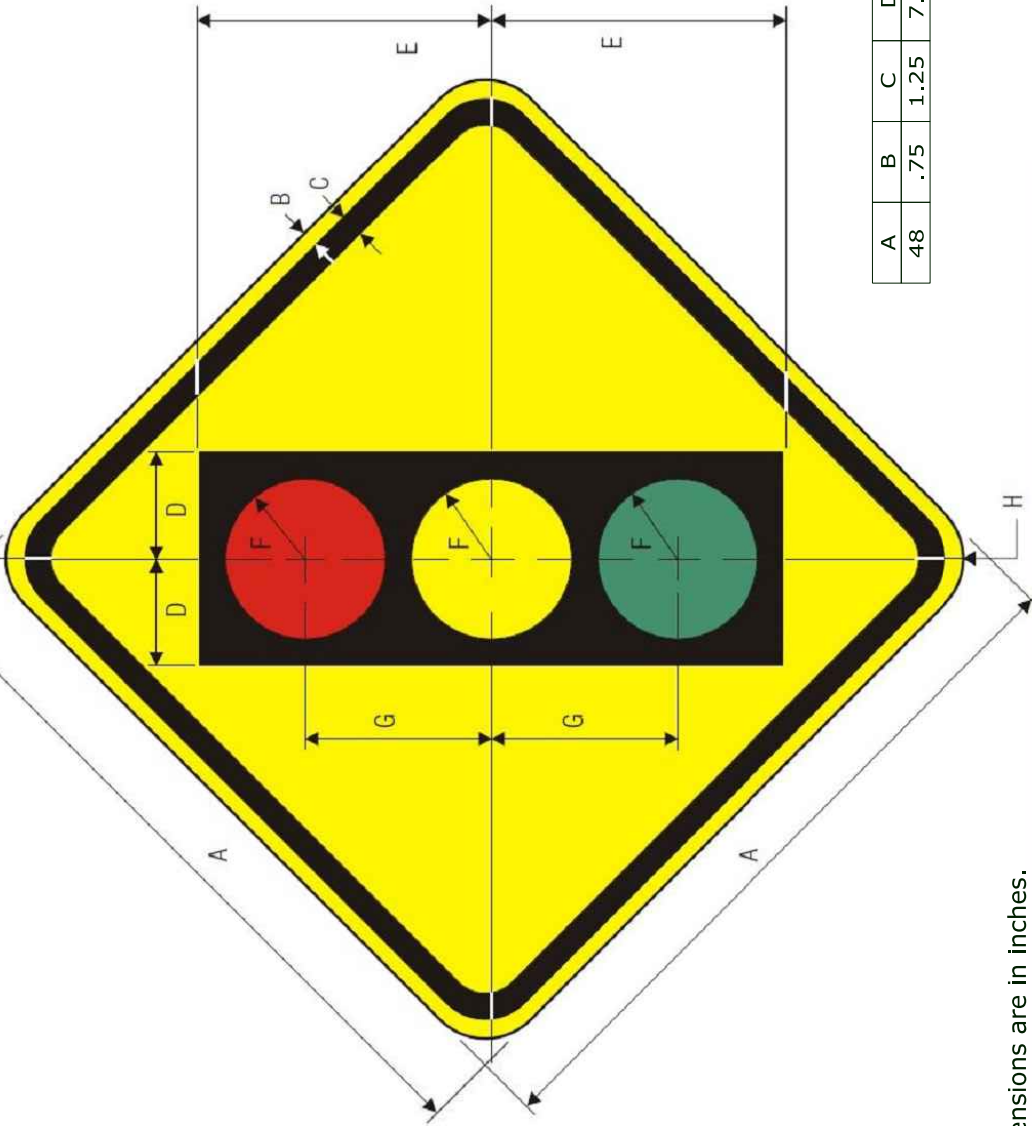
DIMENSIONS ARE IN INCHES
 MATERIAL : .080 THK. SHEET ALUMINUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : LNC

SIGN NUMBER	41_0835
SIGN PANEL	6.25
EXIT CROWN	--
TOTAL (Sq.Ft.)	6.25
BDR. INSET/WIDTH	See Chart
CORNER RADIUS	See Chart
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D /

SIGN DETAIL

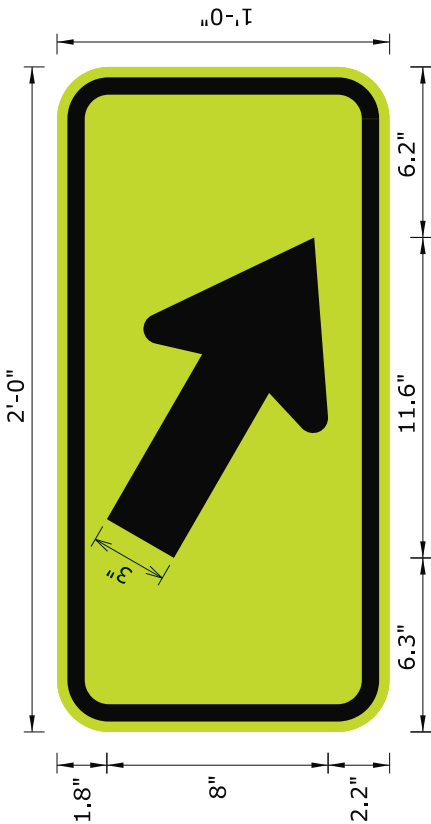


A	B	C	D	E	F	G	H
48	.75	1.25	7.5	20	5	12.5	3

SIGN NUMBER	410848
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W3-3
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : \$DATE\$	

Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B.Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL
1:6



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

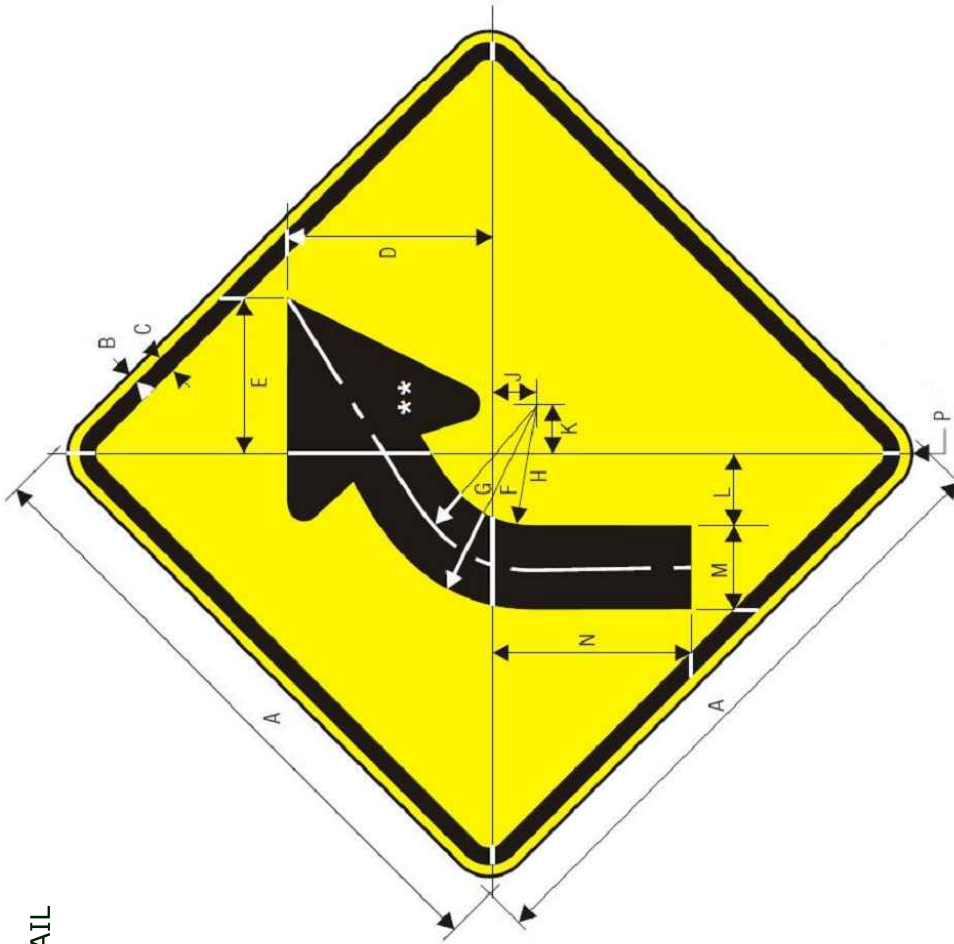
SIGN NUMBER	41-2619
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	W16-7P
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
ARROW/BORDER	COLOR: FL, Yellow Green TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	330	6.2	2.2	7.5	12.5

FILE : 41-2619 Aug 13, 2018

LETTER POSITIONS (X)												
			LENGTH			SERIES/SIZE						

SIGN DETAIL



A	B	C	D	E	F	G	H	J	K	L	M	N	P
36	.625	.875	10.625	0.875	12	9.375	6.75	3.5	2.625	4.125	5.25	12.375	2.25

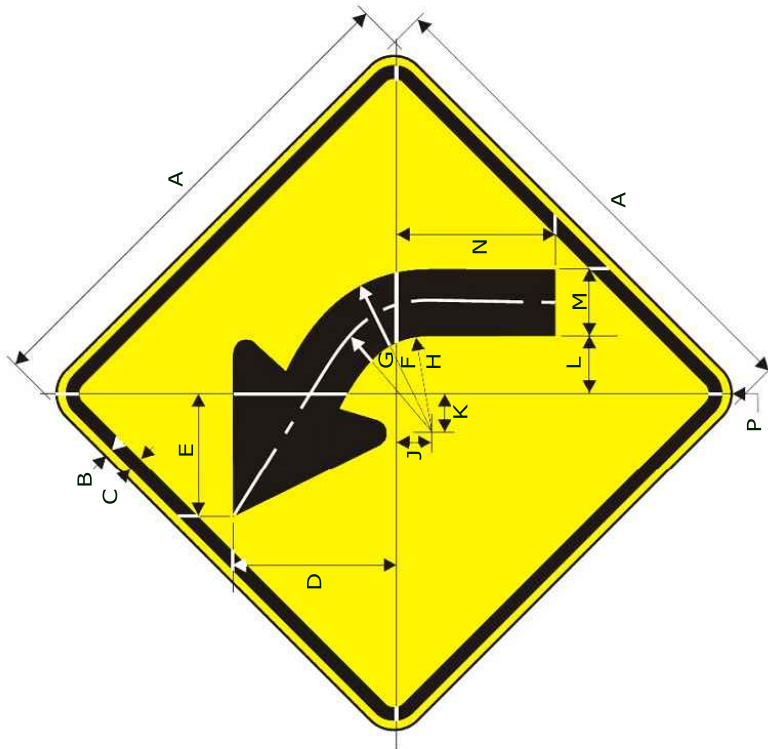
DOT ARROWHEAD D-23
 DIMENSIONS ARE IN INCHES
 MATERIAL : .080 THK.SHEET ALUMINIUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : LNC DESIGNED BY : GMF CHECKED BY : LNC

SIGN NUMBER	414032
SIGN PANEL	9.0
MUTCD	W1-2R
TOTAL (Sq.ft.)	9.0
BDR INSET/WIDTH	See Chart
CORNER RADIUS	See Chart
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D /

SIGN DETAIL

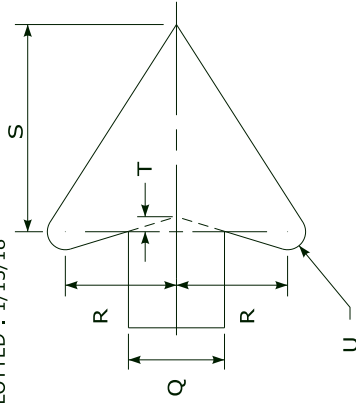


A	B	C	D	E	F	G	H	J	K	L	M	N	P
36	.625	.875	10.625	10.875	12	9.375	6.75	3.5	2.625	4.125	5.25	12.375	2.25

SIGN NUMBER	414169
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq.Ft.)	9.0
MUTCD	W1-2L
BDR INSET/WIDTH	0.625 / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE WHEN COLOR IS BLACK TYPE IS "PLAIN".	

REV'D /

PLOTTED : 1/13/18

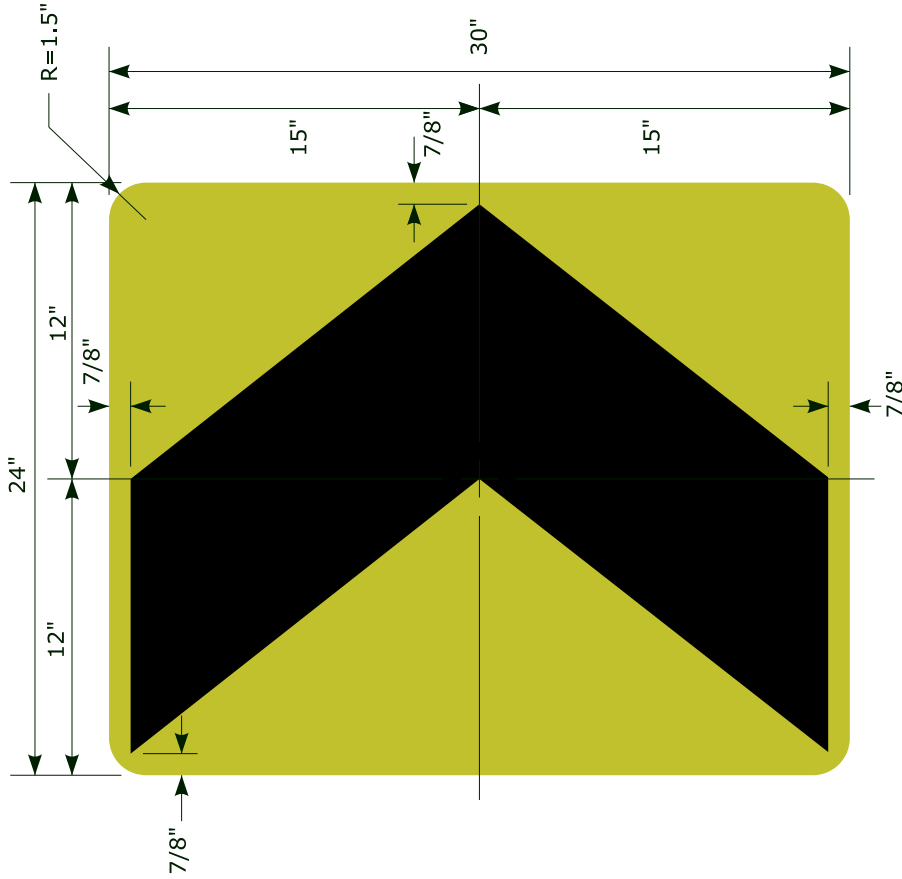


ARROWHEAD DETAIL
N.T.S.

Q	R	S	T	U
5.25	6	10.625	.8125	1.0625

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

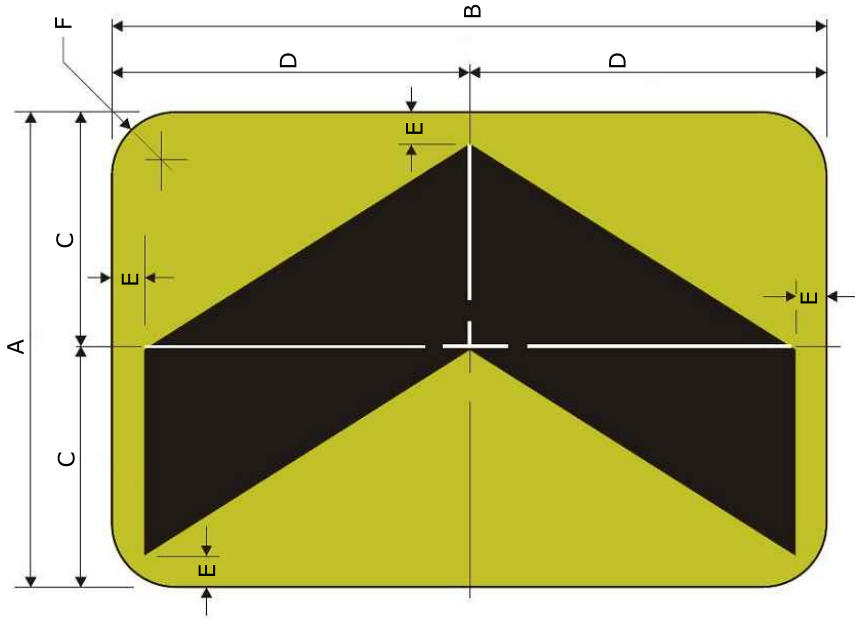
SIGN DETAIL



SIGN NUMBER	414210 L of R
SIGN PANEL	2'-0" x 2'-6"
TOTAL (Sq.ft.)	5.0
MUTCD	W1-8
BDR INSET/WIDTH	N/A
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Fluor. Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 1/19/18	

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



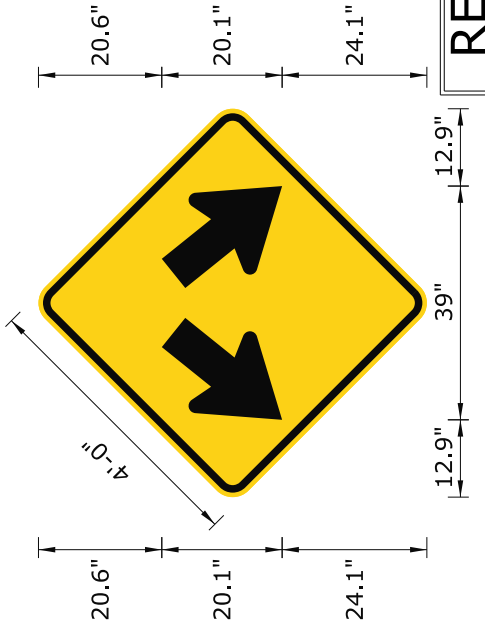
A	B	C	D	E	F
30	36	15	18	1	1.875

SIGN NUMBER	414211
SIGN PANEL	2'-6" x 3'-0"
TOTAL (Sq.ft.)	7.5
MUTCD	W1-8R
BDR INSET/WIDTH	N/A
CORNER RADIUS	1.875"
BACKGROUND	TYPE: * COLOR: Fluor. Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 1/16/18

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL
1:28



REV'D /

Dimensions are in Inches
 Material : .100 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	41-4214
PANEL SIZE	4'-0" x 4'-0"
SIGN AREA	16.0 Sq.Ft.
MUTCD	W12-1
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
ARROW/BORDER	TYPE: * COLOR: Black/Black

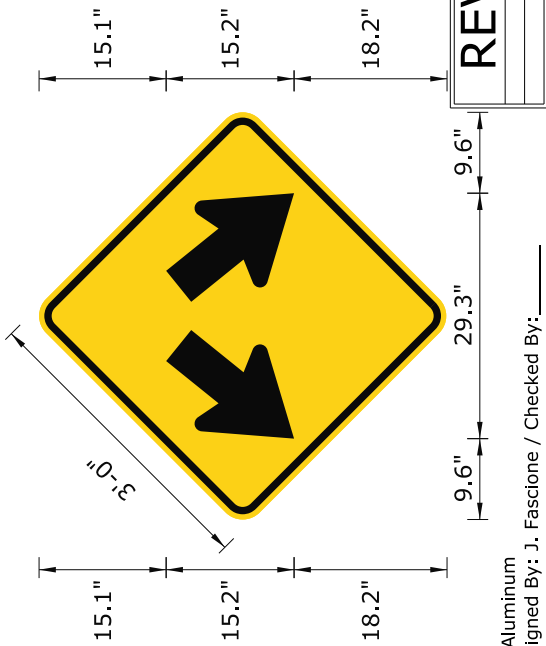
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	141.2	12.9	24.1	16.8	23.3
AR_Type D	218.8	34.9	24.1	16.8	23.3

FILE :41-4214
Sep 25, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE

SIGN DETAIL
1:20



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	41-4215
PANEL SIZE	3'-0" x 3'-0"
SIGN AREA	9.0 Sq.Ft.
MUTCD	W12-1
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: Yellow
ARROW/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

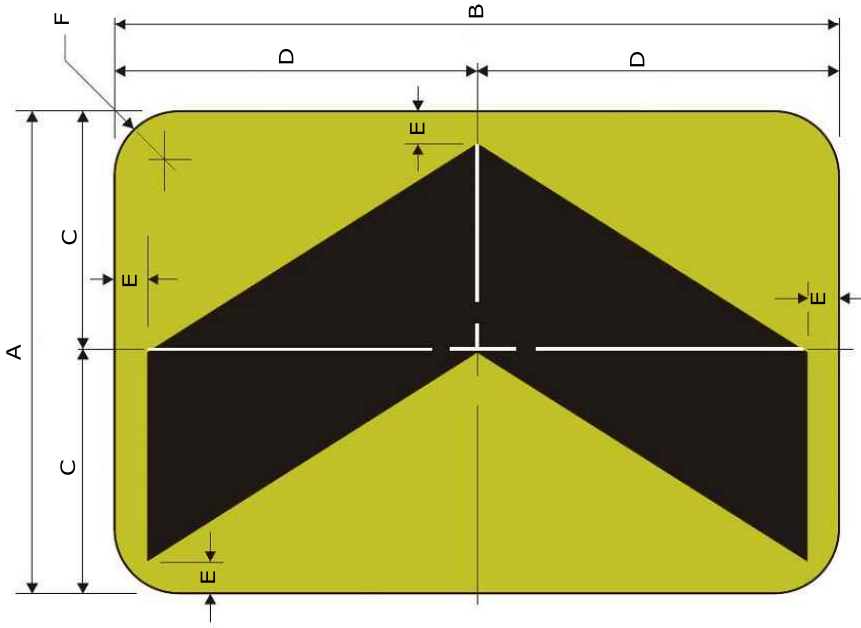
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	141.1	9.6	18.1	12.8	17.7
AR_Type D	218.9	25.9	18.1	12.8	17.7

FILE :41-4215 Sep 26, 2018

LETTER POSITIONS (X)

