

BID SPECIFICATIONS
FOR
2020 ROADWAY IMPROVEMENT PROJECT
“CAMBRIDGE DRIVE NEIGHBORHOOD”

BID NO. 20-15



TOWN OF EAST HARTFORD
DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION
740 MAIN STREET
EAST HARTFORD, CT 06108

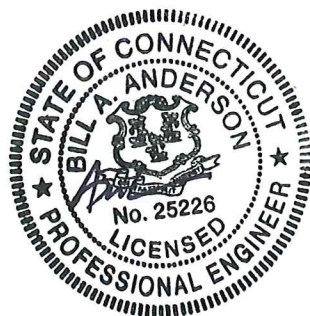


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BIDDING REQUIREMENTS

TOWN OF EAST HARTFORD, CONNECTICUT
INVITATION TO BID
BID NO. 20-15
2020 ROADWAY IMPROVEMENT PROJECT
“Cambridge Drive Neighborhood”

Work under this contract includes, but is not limited to, pavement reclamation, reconstruction, milling, paving, curb replacement, replacing catch basins, resetting and replacing drainage castings, frames, and grates, accessible curb ramp improvements, pavement markings, replacing and resetting signs, landscaping and other necessary appurtenances such as maintenance and protection of traffic.

Sealed Bids will be received at the office of the Purchasing Department, Town Hall, 740 Main Street, East Hartford, CT 06108 until 11:00 AM, March , 5, 2020 at which time and place said bids will be opened publicly and read.

The Town will conduct a NON-MANDATORY PRE-BID MEETING on, February, 20, 2020 AT 10:00 A.M. AT THE OFFICE OF VANASSE HANGEN BRUSTLIN, INC., 100 GREAT MEADOW ROAD, SUITE 200, WETHERSFIELD, CT. IN ORDER TO BE CONSIDERED AN OFFICIAL PLAN HOLDER AND ELIGIBLE BIDDER FOR THE PROJECT, THE PURCHASING AGENT MUST RECEIVE AN EMAIL INDICATING INTEREST IN BIDDING, COMPANY INFORMATION, AND MAIN CONTACT INFORMATION ON, OR BEFORE, Thursday, February, 20, 2020. All companies that send a representative to the non-mandatory pre-bid meeting will also be considered an official plan holder eligible to bid the project.

Requests for information (RFIs) will be accepted via email to the Town Engineer on or before Monday March, 2, 2020.

Drawings and Specifications will be available for review at the office of the Purchasing Agent, East Hartford Town Hall, 740 Main Street, East Hartford, CT. (Between the hours of 8:30 am to 4:30 pm, Monday through Friday) and on the Town of East Hartford’s Purchasing Website:
<http://www.easthartfordct.gov/bids>

IN ORDER TO BE CONSIDERED AN OFFICIAL PLAN HOLDER AND ELIGIBLE BIDDER FOR THE PROJECT, THE PURCHASING AGENT MUST RECEIVE AN EMAIL indicating interest in bidding, company information, and main contact information on, or before, Monday March, 2, 2020. All companies that register on the Town’s website to download the documents will also be considered official plan holders.

Bid security in the form of a 5% bid bond, payable to the Town of East Hartford, is required of all bidders and a 100% Performance Bond will be required of the awarded bidder.

Bid security in the form of a 5% bid bond, payable to the Town of East Hartford, is required of all bidders. A 100% Performance Bond and a Labor & Materials Bond will be required of the awarded bidder.

The Town reserves the right to reject any or all bids, or any part of all bids, to waive any informality, and reserves all other rights as detailed in the Contract Documents when such action is in the best interest of the Town. The Town is an equal opportunity employer. Contractor must comply with all Federal, State and Local requirements under this contract.

