

**CONTRACT FORM**  
**INCLUDING SPECIFICATIONS**  
**FOR FIELD SUBSURFACE INVESTIGATIONS**  
**BY BORING CONTRACTORS**

**PROJECT NO. 161-143**  
**BRIDGE NO. 05501 IN WILTON, CONNECTICUT**  
**ARROWHEAD ROAD OVER NORWALK RIVER**

Prepared by Freeman Companies  
For CME Associates, Inc.

April 29, 2020

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## INVITATION TO BID

Sealed proposals for the performance of subsurface explorations, including the makings of borings in soil and rock; securing samples and other work incidental thereto on and in the general vicinity of the proposed State Project No. 161-143; Bridge No. 05501 in Wilton, Connecticut; Arrowhead Road over Norwalk River, will be received by Freeman Companies on behalf of CME Associates, Inc., until **Thursday May 14, 2020 at 5:00 PM**, Eastern Time. Deliver all bids to 36 John St., Hartford, CT 06106, and via email to [nwhetten@freemancos.com](mailto:nwhetten@freemancos.com).

Plans, specifications, proposal form and form of contract are attached hereto.

The work will be performed under subcontract to CME. CME is the prime contractor for this work under contract with the Connecticut Department of Transportation (CTDOT) for State Project No. 161-143; Bridge No. 05501 in Wilton, Arrowhead Road over Norwalk River.

Proposals must be made upon the form provided. The blank places in the form must be filled in as noted, and no change shall be made in the phraseology of the proposal or in the items mentioned herein. Proposals that contain any omissions, alternations, additions, or items not called for in the itemized proposal, or that contain irregularities of any kind, may be rejected as non-responsive.

A certified check for the sum of ten percent (10%) of the amount of the bid, made payable to CME must accompany the bid, as a guarantee that the contract will be entered into, if awarded.

In lieu of a certified check, a proposal guaranty in the form of a bond furnished by a surety company in the amount of 10% of the amount of the bid will be accepted. The surety must be a corporate surety licensed to sign surety bonds in the State of Connecticut.

A performance contract bond and payment bond, each in the sum of one hundred percent (100%) of the contract price, will be required on execution of the contract.

CME Associates, Inc. reserves the right to reject any or all bids.

**PROPOSAL FOR SUBSURFACE EXPLORATIONS**

**AT THE SITE OF**

**PROJECT NO. 161-143  
BRIDGE NO. 05501 IN WILTON, CONNECTICUT  
ARROWHEAD ROAD OVER NORWALK RIVER**

TO: Freeman Companies for CME Associates, Inc.

In submitting this bid, the undersigned declares that he/she is the only person or persons interested in the said bid; that it is made without any connection to any person making another bid for the same contract; and that the bid is, in all respects, fair and without collusion, fraud, or mental reservation.

The undersigned also declares that he has carefully examined the plans, specifications and form of contract and that he has personally inspected the actual location of the work, together with the local sources of supply; has satisfied himself as to all the quantities and conditions; and understands that in signing this proposal, he waives all right to plead any misunderstanding regarding same.

The undersigned further understands and agrees that he is to furnish and provide for the respective unit bid price, all the necessary material, machinery, implements, tools, labor, services, etc., and to do and perform all the necessary work under the aforesaid conditions, to complete the work in accordance with the plans and specifications, which plans and specifications it is agreed are a part of this proposal. The list of bid items, together with the estimated quantities thereof, is set forth in the Bid Sheet, which accompanies and forms a part of this proposal. The undersigned further agrees that his total bid price, which shall be evaluated in comparison with the total bid price of other bidders, shall be completed as the summation of the products of the estimated quantities shown on the Bid Sheet multiplied by the unit bid price for each item. In case of discrepancy between the words and the numerals giving the unit bid prices, the words shall govern.

Furthermore, the undersigned fully understands that the quantities of the items set forth in the Bid Sheet are only approximate and agrees to accept the unit price as full compensation for the actual quantities of such items required to complete the work to the satisfaction of the Engineer, be the quantities more or less than those set forth in the Bid Sheet.

The undersigned agrees to submit a schedule of progress or time chart for the work concerned if so requested by the Engineer after the opening of the bids, and to do so within three (3) days of such request. The schedule or chart will be used in consideration of the bids and after award of the contract by the Engineer in the field as a check on the actual progress.

On acceptance of this proposal for said work, the undersigned does hereby bind himself to enter into written contract with CME within three (3) business days of the date of notice of award and to comply in all respects with the terms of said contract. The undersigned agrees that this proposal shall be valid for thirty (30) calendar days from the date of this proposal.

Accompanying this proposal is a guaranty, payable to the order of CME Associates, Inc. in the sum of 10% of the amount of the Gross Sum Bid, which deposit is to be forfeited as liquidated damages in case this proposal is accepted and the undersigned shall fail to execute a contract under the conditions of this proposal within three (3) business days after date of official notice of the award of the contract. Otherwise, said deposit is to be returned to the undersigned.

All proposal guaranties will be returned within three (3) calendar days following the award of the contract. Freeman Companies will notify CME via e-mail that said proposal guaranties have been returned within the (3) calendar days following the award of the contract. When the award is deferred for a period of time longer than ten (10) calendar days after the opening of the proposals, all guaranties, except those of the three lowest bidders, will be returned. Should no award be made within 30 calendar days after the opening of proposals, all proposals will be rejected and the proposal guaranty returned, except that with the approval of the Bidder and the Surety, the Engineer may retain the proposal and proposal guaranty of the low bidder for as long as may be agreed upon by the Engineer, Bidder and Surety.

Date \_\_\_\_\_, 2020

\_\_\_\_\_  
Print Legal Name of Person, Firm, or Corporation

By \_\_\_\_\_

Bidder's Address (Not a P.O. address):

\_\_\_\_\_ Street

\_\_\_\_\_ City and State

\_\_\_\_\_ Telephone Number

\_\_\_\_\_ Email Address

If a Corporation:

Name

Address

\_\_\_\_\_ President \_\_\_\_\_

\_\_\_\_\_ Secretary \_\_\_\_\_

\_\_\_\_\_ Treasurer \_\_\_\_\_

If a Firm:

Name

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Address

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**BID SHEET**

**PROJECT NO. 161-143  
BRIDGE NO. 05501 IN WILTON, CONNECTICUT  
ARROWHEAD ROAD OVER NORWALK RIVER**

<b>Item No.</b>	<b>Approx. Quantities</b>	<b>Item Description – Pay Unit <i>Unit Bid Price (in words)</i></b>	<b>Unit bid price dollars/cents <i>(in figures)</i></b>	<b>Amount of Bid dollars/cents <i>(in figures)</i></b>
1	280	3 ½” Minimum Diameter Soil Borings – Type A, per linear foot _____		
2	70	1 ½” I.D. Split-Barrel Samples, each _____		
3	40	Rock Coring – NX, per linear foot _____		
4	0	Standby Time, per hour _____		
5	2	Mobilization & Demobilization, per each rig _____		

TOTAL OR GROSS SUM BID, (*WRITTEN IN WORDS*):

\_\_\_\_\_

\*\*TOTAL OR GROSS SUM BID, *DOLLARS/CENTS (IN FIGURES)*: \$ \_\_\_\_\_

\*\* This value will be used for comparison of Bids.

DIRECT COSTS

Item No. and Description	Estimated Duration	*Daily Rate	*Weekly Rate	*Weekend Rate	*Monthly Rate
6. Traffic Person (For uniformed traffic control on non-railroad property)	5 days	\$_____	\$_____	\$_____	\$_____

\* If applicable, the Bidder should submit a rate for each category. "N/A" should be shown for non-applicable categories.

Estimated Total for Traffic Person \$\_\_\_\_\_

**CONTRACT AGREEMENT FOR SUBSURFACE EXPLORATIONS**

**AT THE SITE OF**

**PROJECT NO. 161-143  
BRIDGE NO. 05501 IN WILTON, CONNECTICUT  
ARROWHEAD ROAD OVER NORWALK RIVER**

1. **GENERAL AGREEMENT**

This agreement, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2020, by and between CME Associates, Inc., hereinafter referred to as the "Engineer" or the Party of the First Part, and \_\_\_\_\_, hereinafter referred to as the Contractor or the Party of the Second Party,

WITNESSETH:

The Contractor shall furnish all labor, materials, equipment, supplies and other facilities, and shall perform all work necessary or proper for or incidental to the making of subsurface explorations at the locations on the plans at the site Arrowhead Road over Norwalk River in Wilton, Connecticut, in strict accordance with the Specifications found herewith and the accompanying Contract Plans, and to the satisfaction and approval of the Engineer; and shall perform all other obligations and assume all liability imposed upon him by the Contract and Specifications.

In full consideration thereof, the Engineer will pay the Contractor, at the times and in the manner hereinafter provided, an amount determined by the prices named in the Clause, hereof entitled "Contract Unit Prices," and, except as otherwise provided herein, such amounts only. The prices for items named therein include full compensation to the Contractor for all labor, materials, and other things incidental to the completion of the entire work. Such payment shall be computed upon the basis of the actual quantities in the completed work, whether such quantities be more or less than those shown in the Bid Sheet bound herewith.

2. **CONTRACT UNIT PRICES**

Subject to the provisions of this Contract, the Engineer will pay and the Contractor shall accept in full consideration for the performance of the Contractor's obligation hereunder, the following unit prices:



State Project No. 161-143  
 Bridge No. 05501, in Wilton, Connecticut  
 Arrowhead Road over Norwalk River

1. For 3 1/2" Minimum Diameter Soil Borings – Type A, \$ \_\_\_\_\_ per linear foot.
2. For 1 1/2" I.D. Split-Barrel Samples, \$ \_\_\_\_\_ per each.
3. For Rock Coring - NX, \$ \_\_\_\_\_ per linear foot.
4. For Standby Time, \$ \_\_\_\_\_ per hour.
5. For Mobilization and Demobilization, \$ \_\_\_\_\_ per each rig.

**DIRECT COSTS**

Subject to the provisions of this Contract, the Engineer will pay and the Contractor shall accept in full consideration for the performance of the Contractor's obligation hereunder, reimbursement as Direct Costs for the following items:

Item No. and Description	Estimated Duration	Daily Rate	Weekly Rate	Weekend Rate	Monthly Rate
6. Traffic Person (For uniformed traffic control on non-railroad property)	5 days	\$ _____	\$ _____	\$ _____	\$ _____

\* If applicable, the Bidder should submit a rate for each category. "N/A" should be shown for non-applicable categories.

Estimated Total for Traffic Person \$ \_\_\_\_\_

### 3. EXTRA WORK

Unforeseen work made necessary by changes in plans or work necessary to complete the subsurface investigations, for which no price is provided in the contract, shall be classified as extra work and done in accordance with the requirements of the specifications and as directed by the Engineer.

The Engineer shall notify the Contractor of the necessity for extra work, stipulating its character and extent. Upon receipt of such notification, the Contractor shall notify the Engineer, in writing, of the compensation, either unit price or lump sum as requested, for which he proposes to perform the extra work required. The Engineer may accept the compensation proposed by the Contractor, or if he considers the prices submitted to be excessive, he may order the work done on a "Cost Plus" basis as specified hereinafter. In either case, the character and extent of extra work, together with the accepted basis of compensation shall be communicated to the Contractor in writing.

If the Engineer orders extra work performed on a "Cost Plus" basis, the Contractor shall perform the same and shall receive in payment therefor an amount equal to the actual net cost in money to him of the materials, wages of applied labor, other direct expense and insurance required for labor, plus 20 percent of the above items and plus such rental for plant and other equipment (other than small tool) as the Engineer deems reasonable, and that amount only. If the work is performed on a unit price basis, there is no markup.

No work shall be considered Extra Work unless it has been ordered in writing as such by the Engineer before the said work started, or unless the Contractor shall file a written claim for Extra work with the Engineer within two (2) days from the date of instructions from the Engineer or his representative to proceed with such work.

### 4. PAYMENT

Partial Payment(s): On or about the first day of each calendar month, the Engineer will request the Contractor to furnish information necessary to estimate the value of the work satisfactorily done up to that time. Within fifteen (15) days after receipt of this information, the Engineer will request the State to pay him 90% of the value of the work thus estimated, less any previous payments made; and the Engineer, within ten (10) days after receipt of such payment from the State, will pay to the Contractor the amount thus received.