SYMBOL	ROT	X	Y	WID	HT	LENGTH	SERIES/SIZE

SIGN DETAIL

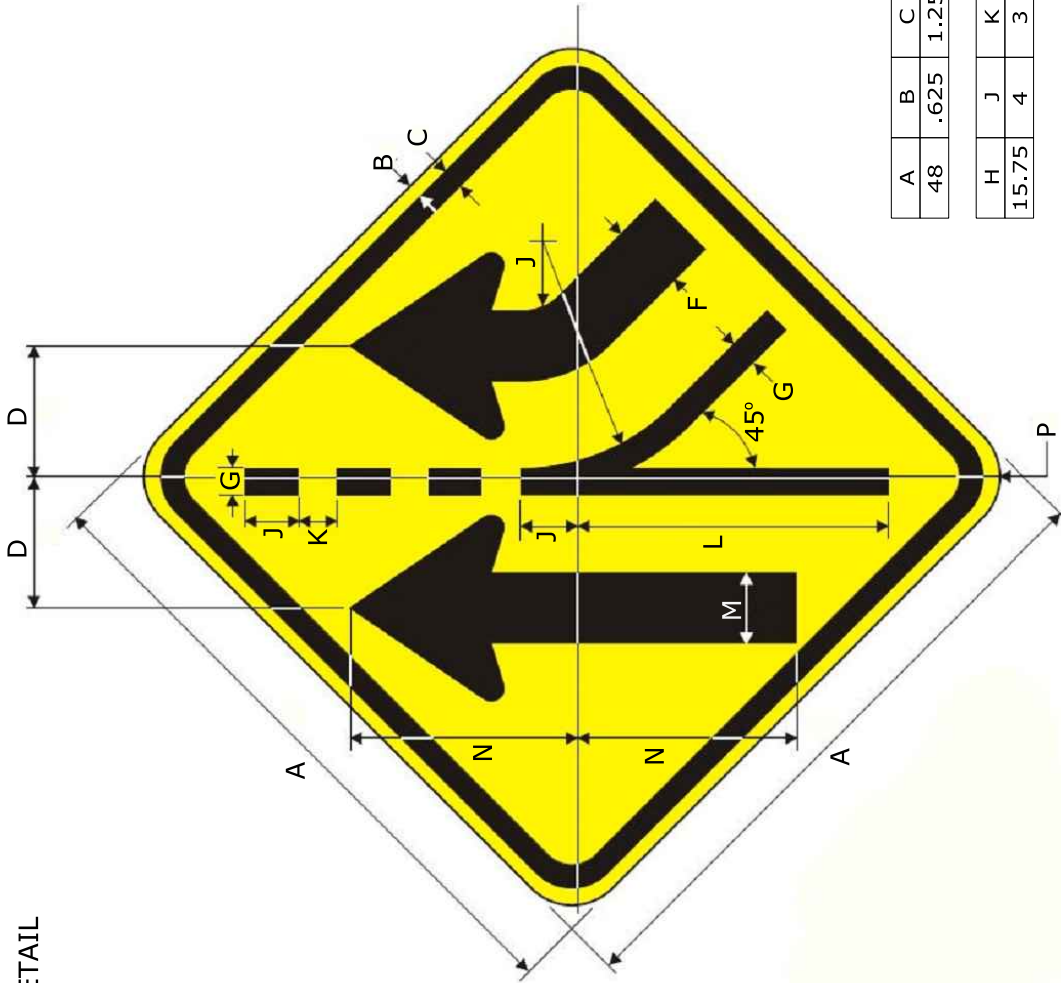


A	B	C	D	E	F
36	48	18	24	1.125	2.25

SIGN NUMBER	414260
SIGN PANEL	3'-0" x 4'-0"
TOTAL (Sq.Ft.)	12.0
MUTCD	W1-8
BDR INSET/WIDTH	N/A
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: Fluor. Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS 'PLAIN'.	
REV'D /	
PLOTTED : 5/1/2018	

Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



A	B	C	D	E	F	G
48	.625	1.25	10	4	5.5	2

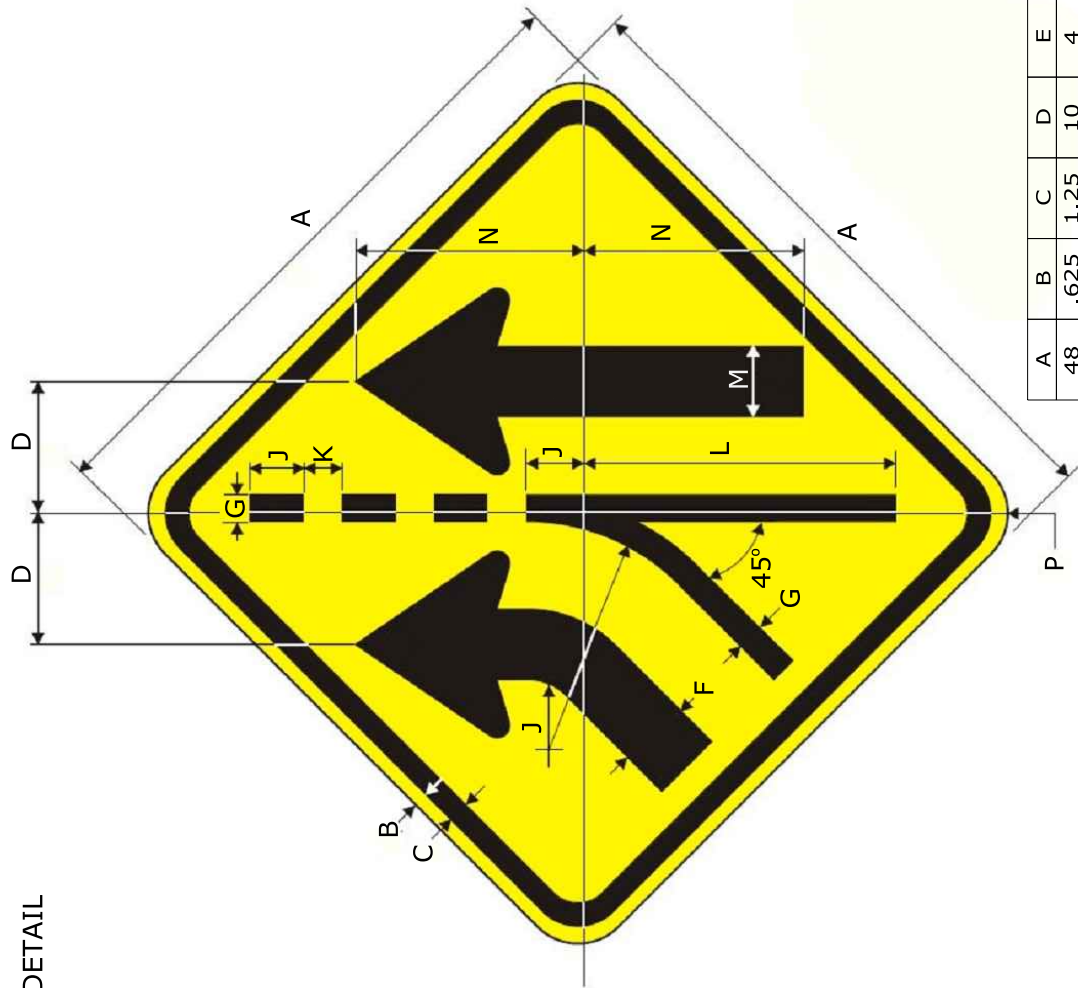
H	J	K	L	M	N	P
15.75	4	3	24	5.5	17	3

SIGN NUMBER	414434
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W4-3R
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 8/21/2018

Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B.Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



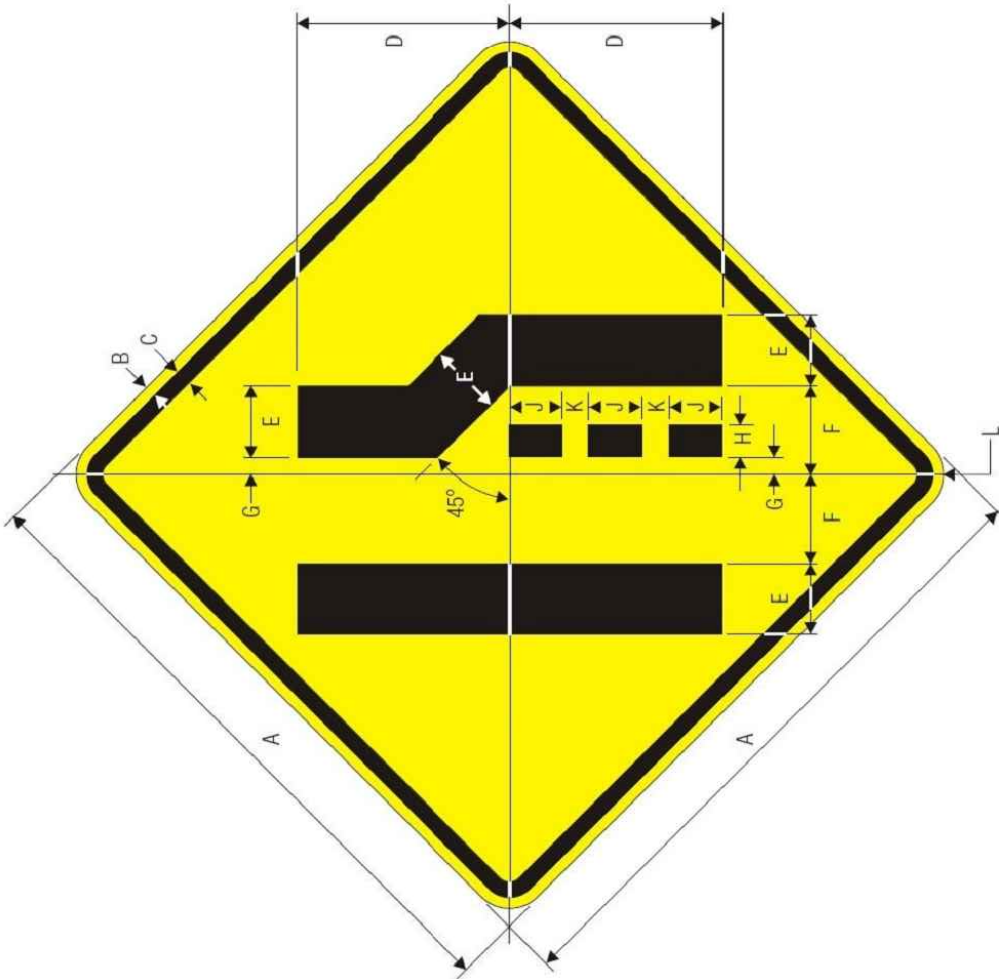
A	B	C	D	E	F	G
48	.625	1.25	10	4	5.5	2

H	J	K	L	M	N	P
15.75	4	3	24	5.5	17	3

Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B.Schilling / Designed By : J. Fascione / Checked By :

SIGN NUMBER	414435
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W4-3L
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 3/21/2018	

SIGN DETAIL

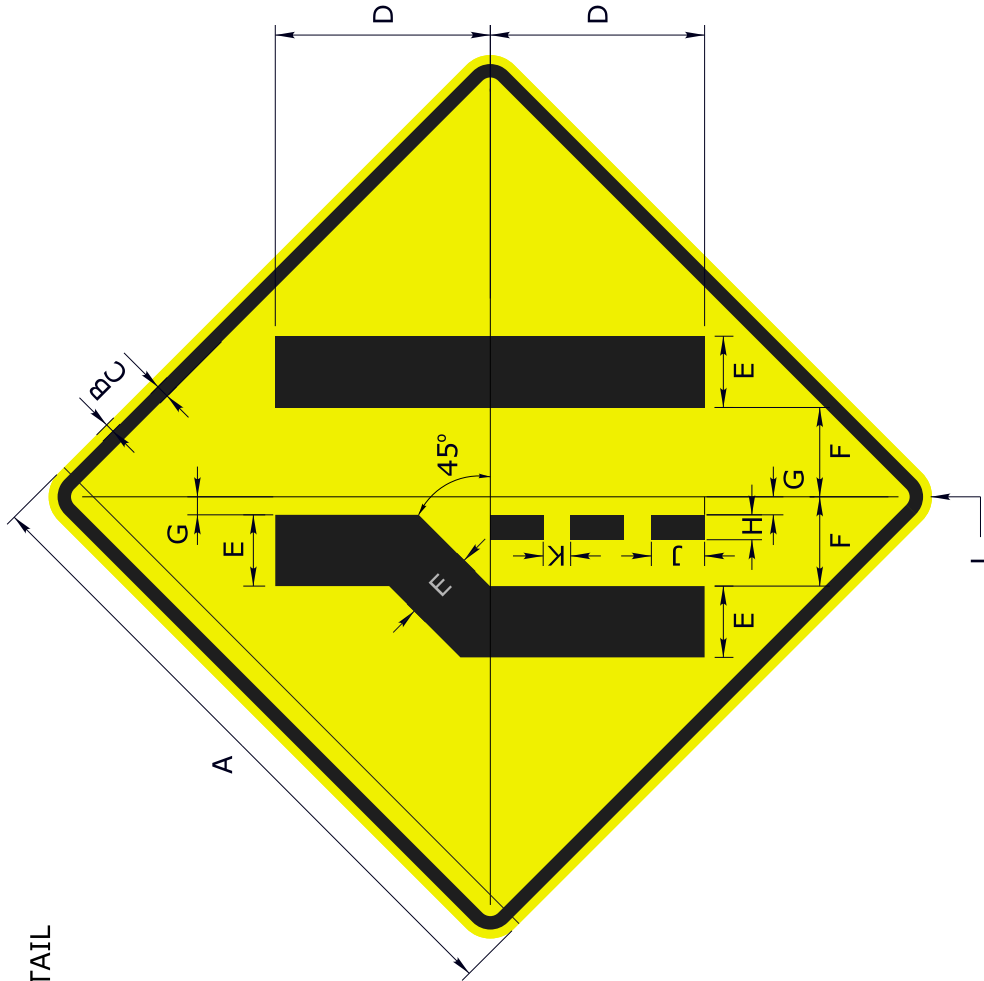


Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

A	B	C	D	E	F	G	H	J	K	L
36	.625	.875	12	4	5	1	1.25	3	1.5	2.25

SIGN NUMBER	41-4441
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq.Ft.)	9.0
MUTCD	W4-2R
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 6/18/18	

SIGN DETAIL
1:25



A	B	C	D	E	F	G	H	J	K	L
48	.75	1.25	16	5.375	6.688	1.25	2.375	4	2	3

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	414446
PANEL SIZE	4'-0" x 4'-0"
SIGN AREA	16.0 Sq.Ft.
MUTCD	W4-2R
BDR INSET/WIDTH	.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
SYMBOL/BORDER	TYPE: * COLOR: Black/Black

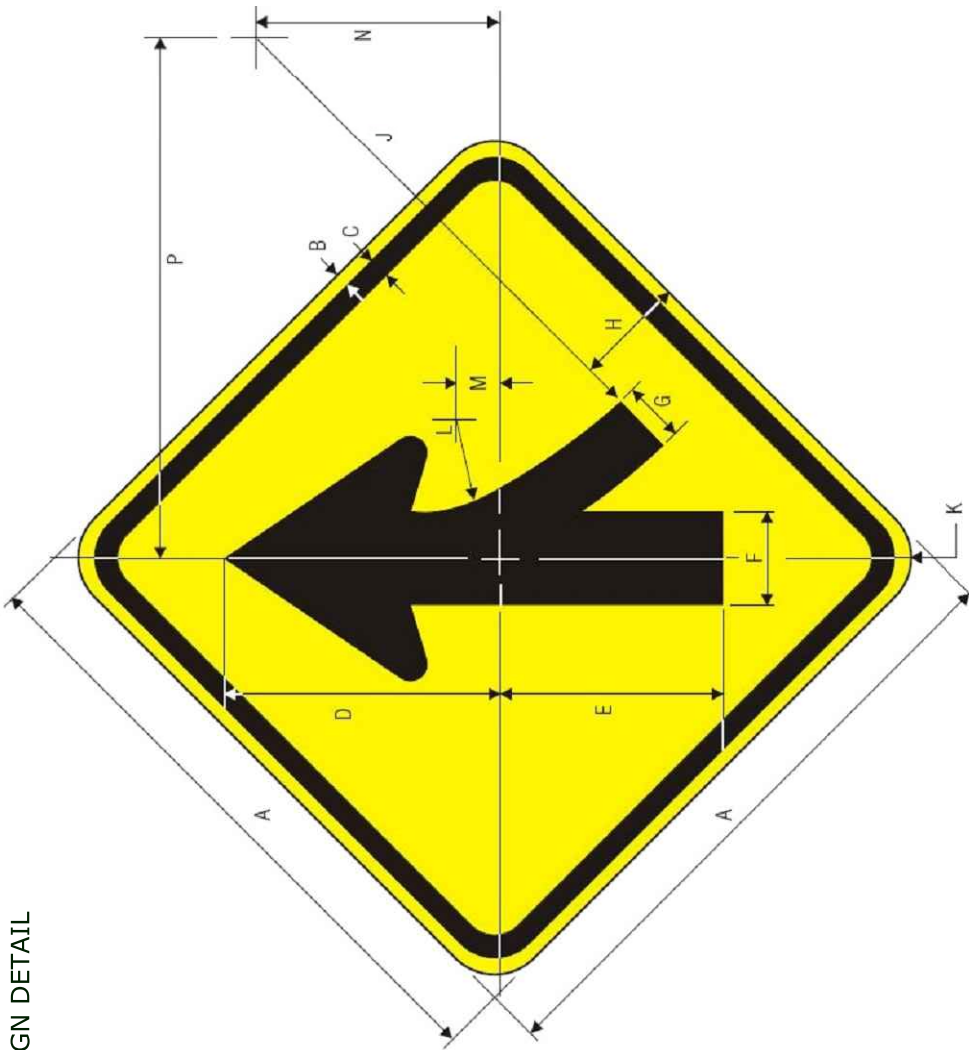
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

REV'D /

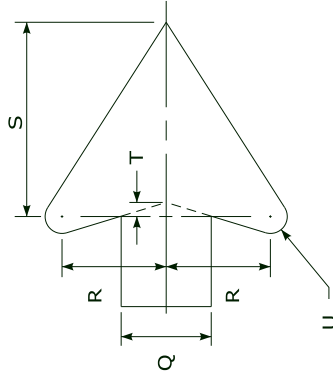
FILE :414446 Oct 18, 2017

SIGN DETAIL



SIGN NUMBER	414449
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq.Ft.)	9.0
MUTCD	W4-1R
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 6/20/18



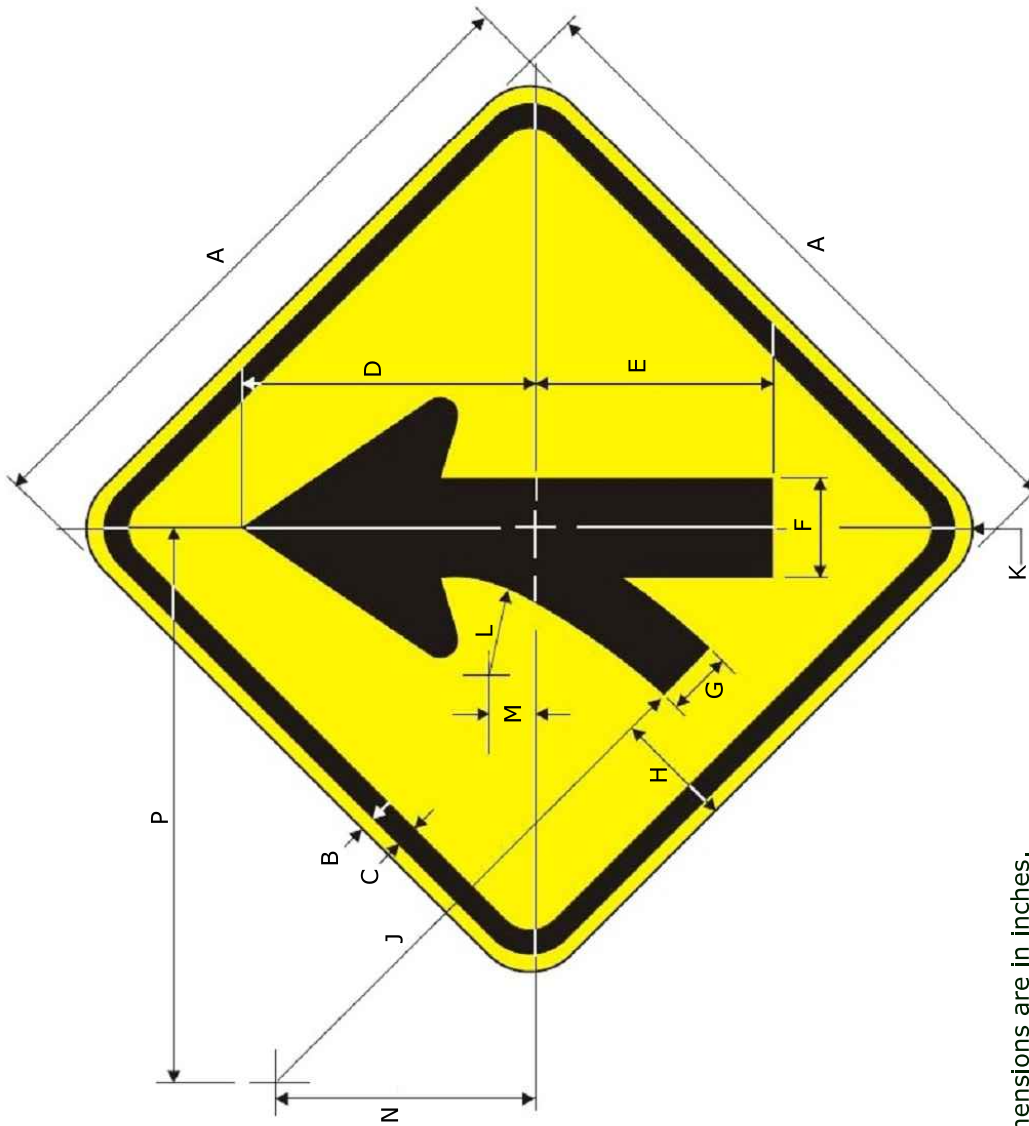
ARROWHEAD DETAIL
N.T.S.