All bidders are requested to note that the award of this Contract is subject to the following conditions and contingencies:

1. The approval of such governmental agencies as may be required by law.

2. The appropriation of adequate funds by the proper agencies.

Douglas R. Wilson, P.E.
Town Engineer
(860) 291-7833
dwilson@easthartfordct.gov

Michelle Enman
Purchasing Agent
(860) 291-7270
menman@easthartfordct.gov



TOWN OF EAST HARTFORD, CONNECTICUT

STANDARD INSTRUCTIONS FOR BIDDERS

1. Sealed bid proposals will be received by the purchasing agent until the date and time indicated on the Invitation to Bid. Bids received later than the date and time specified will not be considered and will be returned unopened.
2. Bids are to be returned with the bid number prominently indicated on any other mailing envelope. The name and address of the bidder should appear in the upper left hand corner of the envelope.
Bids will not be accepted via fax or e-mail.
3. All proposals will be opened and read publicly and are subject to public inspection. Bidders may be present or represented at all openings. Bid results are mailed to all responding bidders.
4. Municipalities are exempt from any sale, excise or federal taxes. Bid prices must be exclusive of taxes and will be so construed.
5. The Town of East Hartford reserves the right to reject any or all bids or any part of all bids and to waive any informality when such action is in the best interest of the Town. The Town also reserves the right to extend by mutual consent an awarded bid when such action is in its best interest.
6. Bidders should familiarize themselves with all of the terms and conditions set forth in the bid specifications. Failure by the bidder to familiarize himself with these terms and conditions does not excuse the bidder from fulfillment of the bid specifications.
7. All entities doing business with the Town certify, upon acceptance of a bid and by virtue of their signature on that bid, that they have read, understood and will comply with the section of the Town's updated plan of affirmative action and equal opportunity relating to contractual and purchasing procedures – Section VIII Dated 01/88. The bidder agrees to cooperate fully should the Town choose to audit this compliance.
8. Unit price amount should be shown in both words and figures. In case of discrepancy, the unit price amount shown in words will govern. In case of an error in the extension or addition of prices, the unit price will govern. The Town will not be subject to any price increases after a bid award, unless it was part of the original bid terms.
9. The Town reserves the right to increase or decrease quantities listed in order to stay within the allocated funding at time of bid opening.
10. The Purchasing Department has the obligation to accept the lowest responsible bid which is in the Town's best interest. Factors include, but are not limited to: price, compliance to specifications, quality offered, freight costs, delivery time, past performance, standardization of current equipment, financial resources, technical qualifications, equipment and experience.
11. Bidders shall state in writing and attach to the bid, any conditions/exceptions that are part of the bid price. Comments to the effect "see literature" will not be acceptable.
12. Any manufacturers' names, trade names, brand names or catalog numbers used in the specifications are there for the purpose of establishing and describing general performance and quality levels.

TOWN OF EAST HARTFORD, CONNECTICUT

STANDARD INSTRUCTIONS FOR BIDDERS (*cont'd*)

Such references are not intended to be restrictive and bids are invited on these and approved equal brands or products of any manufacturer.

13. The Town's competitive bidding process is not a means for competitors to obtain private/proprietary information that is not otherwise normally available. Such information relates to a bidder's financial records and responsibility, test data, manufacturing drawings, formulas and processes. To promote competition and protect valid interests this type of information/data will remain confidential.
14. All bidder questions shall be directed to the Purchasing Agent. Procedural and clarification questions will be answered appropriately. Questions that require an answer that will in effect change/alter the intent of the specifications will only be answered in writing to all bidders by a bid addendum.
15. Awarded bidders are responsible for obtaining all necessary permits as required by OSHA, Federal, State and/or Town regulations. Town permits will be issued at no cost.
16. Alternate proposals will not be considered unless specifically called for in the bid.
17. Prices shall include packing, transportation and delivery charges F.O.B. to East Hartford/delivered unless specifically noted otherwise.
18. Bidder declares that the proposal is not made in connection with any other bidder submitting a proposal for the same bid and is in all respects fair and without collusion or fraud.
19. Cash discounts may be offered by bidder for prompt payment of bills, but such cash discount will not be taken into consideration in determining the awarded low bidder except in the case of tie bids and then only provided such discount is based on payment of invoice not less than fourteen (14) days after satisfactory delivery and/or receipt of invoice, whichever is later.
20. The Town will not award a bid to any bidder who owes a delinquent tax to the Town. Bidders certify by virtue of their signature on the bid sheet that neither the bidder nor any business or corporation which the Bidder owns an interest is delinquent in tax obligations to the Town. The Purchasing Department will verify that no delinquent taxes are owed before any bid is awarded.
21. All bidders shall include a corporate resolution with your submittal. Sample formats for Corporations and Professional Corporations, Limited Liability Company and Partnerships (including Limited Partnership and Limited Liability Partnership) are attached in this packet
22. The bidding entity is required to provide evidence from the Connecticut Secretary of State that they are in good standing and qualified to conduct business in the State of Connecticut.