Final Payment: Upon verification of the satisfactory completion of all work whatsoever required, the Contractor shall furnish to the Engineer satisfactory evidence that all just liens, claims and demands for rental of equipment, labor and material, arising out of such work, are fully satisfied, and that all of the work is fully released from liens, claims and demands, whether just or otherwise. Within fifteen (15) days after receipt of such evidence, the Engineer will request the State to pay him the total value of all work satisfactorily done, less any payments previously made, and within ten (10) days of receipt of this Final Payment from the State, the Engineer will pay to the Contractor all amounts still outstanding and due him. All prior estimates and payments shall be subject to correction in this payment, which is throughout this Contract called the Final Payment.

### 5. CONTRACT NOT TO BE ASSIGNED

The Contractor shall give his personal attention constantly to the faithful prosecution of the work. He shall not assign or otherwise dispose of the Contract, or his right, title or interest in or to the same or any part thereof.

6. MODIFICATION OF CONTRACT

No modification of or change in this Contract shall be valid or enforceable against either of the parties unless it is in writing and signed by the parties or their duly authorized representatives.

7. DEFAULT OF CONTRACT

When, in the opinion of the Engineer, the project or any part thereof has been abandoned, or the Contractor is willfully violating any of the covenants of this Contract, then the Engineer may declare the Contractor in default of the Contract and notify him to discontinue the project. The Engineer may then call on the Surety to complete the project.

8. COMMENCEMENT OF WORK

Subject to weather and/or delays receiving required permits, the Contractor agrees to mobilize and actually start work on the Contract within twenty-one (21) consecutive calendar days from the date of the written notice to proceed.

9. PERFORMANCE CONTRACT BOND AND PAYMENT BOND

The successful Bidder, at the time of the execution of the contract, may deposit with the Engineer, a surety company bond for the satisfactory completion of the work and a surety company bond for the payment of all debts pertaining to materials, rental of equipment, and labor used or employed in the execution of the Contract. These bonds shall each be in an amount equal to the amount of the contract award and in a form acceptable to the Engineer.

The Surety must be a corporate surety licensed to sign surety bonds in the State of Connecticut.

10. INSURANCE

The Bidder, to whom the Contract has been awarded, shall furnish to the Engineer, prior to the commencement of any work, satisfactory proof that all provisions, herewith specified, relating to the Contractor's insurance have been fully complied with.

11. WAIVER OF RESPONSIBILITY

It shall be understood that preliminary data obtained by subsurface explorations prior to this Contract and presented for examination by prospective bidders is not intended as a warranty of actual subsurface conditions to be encountered. The Engineer will bear no responsibility for the accuracy or suitability of subsurface information made available for examination and the conditions indicated by such information shall not be used by the Contractor as possible cause for subsequent revisions or waivers in the Contract.

14. NON-LIABILITY OF THE STATE AND ENGINEER'S REPRESENTATIVES

No agents or employees of the Engineer, the State of Connecticut, all officers, agents and servants of the State of Connecticut, Commissioner of Transportation and his successors, shall be charged personally by the Contractor with any liability or held liable to him, under any terms or provisions of this Contract or because of its execution or attempted execution, or because of any breach thereof.

16. CONTRACTOR'S WARRANTIES

The Contractor represents and warrants:

That he is financially solvent; that he is experienced in and competent to perform the type of work contemplated by this Contract. That he has carefully examined the specifications, plans, and the site of the work, the general and local conditions, and other matters which may in any way affect the work or its performance.

**PROJECT NO. 161-143  
BRIDGE NO. 05501 IN WILTON, CONNECTICUT  
ARROWHEAD ROAD OVER NORWALK RIVER**

IN WITNESS WHEREOF, the parties have caused these presents to be signed and sealed the day and year first above written.

Witness

Witness Signature	By	Contractor Signature
Print Name and Title		Print Name and Title
Date		Date

Witness

Witness Signature	By	Engineer Signature
Print Name and Title		Print Name and Title
Date		Date

## SPECIFICATIONS FOR SUBSURFACE EXPLORATIONS

### SECTION 1 – GENERAL CONDITIONS

#### 1-1 Definitions

"Engineer" shall mean the firm of CME Associates, Inc., or their authorized representative.

"Commissioner of Transportation" shall mean the Commissioner of Transportation for the State of Connecticut, acting directly or through his duly authorized representative.

"Contractor" shall mean the person, persons, or corporation, which has executed the Contract with the Engineer for the proposed work.

"Inspector" shall mean the firm of Freeman Companies, the authorized representative of the Engineer assigned to the inspection of work and materials.

"State" and/or "Department" shall mean the State of Connecticut Department of Transportation.

"Town" and/or "Municipality" shall mean the municipality where the site is located.

#### 1-2 Authority and Duties of the Engineer

All work shall be performed to the satisfaction of the Engineer and at such times and places, by such methods and in such manner and sequence as he may require, and shall at all stages be subject to his inspection.

Upon request of the Contractor, the Engineer will confirm in writing any oral order, direction or requirement.

#### 1-3 Injury to Persons or Property

The Contractor shall be responsible for all injury to persons or damage to property, either directly or indirectly, that may result from his operations.

#### 1-4 Authority and Duties of the Inspector

The Inspector is the Engineer's representative in the field, responsible for oversight of the Contractor and ensuring that the work progresses in accordance with these Specifications. The Inspector has the authority to make decisions in the field regarding, but not limited to, boring locations and quantities of pay items. The Inspector will log the borehole and classify the soils.

#### 1-5 Insurance

With respect to the operations performed by the Contractor under the terms of this contract and also those performed for the Contractor by its subcontractors, the Contractor will be required to carry at its own cost and for the duration of this contract, and any supplements thereto, with the State of Connecticut, CME Associates, Inc., 3<sup>rd</sup> Parties necessary for successful completion, and Freeman Companies being named as additional insured parties in conjunction with paragraph (A) and (B) below, the following minimum insurance coverages at no direct cost to the State or CME Associates, Inc. The Contractor shall coordinate with Freeman Companies to ensure all appropriate insurance requirements are met. In the event the Contractor secures excess/umbrella liability insurance to meet the minimum requirements specified in

paragraphs (A) and/or (B) below, the State of Connecticut, CME Associates, Inc., and other 3<sup>rd</sup> parties necessary for successful completion of the work, shall be named as additional insured.

### **1-5a Insurance Provisions**

The State of Connecticut, its officers, officials, employees, agents, Boards and Commissions, CME Associates, Inc., Freeman Companies, and other 3<sup>rd</sup> parties for successful completion of work, shall be named as additional insured. The coverage shall contain no special limitations on the scope of protection afforded to the State.

The Contractor shall assume any and all deductibles in the described insurance policies.

The Contractor's insurers shall have no right of recovery or subrogation against the State and the described insurance shall be primary coverage.

Any failure to comply with the claim reporting provisions of the policy shall not affect coverage provided to the State.

Each required insurance policy shall not be suspended, voided, cancelled or reduced except after 30 days prior written notice by certified mail has been given to the State.

"Claims Made" coverage is unacceptable, with the exception of Professional Liability.

The Contractor agrees that he/she will not use the defense of Governmental immunity in the adjustment of claims or in the defense of any suit, unless requested by the State.

#### **A. COMMERCIAL GENERAL LIABILITY**

The Contractor shall carry Commercial General Liability Insurance, including Contractual Liability Insurance, providing for a Combined Single Limit of one million dollars (\$1,000,000.00) for all damages arising out of bodily injury to or death of all persons in any one accident or occurrence, and for all damages arising out of injury to or destruction of property in any one accident or occurrence, and, subject to that limit per occurrence, a total (or aggregate) limit of two million dollars (\$2,000,000.00) for all damages arising out of bodily injury to or death of all persons and out of injury to or destruction of property during the policy period. Total/aggregate coverage shall be per project, purchase order or contract aggregate. Coverage shall include Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage.

#### **B. AUTOMOBILE LIABILITY**

The operation of all motor vehicles, including those hired or borrowed, used in connection with the Contract shall be covered by Automobile Liability Insurance providing for a total limit of one million dollars (\$1,000,000.00) Combined Single Limit per occurrence for all damages arising out of bodily injury to or death of all persons in any one accident or occurrence, and for all damages arising out of injury to or destruction of property in any one accident or occurrence. In cases where an insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least two million dollars (\$2,000,000.00). Coverage extends to owned, hired and non-owned automobiles. If the vendor/contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. When it is clearly established that no vehicle is used in the execution of the contract, then automobile coverage is not required. Contractor operations on airports that use vehicles on the air side require five million dollars (\$5,000,000.00) automotive coverage unless specifically modified by the State, and may require additional special vehicle coverage depending on the types of vehicles employed.

#### **C. RAILROAD PROTECTIVE LIABILITY (Not Applicable)**

When the Agreement requires work on, over or under the right of way of any railroad company, the Contractor shall provide, with respect to the operations that it or its subcontractors perform under the Agreement, Railroad Protective Liability Insurance for and on behalf of the railroad company as named insured, and the State named as additional insured, providing for coverage limits of (1) not less than Two Million Dollars (\$2,000,000) for all damages arising out of any one accident or occurrence, in connection with bodily injury or death and/or injury to or destruction of property; and (2) subject to that limit per accident, a total (or aggregate) limit of Six Million Dollars (\$6,000,000) for all injuries to persons or property during the policy period. If such insurance is required, the Contractor shall obtain and submit the minimum coverage indicated above to the State prior to the commencement of rail related work and/or activities and shall maintain coverage until the work and/or activities is/are accepted by the State.

#### D. VALUABLE PAPERS AND RECORDS (*Not applicable*)

The Contractor shall secure and maintain a Valuable Papers Insurance Policy at no direct cost to the State, until the complete design has been accepted by the State, and all original tracings, highway and bridge design computations, survey data, documents or data will have been returned to the State. This will assure the State that all records, papers, maps, statistics, survey notes, all tracings, highway and bridge design and other data or documents will be reestablished, recreated or restored if made unavailable by fire, theft, or any other cause. When survey data is furnished by the State it shall retain in its possession duplications of all survey plans and field notes. The Contractor shall retain in its possession duplications of all products of its work under this Agreement, if and when it is necessary for the originals to be removed from its possession during the time that this policy is in force. This policy shall provide coverage in the amount of Seventy-five Thousand Dollars (\$75,000) when the insured items are in its possession, and in the amount of Twenty Thousand Dollars (\$20,000) regardless of the physical location of the insured items.

#### E. WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY

With respect to all operations the Contractor performs and all those performed for the Contractor by subcontractor(s), the Contractor and subcontractor(s) if used, shall carry (1) Workers' Compensation Insurance at statutory coverage limits and, as applicable, insurance required in accordance with the U.S. Longshoremen and Harbor Workers' Compensation Act, in accordance with the requirements of the laws of the State of Connecticut, and of the laws of the United States respectively, and; (2) Employer's Liability Insurance (EL) with limits of insurance of not less than \$1,000,000 each accident for bodily injury by accident and \$1,000,000 each employee for injury by disease.

#### F. POLLUTION AND/OR ENVIRONMENTAL

The Contractor agrees to acquire and maintain pollution and environmental impairment coverage, if such insurance is applicable to the work performed by the Contractor under this agreement.

Failure of the Contractor to maintain insurance coverage in accordance with the terms of the agreement shall constitute a violation of the agreement and shall subject the Contractor to liquidated damages in the amount of ten percent (10%) of the total contract price, subject to the continued commercial availability of such insurance.

#### G. PROTECTION AND INDEMNITY INSURANCE FOR MARINE OPERATIONS IN NAVIGABLE WATERS (*Not applicable*)

If a vessel of any nature or kind is involved, the Contractor shall obtain the following insurance coverage:

Protection and Indemnity Coverage of \$300,000 per vessel or a limit equal to the value of hull and machinery, whichever is greater.

If there is any limitation or exclusion with regard to crew or employees under the protection and indemnity form, there must be a worker's compensation policy in effect, including coverage for operations under



admiralty jurisdiction with a limit of liability of \$300,000 per accident or to a limit equal to the hull and machinery, whichever is greater, or as otherwise required by statute.