Q	R	S	T	U
5.25	6	10.625	.8125	1.0625

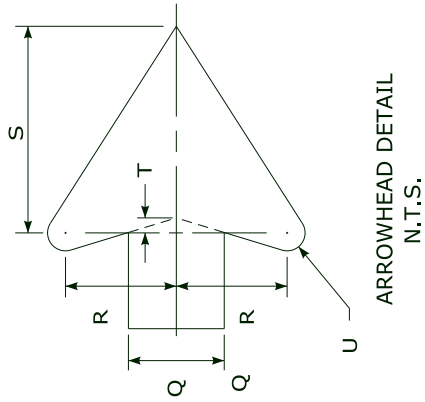
Dimensions are in inches.
Material : .080 Thk. Sheet Aluminum
Side Mounted
Location : N/A
Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

A	B	C	D	E	F	G	H	J	K	L	M	N	P
36	.625	.875	15.75	13.25	5.25	3.625	6.313	33.625	2.25	9.625	4	15.625	33.313

SIGN DETAIL



SIGN NUMBER	414452
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W4-1L
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 6/20/18	



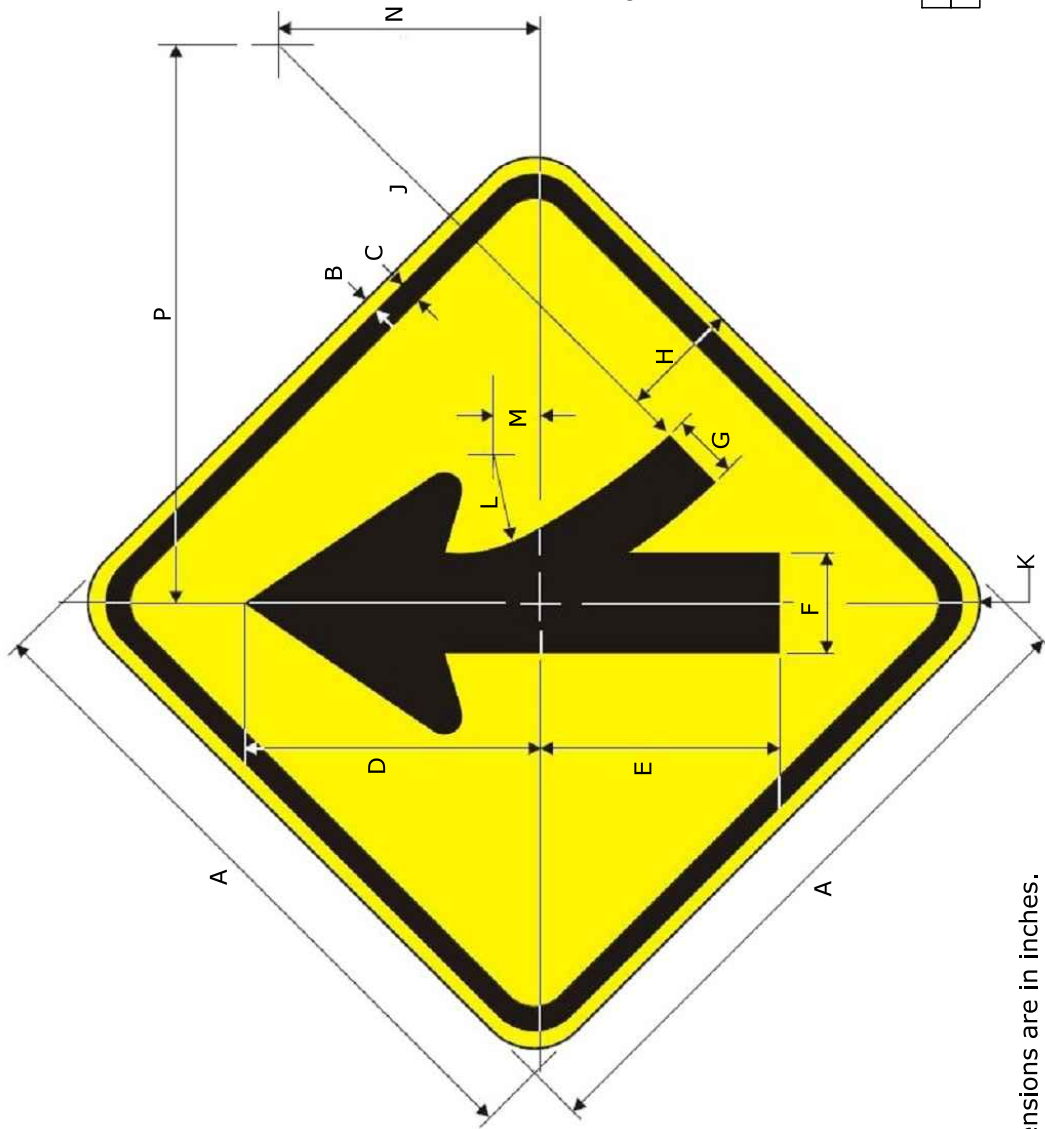
ARROWHEAD DETAIL
N.T.S.

Q	R	S	T	U
7	8	14.1875	1.0625	1.375

A	B	C	D	E	F	G	H	J	K	L	M	N	P
48	.75	1.25	20.5	17.5	7	4.75	8.375	45	3	12.813	5.25	20.75	44.375

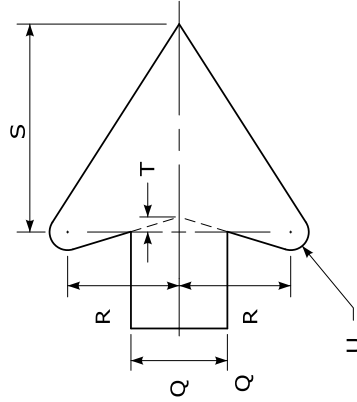
Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



SIGN NUMBER	41-4459
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W4-1L
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 6/20/18



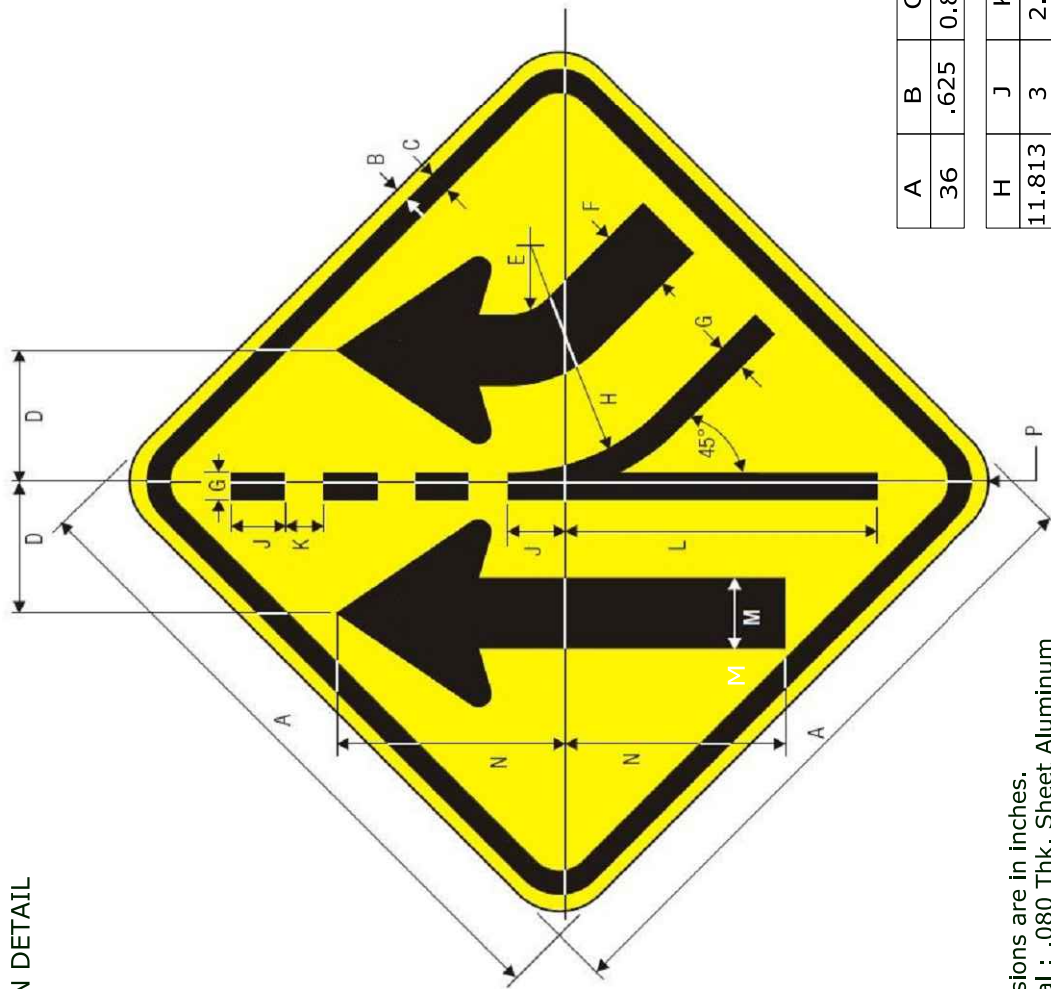
ARROWHEAD DETAIL
N.T.S.

Q	R	S	T	U
7	8	14.1875	1.0625	1.375

A	B	C	D	E	F	G	H	J	K	L	M	N	P
48	.75	1.25	20.5	17.5	7	4.75	8.375	45	3	12.813	5.25	20.75	44.375

Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



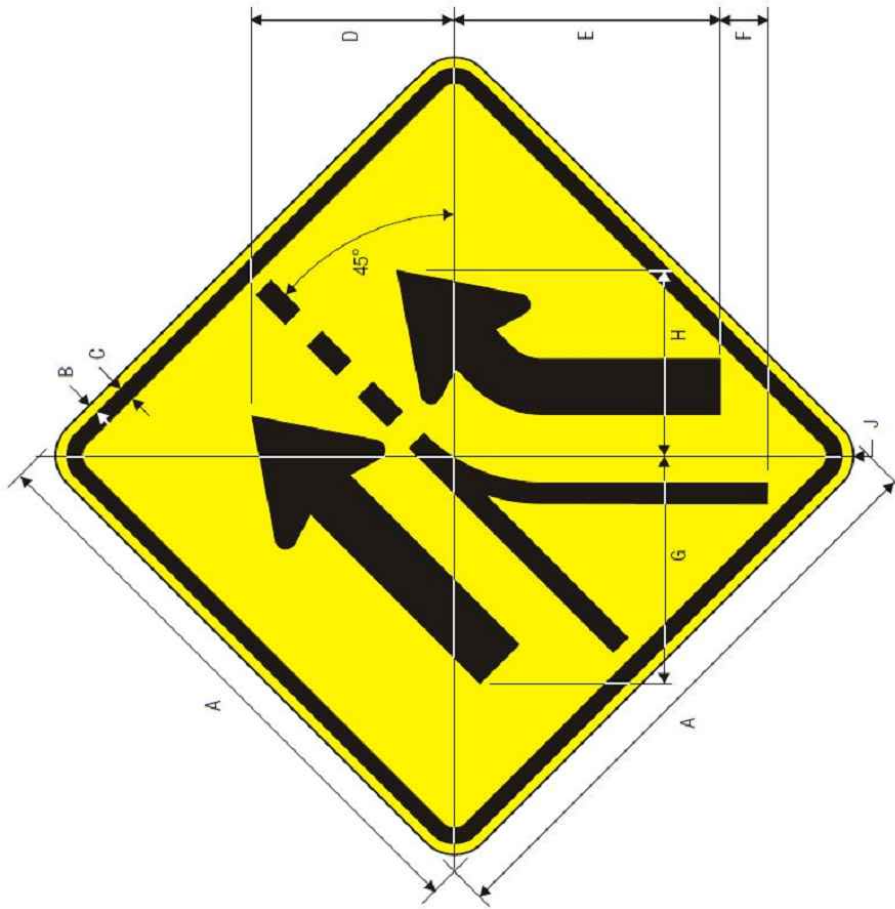
SIGN NUMBER	414470
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq.Ft.)	9.0
MUTCD	W4-3L
BDR. INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : \$DATE\$	

A	B	C	D	E	F	G
36	.625	0.825	7.5	3	4.125	1.5

H	J	K	L	M	N	P
11.813	3	2.25	18	4.125	12.75	2.25

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



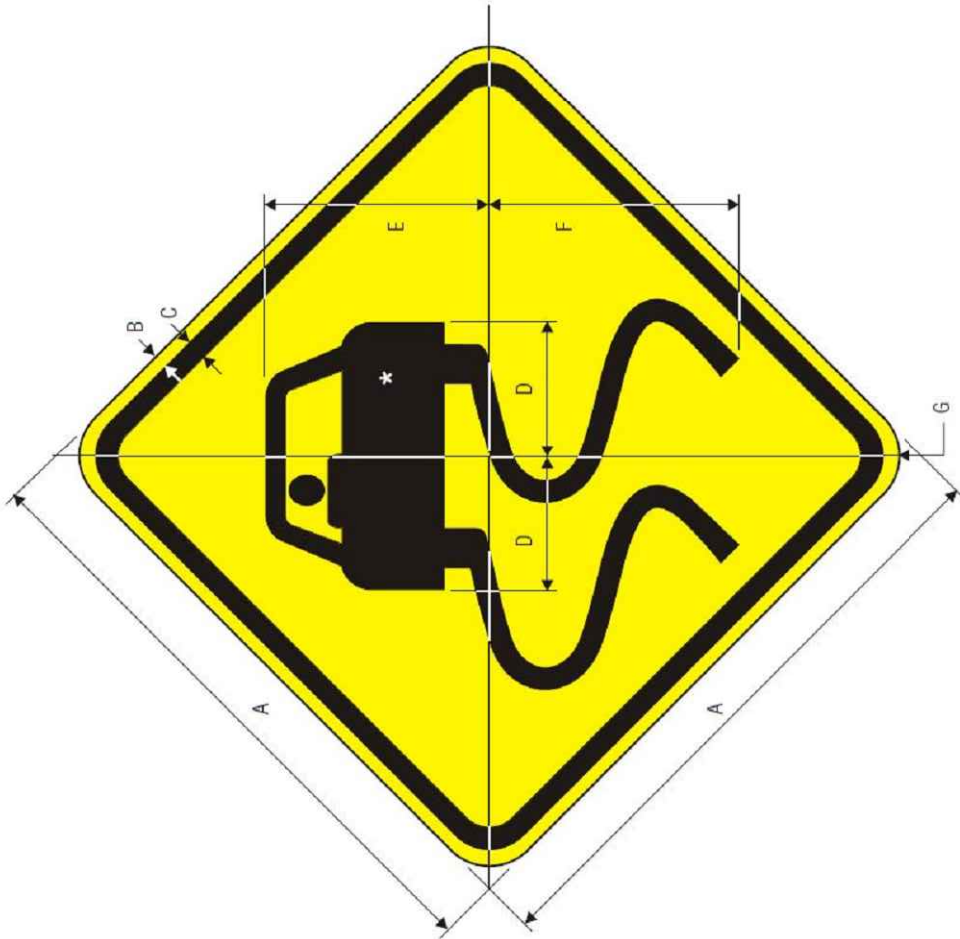
SIGN NUMBER	41-4474
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq.ft.)	9.0
MUTCD	W4-6
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 7/16/2018

DIMENSIONS ARE IN INCHES
 MATERIAL : .080 THK.SHEET ALUMINIUM
 SIDE MOUNTED
 SIGN SUPPORT NO. N/A
 LOCATION : N/A
 ENGINEER : EB DESIGNED BY : JMF CHECKED BY : _____

A	B	C	D	E	F	G	H	J
36	.625	.875	15.571	16.092	18.814	17.493	13.450	2.25

SIGN DETAIL

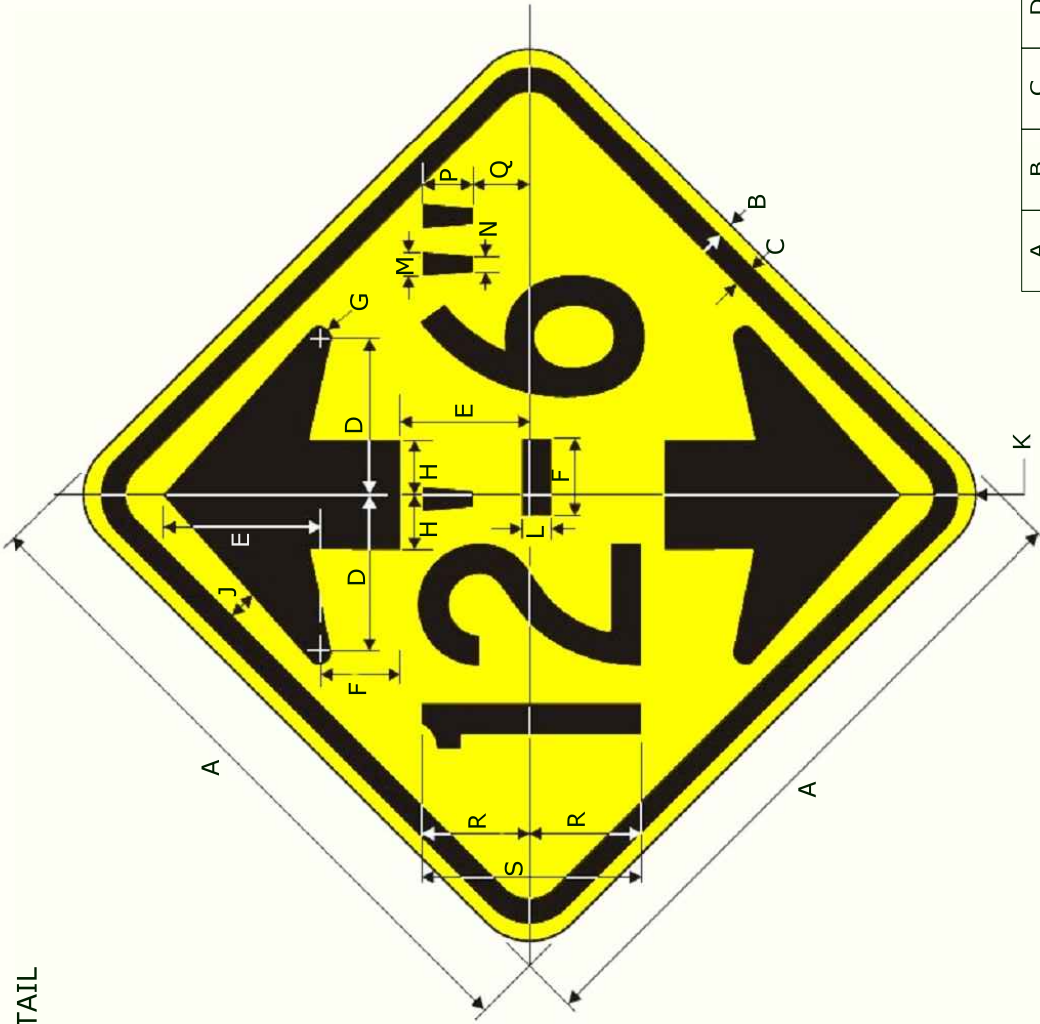


Dimensions are in inches.
 Material : .100 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

A	B	C	D	E	F	G
48	.75	1.25	12.625	17.275	19.75	3

SIGN NUMBER	414521
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0
MUTCD	W8-5
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK, TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 3/31/2018	

SIGN DETAIL



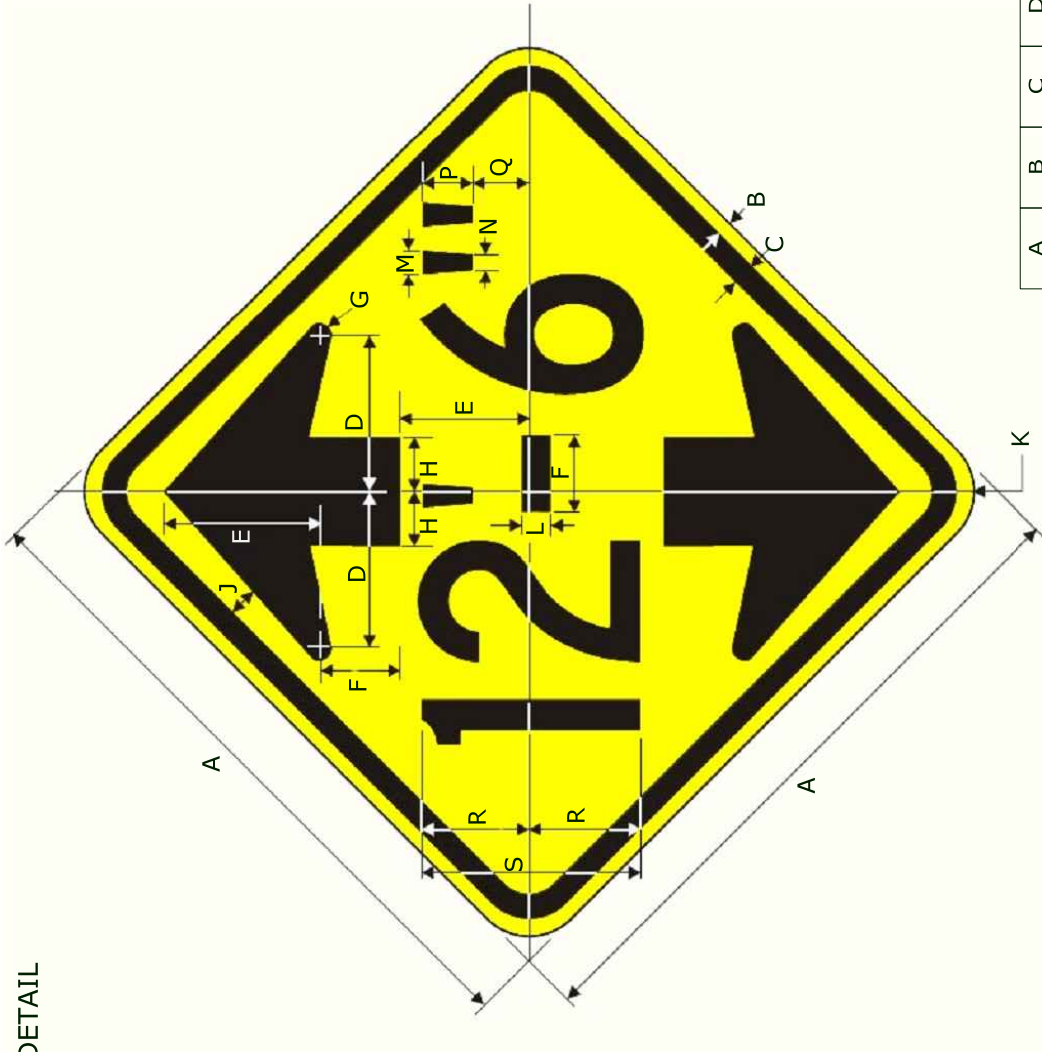
SIGN NUMBER	41-4706
SIGN PANEL	3'-0" x 3'-0"
TOTAL (Sq. Ft.)	9.0
MUTCD	W12-2
BDR INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

PLOTTED : 6/26/2018

A	B	C	D	E	F	G	H	J
36	.625	.875	6.875	8	4.25	1	3	2
K	L	M	N	P	Q	R	S	
2.25	1.875	1.25	.5	2.75	4	6	12D	

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL



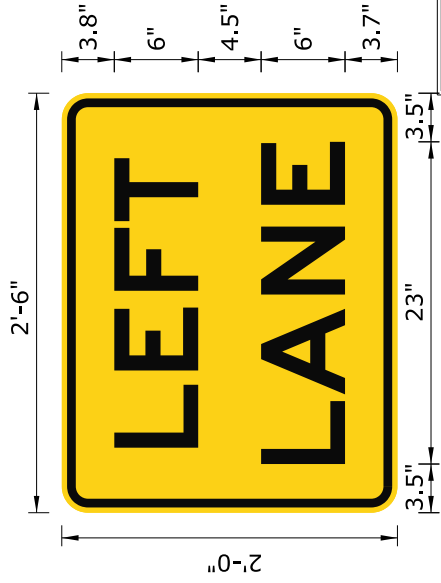
SIGN NUMBER	41-4708
SIGN PANEL	4'-0" x 4'-0"
TOTAL (Sq.Ft.)	16.0
MUTCD	W12-2
BDR INSET/WIDTH	0.75" / 1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: *
	COLOR: Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	
PLOTTED : 6/26/2018	

A	B	C	D	E	F	G	H	J
48	.75	1.25	9.188	10.625	5.875	1.313	4	2.625
K	L	M	N	P	Q	R	S	
3	2.438	1.625	.625	3.625	5.58	8	16D	

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL

1:12



REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	414721
PANEL SIZE	2'-6" x 2'-0"
SIGN AREA	5.0 Sq. Ft.
MUTCD	
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Yellow
	TYPE: *
	COLOR: Black/Black