#### H. CERTIFICATE OF INSURANCE

In conjunction with the above, the Contractor agrees to furnish to the State a Certificate of Insurance on a form acceptable to the State, fully executed by an insurance company or companies satisfactory to the State, for the insurance policy or policies required hereinabove, which policy or policies shall be in accordance with the terms of said Certificate of Insurance. In addition, the original Railroad Protective Liability Insurance Policy must be submitted to Amtrak prior to commencement of operations (*When Applicable*). The Contractor shall coordinate with Freeman Companies. to ensure all insurance requirements are met.

The Contractor shall produce, within five (5) business days, a copy or copies of all applicable insurance policies when requested by the State. In providing said policies, the Contractor may redact provisions of the policy that are proprietary. This provision shall survive the suspension, expiration or termination of this agreement/contract.

#### **1-5b – Additional Coverage**

Other types of coverage may be offered by the Contractor.

#### I. UMBRELLA LIABILITY:

In the event the Contractor secures excess/umbrella liability insurance to meet the minimum requirements specified in items A, B, C, D, E, F, G, and H, the State of Connecticut, Freeman Companies, and CME must be named as Additional Insured. The State of Connecticut must be the Named Insured if a separate umbrella policy is obtained to supplement the coverage specified for item A.

#### **1-5c – Certificate of Insurance**

The Contractor agrees to furnish to the Engineer a Certificate of Insurance in conjunction with Items A, B, C, D, E, F, G, and H, above, fully executed by an insurance company or companies satisfactory to the State, for the insurance policy or policies herein above, which policy or policies shall be in accordance with the terms of the Accord form. For the Workers' Compensation Insurance and, if applicable, the U.S. Longshoremen and Harbor Workers' Compensation Act coverage, the policy number (s) and term of the policy (ies) shall be indicated on the Certificate of Insurance. Each insurance policy shall state that the insurance company agrees to investigate and defend the insured against all claims for damage, even if groundless.

#### **1-5d – Responsibility for Claims and Liability**

- (a) The Contractor shall indemnify and hold harmless, CME Associates, Inc, Freeman Companies, other 3<sup>rd</sup> Parties necessary for the successful completion of the work, and the State and its officers, representatives, agents, servants, employees, successors and assigns from and against any and all (1) Claims arising directly or indirectly in connection with the Agreement, concerning the negligent acts of commission or omission (collectively, the "Acts") of the Contractor or Contractor Parties, and (2) liabilities, damages, losses, costs and expenses, including but not limited to attorneys' and other professionals' fees, arising directly or indirectly in connection with Claims, Acts or the Agreement, to the extent of the Contractor's or Contractor Parties' negligence. The Contractor's obligations under this section to indemnify and hold harmless against Claims includes Claims concerning confidentiality of any part of or all of the Contractor's bid, proposal or any Records, any intellectual property rights, other proprietary rights of any person or entity, copyrighted or un-copyrighted compositions, secret

processes, patented or unpatented inventions, article or appliances furnished or used in the performance.

- (b) The Contractor shall not be responsible for indemnifying or holding the State harmless from any liability arising due to the negligence of the State or any third party acting under the direct control or supervision of the State.
- (c) The Contractor shall reimburse the State for any and all damages to the real or personal property of the State caused by the Acts of the Contractor or any Contractor Parties. The State shall give the Contractor reasonable notice of any such Claims.
- (d) The Contractor's duties under this section shall remain fully in effect and binding in accordance with the terms and conditions of the Agreement, without being lessened or compromised in any way, even where the Contractor is alleged or is found to have merely contributed in part to the Acts giving rise to the Claims and/or where the State is alleged or is found to have contributed to the Acts giving rise to the Claims.
- (e) The Contractor shall carry and maintain at all times during the term of the Agreement, and during the time that any provisions survive the term of the Agreement, sufficient general liability insurance to satisfy its obligations under this Agreement. The Contractor shall name the State as an additional insured on the policy. The Department shall be entitled to recover under the insurance policy even if a body of competent jurisdiction determines that the Department or the State is contributorily negligent.
- (f) This section shall survive the termination of the Agreement and shall not be limited by reason of any insurance coverage. 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. If this Agreement is between the State and a Municipality, the Municipality agrees that in the event of an adjustment of claims or in the defense of any suit between the State and the Municipality, the Municipality shall not use the defense of Governmental Immunity.

#### **1-6 Laws To Be Enforced**

The Contractor, at all times, shall observe and comply with all federal and state laws and local bylaws, ordinances, and regulations in any manner affecting the conduct of the work or applying to employees on the project, as well as all orders or decrees which have been promulgated or enacted, by any legal bodies or tribunals having authority or jurisdiction over the work, materials, employees for contract.

#### **1-7 Right of Way and Damage to Property**

An agreement for entry onto private property near the west abutment will be obtained by the Inspector and provided to the Contractor. The Contractor shall obtain all other necessary permits and licenses at his own expense from the authorities having jurisdiction.

The Contractor shall comply with all federal laws, state statutes and local ordinances of the city, town, or village in which the work is being done.

The Contractor shall be responsible for carrying out the work in accordance with the provisions of all permits.

The Contractor may occupy during his operations only those portions of streets or public places at the boring locations for which the required permits have been obtained by him or have been provided to him.

If the Contractor desires to use additional areas outside of those required for the borings, he shall arrange for such areas at his own expense.

The Contractor shall take every precaution against injuring paving, utilities, or private properties and shall promptly repair at his own expense any damage to such paving, utilities, or private property, to the satisfaction of the Engineer. The requirement includes the filling of all drill holes and the re-sodding of any areas where the grass is damaged. Property, which is damaged as the result of the Contractor's operations, shall be repaired at the Contractor's expense, to the satisfaction of the Engineer.

The location of all stationary and mobile equipment shall be subject to the approval of the Engineer and upon the completion of the Contractor's operations at each site, he shall remove equipment therefrom and shall clear the area of all debris and restore it to the condition existing before the start of his operations. All casings shall be withdrawn from the drill holes.

The Contractor shall carry on his operations without interference or delay to traffic, including marine. He shall furnish all labor, material, watchmen, barricades, signs, and lights necessary to maintain traffic, to protect his work and the public during the operations, and to comply with all orders of the Engineer, of the Corps of Engineers, U. S. Army, and of the U. S. Coast Guard pertaining to navigation, and of all other agencies having jurisdiction.

The Contractor is cautioned that there shall be no entry of his equipment or personnel upon private property until the Inspector or Engineer first notifies him that such entry is permissible in accordance with state statutes and state policy and until he, the Contractor, then informs the property owner that entry is being made pursuant to said notification. He shall, at all times, carry out his operations so as to inconvenience no resident at or near the working area. The Contractor shall make clear to all his personnel, the importance of proper public relations. The Engineer will not condone any rude or inconsiderate treatment of any citizens of the State by personnel employed on this project. The Engineer reserves the right to require the removal from the work of any persons or persons employed by the Contractor who has violated this section of the specifications, and such person or persons shall not be employed again thereon without the written consent of the Engineer.

### **1-8 Cleaning Up and Restoration**

After completing the work, the Contractor shall promptly remove all plant and other materials brought by him to the site and restore the site to its original condition.

Each borehole shall be restored to the condition that it was received in. This cost will be incidental to the work.

### **1-9 Progress and Time of Completion**

Subject to weather and/or delays receiving required permits, the field work under this Contract shall be commenced within twenty-one (21) consecutive calendar days from the date of written notice to proceed. Once the actual field work is started, subject to weather, it shall be prosecuted continuously to completion within Ten (10) business days.

If the quantities stated in the proposal are increased, as hereinafter provided, the number of calendar days allowed for completion will be similarly increased. This increase will be in the same proportion as the increase in the total payments to the Contractor above the amount of the executed Contract.

### **1-10 Liquidated Damages**

In case the Contractor shall fail to complete the work hereunder in accordance with the Contract within the time limit specified, he shall pay to the Engineer the sum of \$1,000.00 for each and every calendar day that the time consumed in said completion exceeds the above-mentioned time allowed for that purpose. This sum shall not be considered as a penalty, but as the liquidated damages that the State will suffer by reason of said delay. The Engineer shall deduct the amount of such liquidated damages from the moneys, which may be due or become due to the Contractor under this Contract.

#### **1-11 Health and Safety Plan**

The Contractor shall have a General Health and Safety Plan for the work to be performed and assumes full responsibility for site safety of the Contractor's personnel. The Department and/or the Engineer may request a copy of the health and safety plan. The purpose of this requirement is to assure proper and safe conduct of drilling operations. Items to be covered in the General Health and Safety Plan include, but are not limited to, potential exposure to soils and/or groundwater contaminated with various metals (e.g., lead), semi-volatile organic compounds (SVOCs), and petroleum hydrocarbons, as well as include general safety practices of drill rig movement and operation relative to:

- Protective clothing and gear
- Buried and overhead utilities
- Traffic Safety
- First Aid
- Equipment decontamination

#### **1-12 Work Day**

Typical allowable work hours for operations on paved surfaces of State roadways are from 9:00 a.m. to 4:00 p.m. This includes the time to set up and remove sign patterns and any other devices needed for traffic control. The Order of Conditions of the project specific Encroachment Permit may shorten or lengthen the typical allowable hours. The Contractor is required to obtain an Encroachment Permit from the District or any roadway use permit from the Town before performing any work within the State or Town ROW.

Typically, no on-road work is allowed during inclement weather. Work on Interstate Highways and other Limited Access Expressways may have further restrictions, one of which may be, work requiring the closure of 2 or more lanes may need to be performed at night.

Work which can be performed from outside of the paved surfaces of roadways and which does not require any traffic control on the adjacent roadway is typically allowed from 7:30 a.m. to 5:00 p.m. However, the typical allowable work hours may vary by season.

The Contractor will not be permitted to work on the following Legal Holidays; New Year's Day, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, Martin Luther King Day, Lincoln's Birthday, Columbus Day, and Veteran's Day. Also, the Contractor will not be permitted to work on the day before and the day after any of the above Legal Holidays on Interstate Highways, Limited Access Expressways, or Railroads.

No additional premium will be paid for work required outside of the normal work hours. No work of any kind shall be performed by the Contractor without prior approval of the Engineer.

A list of conditions expected to be included on the Contractor's Encroachment Permit is included in the appendices.

## SECTION 2 – TECHNICAL PROVISIONS

### 2-1 Scope of Work

The work to be done under this contract includes the furnishing of all material, labor, equipment, water supply and all else necessary for drilling and completing borings as described herein and shown on the Contract Plans.

The work is located on the route and in the general vicinity of Arrowhead Road over Norwalk River at Wilton, Connecticut.

### 2-2 Contract Plans

The work shall conform to the Work Plan prepared by Freeman Companies. and attached for reference.

### 2-3 Supervision

The work shall be performed under the supervision and direction of the Inspector. No subsurface explorations shall be made except in the presence of the Inspector. The Inspector will check the logs of the explorations to determine that the information designated herein is being obtained, and see that all samples are properly preserved, protected against damage, boxed and stored in a suitable place or immediately turned over to the Inspector as provided hereafter.

### 2-4 Existing Conditions

Before any subsurface exploration is performed, the Contractor shall contact “Call Before You Dig” at (860) 922-4455 to obtain a request number in accordance with State and Federal laws. The request number expires in 30 calendar days; therefore, the Contractor is responsible for maintaining an active request number. The Contractor will supply the Engineer with the request number(s) prior to the start of work. During the progress of the work, the Contractor shall cooperate with the owners of the utilities and permit their representative access to the work to determine if their utilities are being endangered in any way. Any relocation of borings or other subsurface explorations shall be done with the approval of the Inspector. In addition to contacting “Call Before You Dig”, the Contractor is required to notify Mr./Ms. Niyazi Alsaqri at (203) 389-3174, of the State of Connecticut Department of Transportation, to locate all State-owned utilities.

### 2-5 Contractor's Plant and Equipment – *When Applicable*

All plant, equipment, and methods to be used by the Contractor shall be subject to approval by the Engineer and Amtrak/MNRR (*when applicable for projects over railroads*) at all times during the work; however, approval of the equipment shall not be construed as including the approval of the performance thereof. Additional equipment and methods shall be provided when ordered by the Engineer if required to perform the work satisfactorily according to the Specifications. For work on water, the barge, boat, or other float shall be securely anchored.

If drilling equipment for track level work consists of hi-rail, truck mounted drilling equipment, only one track will be shut down at a time, as such the equipment must allow a train to pass on an adjacent track. All equipment used within the Amtrak/MNRR right-of-way must be pass inspection by the Railroad prior to mobilization to the site. Access for hi-rail equipment will be as directed by the railroad company.