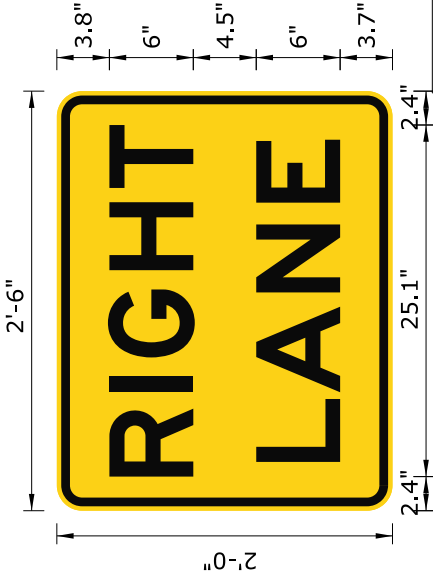
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 414721 Jan 27, 2018

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
L	E	F	T			E 2000	
4.7	5.5	5.7	5	4.5	4.6	20.7	6
L	A	N	E			E 2000	
3.5	5	7.1	6.4	4.5	3.5	23	6

SIGN DETAIL
1:12



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	414722
PANEL SIZE	2'-6" x 2'-0"
SIGN AREA	5.0 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0.31" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black

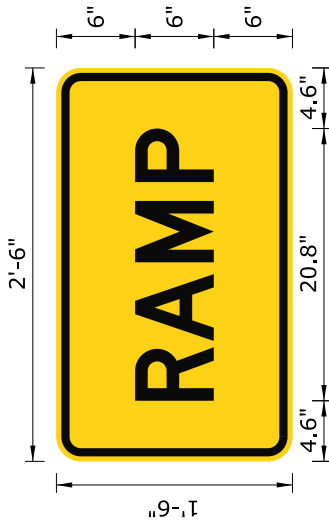
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 414722 Jan 27, 2018

		LETTER POSITIONS (X)						LENGTH	SERIES/SIZE		
2.4	R	6.1	I	2.5	G	6.2	H	5.9	4.5	2.4	E 2000
											25.1 6
3.5	L	5	A	7.1	N	6.4	E	4.5	3.5		E 2000
											23 6

SIGN DETAIL
1:12



Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D 2/21

Revised sign from 30" x 12"
to 30" x 18"

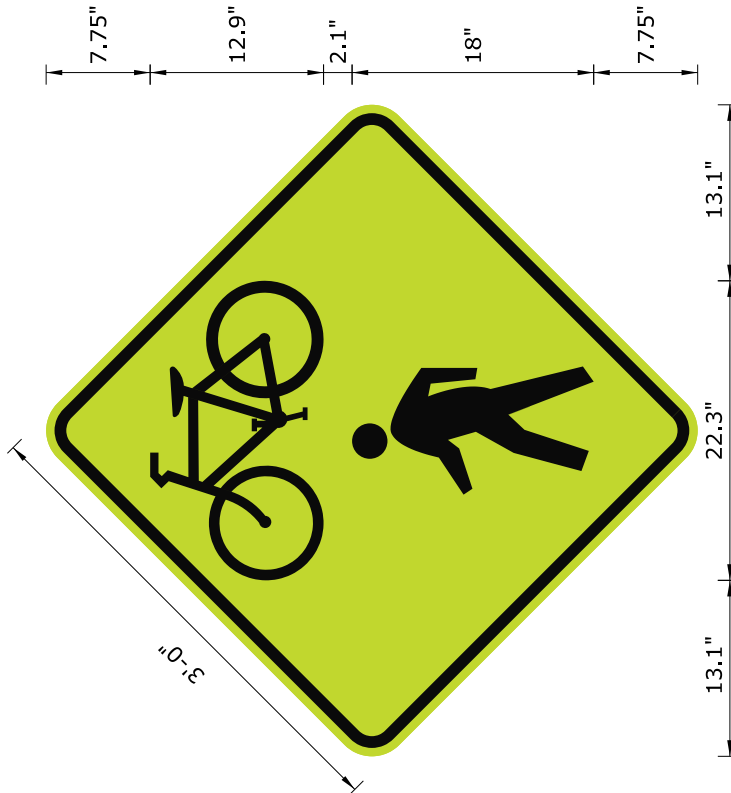
Jan 27, 2018

SIGN NUMBER	414732
PANEL SIZE	2'-6" x 1'-6"
SIGN AREA	3.8 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

R	A	6	4.6	LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
				A	M	P			
4.6	4.6	6	6.1	4.1	4.1	4.6		D 2000	
							20.8	6	

SIGN DETAIL
1:25



SIGN NUMBER	414827
PANEL SIZE	3'-0" x 3'-0"
SIGN AREA	9.0 Sq.Ft.
MUTCD	W11-15
BDR. INSET/WIDTH	0.875" / 0.625"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
SYMBOL/BORDER	COLOR: FL, Yellow Green TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
Bicycle	0	13.1	27.9	22.3	12.9
Pedestrian	0	19.5	7.7	9.6	18

FILE :414827 Apr 16, 2018

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By:-----
Ground Mounted

SIGN DETAIL
1:7



SIGN NUMBER	414830
PANEL SIZE	3'-0" x 3'-0"
SIGN AREA	9.0 Sq.Ft.
MUTCD	W11-2
BDR. INSET/WIDTH	0.625" / 0.875"
CORNER RADIUS	2.25"
BACKGROUND	TYPE: *
SYMBOL/BORDER	COLOR: FL, Yellow Green TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
Pedestrian	0	13.5	8.7	13.3	25

FILE :414830 Apr 16, 2018

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

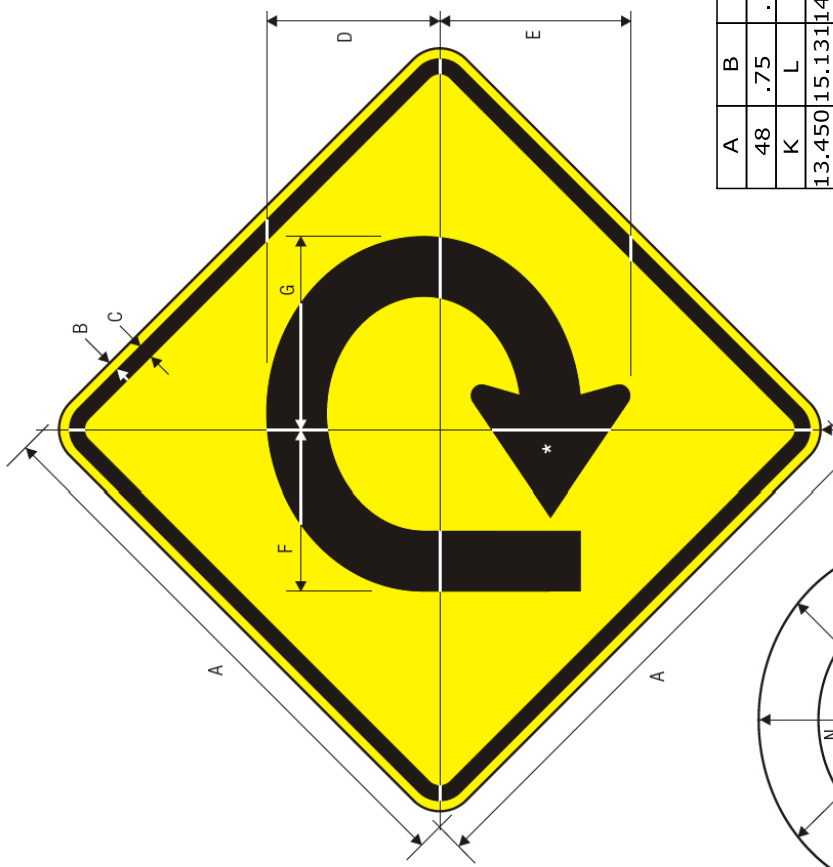
SIGN DETAIL
1:25

SIGN NUMBER	41-4950
PANEL SIZE	4'-0" x 4'-0"
TOTAL (Sq.ft.)	16.0 Sq.Ft.
DATE	Sep 23, 2016
BDR INSET/WIDTH	.75"/1.25"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Yellow
SYMBOL/BORDER	TYPE: * COLOR: Black/Black

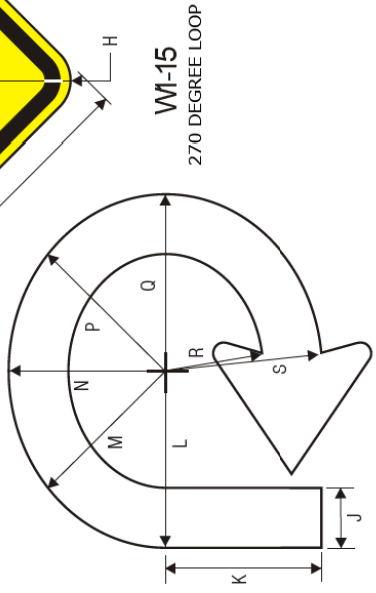
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 414950.dgn



A	B	C	D	E	F	G	H	J
48	.75	.125	14.851	16.252	13.770	16.532	3	5.123
K	L	M	N	P	Q	R	S	
13.450	15.131	14.330	13.370	14.330	14.131	8.446	13.570	



WI-15
270 DEGREE LOOP

Dimension are in Inches
Material : .100 Thick Sheet Aluminum
Engineer : J. Grasso Designed By: J. Fascione Checked By: _____
Ground Mounted

SIGN DETAIL



SIGN NUMBER	41-5001
SIGN PANEL	0'-4" x 4'-0"
TOTAL (Sq.ft.)	1.332
MUTCD	RS
BDR INSET/WIDTH	N/A
CORNER RADIUS	
BACKGROUND	TYPE: *
	COLOR: Fluor. Yellow
LEGEND/BORDER	TYPE: *
	COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

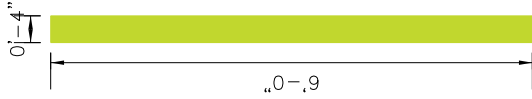
REV'D /

PLOTTED : 6/26/2018

TYPE 2 OBJECT MARKER

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL
1:25



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Sign Support No. N/A
 Location : N/A
 Engineer : LSA Designed By: JMF Checked By: **BBR**

REV'D /

SIGN NUMBER	41-5010
PANEL SIZE	0'-4" x 6'-0"
TOTAL (Sq.Ft.)	2.0 Sq.Ft.
DATE	
BDR INSET/WIDTH	0" / 0"
CORNER RADIUS	0"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: FL, Yellow Green TYPE: * COLOR: N/A
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

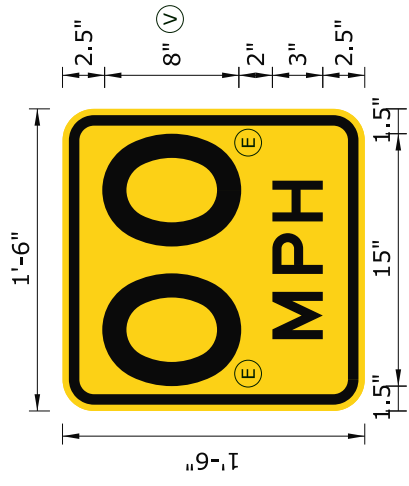
SYMBOL	ROT	X	Y	WID	HT

FILE :\$FILES\$

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE

SIGN DETAIL

1:10



- (E) Equal Spacing
- (V) Variable Legend

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	41-5566
PANEL SIZE	1'-6" x 1'-6"
SIGN AREA	2.3 Sq.Ft.
MUTCD	W13-1P
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

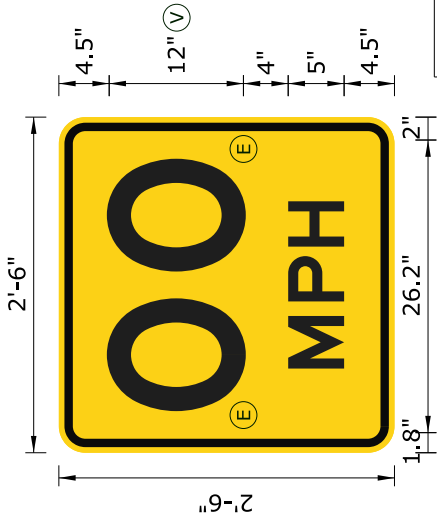
SYMBOL	ROT	X	Y	WID	HT

REV'D /

FILE : 41-5566 9/25/2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
0	0	15	E 2000
1.5	8.3	6.7	1.5
	M	P	H
4.3	3.9	3.1	2.4
		4.3	

SIGN DETAIL
1:15



(E) Equal Spacing

(V) Variable Legend

Dimensions are in Inches

Material : .080 Thick Sheet Aluminum

Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____

Ground Mounted

REV'D /

SIGN NUMBER	41-5574
PANEL SIZE	2'-6" x 2'-6"
SIGN AREA	6.3 Sq.Ft.
MUTCD	W13-1P
BDR INSET/WIDTH	0.5" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black

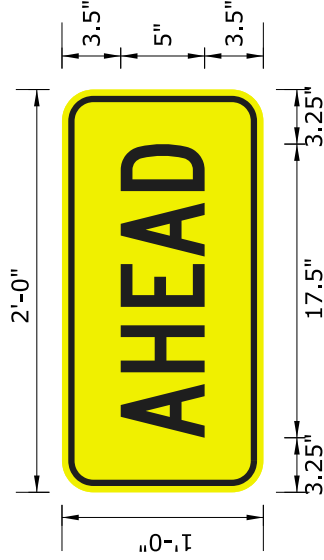
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE :415574 Jan 17, 2018

		LETTER POSITIONS (X)											LENGTH	SERIES/SIZE
0	0												22.6	E 2000 12
3.7	12.5	10.1	3.7											
	M	P	H											
7.5	6	4.9	4.1	7.5									15	E 2000 5

SIGN DETAIL
1:10



SIGN NUMBER	41-6125
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	W16-9P
BDR. INSET/WIDTH	0.38" / 0.38"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Yellow
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 416125 Oct 26, 2017

REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

LETTER POSITIONS (X)			LENGTH	SERIES/SIZE	
A	H	E	A	D	C 2000
3.3	3.9	3.9	3	2.8	
					5

SIGN DETAIL
1:10



REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

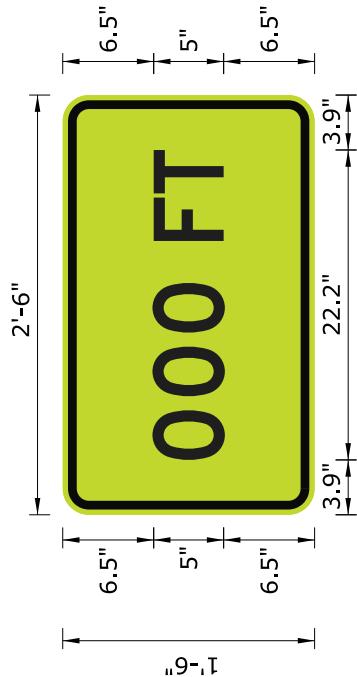
SIGN NUMBER	41-6137
PANEL SIZE	2'-6" x 1'-6"
SIGN AREA	3.8 Sq.Ft.
MUTCD	W16-9P
BDR. INSET/WIDTH	0.5" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: FL.Yellow Green TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

FILE : 416107 6/13/2018

LETTER POSITIONS (X)							LENGTH	SERIES/SIZE
A	H	E	A	D			C 2000	
2.8	5.5	4.2	5.5	3.9		24.5	7	

SIGN DETAIL
1:12



REV'D /

SIGN NUMBER	416142
PANEL SIZE	2'-6" x 1'-6"
SIGN AREA	3.8 Sq.Ft.
MUTCD	W16-2aP
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: FL, Yellow Green TYPE: * COLOR: Black/Black

*** REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".**

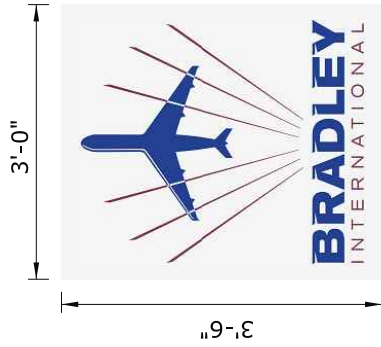
SYMBOL	ROT	X	Y	WID	HT

FILE :416142 Feb 10, 2018

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

LETTER POSITIONS (X)				LENGTH	SERIES/SIZE
0	0	0	0		D 2000
3.9	4.5	4.6	3.6	3	22.2
					5

SIGN DETAIL
1:22



Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN NUMBER	51-1406
PANEL SIZE	3'-0" x 3'-6"
SIGN AREA	10.5 Sq.Ft.
MUTCD	I-5(CT)
BDR. INSET/WIDTH	0" / 0"
CORNER RADIUS	0"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: /White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

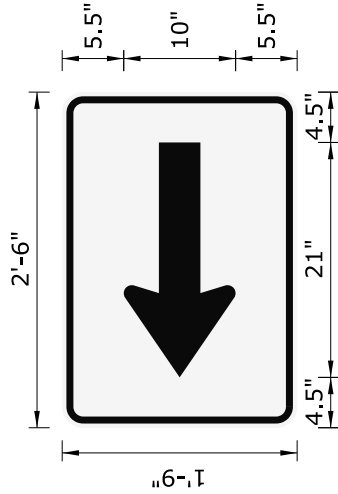
SYMBOL	ROT	X	Y	WID	HT
Logo	0	1.8	2.1	32.4	37.8

FILE : 51-1406 Sep 19, 2018

REV'D /

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE

SIGN DETAIL
1:15



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 4/18
 Revised sign size to 30" x 21"
 to match MUTCD.

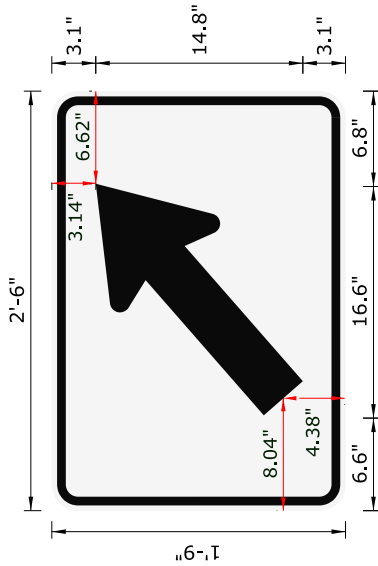
SIGN NUMBER	512606 L of R
PANEL SIZE	2'-6" x 1'-9"
SIGN AREA	4.4 Sq.Ft.
MUTCD	M6-1
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: White
	TYPE: *
	COLOR: /Black
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.	
* WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	4.5	5.5	10	21

FILE :512604 Apr 24, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE

SIGN DETAIL
1:12



Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D 4/18

Revised sign size to 30" x 21"
to match the MUTCD.

SIGN NUMBER	51-2609
PANEL SIZE	2'-6" x 1'-9"
SIGN AREA	4.4 Sq.Ft.
MUTCD	M6-2
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

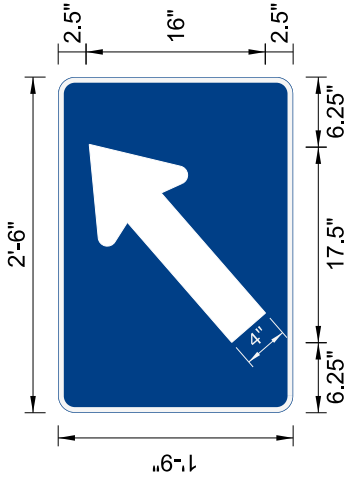
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	48.8	6.6	3.1	10	20.4

FILE : 51-2608 Apr 24, 2018

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE

SIGN DETAIL

1:15



M6-2
 Dimension are in Inches
 Material : 080 Thick Sheet Aluminum
 Location : N/A
 Engineer : A. Mermelstein, Designed By: J. Fascione, Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-2614
PANEL SIZE	2'-6" x 1'-9"
TOTAL (Sq.ft.)	4.4 Sq.Ft.
DATE	May 26, 2017
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
ARROW/BORDER	TYPE: * COLOR: White/White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
512604	41	6.3	2.5	10.1	21.7

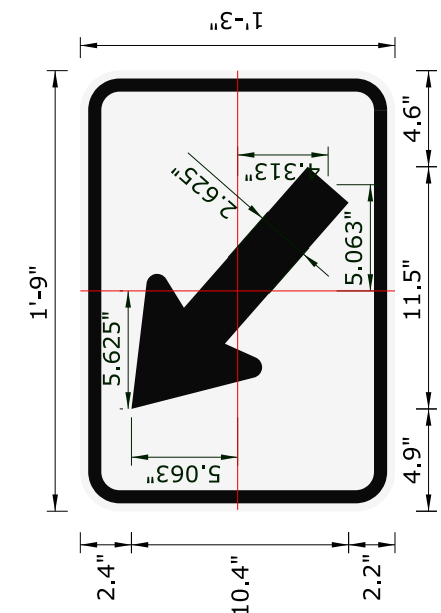
FILE : \$FILES\$

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE

SIGN NUMBER	512629
PANEL SIZE	1'-9" x 1'-3"
SIGN AREA	2.2 Sq.Ft.
MUTCD	M6-2
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
	COLOR: White
ARROW/BORDER	TYPE: *
	COLOR: /Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	311.3	4.6	2.2	7	14.2



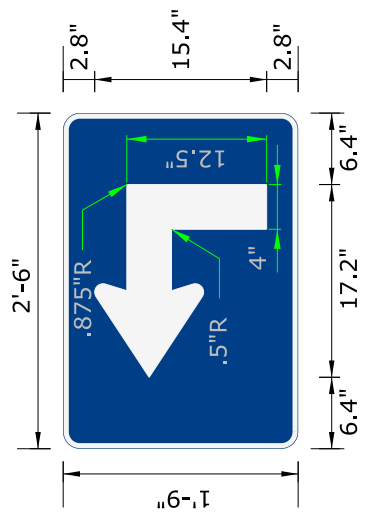
REV'D /

FILE : 51-2626 Apr 27, 2018

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN DETAIL
1:15



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-2679 L
PANEL SIZE	2'-6" x 1'-9"
SIGN AREA	4.4 Sq.Ft.
MUTCD	M5-1
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: /White

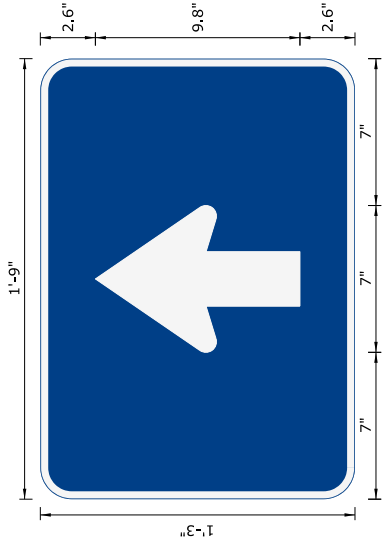
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
ARROW	0	6.4	2.8	15.4	17.2

FILE :51-2679

LETTER POSITIONS (X)		LENGTH		SERIES/SIZE	

SIGN DETAIL
1:8



SIGN NUMBER	51-2685
PANEL SIZE	1'-9" x 1'-3"
SIGN AREA	2.2 Sq.Ft.
MUTCD	M6-3
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
ARROW/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	0	7	2.6	7	9.8

REV'D /

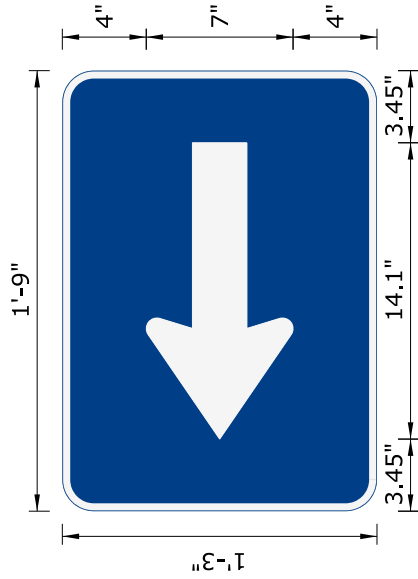
FILE : 51-2625 Apr 27, 2018

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

LETTER POSITIONS (X)

	LENGTH					SERIES/SIZE	

SIGN DETAIL
1:8



REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	512686
PANEL SIZE	1'-9" x 1'-3"
SIGN AREA	2.2 Sq.Ft.
MUTCD	M6-1
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

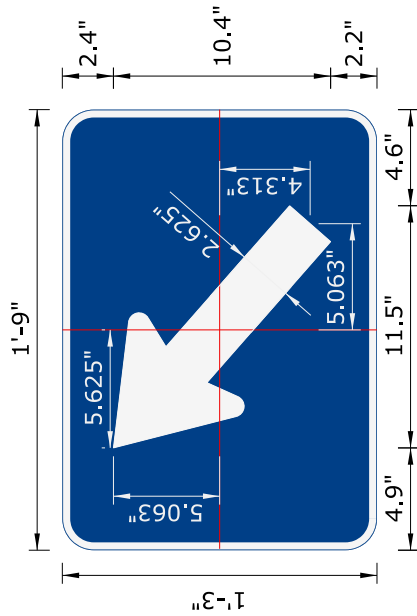
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	3.4	4	7	14.1

FILE : 51-2686 May 04, 2018

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE

SIGN DETAIL
1:8



REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN NUMBER	512688
PANEL SIZE	1'-9" x 1'-3"
SIGN AREA	2.2 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

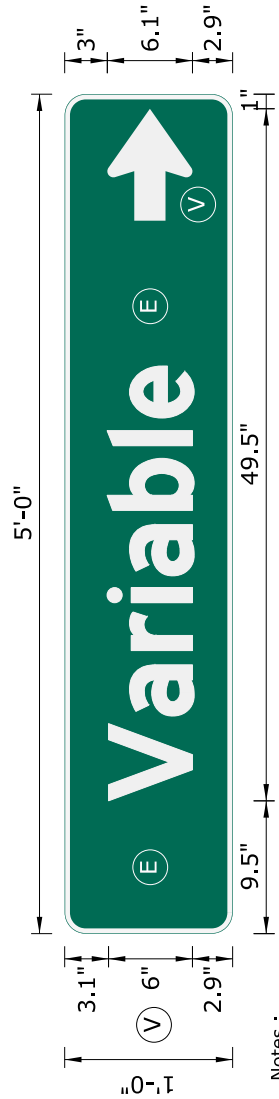
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	228.7	4.9	2.2	7	14.2

FILE : 51-2688 May 05, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE

SIGN DETAIL
1:12



- Notes :
- (E) Equal spacing (1" min).
 - (V) Variable legend & arrow direction (vert & left arrow on left side of sign). use series "d" whenever possible otherwise use series "c" or "b".

Dimensions are in Inches
 Material : .100 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 5/11
 Rev'd to upper/lower case, letter height and sign size.

SIGN NUMBER	51-5202
PANEL SIZE	5'-0" x 1'-0"
SIGN AREA	5.0 Sq.Ft.
MUTCD	D1-1
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Green
LEGEND/BORDER	TYPE: * COLOR: White/White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT
D_5	0	51	2.9	6.1	8

FILE : 51-5202
 May 15, 2018

LETTER POSITIONS (X)			LENGTH	SERIES/SIZE							
V	a	r	i	a	b	i	e	E 2000			
9.5	6.1	4.7	3.4	1.9	4.7	4.6	2		3.7	19.4	31.1

SIGN DETAIL

1:18

- (E) Equal space (1" min)
- Variable legend & arrow direction (vertical & left arrow on left side of sign).
- (V) Center lines of legend with each other whenever possible.
- When both lines of legend are less than 49" center arrow on sign.
- If one line of legend is more than 49" center arrow on shortest line.
- Use series "d" whenever possible otherwise use series "c" or "b".
- Arrow length 7" when vertical.



REV'D 5/11

Rev'd to upper/lower case, letter height and sign size.

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

FILE : 51-5203 May 15, 2018

SIGN NUMBER	51-5203
PANEL SIZE	5'-0" x 2'-0"
SIGN AREA	10.0 Sq.Ft.
MUTCD	W1-2
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Green
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

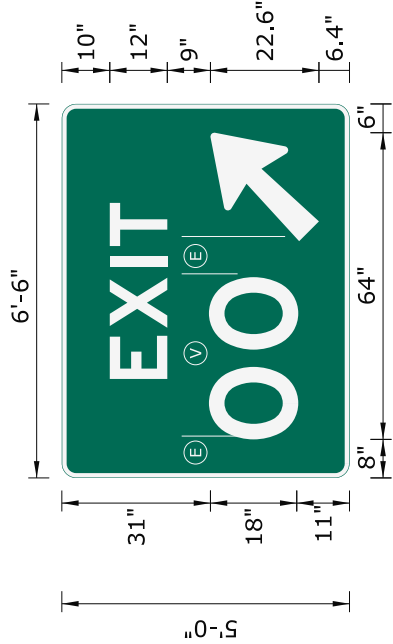
SYMBOL	ROT	X	Y	WID	HT
D_5	0	50.5	3.7	6.1	8

		LETTER POSITIONS (X)														LENGTH	SERIES/SIZE
W	a	t	e	r	b	u	r	y	6	S	t	a	t	e			C 2000
3.6	5	3.4	2.6	3.8	2.6	3.9	4.1	2.2	3.7	3.8	2.5	3.4	2.6	3.1	3.6	52.7	6/4.5
T	e	c	h		C	o	l	l	e	g	e						C 2000
3.6	3.6	3.7	3.1	3.7	6	4.3	4	1.9	1.7	4	3.1	13.8			42.6	6/4.5	

SIGN DETAIL

1:35

(E) EQUAL SPACING
(V) VARIABLE NUMBER



Dimensions are in Inches
Material : .125 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

SIGN NUMBER	51-6124
PANEL SIZE	6'-6" x 5'-0"
SIGN AREA	32.5 Sq.Ft.
MUTCD	E5-1a
BDR INSET/WIDTH	0" / 1"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Green
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	315	49.4	6.4	18.2	28.7

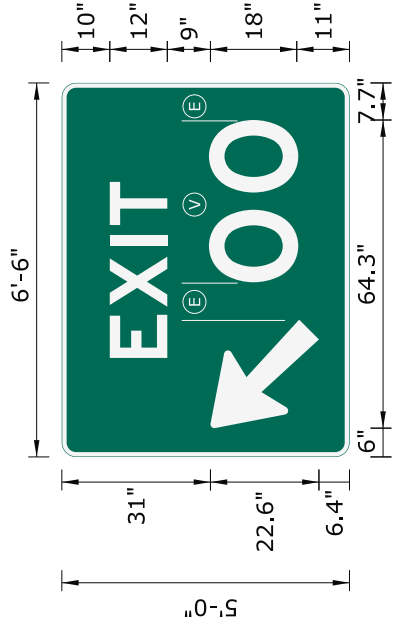
FILE : 51-6124 Sep 21, 2018

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
E	X	I	T										E 2000
20.6	31.3	44.2	48.4									36.7	12
0	0												E 2000
8	26.8											33.8	18

SIGN DETAIL

1:35

(E) EQUAL SPACING
(V) VARIABLE NUMBER



Dimensions are in Inches
Material : .125 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

SIGN NUMBER	51-6125
PANEL SIZE	6'-6" x 5'-0"
SIGN AREA	32.5 Sq.Ft.
MUTCD	E5-1a
BDR INSET/WIDTH	0" / 1"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Green
LEGEND/BORDER	TYPE: * COLOR: White/White

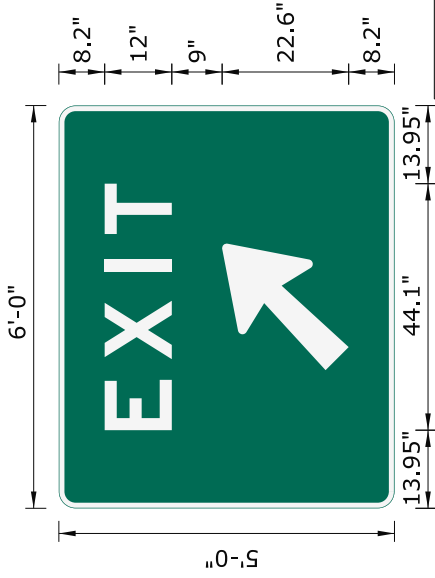
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	225	6	6.4	18.2	28.7

FILE : 51-6125 Sep 21, 2018

		LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
E	X	I	T										E 2000
20.6	31.3	44.2	48.4									36.7	12
0	0												E 2000
36.4	55.1											33.8	18

SIGN DETAIL
1:30



REV'D 9/24
Revised sign size to match
MUTCD E5-1.

Dimensions are in Inches
Material : .125 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

FILE : 51-6150 12/20/2018

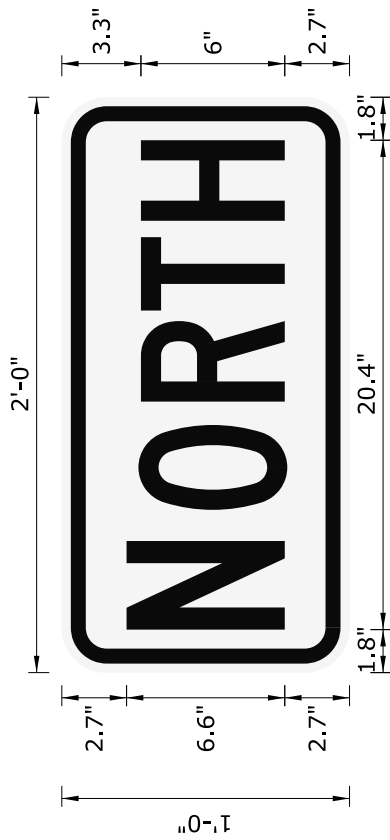
SIGN NUMBER	51-6150
PANEL SIZE	6'-0" x 5'-0"
SIGN AREA	30.0 Sq.Ft.
MUTCD	E5-1
BDR INSET/WIDTH	0" / 1"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Green
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type A	30	24.7	8.2	18.2	28.7

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE	
E	X	I	T	E 2000
14	26.7	42.4	49	
				44.1 12

SIGN DETAIL
1:7



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-6611
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

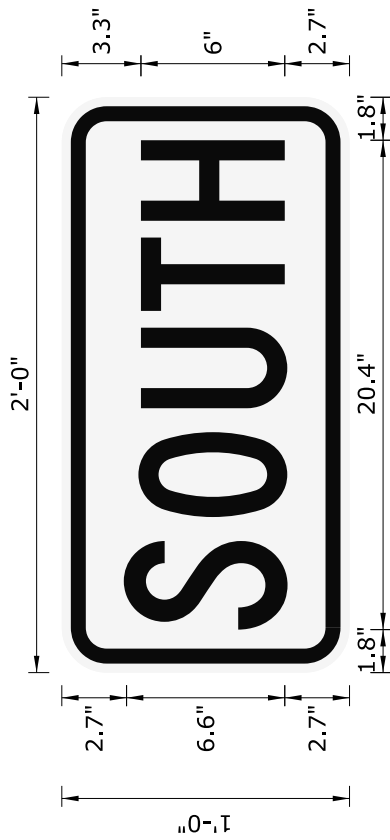
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6611 May 31, 2018

		LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
N	3.7	1.3	4.5	3.8	3.7	3.4	1.8	C 2000	
1.8								20.4	
								6.6	

SIGN DETAIL
1:7



REV'D /

SIGN NUMBER	51-6613
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M3-3
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

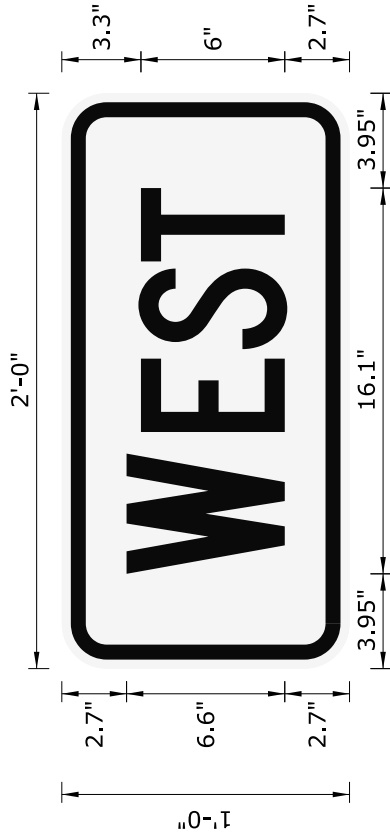
SYMBOL	ROT	X	Y	WID	HT

FILE: 51-6613 May 31, 2018

LETTER POSITIONS (X)					LENGTH	SERIES/SIZE			
S	O	U	T	H		C 2000			
1.8	3.7	1	4.5	4.1	3.8	3.4	1.8	20.4	6.6

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

SIGN DETAIL
1:7



REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN NUMBER	51-6614
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M3-4
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6614 May 31, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE					
W	E	S	T	C 2000				
4	5	0.9	3.5	3.7	3.1	4	16.1	6.6

SIGN DETAIL

SIGN NUMBER 51-6615
SIGN PANEL 2'-0" x 2'-0"
TOTAL (Sq.ft.) 4.0
MUTCD M1-4
BDR INSET/WIDTH N/A
CORNER RADIUS 1.5"
BACKGROUND TYPE: *
LEGEND/SHIELD COLOR: See Sign
 TYPE: *
 COLOR: See Sign

* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".

REV'D /

PLOTTED : 5/31/2018

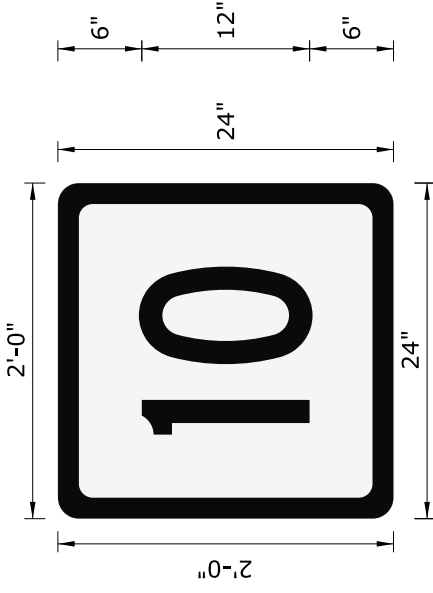
Color : Black

Color : White

A	B	C	D	E	F	G	H	J	K	L	M	N	P
24	24	5.5	12D	6.5	1	5.5	2.5	7.5	7	5.5	4.5	.5	1.5

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL
1:12



REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

FILE : 51-6616 May 31, 2018

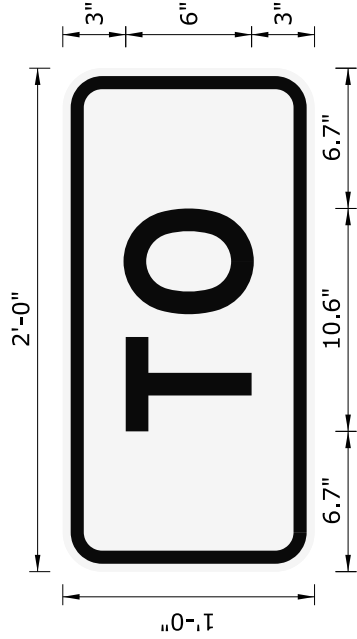
SIGN NUMBER	51-6616
PANEL SIZE	2'-0" x 2'-0"
SIGN AREA	4.0 Sq.Ft.
MUTCD	M1-5
BDR INSET/WIDTH	0" / 1.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

	LENGTH	SERIES/SIZE
1		C
6	12	12

SIGN DETAIL
1:8



SIGN NUMBER	51-6620
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M4-5
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: White
	TYPE: *
	COLOR: Black/Black

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

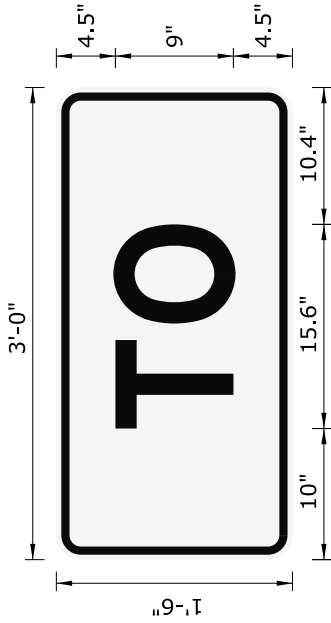
REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

FILE : 51-6620 Jun 01, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
T	O	E 2000	
6.7	5.6 5	10.6	6

SIGN DETAIL
1:12



REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

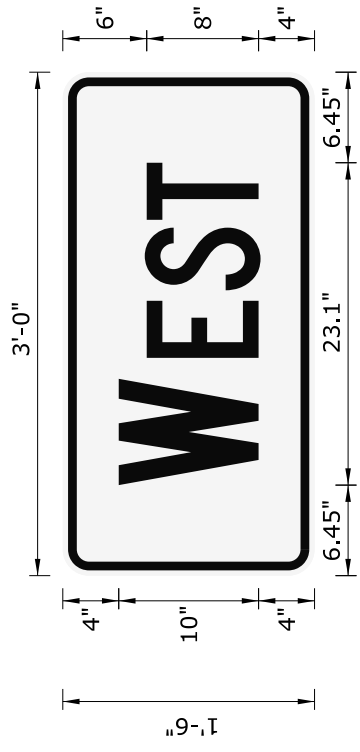
SIGN NUMBER	51-6622
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M4-5
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6622 Jun 01, 2018

		LENGTH	SERIES/SIZE
LETTER POSITIONS (X)			
T	O		E 2000
10	8	7.6	15.6
		10.4	9

SIGN DETAIL
1:12



REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

FILE : 51-6628
 May 18, 2018

SIGN NUMBER	51-6628
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M3-4
BDR INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black

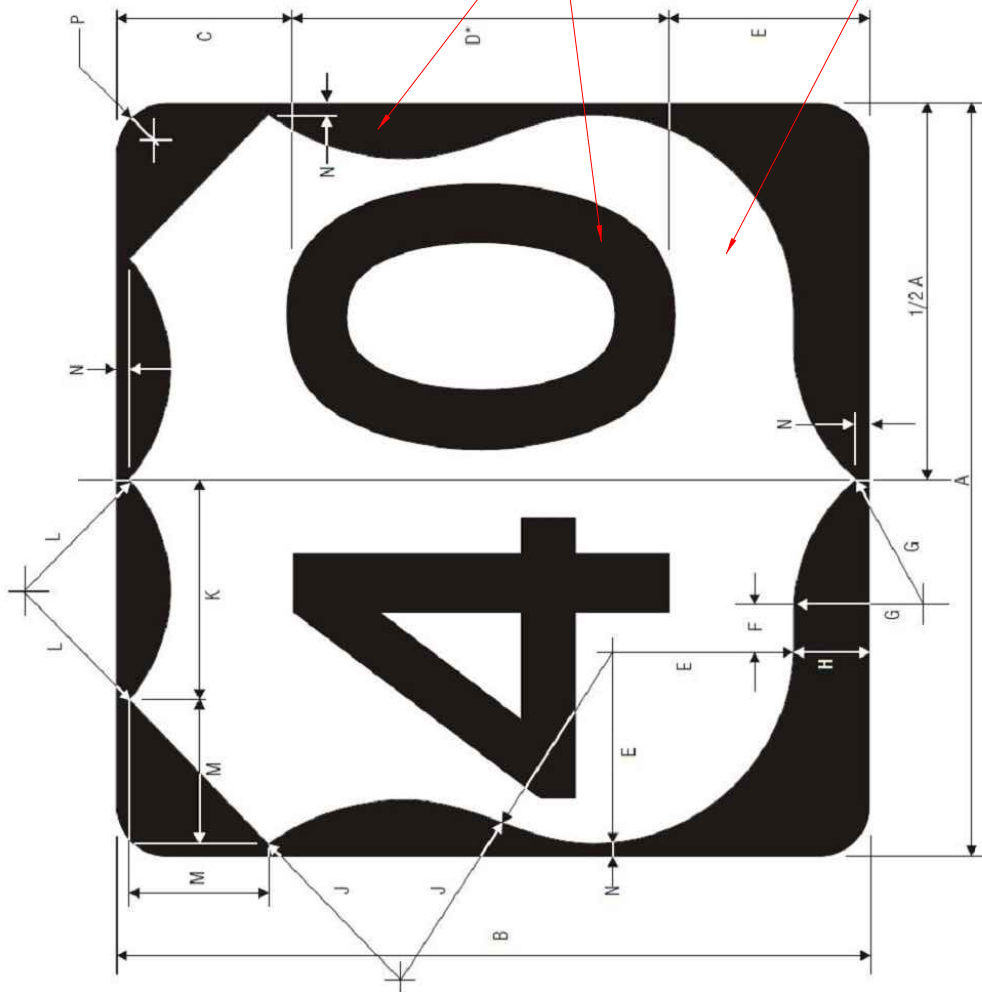
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".					
SYMBOL	ROT	X	Y	WID	HT

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
W	E	S	T				C 2000
6.5	7.6	1.5	4.8	5	4.1	6.5	23.1 10,8

SIGN DETAIL

SIGN NUMBER	51-6635
SIGN PANEL	3'-0" X 3'-0"
TOTAL (Sq.ft.)	4.0
MUTCD	M1-4
BDR INSET/WIDTH	N/A
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: See Sign
LEGEND/SHIELD	TYPE: * COLOR: See Sign
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	
REV'D /	

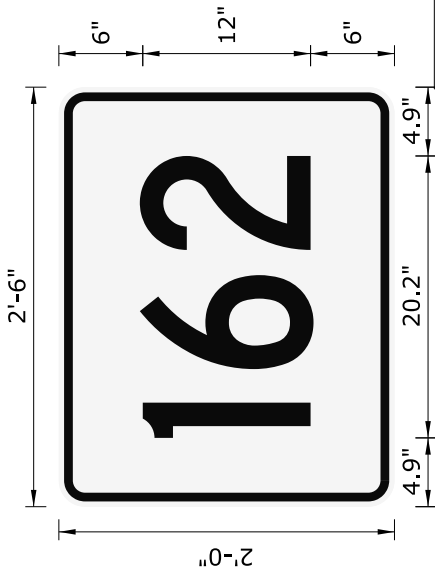
PLOTTED : 6/1/2018



A	B	C	D	E	F	G	H	J	K	L	M	N	P
36	36	8.25	18D	9.75	1.5	8.25	3.75	11.25	10.5	8.25	6.5	.75	2.25

Dimensions are in inches.
 Material : .080 Thk. Sheet Aluminum
 Side Mounted
 Location : N/A
 Engineer : B. Schilling / Designed By : J. Fascione / Checked By :