The Contractor shall be required at all times when the work is in progress to have a minimum of **two** (2) drilling rigs with complete crews at the site and engaged in field operations. The Contractor shall submit in writing, upon request of the Engineer, a schedule of operations for the work. The Engineer shall be

notified at least 48 hours in advance of deviations from the schedule and such deviations shall be subject to the approval of the Engineer.

## **2-6 Cooperation by Contractor**

The Contractor shall at all times have on the work, as his agent, a competent superintendent or foreman thoroughly experienced in the type of work being performed, who shall receive instructions from the Inspector. The superintendent shall have full authority to execute the orders or directions of the Inspector, without delay, and to supply promptly such materials, equipment, tools, labor and incidentals as may be required.

## **2-7 Character of Workmen**

The Contractor shall employ only superintendents, foremen, and workmen as are careful and competent, and the Engineer may demand the dismissal of any person or persons employed by the Contractor in or about the work who misconduct himself or be incompetent or negligent in the due and proper performance of his or their duties, or neglects or refuses to comply with the directions given, and such person or persons shall not be employed again thereon without the written consent of the Engineer. Should the Contractor continue to employ or again employ such person or persons, the Engineer may withhold all payments, which are due or become due, or the Engineer may suspend the work until such orders are complied with.

## **2-8 Line and Grade**

Line and grade for the entire work will be established and laid out by the Engineer or Inspector. The Contractor shall execute the work to such line and grade.

## **2-9 Facilities to be Furnished by the Contractor– *When Applicable***

The Contractor shall construct his own access roads or trails as required with prior approval by the inspector/engineer. The cost of all these items shall be included in the unit bid prices.

## **2-10 Borings**

- a. Type: Borings shall be as necessary to take split-barrel samples in soil, and rock cores in underlying bedrock or boulders as directed by the Inspector.
- b. Number and Location: The approximate number and location of the borings required are shown on the attached Work Plan. The Inspector will establish the exact locations of borings in the field.
- c. Depth: Borings shall, in all cases, be made to such depths as directed by the Inspector.

## **2-11 General Procedure**

The sequence of borings and the type or types of samples to be taken at each hole shall be as directed by the Inspector. In general, borings will be as follows:

- a. Standard Penetration Test (SPT) and split-barrel sampling of soils will be taken in accordance with ASTM D 1586/AASHTO T 206 Standard Specification. Borings will be 3½" minimum diameter holes in which 1 1/2" I.D. split-barrel samples will be taken.
- b. Diamond core drilling for determination of depth to and soundness of bedrock will be in accordance with AASHTO T 225 Standard Specification, borings will be 3½" minimum diameter holes through which rock cores no less than 2<sup>1</sup>/<sub>8</sub>" can be recovered.

- c. Borings designated, as Soil Borings — Type A shall be cased holes performed in accordance with the requirements of these specifications for such work.
- d. For Soil Borings — Type B, the Contractor, at his option, may employ drilling methods involving uncased holes or use of hollow-stem augers or use of the methods required for Soil Borings — Type A or any combination of these methods, provided he can also perform split-barrel sampling and rock coring as required in the bore hole.

In boring methods using a heavy drilling fluid, the casing shall be driven to such depth below ground surface as required to maintain the top of bore holes. Thereafter, heavy drilling fluid may be used to maintain the holes. At the completion of such holes, the heavy drilling fluid shall be recovered by flushing or bailing in order that the true water level may be accurately determined.

Hollow-stem auger borings, which fail to penetrate to the specified depth, shall be continued by other methods, which may include use of the case methods described herein.

- e. No soil samples shall be obtained by driving and removing casing.

## 2-13 Casing

- a. Sinking: Casing shall be driven vertically through earth or other materials to such depth below the surface of the ground as required to maintain the sides of bore holes or as directed by the Engineer. The blows per foot required for the penetration of the casing shall be recorded and included in the Contractor's drill record. Simultaneous washing and driving of the casing will not be permitted, except by order of the Engineer, and where so permitted, the elevations between where water was used in driving the casing must be recorded.

It is the Contractor's responsibility when boulders or other obstacles are encountered to carry the drilling through or past such obstacles.

- b. Size: Casing will be flush-joint and at least 2 1/2" nominal inside diameter for boring in which 1 1/2" samplers are used and 3 1/2" nominal inside diameter pipe where 3" samplers are used. The casing shall also be 3 1/2" minimum nominal diameter for borings in which rock cores are taken.
- c. Weight of Hammer for Casing: The weight of hammer for driving the casing shall be 300 pounds and the drop shall be 24".
- d. Removal: The casing shall be removed on completion of the work and it shall remain the property of the Contractor. However, no casing shall be removed until measurements of the water level have been made and the Engineer has approved such removal. In addition, water level measurements shall be made at 24 hours and 48 hours after the casing has been removed, provided the hole has not collapsed and if it is safe to do so. Boreholes shall not be backfilled until the final water level measurement has been made. Casing may be removed upon completion of borings at which the Inspector directs that Observation Wells be installed.

## 2-14 Split-Barrel Sampling

Split-barrel samples shall be obtained at approximately 1-foot below the ground surface at the beginning of every change of stratum and at the intervals not to exceed 5 feet, unless otherwise directed by the Engineer. At these points, advancement of the borehole shall be stopped, and all material removed from inside the casing or borehole. The use of water for cleaning out between samples will generally be allowed, and approved chipping bits, augers, or sampling spoons may be used for cleaning the casing or borehole preparatory to taking split-barrel samples. The re-use of wash water will not be permitted except in unusual cases, and then only with the written approval of the Engineer. The pump used for wash water shall have sufficient capacity to adequately clean the boreholes before sampling the material that has been loosened.



The samples should be obtained by driving a split-barrel sampler 18 inches into the undisturbed material below the bottom of the casing or borehole.

When sampling in granular materials, the casing shall be kept full of water at all times, unless otherwise directed. The casing shall be filled with water and covered at the end of the working day, and the drop recorded when work is resumed.

Split-barrel samplers shall be equipped at the top with a reliable check valve and shall have a minimum inside sampling length of 18 inches. They shall have a minimum inside diameter of 1.5 inches. A recovery of less than 12 inches of soil in a split-barrel sampler shall not be considered an acceptable sample, and a second sample shall be taken immediately below the unsuccessful recovery, after first advancing the borehole into undisturbed material. If difficulty is experienced in the first attempt to recover a sample, the split-barrel sampler for the second attempt shall be equipped at the bottom with a basket shoe or other spring-type sampler retainer. Flap (trap) valves will be allowed only with the approval of the Engineer. If the earth is very compact and cannot be sampled using the split-barrel sampling methods required herein, the Contractor shall resort to coring methods to obtain a sample.

To facilitate determination of the relative resistance of the various strata, the 1.5 inch split-barrel sampler shall be driven by a 140-pound weight hammer having a 30 inch drop. The number of blows for each six inches of penetration shall be recorded.

#### **2-15 Abandoned Boring Holes**

Should the casing or apparatus be removed from a borehole, or should the hole be abandoned without the permission of the Inspector, or should a boring be started and for any reason not be carried to the depth required by the Inspector, or should the Contractor fail to keep complete records of materials encountered, or to furnish the Inspector the required samples and cores, then the Contractor will make an additional boring at a location selected by the Inspector, and no payment will be made for either the abandoned hole or any samples or cores obtained therein. However, the Contractor will make a record of abandoned bore holes and note thereon the reasons for the abandonment.

#### **2-16 Preserving Samples**

- a. Split-Barrel Samples: Representative specimens of each sample will be preserved. The containers for preserving drive samples shall be large-mouth, round, screw top, air tight, clear glass jars. Size of jars shall be 16 oz. for all drive samples. The specimens will be placed in the jars and tightly capped with gasket sealed caps as soon as taken in order to preserve the original moisture in the material. Samples which retain form upon removal from the sampling spoon shall not be jammed or forced into the jar. The jars shall be suitably boxed in cardboard boxes, marked and identified with legible labels as directed by the Inspector. These labels shall show the date, town, project name, road name, project number, station and offset, boring number, sample number, depth at which the sample was taken, the drillers' names, number of blows for each 6" of penetration and soil classification of the sample. The samples shall be protected against freezing and the jars against breaking.
- b. Rock Cores: The rock cores shall be placed in new wooden boxes so partitioned that the cores from each boring will be kept separate, and the cores shall be properly placed in the order in which they were removed from the core barrel and to show where portions, if any, were lost.

Rock cores shall be suitably labeled and arranged neatly in the boxes in the sequence in which the material was removed from the hole. Adjacent runs shall be separated by means of wood blocks, on which the elevation of the top and bottom of the run shall be clearly, accurately, and permanently marked.

The core boxes shall have a cover hinged at one edge and latched at the other edge and shall be substantially made to withstand normal abuse in shipment. The boxes shall be properly labeled, showing the date the core was taken, town, project name, road name, project number, station and offset, boring number, depth of core and drillers names.

Core boxes shall be substantially constructed of dressed lumber, about five (5) feet in length, and with a capacity for about twenty (20) feet of cores in each box. Core boxes shall be completely equipped with all necessary partitions, covers, hinges, latches for holding down the cover, and suitable identification plates and tags.

**All split barrel and rock core samples shall be delivered by the Contractor to Freeman Companies, 36 John St., Hartford, CT 06106, or where requested by the Engineer.**

## **2-17 Standby Time**

Certain projects may require the Contractor to suspend operations during the normal work day, after work has already begun for the day, due to unexpected restricted working hours imposed by the Department, Town, or for other reasons such as: traffic related issues (including air and rail traffic), unexpected weather conditions, tides or other conditions. Work on site of active construction projects may periodically require that the Contractor temporarily stop the boring operations. When a stoppage of work occurs for any reason, it will be determined by the Engineer as to whether or not it qualifies as Standby Time.

Standby Time will not be paid when a full scheduled work day cannot be performed due to predicted adverse weather conditions, lack of qualified laborers/operators or equipment breakdown.

Should the State or Engineer deem the equipment or workers to be unsafe, no Standby Time will be paid for the Contractor to furnish replacement workers or equipment.

Standby Time will not be paid to assemble or remove a traffic control pattern.

If more than one (1) drill rig is being used on a project this item will be paid per hour per drill rig when applicable, as determined by the Engineer.

If Traffic Control services consisting of State Troopers or Local Police have been scheduled and confirmed with the entity on a particular work day and a Trooper or Police Officer does not show up on site, Standby Time will only be paid from the time that the Contractor normally begins work on site to the time that the Contractor leaves the site, as directed by the Inspector.

## **2-18 Trafficpersons**

The Contractor shall provide the services of Trafficpersons of the type and number, and for such periods, for the control and direction of vehicular traffic and pedestrians in accordance with the State of Connecticut DOT Traffic Control Manual.

***The Contractor shall inform the Engineer of his scheduled operations and the number and type of Trafficpersons requested and/or required by permit.***

If the Contractor changes or cancels any scheduled operations without prior notice of same, as required by the agency providing the Trafficperson, and such that Trafficperson services are no longer required, the Contractor will be responsible for payment, at no cost to the Engineer, of any shown-up cost for any Trafficperson not used because of the change. Exceptions may be granted for adverse weather conditions and unforeseeable causes beyond the control and without the fault or negligence of the Contractor.

Trafficpersons shall consist of the following types:

**State Police Officers:** State Police Officers shall be uniformed off-duty sworn Connecticut State Troopers. Their services will also include the use of Official State Police vehicles and associated equipment.

State Police Officers will be used on all limited access highways. State Police Officers will not be used on non-limited access State highways. State Police Officers with Official State Police vehicles will be used at such locations and for such periods necessary to control traffic operations and promote increased safety to motorists through the construction sites. On limited access highways, State Police Officers will be utilized for regional work zone traffic safety and enforcement operations in addition to project-related work zone assignments.

**Uniformed Municipal Police Officers:** Uniformed Municipal Police Officers shall be sworn Municipal Police Officers or Uniformed Constables who perform criminal law enforcement duties for the Municipality in which the project is located. Their services will also include an official Municipal Police vehicle. Uniformed Municipal Police Officers will be used on all non-limited access highways. If the Town where work is being performed does not have a municipal police force then State Police Officers will be used on non-limited access State Highways and in some cases on local roads as determined by the Town's traffic authority.