SIGN DETAIL
1:12



REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

SIGN NUMBER	51-6647
PANEL SIZE	2'-6" x 2'-0"
SIGN AREA	5.0 Sq.Ft.
MUTCD	M1-5
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: White
	TYPE: *
	COLOR: Black/Black

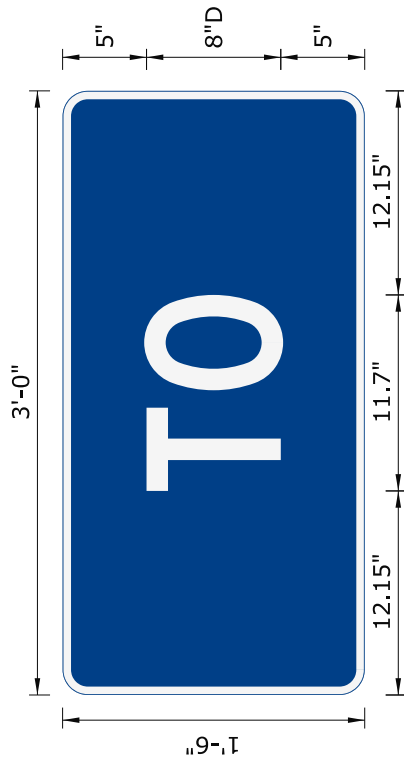
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE :51-6647 Jun 02, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
1	6	2	C 2000
4.9	4.9	8.5	6.7
		4.9	
		20.2	12

SIGN DETAIL
1:10



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 12/18

Revised panel size to 36" x 18"

SIGN NUMBER	51-6649
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M4-5
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Blue
	TYPE: *
	COLOR: White/White

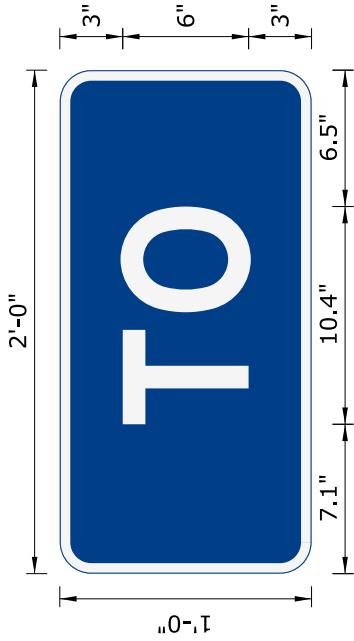
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6649 Dec 04, 2018

		LENGTH	SERIES/SIZE
T	O		D 2000
12.2	6	5.7	12.2

SIGN DETAIL
1:8



SIGN NUMBER	51-6650
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M4-5
BDR. INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Blue
	TYPE: *
COLOR: White/White	
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.	
* WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

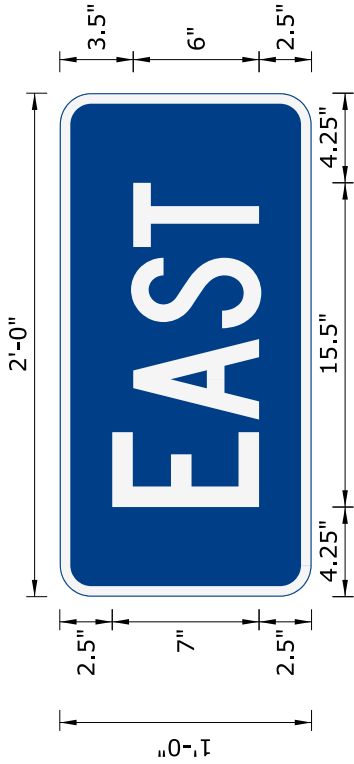
FILE : 51-6650 Jun 02, 2018

REV'D /

Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

				LENGTH	SERIES/SIZE
LETTER POSITIONS (X)					
T	O				E 2000
7.1	5.3	5	6.5	10.4	6

SIGN DETAIL
1:8



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-6652
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M3-2
BDR. INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

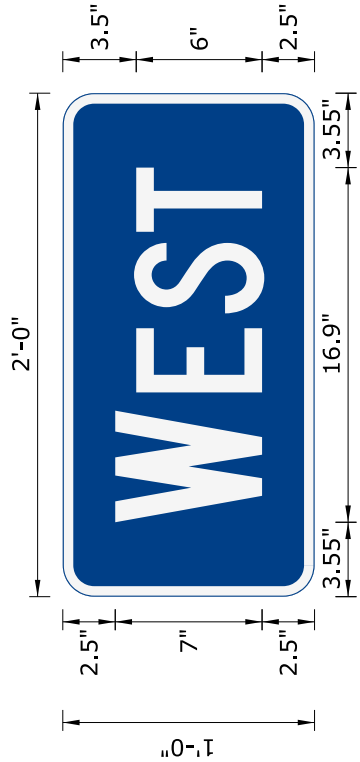
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6652 Jun 06, 2018

LETTER POSITIONS (X)				LENGTH	SERIES/SIZE			
E	A	S	T		C 2000			
4.3	3.6	0.6	4.4	3.9	3.1	4.3	15.5	7,6

SIGN DETAIL
1:8



SIGN NUMBER	51-6654
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M3-4
BDR. INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

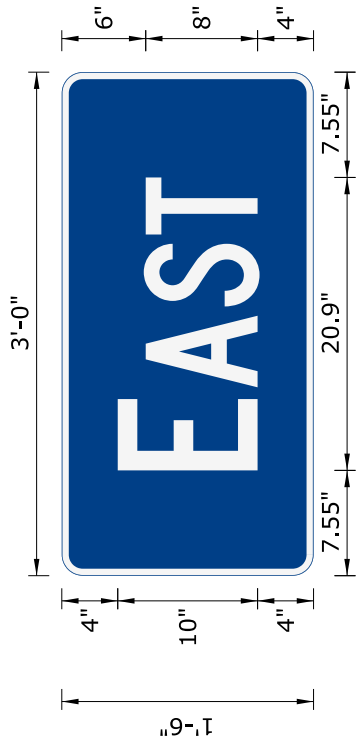
REV'D /

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

FILE : 51-6654 Jun 04, 2018

LETTER POSITIONS (X)			LENGTH	SERIES/SIZE				
W	E	S	T	C 2000				
3.5	5.3	0.9	3.8	3.9	3.1	3.5	16.9	7,6

SIGN DETAIL
1:12



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-6656
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M3-2
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: ✱ COLOR: Blue
LEGEND/BORDER	TYPE: ✱ COLOR: White/White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. ✱ WHEN COLOR IS BLACK TYPE IS "PLAIN".	

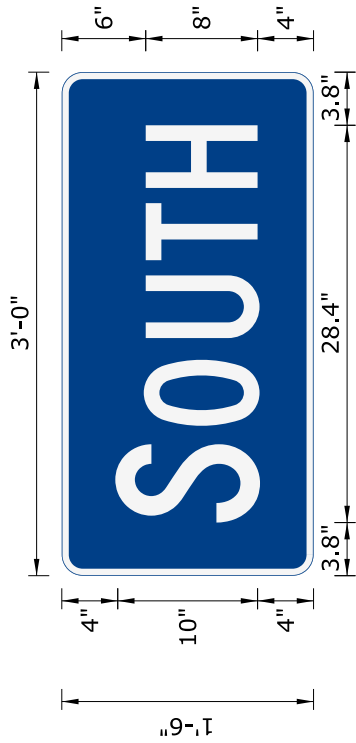
SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6656 Jun 04, 2018

LETTER POSITIONS (X)

	LETTER POSITIONS (X)			LENGTH	SERIES/SIZE
	A	S	T		
E	5.1	0.8	5.1	7.5	C 2000
				20.9	10,8

SIGN DETAIL
1:12



Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

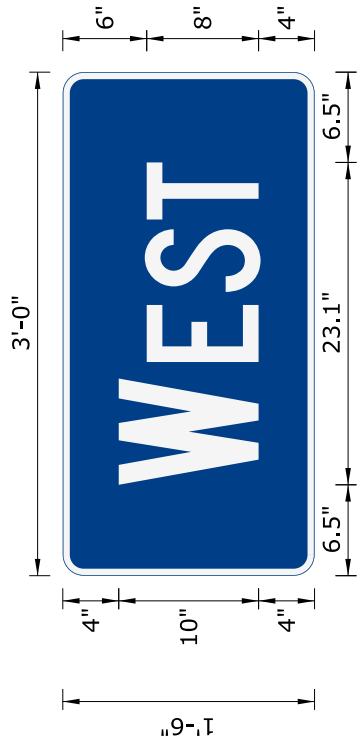
SIGN NUMBER	51-6657
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M3-3
BDR. INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6657 Jun 04, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE				
S	O	U	T	H			C 2000
3.8	5.6	1.3	6.3	5.6	5.2	4.5	3.8

SIGN DETAIL
1:12



REV'D /

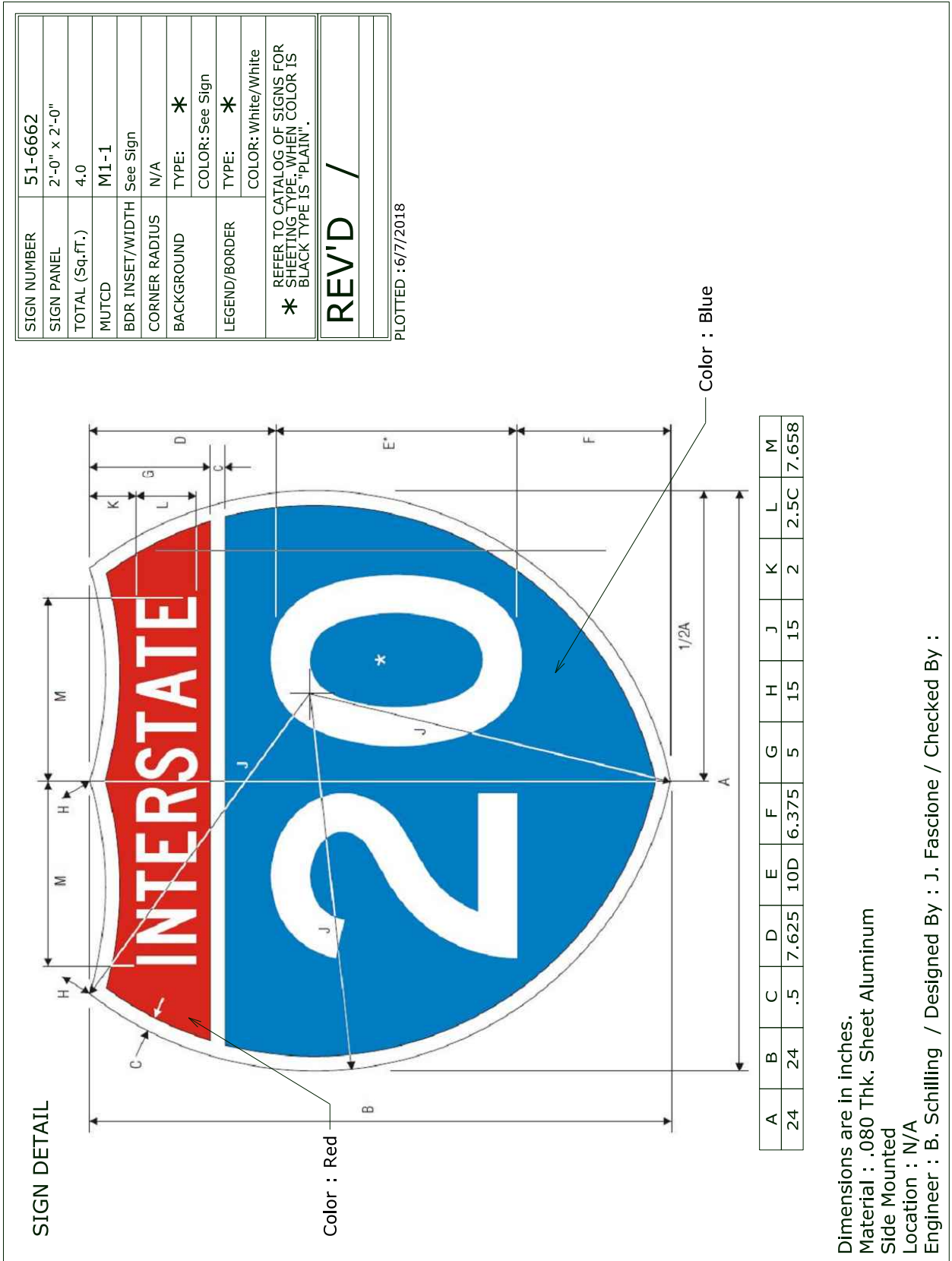
Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

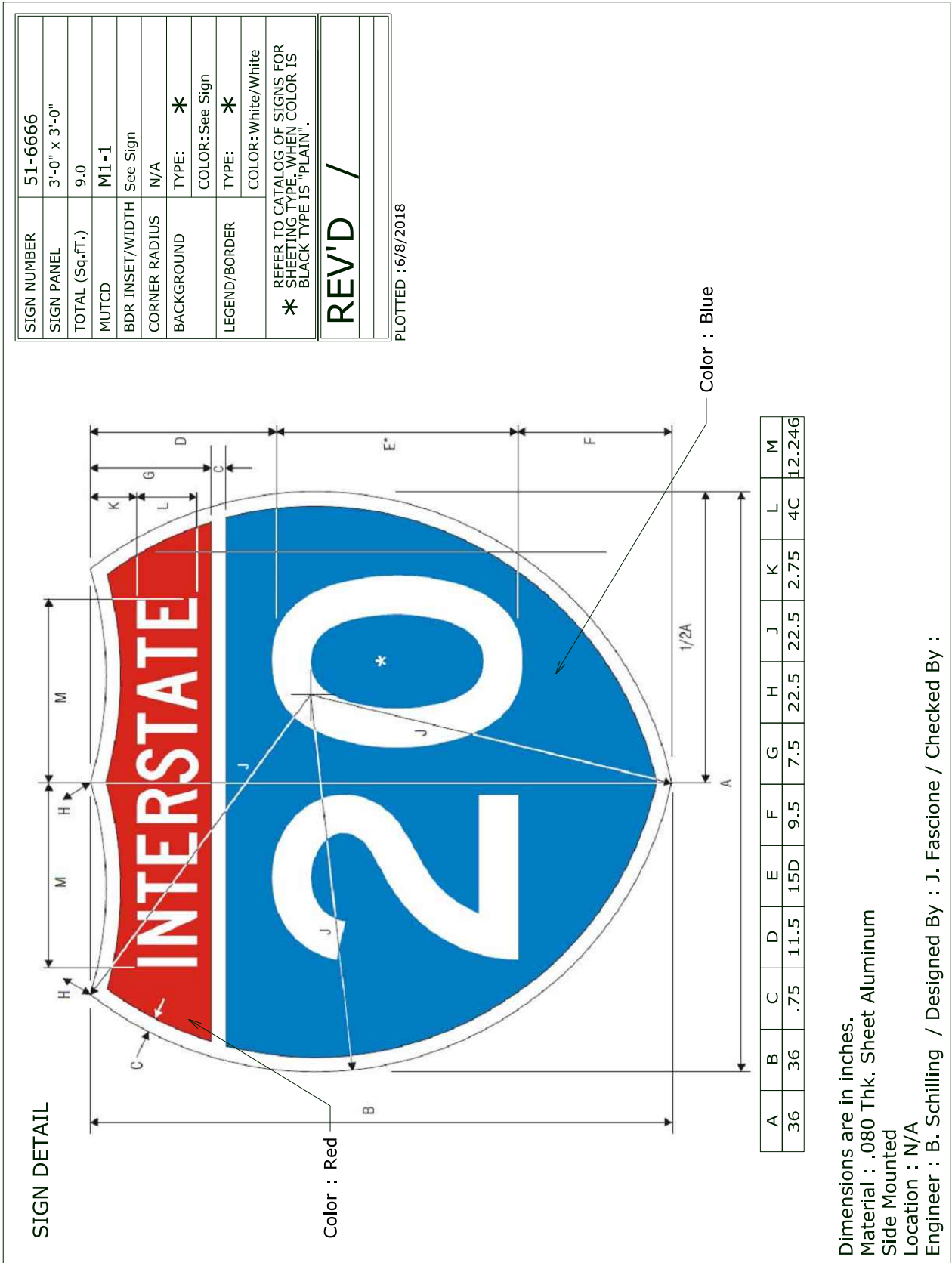
SIGN NUMBER	51-6658
PANEL SIZE	3'-0" x 1'-6"
SIGN AREA	4.5 Sq.Ft.
MUTCD	M3-4
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

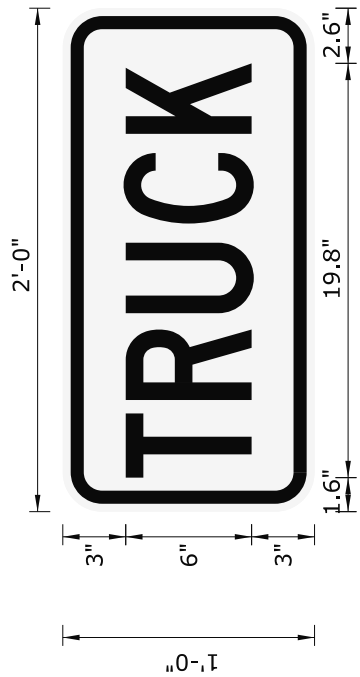
FILE : 51-6658 Jun 04, 2018

LETTER POSITIONS (X)				LENGTH	SERIES/SIZE			
W	E	S	T		C 2000			
6.5	7.6	1.2	5	5.2	4.1	6.5	23.1	10,8





SIGN DETAIL
1:8



Dimensions are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

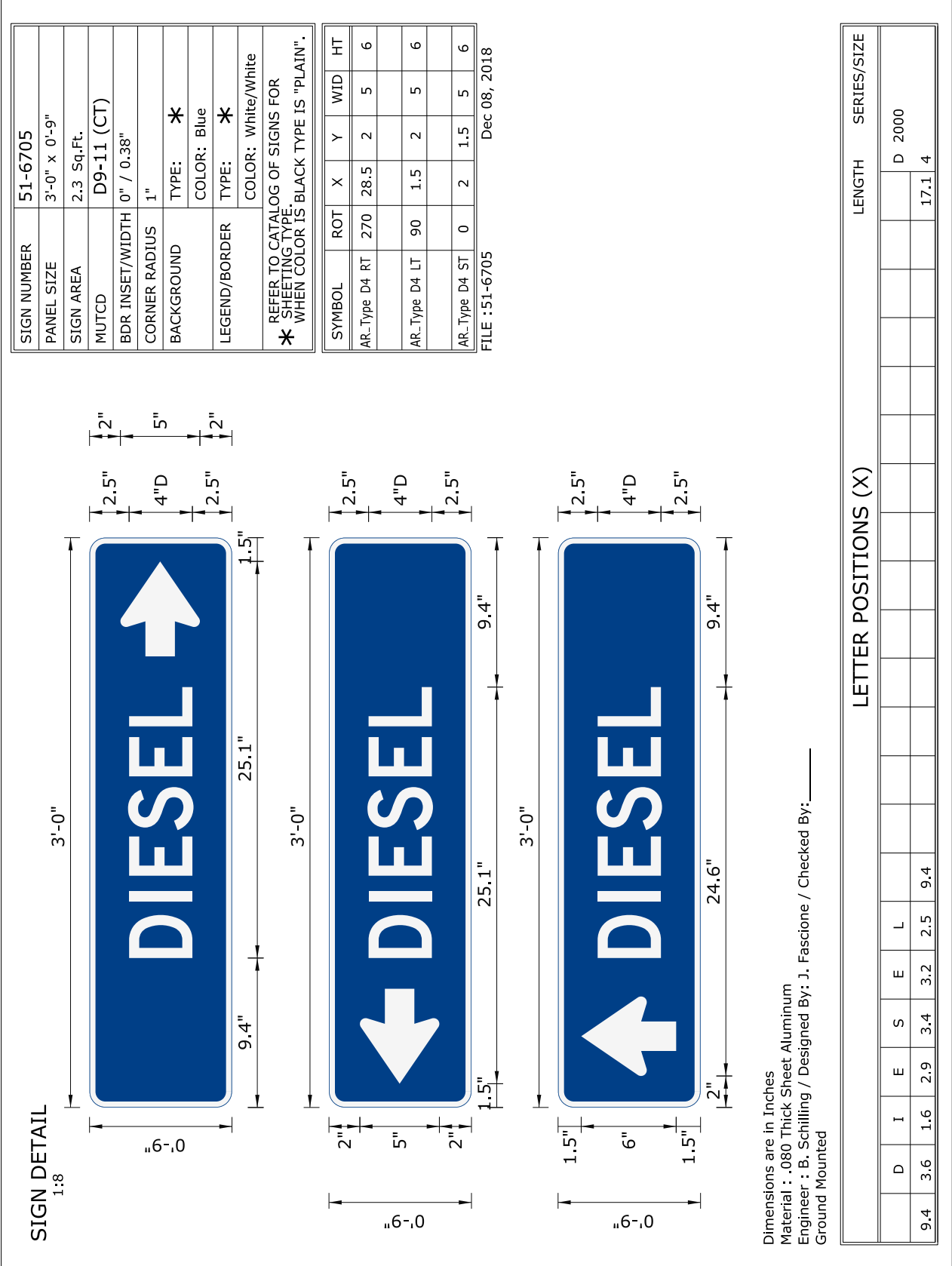
REV'D /

SIGN NUMBER	51-6670
PANEL SIZE	2'-0" x 1'-0"
SIGN AREA	2.0 Sq.Ft.
MUTCD	M4-4
BDR. INSET/WIDTH	0.38" / 0.63"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: White
LEGEND/BORDER	TYPE: * COLOR: Black/Black
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. * WHEN COLOR IS BLACK TYPE IS "PLAIN".	

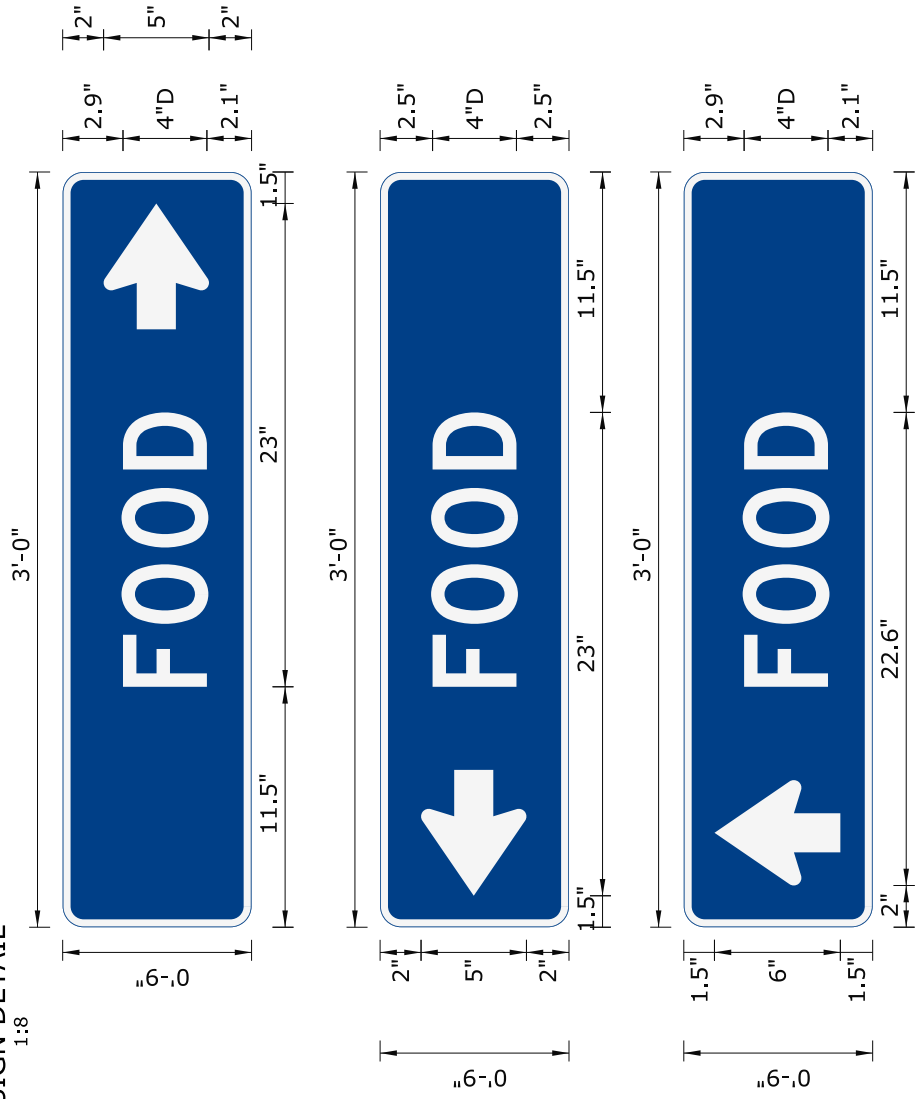
SYMBOL	ROT	X	Y	WID	HT

FILE :51-6670 Nov 14, 2018

LETTER POSITIONS (X)						LENGTH	SERIES/SIZE
1.6	3.7	4.1	4.3	4.3	3.4	2.6	C 2000
							19.8 6



SIGN DETAIL
1:8



SIGN NUMBER	51-6706
PANEL SIZE	3'-0" x 0'-9"
SIGN AREA	2.3 Sq.Ft.
MUTCD	D9-8 (CT)
BDR. INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Blue
	TYPE: *
	COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

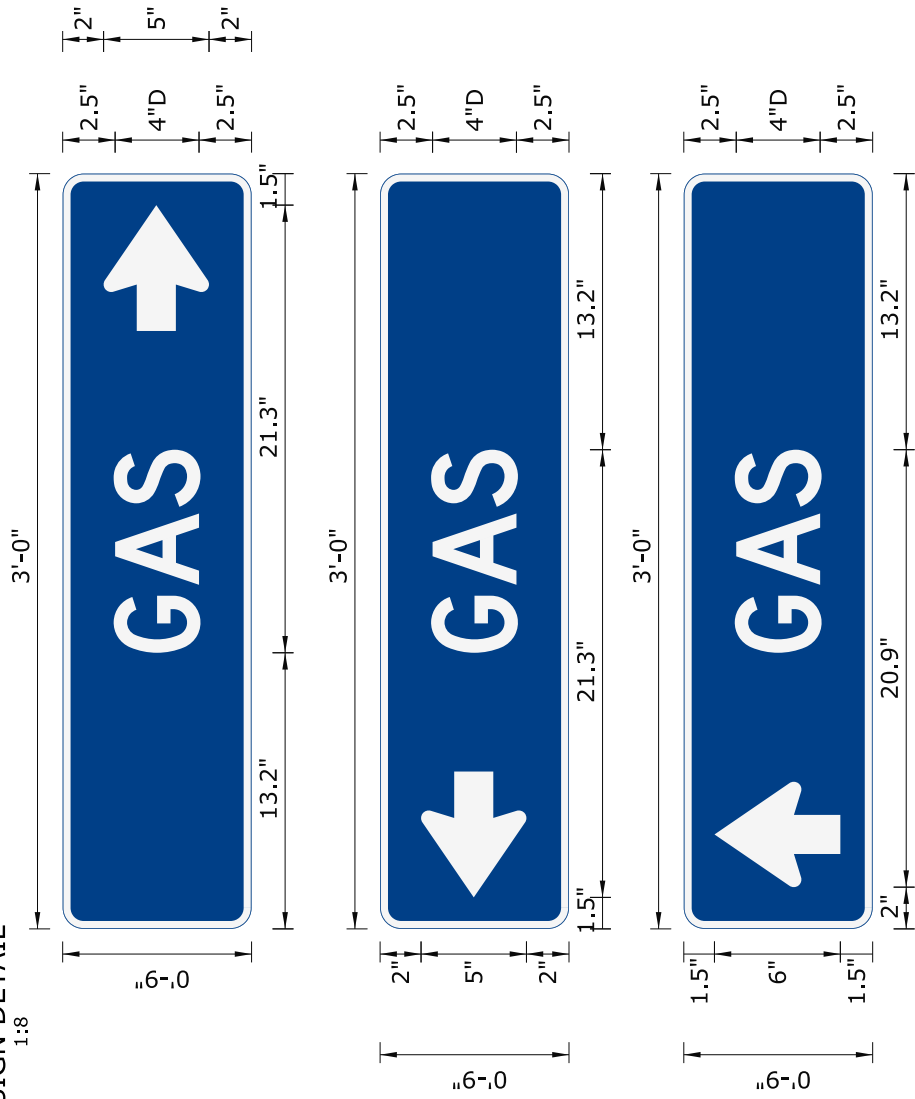
SYMBOL	ROT	X	Y	WID	HT
AR_Type D4 RT	270	28.5	2	5	6
AR_Type D4 LT	90	1.5	2	5	6
AR_Type D4 ST	0	2	1.5	5	6

FILE : 51-6706 Dec 08, 2018

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
F	O	O	D								D 2000
11.5	3	3.6	3.7	2.7	11.5					13.1	4

SIGN DETAIL
1:8



SIGN NUMBER	51-6708
PANEL SIZE	3'-0" x 0'-9"
SIGN AREA	2.3 Sq.Ft.
MUTCD	D9-9 (CT)
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

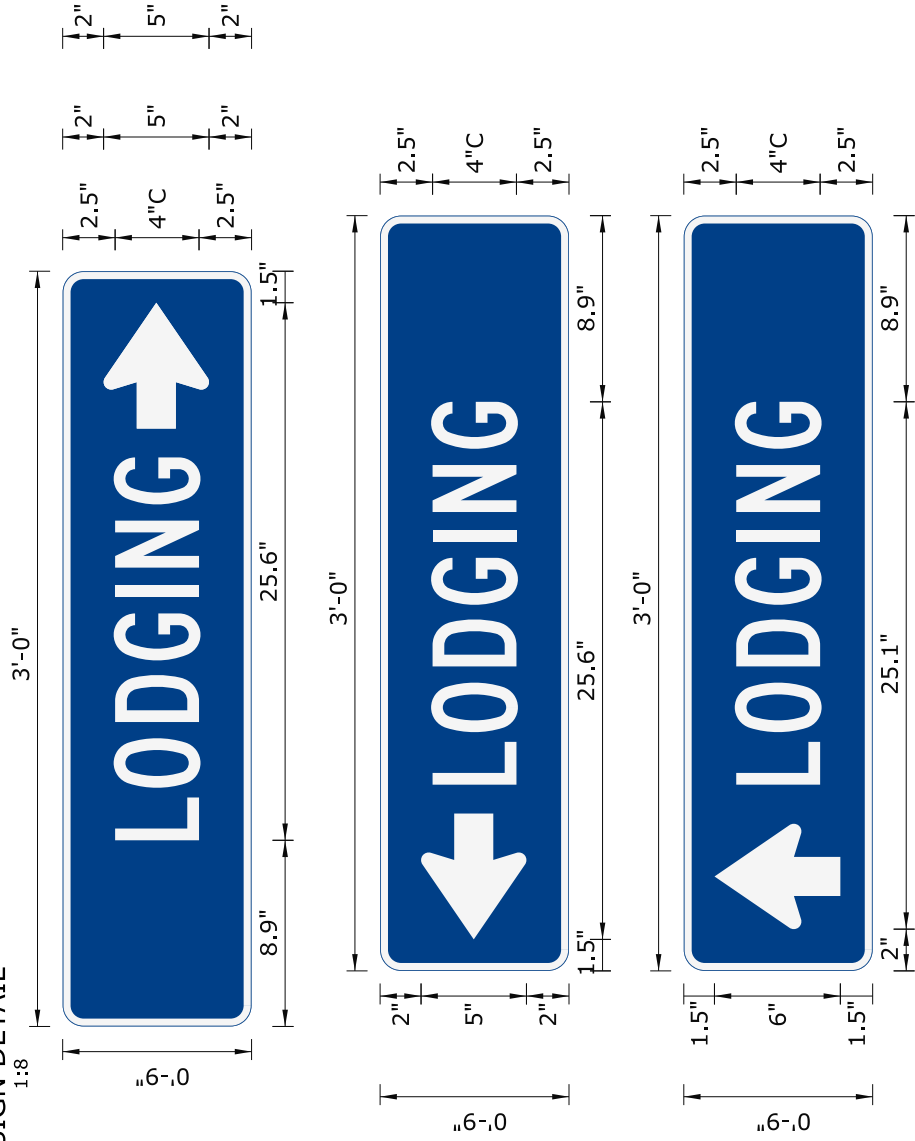
SYMBOL	ROT	X	Y	WID	HT
AR_Type D4 RT	270	28.5	2	5	6
AR_Type D4 LT	90	1.5	2	5	6
AR_Type D4 ST	0	2	1.5	5	6

FILE : 51-6708
Dec 08, 2018

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
G	A	S									D 2000
13.2	3.2	3.7	2.7	13.2						9.7	4

SIGN DETAIL
1:8



SIGN NUMBER	51-6709
PANEL SIZE	3'-0" x 0'-9"
SIGN AREA	2.3 Sq.Ft.
MUTCD	D9-7 (CT)
BDR INSET/WIDTH	0" / 0.38"
CORNER RADIUS	1"
BACKGROUND	TYPE: *
LEGEND/BORDER	COLOR: Blue
	TYPE: *
	COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
AR_Type D4 RT	270	28.5	2	5	6
AR_Type D4 LT	90	1.5	2	5	6
AR_Type D4 ST	0	2	1.5	5	6

FILE : 51-6709 Dec 08, 2018

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

LETTER POSITIONS (X)										LENGTH	SERIES/SIZE	
	L	O	D	G	I	N	G					
8.9	2.5	3.1	2.9	3	1.4	3	2.2	8.9				

SIGN DETAIL
1:12

**BUSINESS PANEL
FOR FREEWAY**

NOTES FOR NON-LOGO BUSINESS PANEL
BACKGROUND COLOR :
- BROWN : AMUSEMENT PARK, CULTURAL
CENTER, RECREATIONAL AREA,
MUSEUM, ETC.

NOTES FOR LOGO BUSINESS PANEL
- SUBMIT TO THE DIVISION OF TRAFFIC
ENGINEERING FOR REVIEW AND
APPROVAL.

SIGN NUMBER	51-6731
SIGN PANEL	15.0
EXIT CROWN	--
TOTAL (Sq.Ft.)	15.0
BDR INSET/WIDTH	0" / 0.75"
CORNER RADIUS	2.25"
BACKGROUND FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: Brown
LEGEND/BORDER FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: White/White
BACKGROUND FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
LEGEND/BORDER FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D 6/18

Revised letter Series from B to D.

PLOTTED : 12/27/2018

(E) EQUAL SPACING
(V) VARIABLE LEGEND OR LOGO TO FIT 60" x 36" SIGN :
* SERIES "D" UP TO 8 CHARACTERS MAX PER LINE.
* SERIES "C" UP TO 9 OR 10 CHARACTERS MAX PER LINE.
DIMENSIONS ARE IN INCHES
MATERIAL : .040 THK.SHEET ALUMINUM
OVERLAY PANEL
SIGN SUPPORT NO. N/A
LOCATION : TO BE USED WITH 52-6747, 52-6748, 52-6750, 52-6756, & TP-1283
ENGINEER : B. SCHILLING DESIGNED BY : J. FASCIONE CHECKED BY : _____

SIGN DETAIL
1:12

**BUSINESS PANEL
FOR FREEWAY**

5'-0"

1.5"

7"

8"D (V)

6"

8"D (V)

7"

1.6"

56.9"

3'-0"

5'-0"

1.5"

3"

8"D (V)

3"

8"D (V)

3"

8"D (V)

1.6"

57.5"

3'-0"

NOTES FOR NON-LOGO BUSINESS PANEL

BACKGROUND COLOR :

- GREEN : COLLEGE, UNIVERSITY, ETC.

NOTES FOR LOGO BUSINESS PANEL

- SUBMIT TO THE DIVISION OF TRAFFIC ENGINEERING FOR REVIEW AND APPROVAL.

SIGN NUMBER	51-6733
SIGN PANEL	15.0
EXIT CROWN	--
TOTAL (Sq. Ft.)	15.0
BDR INSET/WIDTH	0" / 0.75"
CORNER RADIUS	2.25"
BACKGROUND FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: Green
LEGEND/BORDER FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: White/White
BACKGROUND FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
LEGEND/BORDER FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D 6/18

Revised letter Series from B to D.

PLOTTED : 12/27/2018

- (E) EQUAL SPACING
- (V) VARIABLE LEGEND OR LOGO TO FIT 60" x 36" SIGN :
- * SERIES "D" UP TO 8 CHARACTERS MAX PER LINE.
- * SERIES "C" UP TO 9 OR 10 CHARACTERS MAX PER LINE.
- DIMENSIONS ARE IN INCHES
- MATERIAL : .040 THK.SHEET ALUMINUM OVERLAY PANEL
- SIGN SUPPORT NO. N/A
- LOCATION : TO BE USED WITH 52-6747, 52-6748, 52-6750, 52-6756, & TP-1283
- ENGINEER : B. SCHILLING DESIGNED BY : J. FASCIONE CHECKED BY : _____

SIGN DETAIL 1:12

BUSINESS PANEL FOR RAMPS & COVENTIONAL ROADWAYS

2 LINES USE 4" B OR C LETTERS.

3 LINES USE 3" B OR C LETTERS.

NOTES FOR NON-LOGO BUSINESS PANEL
 BACKGROUND COLOR :
 - BROWN : AMUSEMENT PARK, CULTURAL CENTER, RECREATIONAL AREA, MUSEUM, ETC.

NOTES FOR LOGO BUSINESS PANEL
 - SUBMIT TO THE DIVISION OF TRAFFIC ENGINEERING FOR REVIEW AND APPROVAL.

SIGN NUMBER	51-6737
SIGN PANEL	3.75
EXIT CROWN	--
TOTAL (Sq.ft.)	3.75
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: Brown
LEGEND/BORDER FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: White/White
BACKGROUND FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
LEGEND/BORDER FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".	

SYMBOL	ROT	X	Y	WID	HT

REV'D 6/14

ADDED NOTES FOR LOGO PANEL AND UPDATED BORDER FOR LOGO PANEL.

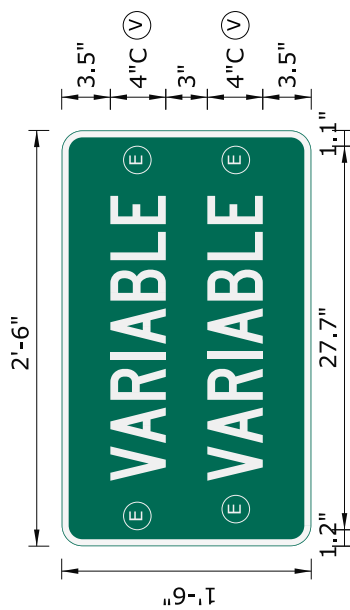
ENGINEER : B. SCHILLING DESIGNED BY : J. FASCIONE CHECKED BY : _____

PLOTTED : 12/28/18

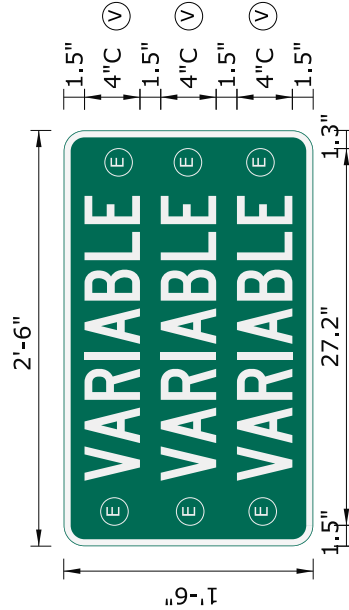
SIGN DETAIL
1:12

**BUSINESS PANEL FOR
RAMPS & COVENTIONAL
ROADWAYS**

2 LINES USE 4" B OR C LETTERS.



3 LINES USE 3" B OR C LETTERS.



NOTES FOR NON-LOGO BUSINESS PANEL

BACKGROUND COLOR :

- GREEN : COLLEGE, UNIVERSITY, ETC.

NOTES FOR LOGO BUSINESS PANEL

- SUBMIT TO THE DIVISION OF TRAFFIC
ENGINEERING FOR REVIEW AND
APPROVAL.

SIGN NUMBER	51-6740
SIGN PANEL	3.75
EXIT CROWN	--
TOTAL (Sq.ft.)	3.75
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: Green
LEGEND/BORDER FOR NON-LOGO BUSINESS PANEL	TYPE: * COLOR: White/White
BACKGROUND FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
LEGEND/BORDER FOR LOGO BUSINESS PANEL	TYPE: * COLOR: Variable
* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE, WHEN COLOR IS BLACK TYPE IS PLAIN.	

SYMBOL	ROT	X	Y	WTD	HT

REV'D 6/14

ADDED NOTES FOR LOGO PANEL AND
UPDATED BORDER FOR LOGO PANEL.

- (E) EQUAL SPACING
- (V) VARIABLE LEGEND OR LOGO TO FIT 30" x 18" SIGN :
- * SERIES "C" UP TO 8 CHARACTERS MAX PER LINE.
- * SERIES "B" UP TO 9 OR 10 CHARACTERS MAX PER LINE.
- DIMENSIONS ARE IN INCHES
- MATERIAL : .040 THK.SHEET ALUMINUM
- OVERLAY PANEL TO BE USED WITH 51-6752 AND 51-6755
- SIGN SUPPORT NO. N/A
- LOCATION : N/A
- ENGINEER : B. SCHILLING DESIGNED BY : J. FASCIONE CHECKED BY : _____

SIGN DETAIL
1:15



Dimensions are in Inches.
Material : .100 Thk. Sheet Aluminum
Mounted : Ground
Sign Support No. N/A
Location : N/A
Project No. N/A
Engineer : B. Schilling / Designed by : J.Fascione / Checked by :

HEADING PANEL USED WITH 51-6752

REV'D 7/18

Removed the "S" from "ATTRATIONS".

SIGN NUMBER	51-6751
SIGN PANEL	4'-0" x 1'-6"
EXIT CROWN	
TOTAL AREA	6.0 Sq.Ft.
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: IV COLOR: Blue
LEGEND/BORDER	TYPE: IV COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT

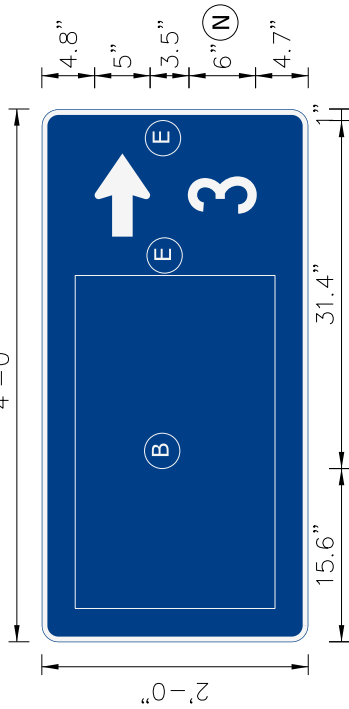
PLOTTED : \$DATES

LETTER POSITIONS (X)

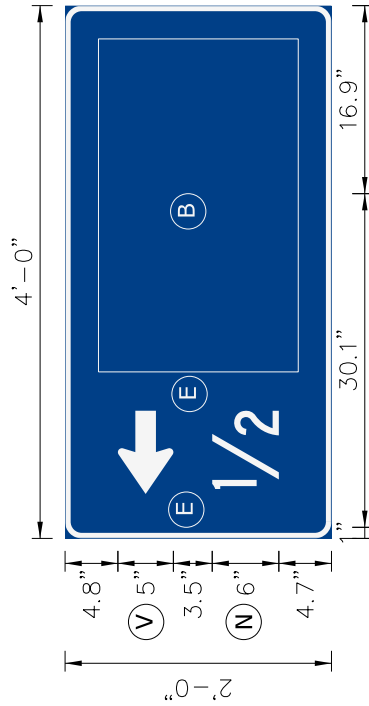
															LENGTH	SERIES/SIZE
A	T	T	R	A	C	T	I	O	N							
5	4.2	3.4	3.9	3.9	4.6	4.1	3.9	2	4.7	3.4	5	38.1		6		C 2000

SIGN DETAIL
1:15

FOR RAMPS
4'-0"



LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
3			C 2000
38.6	3.4	6.1	3.4 6



LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
1/2			C 2000
4.5	7.1	36.5	7.1 6

DIMENSIONS ARE IN INCHES
MATERIAL : .100 THK.SHEET ALUMINUM
SIDE MOUNTED
SIGN SUPPORT NO.
LOCATION : N/A
ENGINEER : B. SCHILLING DESIGNED BY : J. FASCIONE CHECKED BY : _____

NOTE :
FOR CONVENTIONAL HIGHWAY
SIGN SEE 51-6755.

SIGN NUMBER	51-6752
SIGN PANEL	8.0
EXIT CROWN	--
TOTAL (Sq.Ft.)	8.0
BDR INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE. WHEN COLOR IS BLACK TYPE IS "PLAIN".

REV'D 12/18

Revised Business Panel note (B) to reflect different sign #s for different color panels.

ARROW & NUMBER ON RIGHT

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	36.5	14.3	5	7.5
BUSINESS	0	3	3	30	18

ARROW & NUMBER ON LEFT

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	4	14.3	5	7.5
BUSINESS	0	15	3	30	18

(B) BUSINESS PANEL 51-6753 BLUE, 51-6737 BROWN AND 51-6740 GREEN.

(E) EQUAL SPACING FOR ARROW AND NUMBER (DISTANCE).

(N) VARIABLE NUMBER (DISTANCE).