Uniformed Municipal Police Officers and requested Municipal Police vehicles will be used at such locations and for such periods deemed necessary to control traffic operations and promote increased safety to motorists through the work site.

**Uniformed Flaggers:** Uniformed Flaggers shall be persons who have successfully completed flagger training by the American Traffic Safety Services Association, National Safety Council or other programs. Services of Uniformed Flaggers shall include the following equipment: garments (including high visibility headgear) so as to be readily distinguishable as a Flagger in accordance with Standard 6E-3 of the MUTCD, and these specifications, and a STOP/SLOW paddle that is at least 18 inches in width and with letters at least 6 inches high, mounted on a handle of sufficient length so that the bottom of the sign will be 6 feet above the ground, and conforms to Standard 6E-4 of the MUTCD and catalog number 387-80-9950 of the Catalog of Signs Connecticut DOT.

Uniformed Flaggers will only be used on non-limited access highways when authorized by the Traffic Control Manual. Uniformed Flaggers will be used at such locations and for such periods necessary to control traffic operations.

**General:** Uniformed Law Enforcement Personnel being used as Trafficpersons may conduct motor vehicle enforcement operations in and around work areas.

Trafficpersons shall wear a high visibility safety garment that complies with OSHA, MUTCD, ASTM Standards and the following:

Uniformed Law Enforcement Personnel shall wear the high visibility safety garment provide by their law enforcement agency. If no high visibility safety garment is provided, the Contractor shall provide the law enforcement personnel with a garment meeting the requirements stated below for the Uniformed Flaggers' garment.

Uniformed Flagger – The base material for the safety garment shall be a fluorescent color of orange, yellow, or strong yellow-green. The garment shall have vertical and horizontal stripe markings of contrasting color to the base material to enhance noticeability of the wearer. These markings shall be made of retroreflective or combination of retroreflective and non-retroreflective materials. The retroreflective material shall be orange, yellow, white, silver, strong yellow-green, or a fluorescent version of one of these colors and shall have a minimum width of 5/8". A minimum area of 40 square inches of retroreflective material must be visible when the garment is viewed from either the front or back and a minimum of 12 square inches of

retroreflective material must be visible from any other normal observation angle. The safety garment shall have the words "Traffic Control" clearly visible on the front and rear panels (minimum letter size 2 inches).

Worn/faded safety garments that are no longer highly visible shall not be used. The Inspector shall direct the replacement of any worn/faded garment at no additional cost to the State.

A Trafficperson shall assist in implementing the traffic control specified in the Maintenance and Protection of Traffic contained elsewhere in these specifications or as directed by the Engineer. Any situation requiring Trafficpersons to operate in a manner contrary to the Maintenance and Protection of Traffic Specification shall be authorized in writing by the Engineer.

Prior to the start of operations on the project requiring the use of Trafficpersons, a meeting will be held with the Contractor, Trafficperson agency, and Inspector to review the Trafficperson operations, lines of responsibility, and operating guidelines which will be used on the project.

In the event of an unplanned, emergency, or short-term operation, the Inspector may approve the use of properly clothed, non-certified Trafficpersons until such time as a certified Trafficperson may be obtained. In no case shall this temporary use exceed 8 hours for any particular operation.

## **2-19 Mobilization and Demobilization**

This item shall include the initial mobilization of the drill rig at the project site and the final demobilization after all borings are complete. The Contractor is required to furnish the drill rig and tools, in good condition and all other equipment necessary to carry on and complete the work properly. The Contractor may be required to mobilize and dismantle his equipment at existing highway structures, highway embankments, highway rights of way, off the traveled way, wooded areas and other difficult sites. The Contractor shall have the necessary equipment and personnel to assemble his drilling equipment at the desired locations.

The backfilling and casing, work hours, permits or any other requirements made by the Department, Town, or other public transportation authority shall be complied with by the Contractor and any costs shall be considered as part on the unit price of Mobilization and Demobilization and no additional compensation will be allowed. No additional compensation will be made to the Contractor for preparing the application for and acquiring the entry permit and its associated fee.

This item shall also include full compensation for all Traffic Control Equipment (such as; traffic control devices, cones, signs, etc.) required for the project.

All material or equipment furnished under this item shall remain the property of the Contractor and shall be maintained and disposed of by him. This item shall carry all charges incident to such plant setup and removal, in order that the charges need not be distributed among the more variable items of the contract.

## **2-20 Records**

The Contractor shall keep complete, neat, accurate and legible daily reports. The records shall be made at the site as the work progresses and shall be furnished to the Engineer at the completion of each day. The records shall contain the following information:

### **General**

- Name of Inspector, Contractor and Lead Driller
- Date of start and date of finish.
- Town, State Project Number, Route Number/Name, and Bridge Number when applicable
- Boring Number
- Quantities completed for each pay Item
- Field Receipts for Direct Costs

### Soil Borings

- ❑ Size & type of any Casing, Sampler, and Core Barrel used
- ❑ Type of hammer used to drive sampler and casing (drop, safety, or automatic); include hammer weight and drop height
- ❑ Depth of observed ground water, elapsed time of observation after completion of drilling; a water observation must be made in the borehole prior to backfilling
- ❑ Type and Number of each sample taken (All samples shall be numbered consecutively); include sample depth from ground surface
- ❑ Number of blows required for each 6-inch penetration of split-barrel sampler and for each 12-inch penetration of casing
- ❑ Total depth penetrated by split-barrel sampler and the measured length of sample recovered from the sampler
- ❑ Material Description of samples (as shown in sample log)
- ❑ End of boring depth
- ❑ Notes regarding any other pertinent information and remarks on miscellaneous conditions encountered such as: artesian conditions, loss of wash water, obstructions encountered, odors of recovered samples

### Rock Cores

- ❑ Type and size of core barrel and bit type (diamond/carbide)
- ❑ Length of core recovered for each length drilled, including number of pieces
- ❑ Depth at which rock was encountered
- ❑ Depth at each change in rock type
- ❑ End of boring depth
- ❑ Time required to core each foot
- ❑ Description of rock in accordance with the following classifications:
  - Kind:** shale, slate, limestone, sandstone, etc.
  - Condition:** broken, fissured, disintegrated, laminated, solid, etc.
  - Hardness:** Soft, medium, hard, and very hard

## **2-21 Submission of Reports and Samples**

A copy of the Contractor's daily reports shall be given to the Inspector daily. The Contractor shall provide typed boring logs of all subsurface explorations, referenced to ground surface with stratum classified as described above, together with all notes, remarks and pertinent information required by this Specification. The logs shall be submitted no later than five (5) days after the completion of the subsurface exploration program. The typed logs shall be mailed to the address provided by the Consultant.

The Contractor shall maintain possession of soil samples until the job is completed, unless otherwise directed by the Inspector. Borings for which soil samples are not turned over by the Contractor to the Inspector will be considered as not drilled and no payment will be made by the Engineer for those borings.

**All split barrel and rock core samples shall be delivered by the Contractor to Freeman Companies, 36 John Street, Hartford, CT 06106, or where requested by the Engineer.**

## **2-22 Measurement and Payment**

### a. General

The contract items include all services, labor, equipment, transportation, material and supplies for the complete work. Payment for these items shall include compensation for obtaining, packing, marking and submitting samples and recording and submitting data incidental to each item. No other payments for any specified or indicated work, nor for any work implied therefrom, shall be made. Payment will not be made for boreholes, bar soundings, pipe probings or other subsurface

explorations abandoned without authorization of the Inspector, or for such holes for which satisfactory samples and data are not submitted. The quantities stated in the proposal are approximate only and are for the specific purpose of comparing bids. The Engineer does not guarantee that these items or quantities will be performed. The Engineer and Inspector reserve the right to vary the quantities or delete items in their entirety, and the Contractor shall not be entitled to any extra payment due to such amended quantities or deleted items.

b. Soil Borings

1. This work will be measured for payment by the actual number of vertical linear feet bored for each accepted hole between the ground surface at the hole and the bottom of the accepted bore hole. This measurement shall include the portion(s) of the hole in boulder(s) less than two (2) feet in thickness, if any, but shall not include the portion of the hole in bedrock, if any.
2. The item will be paid at the contract unit price per linear foot for "3 1/2" Minimum Diameter Soil Borings", of the Type specified.

c. Split-Barrel Samples

1. The amounts to be included under the respective items for split-barrel samples of the size specified shall be the number of completed samples actually taken and accepted.
2. This work will be paid for at the contract unit price each for "Split-Barrel Samples" of the size specified, which price shall include compensation for all work incidental to the samples and not covered under other contract items.

d. Rock Coring

1. This work will be measured for payment by the actual number of vertical linear feet of acceptably drilled hole in bedrock and in individual boulders two (2) feet or more in thickness.
2. This work will be paid for at the contract unit prices per linear foot for "Rock Coring—NX", which price shall include compensation for all work incidental to the samples and not covered under other contract items.

e. Standby Time

1. The item Standby Time will be measured for payment by the actual number of hours each drill rig or testing rig is required by the Engineer to Standby. Standby Time will be measured to the nearest 15 minute interval.
2. The item will be paid at the contract unit price per hour for "Standby Time."

f. Mobilization and Demobilization

1. Method of Measurement: Unless otherwise directed by the Engineer or Inspector, this work will be conducted under one (1) mobilization and demobilization to/from the site, and will be measured for payment as such. This item will be due for payment at the time of final payment after removal of all materials and equipment from the project.
2. Basis for Payment: This work will be paid for at the contract per each rig unit price for "Mobilization and Demobilization". This item will also include full compensation for all traffic control devices, cones, signs, etc., and all other materials, equipment, tools, labor and work incidental thereto required for the work.

g. Trafficpersons

1. Only Trafficperson services in accordance with the State of Connecticut DOT Traffic Control manual will be measured for payment. Services of Trafficpersons will be

measured for payment by the actual number of hours for each person rendering services in accordance with these specifications. Services of Trafficpersons utilized by the Contractor not necessary for the proper completion of the project or at locations where traffic is unnecessarily restricted by the Contractor's method of operation, will not be measured for payment.

The minimum hours of payment for each Trafficperson supplied by a law enforcement agency or Trafficperson subcontractor in any one day shall be four hours. No Uniformed Trafficperson shall work more than twelve hours in any one day. In case such services are required for more than twelve hours, the Contractor may request additional Trafficpersons. In cases where the Trafficperson is an employee on the Contractor's payroll, payment for the Trafficperson will be made only for those hours when the Contractor's employee is performing Trafficperson duties.

Travel time charged by State Police Officers, up to one hour per day, will be measured for payment. No travel time will be allowed or paid for Uniformed Municipal Police Officers or Uniformed Flaggers. Safety garments and STOP/SLOW paddles will not be measured for payment.

2. The sum of money shown on the Estimate and in the itemized proposal as "Estimated Total for Traffic Person" for this work will be used as a budget price and payment will be made as described below. The estimated duration figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown the altered figure will be disregarded and the original price will be used to determine the total amount for the contract.

"Trafficperson" will be paid for at the actual hourly rate charged for the Trafficperson service (monthly statement or receipted bills) by the entity which actually provide the service plus a five percent (5%) markup. Use of a Municipal police vehicle will be paid at the actual rate charged by the Municipality plus a five percent (5%) markup. The rate charged by the Municipality for use of a Uniformed Municipal Police Officer and/or an official Municipal Police vehicle shall not be greater than the rate it normally charges others for similar services

**V LIST OF ATTACHMENTS**

1. Conditions Expected to be included in the Contractor's Encroachment Permit
2. Subsurface Exploration Work Plan
3. Traffic Control Plans for Maintenance Operations



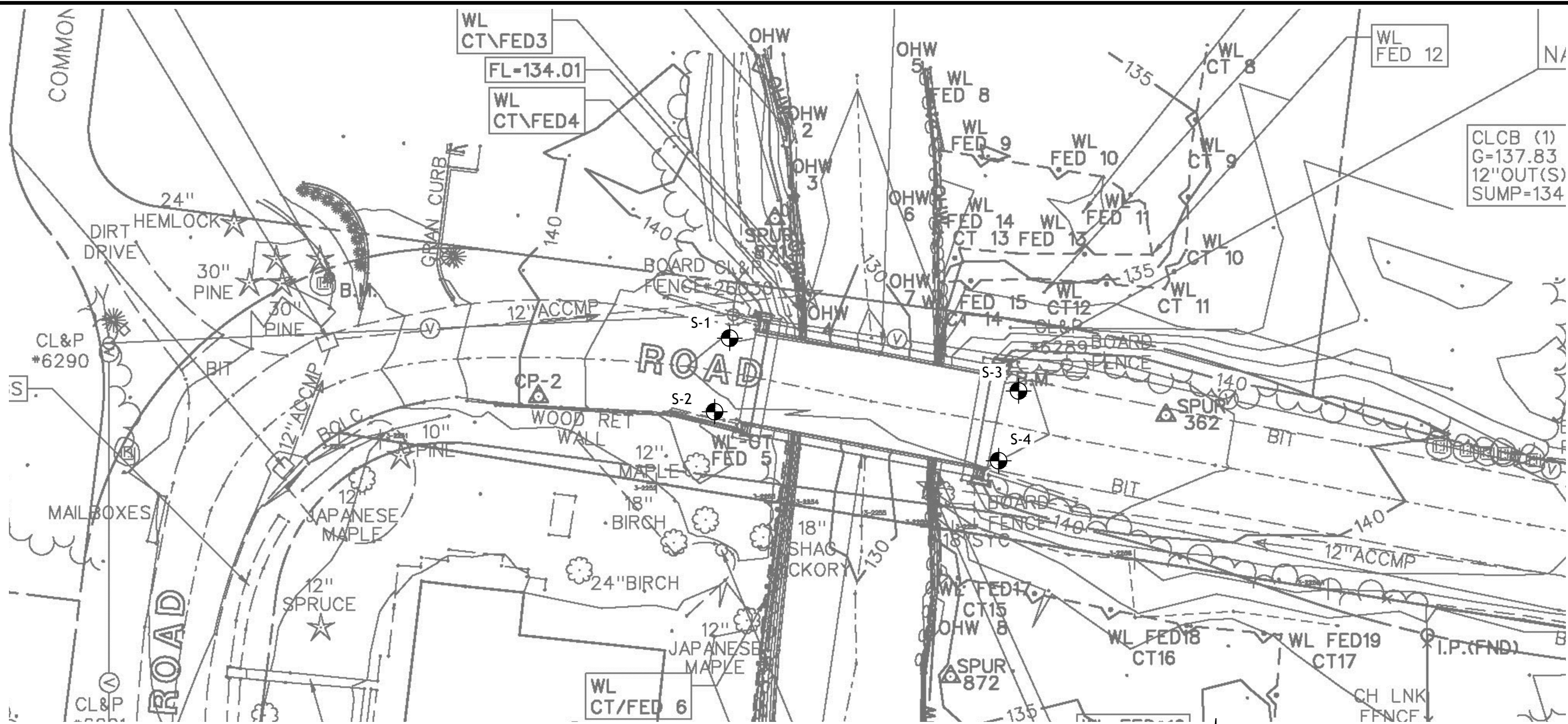
## **CONDITIONS EXPECTED TO BE INCLUDED IN THE CONTRACTOR'S ENCROACHMENT PERMIT**

*(Note: The Contractor must obtain an Encroachment Permit from the Department or any roadway use permit from the Town prior to the start of work)*

- a. A copy of the Encroachment Permit must be available on site at all times.
- b. Vehicular and pedestrian traffic must be adequately protected through the use of appropriate traffic control patterns. Uniformed police officers or personnel who are certified for traffic control to a level equivalent to the National Safety Council shall be utilized to direct traffic through the work area. All traffic control signing and appurtenances shall be in accordance with the latest edition of the "Manual on Uniform Traffic Control Devices" and must meet NCHRP 350 requirements. Traffic Plans are attached.
- c. Reduced work hours may be required as part of the Encroachment Permit.
- d. Holiday Restrictions: No permit work within the highway right of way will be permitted the day before a legal holiday and no work shall be resumed until 12:00 noon the day following the holiday, unless otherwise approved or indicated. Weekends shall be considered as part of the holiday when the legal holiday falls on a Friday or Monday.
- e. Vehicles must be parked off the roadway whenever possible to avoid impeding traffic flow or distracting the traveling public.
- f. Appropriate work zone signs must be set out to alert the traveling public of activity in the area.

**SUBSURFACE EXPLORATION WORK PLAN**

Freeman Companies, LLC. x:\Proposal\2020\0407P\_161-143 Bridge 05501 Arrowhead Rd\_Wilton\_CME\GEO Drawings\2020-0409P - Wilton, Lovers Lane.dwg Apr 28, 2020-3:53pm Plotted By: tta



CLCB (1)  
G=137.83  
12"OUT(S)  
SUMP=134

**LEGEND:**

S-1 PROPOSED TEST BORINGS

**NOTES:**

1. EACH TEST BORING SHALE EXTEND TO BEDROCK (ESTIMATED AVERAGE DEPTH = 70 FT), AND INCLUDE A 10-FOOT-LONG NX-SIZE ROCK CORE.
2. TWO DRILLING RIGS OPERATING SIMULTANEOUSLY ARE REQUIRED.
3. BASE PLAN BY CME ASSOCIATES, INC. (A CHA COMPANY)

**SUBSURFACE EXPLORATION LOCATION PLAN**  
**BRIDGE 05501 - ARROWHEAD ROAD OVER NORWALK RIVER**  
**STATE PROJECT No. 161-143**  
**WILTON, CONNECTICUT**

**FREEMAN**  
**COMPANIES**  
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES  
**FREEMAN COMPANIES, LLC**  
 36 JOHN STREET  
 HARTFORD, CT 06106  
 WWW.FREEMANCOS.COM  
 TEL: (860)251-9550  
 TOLL FREE: (800)604-5141  
 FAX: (860)986-7161  
**ELEVATE YOUR EXPECTATIONS**

No.	Date	Description

REVISIONS

DRAWN: T.T.  
 CHECKED: N.W.  
 APPROVED: N.W.  
 SCALE:  
 PROJECT NO.: 2020-0407P  
 DATE: 04/27/2020

SHEET NO.

**TRAFFIC CONTROL PLANS FOR MAINTENANCE AND PROTECTION OF TRAFFIC**

## **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 a safer and more 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 or is within the clear zone. 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 in order to command respect from the motorist.

Lane reduction tapers should be placed so that the entire length of the taper is installed on a tangent section of roadway and the entire taper area can be seen by the motorist.

All existing conflicting signs shall be removed, covered with an opaque material, or turned so that they are not legible to oncoming traffic prior to implementing a traffic control pattern. The existing signs shall be uncovered or reinstalled once the pattern is removed.

A buffer area should be provided during installation of a traffic control pattern and maintained for the duration of the work. The buffer area shall be free of any equipment, workers, materials, and parked vehicles.

Construction Traffic Control Plans 19 through 25 should be used for moving operations such as line striping, rumble strips, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns are not required for vehicles on an emergency patrol type activity or for a short duration stop of up to one hour, as long as the equipment is contained within the shoulder. Flashing lights, arrow boards, truck-mounted or trailer-mounted impact attenuators, and appropriate Trafficperson(s) shall be used when required.

In a situation not adequately covered by the Construction Traffic Control Plans, the Contractor shall contact the Engineer for assistance prior to setting up a traffic control pattern.

### **Placement of Signs**

Signs shall be placed in a position that allows 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 Construction Traffic Control Plans**

The Construction 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.

The proper application of the Construction Traffic Control Plans and installation of traffic control devices is dependent upon actual field conditions.

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.

Adjustments to the Construction Traffic Control Plans shall only be made at the direction of the Engineer.

Table 1 indicates the minimum taper lengths required for a lane closure based on the posted speed limit and lane width of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the Construction Traffic Control Plans cannot be achieved.

**Table 1 – Minimum Taper Length**

POSTED SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE (FEET)	
	FREEWAYS	SECONDARY ROADS
30 OR LESS	180	165
35	245	225
40	320	295
45	540	495
50	600	550
55	660	605
65	780	715

The following Sections 1 through 10 shall be utilized when applicable:

## **1. Work Zone Safety Meetings**

- 1.a) Prior to the commencement of work, a Work Zone Safety Meeting shall be conducted with representatives from 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. DOT Traffic Engineering shall be invited to the Work Zone Safety Meeting. 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 shall include:
  - i. Review Project scope of work and time;
  - ii. Review Section 1.08, Prosecution and Progress;
  - iii. Review Section 9.70, Trafficpersons;
  - iv. Review Section 9.71, Maintenance and Protection of Traffic;
  - v. Review Contractor's schedule and method of operations;
  - vi. Review special concern areas: ramps, turning roadways, medians, lane drops, etc.;
  - vii. Open discussion of work zone questions and issues;
  - viii. Discussion of review and approval process for changes in Contract requirements as they relate to work zone areas.

## **2. General**

- 2.a) Traffic control patterns shall only be installed if the required minimum number of signs, traffic cones, traffic drums, and other equipment (i.e. one Arrow Board for each lane closed, two Truck-Mounted or Trailer-Mounted Attenuators (TMAs), Changeable Message Sign, etc.) are on Site.
- 2.b) The Contractor shall have spare maintenance and protection of traffic equipment (TMAs, Arrow Board, Changeable Message Sign(s), construction signs, traffic cones, traffic drums, etc.) available at all times in case of mechanical failures, etc. Spare maintenance and protection of traffic equipment installed as a result of a sudden equipment breakdown shall be replaced by the Contractor 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 lost time.
- 2.d) In cases of differences of opinion between the Contractor and the Inspection staff, the Contractor shall follow the directions of the Engineer. 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.

### **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 end of the work area, or traffic control pattern, and proceeding back toward the advance warning signs.
- 3.c) Stopping traffic may be allowed within the allowable hours stated in Section 1.08.04:
  - i. For those activities stated within the Contract.
  - ii. During paving, milling operations, or similar activities where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway so traffic does not travel across the longitudinal joint or difference in roadway elevation.
  - iii. To move slow moving equipment across live traffic lanes into the work area.
- 3.d) The Contractor shall adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
- 3.e) 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 with or exiting from the mainline traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.
- 3.f) Workers are prohibited from crossing the travel lanes on limited access roadways 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.

### **4. Implementation of Rolling Road Block (RRB)**

- 4.a) Temporary road closures using a 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:
  - i. Refer to the Limitation of Operations Chart provided in Section 1.08.04 for the hours allowed for implementing a RRB operation. The Contractor shall only implement a RRB operation within the hours shown in the Chart.
  - ii. In areas with good sight lines and full shoulders, signs on the side of the road opposite the traffic pattern should be installed in a separate operation.
  - iii. 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 TMAs and police vehicles, leave the shoulder or on-ramp and accelerate



- to normal roadway speeds in each lane. The vehicles will then position themselves side by side and decelerate to the RRB speed on the highway.
- iv. A Pre-Warning Vehicle, as specified elsewhere in the Contract, shall be used to advise the motorists that sign pattern installation or removal is underway.
  - v. The RRB duration shall not exceed 15 minutes from the start of the traffic block until all lanes are opened as designated in the Limitation of Operations 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 District.
  - vi. RRB shall not be used 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. TMAs (and State Police if available) shall be used to protect the workers installing the taper in the additional lane.
  - vii. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days shall be allowed for review and comment by the District.
  - viii. The Engineer and the Contractor will review and discuss the RRB procedures (including any revisions) 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, then the work will proceed as recommended by the Department. Any unresolved issues shall be addressed the following day.

## **5. Use of Arrow Boards**

- 5.a) On limited access roadways, one Arrow Board shall be used for each lane that is closed. The Arrow Board shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the Construction Traffic Control Plans. Additional Arrow Boards shall be deployed if sight distances are limited.
- 5.b) On non-limited access roadways, the use of an Arrow Board for lane closures is optional. The roadway geometry, sight distance, and traffic volume shall be considered in the decision to use the Arrow Board.
- 5.c) A vehicle displaying an arrow board shall be equipped with high-intensity rotating, flashing, oscillating, or strobe lights.
- 5.d) The flashing arrow mode shall be used for lane closure (merge) tapers.

- 5.e) The flashing arrow mode shall not be used for temporary alternating one-way traffic operations or to laterally shift lanes of traffic.
- 5.f) The flashing double arrow mode shall only be used for closing a center lane on a multilane roadway where adjacent left and right lanes remain open.
- 5.g) For shoulder work or roadside work near the shoulder, the Arrow Board shall be positioned in the shoulder and the flashing alternating diamond mode should be used.
- 5.h) The flashing alternating diamond caution mode should also be used when supplemental Arrow Boards are positioned in an already closed lane.