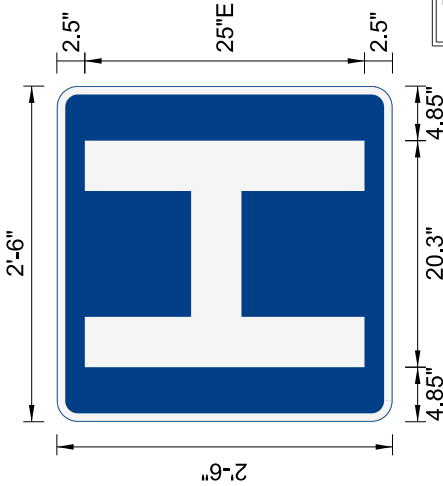
(V) VARIABLE ARROW (DIRECTION).

51-6752 SUBMOUNTED BELOW 51-6751.

PLOTTED : 12/28/2018

SIGN DETAIL

1:15



Dimension are in Inches
 Material : .080 Thick Sheet Aluminum
 Engineer : A. Mermelstein, Designed By: J. Fascione, Checked By: _____
 Ground Mounted

REV'D /

SIGN NUMBER	51-6757
PANEL SIZE	2'-6" x 2'-6"
TOTAL (Sq.ft.)	6.3 Sq.Ft.
MUTCD	D9-2
BDR INSET/WIDTH	0" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

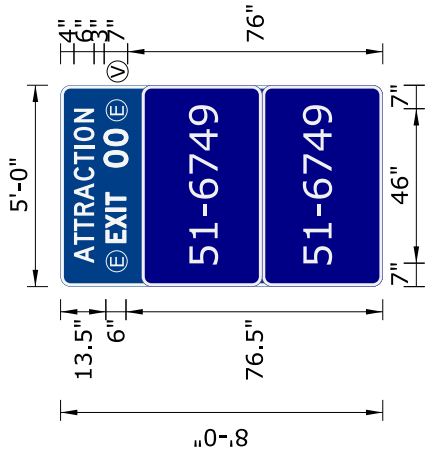
SYMBOL	ROT	X	Y	WID	HT

FILE : 51-6757 10/27/2018

LETTER POSITIONS (X)

		LENGTH	SERIES/SIZE
H			E 2000
4.9	20.3	20.3	25

SIGN DETAIL
1:50



(E) EQUAL SPACING
 (V) VARIABLE EXIT NUMBER
 Dimensions are in Inches
 Material : .100 Thick Sheet Aluminum
 Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
 Ground Mounted

REV'D 7/18
 Removed the "S" from
 "ATTRACTIONS".

FILE : 51-6758 Jul 10, 2018

SIGN NUMBER	51-6758
PANEL SIZE	5'-0" x 8'-0"
SIGN AREA	40.0 Sq.Ft.
MUTCD	
BDR INSET/WIDTH	/ 1"
CORNER RADIUS	3"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

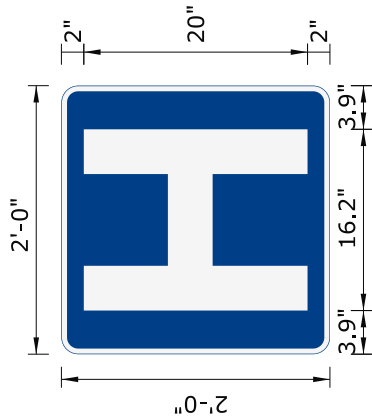
REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
 * WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
51-6749	0	0	36	60	36
51-6749	0	0	0	60	36

LETTER POSITIONS (X)

		LETTER POSITIONS (X)											LENGTH	SERIES/SIZE		
A	7	5.5	4.1	4.6	4.6	5.9	4.9	4.9	4.6	2.3	5.6	4.1	7	D 2000	46	6
E	13.1	4.3	5.1	1.9	3.7	6	1.5	6.4	5	0	13.1			D 2000	33.8	6,7

SIGN DETAIL
1:15



SIGN NUMBER	51-6788
PANEL SIZE	2'-0" x 2'-0"
SIGN AREA	4.0 Sq.Ft.
MUTCD	D9-2
BDR. INSET/WIDTH	0" / 0.5"
CORNER RADIUS	1.5"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

REV'D /

Dimensions are in Inches

Material : .080 Thick Sheet Aluminum

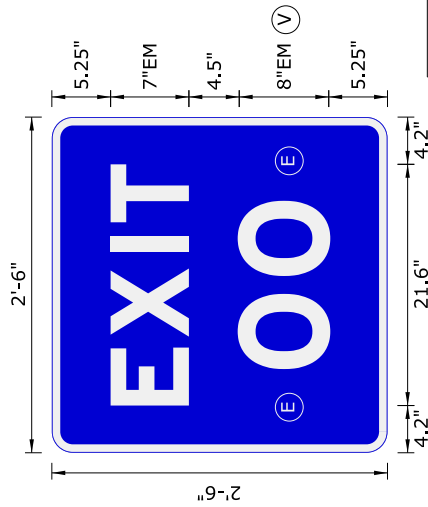
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____

Ground Mounted

FILE : 51-6788
Oct 27, 2018

LETTER POSITIONS (X)		LENGTH	SERIES/SIZE
H		16.2	EM 2000
3.9		20	

SIGN DETAIL
1:15



- (E) EQUAL SPACING
- (V) VARIABLE EXIT NUMBER

Dimensions are in Inches
Material : .080 Thick Sheet Aluminum
Engineer : B. Schilling / Designed By: J. Fascione / Checked By: _____
Ground Mounted

REV'D /

SIGN NUMBER	51-7791
PANEL SIZE	2'-6" x 2'-6"
SIGN AREA	6.3 Sq.Ft.
MUTCD	D9-13P (CT)
BDR. INSET/WIDTH	0" / 0.75"
CORNER RADIUS	1.88"
BACKGROUND	TYPE: * COLOR: Blue
LEGEND/BORDER	TYPE: * COLOR: White/White

REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
* WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT

FILE : 51-7791 Nov 01, 2018

LETTER POSITIONS (X)

SERIES/SIZE		LENGTH	
E	T	EM 2000	EM 2000
4.2	20.6	21.6	7
0			
7.5	15.8	15	8

ITEM #1806226A - PRE-WARNING VEHICLE

Description: Work under this item shall include furnishing, deploying and maintaining a Truck-Mounted Impact Attenuator equipped with a changeable message sign (CMS) for use as a Pre-Warning Vehicle (PWV) in a rolling road block operation on limited access highways. Impact attenuators shall only be truck-mounted. The message on the sign shall warn motorists of slow or stopped traffic conditions.

Materials: The Truck-Mounted Impact Attenuator shall meet the requirements of Article 18.06.02, except replace all instances of “flashing arrow,” “arrow sign,” and “arrow” with “CMS”. The CMS shall meet the requirements of Article 11.31.02, with the following amendments:

1. Physical Characteristics of the CMS

- a) Mounting – The CMS shall be truck mounted only
- b) Sign Display Dimensions – Width of 6 feet, height of 4 feet

2. Visual Characteristics of the CMS Display

- a) Sign Type – CMS shall have a LED display only
- b) Color – CMS shall have black background with orange, yellow, or amber legend
- c) Characters – Letter height shall be 13 inches; Single stroke
- d) Visibility– CMS brightness must provide for visibility at 1/2 mile
- e) Message – The message shall read as follows, or shall be as directed by the Engineer:

Frame 1: SLOWED TRAFFIC AHEAD

Frame 2: BE PREPARED TO STOP

Or

Frame 1: STOPPED TRAFFIC AHEAD

Frame 2: BE PREPARED TO STOP

Construction Methods: The PWV shall be initially positioned in the right shoulder ½ mile prior to the rolling road block operation.

If a traffic queue reaches the PWV’s initial location, the Contractor shall slowly reverse the PWV along the shoulder to position itself prior to the new back of queue.

The Contractor shall meet the requirements of Article 18.06.03.

Method of Measurement: This work will be measured for payment by the actual number of hours that the Pre-Warning Vehicle is used in a rolling road block operation.

Basis of Payment: This work will be paid for at the Contract unit price per hour for “Pre-Warning Vehicle,” which shall include the furnishing and use of the pre-warning vehicle and a driver, attenuator reflector, flashing lights, changeable message sign, and all equipment, materials, tools, labor, disposal of damaged Truck-Mounted Impact Attenuator components and work incidental thereto.

Pay Item	Pay Unit
Pre-warning Vehicle	hr

PERMITS AND/OR REQUIRED PROVISIONS

The following Permits and/or and Required Provisions follow this page are hereby made part of this Contract.

- **PERMITS AND/OR PERMIT APPLICATIONS**

No Permits are required for this contract

- **Construction Contracts - Required Contract Provisions (State Funded Only Contracts)**

**Construction Contracts - Required Contract Provisions
(State Funded Only Contracts)**

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- EXHIBIT E - State Wage Rates (Attached at the end)

1. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit A, all of which are hereby made a part of this Contract.

2. Contractor Work Force Utilization / Equal Employment Opportunity

- (a) The Contractor shall comply with the Contractor Work Force Utilization / Equal Employment Opportunity requirements attached at Exhibit B and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of \$10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.
- (b) Companies with contracts, agreements or purchase orders valued at \$10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

3. Contract Wage Rates

The Contractor shall comply with:

The State wage rate requirements indicated in Exhibit E hereof are hereby made part of this Contract.

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 816), as may be revised, every Contractor or subcontractor performing project work on a federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

4. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

5. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 31-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 of the Connecticut General Statutes, as revised, on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states

6. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

7. Executive Orders

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

8. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

(a) For purposes of this Section, the following terms are defined as follows:

- (1) "Commission" means the Commission on Human Rights and Opportunities;
- (2) "Contract" and "contract" include any extension or modification of the Contract or contract;
- (3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- (4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
- (5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

- (6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;
- (7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;
- (8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;
- (9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons:
 - (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and
- (10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the State of Connecticut, including, but not limited to municipalities, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state of the United States, including but not limited to, the District of Columbia, Puerto Rico, U.S. territories and possessions, and federally recognized Indian tribal governments, as defined in Connecticut General Statutes § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in subdivision (1), (2), (3), or (4) of this subsection.

- (b) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor

agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

- (c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.
- (d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.
- (e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.
- (f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.
- (g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.
- (h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such

provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

Please be aware the Nondiscrimination Certifications can be found at the Office of Policy and Management website:

<https://portal.ct.gov/OPM/Fin-PSA/Forms/Nondiscrimination-Certification>

9. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars (\$5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

10. Connecticut Freedom of Information Act

- (a) **Disclosure of Records.** This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.
- (b) **Confidential Information.** The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must

accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as "CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.*, Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

11. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

12. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-112a of the General Statutes of the State of Connecticut, as revised.

13. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit C, and hereby made part of this Contract.

14. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be

transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

15. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

16. Audit and Inspection of Plants, Places of Business and Records

- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
- (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
- (d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
- (e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
- (f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

17. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of \$50,000 or more, or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit D.

18. Tangible Personal Property

- (a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:
- (1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
 - (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

19. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially and anonymity respected.

20. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in

the information contained in the form, a contractor shall submit the updated form, as applicable, either (i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

EXHIBIT A**TITLE VI CONTRACTOR ASSURANCES**

During the performance of this Contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. **Compliance with Regulations:** The Contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the United States Department of Transportation (hereinafter, "USDOT"), Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Subsection 5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:**

In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

4. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation (ConnDOT) or the Funding Agency (FHWA, FTA and FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to ConnDOT or the Funding Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the ConnDOT shall impose such sanctions as it or the Funding Agency may determine to be appropriate, including, but not limited to:

- A. Withholding contract payments until the Contractor is in-compliance; and/or
- B. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. **Incorporation of Provisions:** The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the ConnDOT or the Funding Agency may -direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the ConnDOT to enter into such litigation to protect the interests of the Funding Agency, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

EXHIBIT B**CONTRACTOR WORKFORCE UTILIZATION / EQUAL EMPLOYMENT OPPORTUNITY****1. Project Workforce Utilization Goals:**

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the Appendix A below.

STATE FUNDED PROJECTS (only)
APPENDIX A
(Labor Market Goals)

<u>LABOR MARKET AREA GOAL</u>	<u>Minority</u>
<u>Female</u>	
Bridgeport	14%
6.9%	
Ansonia	Beacon Falls
Easton	Fairfield
Oxford	Seymour
Trumbull	
	Bridgeport
	Milford
	Shelton
	Derby
	Monroe
	Stratford
Danbury	4%
6.9%	
Bethel	Bridgewater
Kent	New Fairfield
Redding	Ridgefield
Washington	
	Brookfield
	New Milford
	Roxbury
	Danbury
	Newtown
	Sherman
Danielson	2%
6.9%	
Brooklyn	Eastford
Pomfret	Putnam
Thompson	Voluntown
	Hampton
	Scotland
	Union
	Killingly
	Sterling
	Woodstock
Hartford	15%
6.9%	
Andover	Ashford
	Avon
	Barkhamsted

Belin	Bloomfield	Bolton	Bristol
Burlington	Canton	Chaplin	Colchester
Columbia	Coventry	Cromwell	Durham
East Granby	East Haddam	East Hampton	East Hartford
East Windsor	Ellington	Enfield	Farmington
Glastonbury	Granby	Haddam	Hartford
Harwinton	Hebron	Lebanon	Manchester
Mansfield	Marlborough	Middlefield	Middletown
Newington	Plainville	Plymouth	Portland
Rocky Hill	Simsbury	Somers	South Windsor
Southington	Stafford	Suffield	Tolland
Vernon	West Hartford	Wethersfield	Willington
Winchester	Windham	Windsor	Windsor Locks

Lower River				2%
6.9%				

Chester	Deep River	Essex	Old Lyme
Westbrook			

New Haven				14%
6.9%				

Bethany	Branford	Cheshire	Clinton
East Haven	Guilford	Hamden	Killingworth
Madison	Meriden	New Haven	North Branford
North Haven	Orange	Wallingford	West Haven
Woodbridge			

New London				8%
6.9%				

Bozrah	Canterbury	East Lyme	Franklin
Griswold	Groton	Ledyard	Lisbon
Montville	New London	North Stonington	Norwich
Old Lyme	Old Saybrook	Plainfield	Preston
Salem	Sprague	Stonington	Waterford
Hopkinton	RI – Westerly Rhode Island		

Stamford				17%
6.9%				

Darien	Greenwich	New Canaan	Norwalk
Stamford	Weston	Westport	Wilton

Torrington				2%
6.9%				

Canaan	Colebrook	Cornwall	Goshen
Hartland	Kent	Litchfield	Morris
Norfolk	North Canaan	Salisbury	Sharon
Torrington	Warren		

Waterbury 6.9%				10%
Bethlehem	Middlebury	Naugatuck	Prospect	
Southbury	Thomaston	Waterbury	Watertown	
Wolcott	Woodbury			

EXHIBIT C**Health Insurance Portability and Accountability Act of 1996 (“HIPAA”).**

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the “Department”) is a “covered entity” as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of “individually identifiable health information,” as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a “business associate” of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions
 - (1) “Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))
 - (2) “Business Associate” shall mean the Contractor.
 - (3) “Covered Entity” shall mean the Department of the State of Connecticut named on page 1 of this Contract.
 - (4) “Designated Record Set” shall have the same meaning as the term “designated record set” in 45 C.F.R. § 164.501.
 - (5) “Electronic Health Record” shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

- (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
 - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.
 - (11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.
 - (12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.
 - (13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.
 - (14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.
 - (15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).
- (h) Obligations and Activities of Business Associates.
- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.
 - (2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.
 - (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.
 - (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.
- (6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.
- (7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.
- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
- A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
- B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
- C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.
 4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to

individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

- D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.
 - E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.
- (i) Permitted Uses and Disclosure by Business Associate.
- (1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.
 - (2) Specific Use and Disclosure Provisions
 - (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
 - (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.
 - (C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).
- (j) Obligations of Covered Entity.

- (1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.
 - (2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.
 - (3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.
- (k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.
- (l) Term and Termination.
- (1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.
 - (2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:
 - (A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or
 - (B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or
 - (C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.
 - (3) Effect of Termination
 - (A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity

within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

- (1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.
- (2) Amendment. The Parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.
- (3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.
- (4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.
- (5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.
- (6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the

HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined on the reverse side of this page*).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."

DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual’s household who may legally be claimed as a dependent on the federal income tax of such individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor’s state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT E

(state wages will be inserted here)

Project: Replacement Of Highway Signing On I-84

**Minimum Rates and Classifications
for Heavy/Highway Construction**

ID#: H 25963

**Connecticut Department of Labor
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Rocky Hill

FAP Number:

State Number: 155-173

Project: Replacement Of Highway Signing On I-84

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	33.79	34% + 8.96
<hr/>		
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	34.72	32.15
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2) Carpenters, Piledrivermen	32.60	25.34
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2a) Diver Tenders	32.60	25.34
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As of:

Tuesday, April 23, 2019

Project: Replacement Of Highway Signing On I-84

3) Divers	41.06	25.34
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03a) Millwrights	33.14	25.74
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4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	49.75	21.05
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4a) Painters: Brush and Roller	33.62	21.05
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4b) Painters: Spray Only	36.62	21.05
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4c) Painters: Steel Only	35.62	21.05
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4d) Painters: Blast and Spray	36.62	21.05
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Project: Replacement Of Highway Signing On I-84

4e) Painters: Tanks, Tower and Swing 35.62 21.05

5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9) 40.00 25.97+3% of gross wage

6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 35.14 + a

7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9) 42.62 31.21

---LABORERS----

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist 30.05 20.10

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen 30.30 20.10

Project: Replacement Of Highway Signing On I-84

10) Group 3: Pipelayers 30.55 20.10

11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders 30.55 20.10
(cement/concrete), catch basin builders, asphalt rakers, air track operators, block
paver, curb setter and forklift operators

12) Group 5: Toxic waste removal (non-mechanical systems) 32.05 20.10

13) Group 6: Blasters 31.80 20.10

Group 7: Asbestos/lead removal, non-mechanical systems (does not include 31.05 20.10
leaded joint pipe)

Group 8: Traffic control signalmen 16.00 20.10

Group 9: Hydraulic Drills 29.30 18.90

Project: Replacement Of Highway Signing On I-84

---LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and
Liner Plate Tunnels in Free Air.---

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.22	20.10 + a
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13b) Brakemen, Trackmen	31.28	20.10 + a
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---CLEANING, CONCRETE AND CAULKING TUNNEL---

14) Concrete Workers, Form Movers, and Strippers	31.28	20.10 + a
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15) Form Erectors	31.60	20.10 + a
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---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL
IN FREE AIR:---

Project: Replacement Of Highway Signing On I-84

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	31.28	20.10 + a
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17) Laborers Topside, Cage Tenders, Bellman	31.17	20.10 + a
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18) Miners	32.22	20.10 + a
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---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED
AIR: ----

18a) Blaster	38.53	20.10 + a
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19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	38.34	20.10 + a
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20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	36.41	20.10 + a
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Project: Replacement Of Highway Signing On I-84

21) Mucking Machine Operator 39.11 20.10 + a

---TRUCK DRIVERS---(*see note below)

Two axle trucks 29.13 23.33 + a

Three axle trucks; two axle ready mix 29.23 23.33 + a

Three axle ready mix 29.28 23.33 + a

Four axle trucks, heavy duty trailer (up to 40 tons) 29.33 23.33 + a

Four axle ready-mix 29.38 23.33 + a

Project: Replacement Of Highway Signing On I-84

Heavy duty trailer (40 tons and over)	29.58	23.33 + a
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Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	23.33 + a
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---POWER EQUIPMENT OPERATORS---

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	39.55	24.30 + a
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Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	39.23	24.30 + a
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Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	38.49	24.30 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	38.10	24.30 + a
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Project: Replacement Of Highway Signing On I-84

Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	37.51	24.30 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	37.51	24.30 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	37.20	24.30 + a
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Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	36.86	24.30 + a
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	36.46	24.30 + a
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Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	36.03	24.30 + a
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Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	33.99	24.30 + a
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Project: Replacement Of Highway Signing On I-84

Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	33.99	24.30 + a
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Group 12: Wellpoint Operator.	33.93	24.30 + a
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Group 13: Compressor Battery Operator.	33.35	24.30 + a
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Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	32.21	24.30 + a
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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	31.80	24.30 + a
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Group 16: Maintenance Engineer/Oiler	31.15	24.30 + a
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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.30 + a
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Project: Replacement Of Highway Signing On I-84

Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	33.04	24.30 + a
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**NOTE: SEE BELOW

---LINE CONSTRUCTION---(Railroad Construction and Maintenance)---

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
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21) Heavy Equipment Operator	42.26	6.5% + 19.88
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22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
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23) Driver Groundmen	26.50	6.5% + 9.00
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As of:

Tuesday, April 23, 2019

Project: Replacement Of Highway Signing On I-84

23a) Truck Driver	40.96	6.5% + 17.76
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---LINE CONSTRUCTION---

24) Driver Groundmen	30.92	6.5% + 9.70
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25) Groundmen	22.67	6.5% + 6.20
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26) Heavy Equipment Operators	37.10	6.5% + 10.70
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27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
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28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45
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As of:

Tuesday, April 23, 2019

Project: Replacement Of Highway Signing On I-84

01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**

Project: Replacement Of Highway Signing On I-84

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.*

***Note: Hazardous waste premium \$3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

As of:

Tuesday, April 23, 2019

Project: Replacement Of Highway Signing On I-84

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of:

Tuesday, April 23, 2019

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

- a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

- a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

- a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

- a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Information Bulletin ***Occupational Classifications***

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

- The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. **License required by Connecticut General Statutes: R-1,2,5,6.*

- **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal)).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- **LEAD PAINT REMOVAL**

- Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

- Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.

****License required per Connecticut General Statutes: F-1,2,3,4.***

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are required to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➤ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543.

Statute 31-55a

Last Updated: June 02, 2008

You are here: [DOL Web Site](#) ▶ [Wage and Workplace Issues](#) ▶ Statute 31-55a

- Special Notice -

To All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the *contractor's* responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace

Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd.,
Wethersfield, CT 06109 at (860)263-6790.

[Workplace Laws](#)

Published by the Connecticut Department of Labor, Project Management Office

November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

Sec. 31-53b. Construction safety and health course. Proof of completion required for employees on public building projects. Enforcement. Regulations. (a) Each contract entered into on or after July 1, 2007, for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by an political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least one hundred thousand dollars, shall contain a provision requiring that, not later than thirty days after the date such contract is awarded, each contractor furnish proof to the Labor Commissioner that all employees performing manual labor on or in such public building, pursuant to such contract, have completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, in the case of telecommunications employees, have completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any employee required to complete a construction safety and health course required under subsection (a) of this section who has not completed the course shall be subject to removal from the worksite if the employee does not provide documentation of having completed such course by the fifteenth day after the date the employee is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2007, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) For the purposes of this section, "public building" means a structure, paid for in whole or in part with state funds, within a roof and within exterior walls or fire walls, designed for the housing, shelter, enclosure and support or employment of people, animals or property of any kind, including, but not limited to, sewage treatment plants and water treatment plants, "Public building" does not include site work, roads or bridges, rail lines, parking lots or underground water, sewer or drainage systems including pump houses or other utility systems.

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____, 2004.

Notary Public

 Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109