## **6. Use of Truck-Mounted or Trailer-Mounted Impact Attenuators (TMAs)**

- 6.a) On limited access roadways, lane closures shall use a minimum of two TMAs to install and remove traffic control patterns. If two TMAs are not available, then the pattern shall not be installed.
- 6.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 shall be considered in the decision to utilize the TMAs.
- 6.c) On limited access roadways, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane to establish the advance and transition signing. The Arrow Board mounted on the TMA shall be in the arrow mode when taking the lane. The sign truck and workers shall be at sufficient distance 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 Portable Changeable Message Signs, signs, Arrow Boards, and cones/drums are installed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when traveling in the closed lane.
- 6.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 Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when in the closed lane.
- 6.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 Section 18.06. 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) shall be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

- 6.f) TMAs will be paid for in accordance with how the unit is used. If it is used as a TMA and is in the proper location as specified, then it will be paid for at the specified hourly rate for Truck-Mounted or Trailer-Mounted Impact Attenuator. When the TMA is used as an Arrow Board, it will be paid for at the daily rate for Arrow Board. If a TMA is used to install and remove a pattern and is also used as an Arrow Board in the same day, then the unit will be paid for 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 an Arrow Board during the same day, then the unit will only be paid for at the daily rate as an Arrow Board.

## **7. Use of Traffic Drums and Traffic Cones**

- 7.a) On limited-access highways, ramps, and turning roadways:
- i. Traffic drums shall be used for taper channelization.
  - ii. Traffic drums shall be used to delineate raised catch basins and other hazards.
  - iii. Traffic cones with a minimum height of 42 inches may be used in place of drums in the tangent section of a closed lane or shoulder.
  - iv. Traffic cones less than 42 inches in height shall not be used.
- 7.b) On all roadways:
- i. 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.
  - ii. Traffic cones shall not be left unattended.
  - iii. Traffic cones with a minimum height of 42 inches shall be used when the posted speed limit is 45 MPH or above.
- 7.c) Typical spacing of traffic drums and/or cones shown on the Construction Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

## **8. Use of Barricade Warning Lights**

- 8.a) Barricade Warning Lights may be installed on channelizing devices when used in a merge taper. The Barricade Warning Lights shall flash in a sequential pattern when used in a merge taper. The successive flashing shall occur from the upstream end (beginning) of the merge taper to the downstream end (end) of the merge taper.
- 8.b) Type C Barricade Warning Lights may be used at night to delineate the edge of the travel way.
- 8.c) Type B Barricade Warning Lights shall be used on post-mounted advanced warning signs.

## **9. Use of Portable Changeable Message Signs (PCMS)**

- 9.a) On limited access roadways, one PCMS shall be used in advance of the traffic control pattern for all lane closures. Prior to installing the pattern, the PCMS shall be installed and in operation, displaying the appropriate lane closure information. The PCMS shall be positioned ½ to 1 mile ahead of the start of the lane closure taper. If the distance to the nearest exit ramp is greater than the specified ½ to 1 mile distance, then an additional PCMS shall be positioned a sufficient distance ahead of the exit ramp (and before the previous on-ramp where practical) to alert motorists to the work and therefore offer them an opportunity to take the exit.
- 9.b) On non-limited access roadways, the use of PCMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to use the PCMS.
- 9.c) PCMS should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the PCMS, it should be placed off the shoulder and outside of the clear zone. If a PCMS has to be placed on the shoulder of the roadway or within the clear zone, it should be placed on the paved shoulder with a minimum of five traffic drums placed in a taper in front of it to delineate its position. The taper shall meet minimum distance requirements for a shoulder closure. The PCMS shall be protected if it is used for a continuous duration of 36 hours or more.
- 9.d) The PCMS shall be removed from the clear zone and have the display screen cleared and turned 90 degrees away from the roadway when the PCMS is no longer required.
- 9.e) The PCMS should not be used within 1,000 feet of an existing PCMS or Variable Message Sign (VMS).
- 9.f) A PCMS message shall:
  - i. consist of no more than two phases;
  - ii. contain no more than three lines of text per phase;
  - iii. have no more than eight characters per line, including spaces.
- 9.g) The PCMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs. The PCMS should not be used for generic messages (ex.: Road Work Ahead, Bump Ahead, Gravel Road, etc.) or for messages that need to be displayed for long periods of time, such as during stage construction. These types of messages should be displayed with construction signs. Special signs shall be coordinated with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.
- 9.h) Typical messages that are allowed on the PCMS are shown below. Approval must be received from the Office of Construction for any message(s) different than the typical messages shown in Figure 1.
- 9.i) All messages shall comply with the information provided in Tables 2 and 3.

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Message No.</u>	<u>Phase 1</u>	<u>Phase 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	EXIT XX CLOSED	USE EXIT YY
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	EXIT XX CLOSED USE YY	FOLLOW DETOUR
5	RIGHT LANE CLOSED	MERGE LEFT	13	2 LANES SHIFT AHEAD	USE CAUTION
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	3 LANES SHIFT AHEAD	USE CAUTION
7	RIGHT LANE CLOSED	REDUCE SPEED			
8	2 RIGHT LANES CLOSED	REDUCE SPEED			

**Figure 1: Typical PCMS Messages**

**Table 2: Acceptable Abbreviations**

Word Message	Standard Abbreviation	Word Message	Standard Abbreviation
Access	ACCS	Minimum	MIN
Afternoon / Evening	PM	Minor	MNR
Ahead	AHD	Minute(s)	MIN
Alternate	ALT	Monday	MON
Avenue	AVE, AV	Morning / Late Night	AM
Bicycle	BIKE	Mount	MT
Blocked	BLKD	Mountain	MTN
Boulevard	BLVD	National	NATL
Bridge	BR	Normal	NORM
CB Radio	CB	North	N
Center	CTR	Northbound	NBND
Center	CNTR	Oversized	OVRSZ
Chemical	CHEM	Parking	PKING
Circle	CIR	Parkway	PKWY
Compressed Natural Gas	CNG	Pavement	PVMT
Condition	COND	Pedestrian	PED
Congested	CONG	Place	PL
Construction	CONST	Pounds	LBS
Court	CT	Prepare	PREP
Crossing	XING	Quality	QLTY
Crossing (other than highway-rail)	XING	Right	RT
Downtown	DWNTN	Road	RD
Drive	DR	Roadwork	RDWK
East	E	Route	RT, RTE
Eastbound	EBND	Saint	ST
Electric Vehicle	EV	Saturday	SAT
Emergency	EMER	Service	SERV
Entrance, Enter	ENT	Shoulder	SHLDR
Exit	EX	Slippery	SLIP
Express	EXP	South	S
Expressway	EXPWY	Southbound	SBND
Feet	FT	Speed	SPD
Freeway	FRWY, FWY	State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**
Friday	FRI	Street	ST
Frontage	FRNTG	Sunday	SUN
Hazardous	HAZ	Telephone	PHONE
Hazardous Material	HAZMAT	Temporary	TEMP
High Occupancy Vehicle	HOV	Terrace	TER
Highway	HWY	Thruway	THWY
Highway-Rail Grade Crossing	RR XING	Thursday	THURS

Hospital	HOSP	Tons of Weight	T
Hour(s)	HR, HRS	Traffic	TRAF
Information	INFO	Trail	TR
International	INTL	Travelers	TRVLRS
Interstate	I-	Tuesday	TUES
Junction / Intersection	JCT	Turnpike	TPK
Lane	LN	Two-Way Intersection	2-WAY
Left	LFT	Two-Wheeled Vehicles	CYCLES
Liquid Propane Gas	LP-GAS	Upper	UPR
Local	LOC	US Numbered Route	US
Lower	LWR	Vehicle(s)	VEH, VEHS
Maintenance	MAINT	Warning	WARN
Major	MAJ	Wednesday	WED
Maximum	MAX	West	W
Mile(s)	MI	Westbound	WBND
Miles Per Hour	MPH		

\*\* A space and no dash shall be placed between the abbreviation and the number of the route.

**Table 3: Unacceptable Abbreviations**

<b>Unacceptable Abbreviation</b>	<b>Intended Word</b>	<b>Common Misinterpretation</b>
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

## **10. Use of State Police Officers**

- 10.a) State Police may be used only on limited access highways and secondary roadways that are under their primary jurisdiction. A minimum of one Officer may be used per critical sign pattern; however, a State Police presence is not required. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Left lane closures may also be implemented without State Police presence in areas with only moderate traffic and wide, unobstructed medians. It may be desirable to have a State Police presence, when available, under specific situations, such as 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.
- 10.b) If a State Police presence is provided, once the pattern is in place, the State Police Officer should be positioned in a non- hazardous location in advance of the pattern to provide advance warning to the motorist. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall reposition so that they are located prior to the backup. The State Police Officer should not be located immediately behind or within the roll ahead area of any TMA or within the work zone buffer area. The State Police Officer shall not be positioned in such a way that the State Police Officer obstructs any construction warning signs or PCMS from view of the motorist.
- 10.c) Other functions of the State Police Officer(s) may include:
- i. Assisting construction vehicles entering and exiting the work area.
  - ii. Enforcement of motor vehicle laws within the work area, if specifically requested by the Engineer.
- 10.d) State Police Officers assigned to a work site shall take direction from the Engineer.

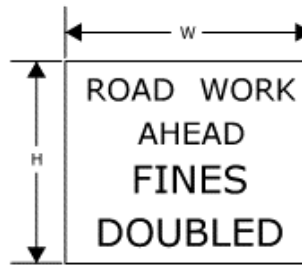


## REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY AND MUNICIPAL ROAD IN CONNECTICUT WHERE THERE ARE WORKERS PRESENT ON THE HIGHWAY.

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.

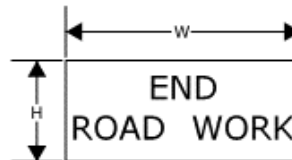
	W	H
31-1906	48"	42"
31-1907	60"	54"



## "END ROAD WORK" SIGN

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

	W	H
80-9606	36"	18"
80-9612	48"	24"



CONSTRUCTION TRAFFIC CONTROL PLAN  
ROAD WORK AHEAD  
SIGNS

SCALE: NONE

## 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 IN ADVANCE 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. TRAFFIC CONES AND PORTABLE CONSTRUCTION SIGNS SHALL NOT BE LEFT UNATTENDED.
5. ALL CONFLICTING 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 48 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  $\leq$  40 MPH).
8. IF THIS PLAN IS TO REMAIN IN OPERATION FROM SUNSET TO SUNRISE, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.
9. A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF MILE 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'
35	245'
40	320'
45	540'
50	600'
55	660'
65	780'

CONSTRUCTION TRAFFIC CONTROL PLAN

### NOTES

SCALE: NONE

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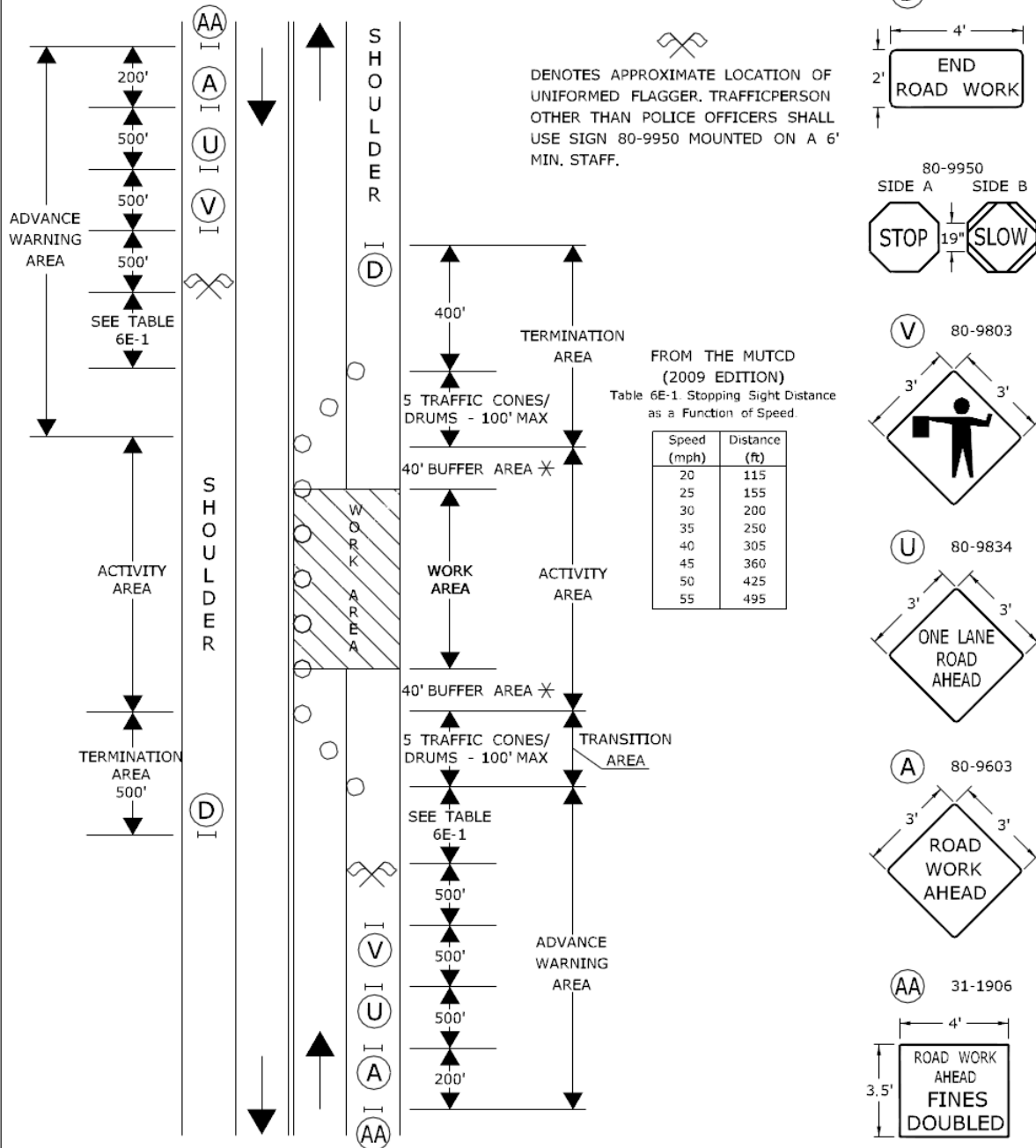
APPROVED

*Tracy L. Fogarty*  
PRINCIPAL ENGINEER

Tracy L. Fogarty, P.E.  
2019.05.13 06:47:47-0400

# WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE  
108 SQ. FT (MIN.)



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



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 13 - SHEET 1 OF 2**  
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION  
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APPROVED *Charles S. Harlow* Charles S. Harlow  
2012.06.05 15:55:23-04'00"  
PRINCIPAL ENGINEER

# WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE  
108 SQ. FT (MIN.)

## HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

**A. TO STOP TRAFFIC**

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND AIM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.



**B. TO DIRECT TRAFFIC TO PROCEED**

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.



**C. TO ALERT OR SLOW TRAFFIC**

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.



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



SCALE: NONE

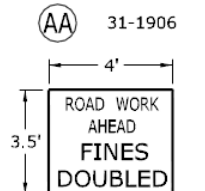
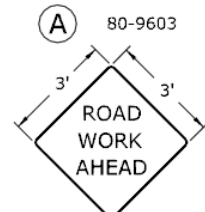
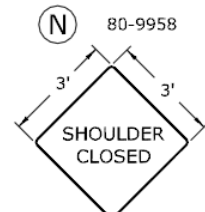
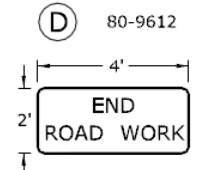
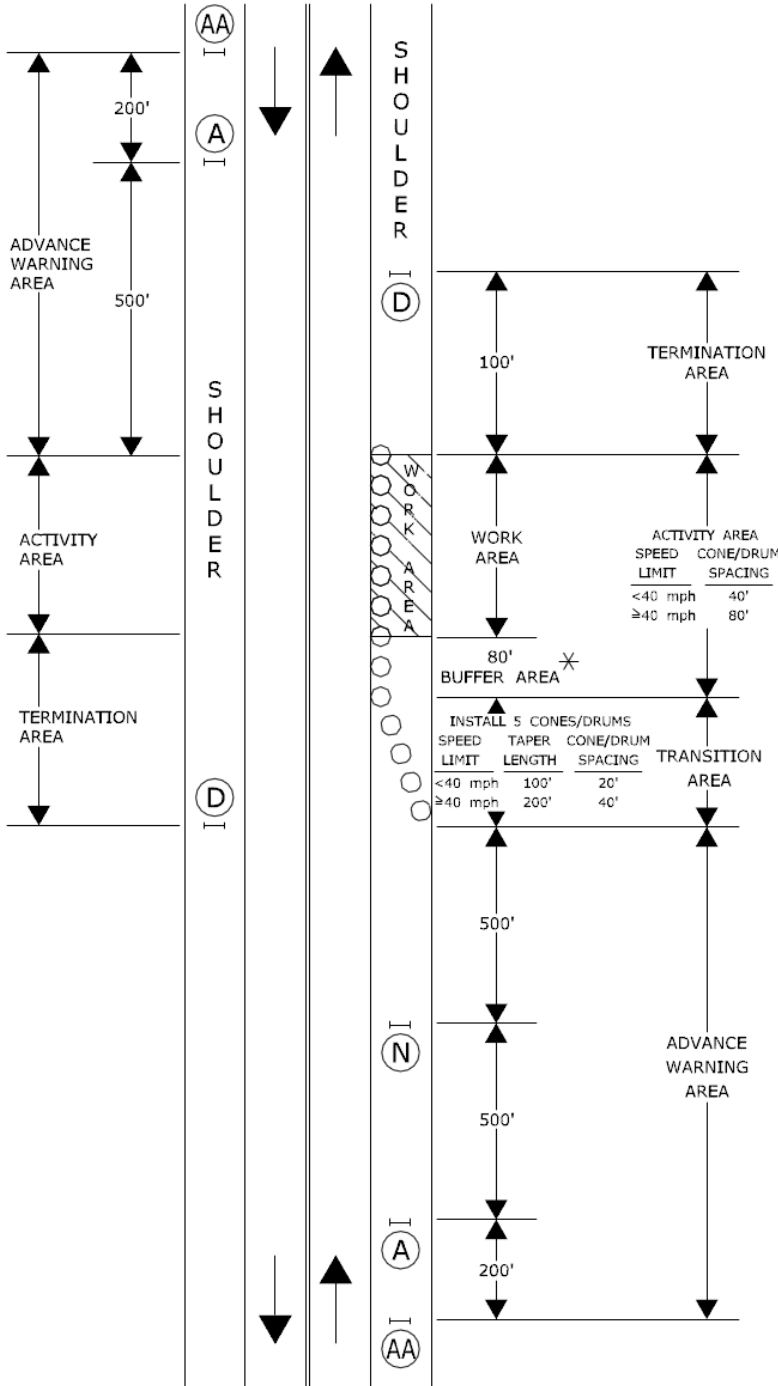
CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 13 - SHEET 2 OF 2**  
SEE NOTES 1, 2, 4, 6, 7, 8

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PRINCIPAL ENGINEER    Charles S. Harlow  
2012.06.05 15:55:45-04'00'

# WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE  
71 SQ. FT (MIN.)



SPEED LIMIT	CONE/DRUM SPACING
<40 mph	40'
≥40 mph	80'

INSTALL 5 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	100'	20'
≥40 mph	200'	40'

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



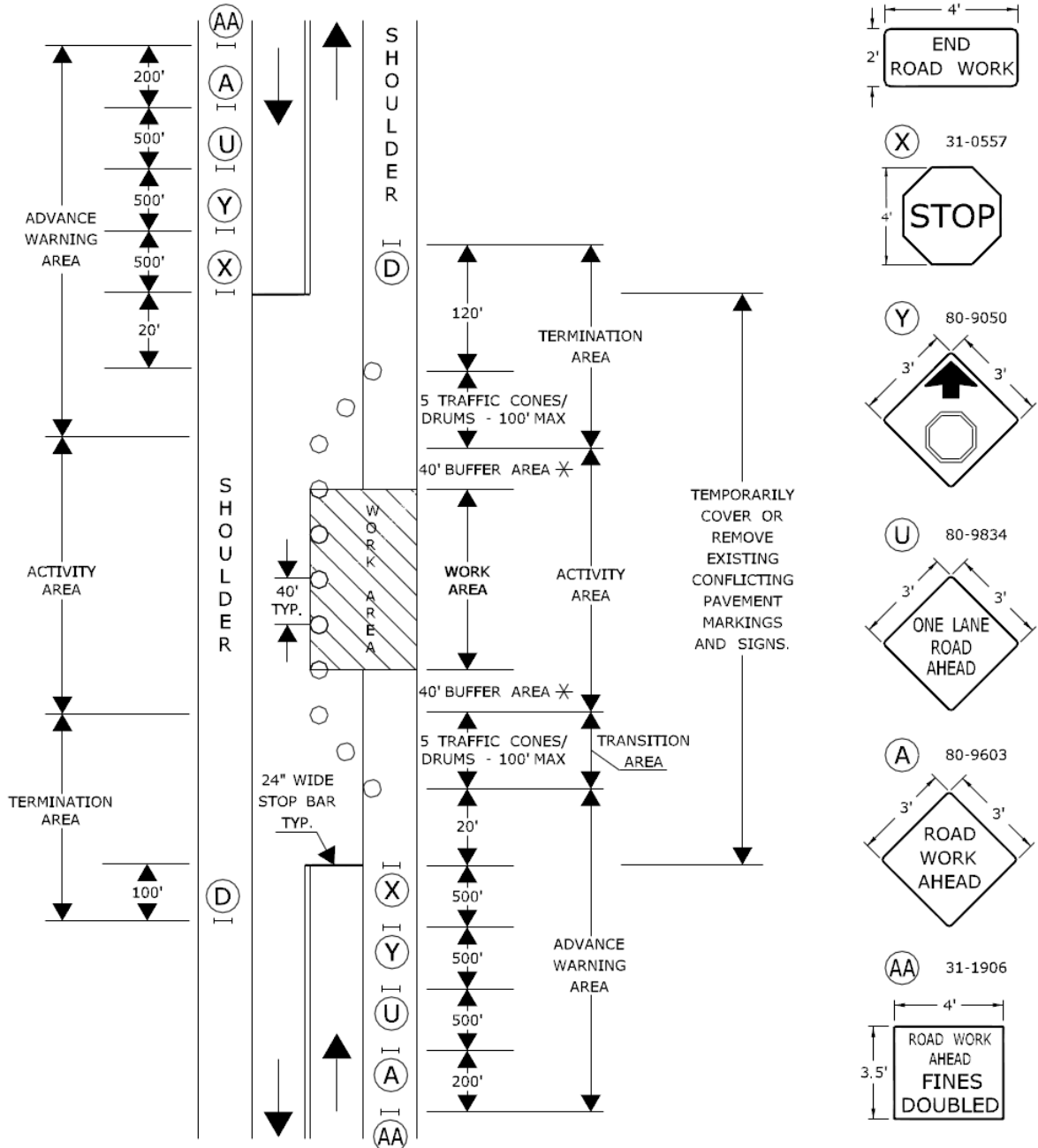
CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 14**  
SEE NOTES 1, 2, 4, 7, 8

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PRINCIPAL ENGINEER  
2012.08.05 15:56:09-04'00"

# WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY ALTERNATING ONE-WAY TRAFFIC OPERATIONS STOP SIGN CONTROL

SIGN FACE  
125 SQ. FT (MIN.)



- (D) 80-9612  
4' x 2' END ROAD WORK
- (X) 31-0557  
4' x 4' STOP
- (Y) 80-9050  
3' x 3' ONE LANE AHEAD
- (U) 80-9834  
3' x 3' ONE LANE ROAD AHEAD
- (A) 80-9603  
3' x 3' ROAD WORK AHEAD
- (AA) 31-1906  
4' x 3.5' ROAD WORK AHEAD FINES DOUBLED

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



CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 18**  
 SEE NOTES 1, 2, 4, 7, 8

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 2012.06.05 15:57:37-0400  
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