TOWN OF EAST HARTFORD, CONNECTICUT

INSTRUCTIONS FOR
CONSTRUCTION AND/OR LABOR SERVICE BIDS

1. A *Certificate of Insurance* naming the Town as an additional insured will be required of the awarded bidder. The insurance indemnification clause is contained with the bid specifications (see *Insurance Requirements*).
2. This is a prevailing wage bid and the wage rates are attached within the Bid Specifications. In accordance with state law, each contract for the construction, remodeling or repair of any public building or public works or improvements shall contain the following provision when the cost of construction, remodeling or repair exceeds the limits as provided in Connecticut General Statutes 31-53; “the wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in Subsection (h) of Section 31-53 for the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the Town of East Hartford. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as parts of his wages the amount of payment or contribution for his classification on each pay day”.
3. This project does not need to comply with CHRO contract compliance requirements.
4. A Bid Bond must be submitted with the bid and may be in the form of certified check or cashier’s check **payable to “The Town of East Hartford” or a bond of a surety company authorized to transact business in the State of Connecticut**. No checks will be returned until the bid is awarded. If you are the awarded bidder, your check will be held until it is replaced with another Guarantee of Performance. **Bid Bond shall be 5% (five percent) of total bid price**.
5. A Guarantee of Performance will be required of the awarded bidder and may be in the form of a certified check or cashier’s check payable to “The Town of East Hartford” or a bond of a surety company authorized to transact business in the State of Connecticut. Checks will be retained by the Town for period of time after final acceptance and payment as determined by the complexity of the project. **Performance Bond shall be 100% (one hundred percent) of awarded bid price**.
6. A Guarantee of Payment will be required of the awarded bidder and may be in the form of a certified check or cashier’s check payable to “The Town of East Hartford” or a bond of a surety company authorized to transact business in the State of Connecticut. Checks will be retained by the Town for period of time after final acceptance and payment as determined by the complexity of the project. Labor and Material Bond shall be 100% (one hundred percent) of awarded bid price.
7. The Town requires the contractor to carry an umbrella liability limit of \$2,000,000.
8. Before starting any work awarded bidders are responsible for obtaining permits as required by Federal, State, MDC, Utilities and/or Town regulations. Any applicable fees shall be included in the total bid price. Town of East Hartford permits will be issued at no charge.
9. The bidder shall abide by all OSHA, Federal, State and local laws, ordinances and regulation, which any manner affect those engaged or employed on the Work, or the materials or equipment used in the

TOWN OF EAST HARTFORD, CONNECTICUT

INSTRUCTIONS FOR CONSTRUCTION AND/OR LABOR SERVICE BIDS (*cont'd*)

Work, or in any way affect the conduct of the Work, and no pleas of misunderstanding will be considered on account of ignorance. If bidder shall discover any provisions in the drawings, specifications or contract, which are in conflict with any such law, by-law or ordinance or regulation, he shall report it to the Town in writing with the bid proposal.

10. Throughout the work period, the contractor shall maintain the work site in a generally accepted standard of cleanliness, free from accumulation of waste materials or rubbish caused by his operations and shall take prompt action to correct any hazardous conditions reported.
11. It is the responsibility of each bidder before submitting a bid, to familiarize themselves with the specifications and conditions that may affect cost, progress, performance or completion of the project.
12. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with generally accepted industry standards.
13. Unless otherwise specified, the contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, fuel, appliances, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.
14. The Contractor may utilize the services of specialty subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award any work to any subcontractor without prior written approval of the Town, which approval will not be given until the Contractor submits to the Town a written statement concerning the proposed award to the subcontractor, which statement will contain such information as the Town may require. The Contractor shall be as fully responsible to the Town for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of person directly employed by him. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and other contract documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards to terminating any subcontract that the Town may exercise over the Contractor under any provision of the Contract documents. Nothing contained in this bid shall create any contractual relation between any subcontractor and the Town.
15. The Contractor shall not assign the whole or any part of this contract or any moneys due or to become without written consent of the Town, which in its sole discretion may be denied. In case the Contractor assigns all or any part of any moneys due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and or any moneys due or to become due to the contractor shall be subject to prior claims of all person, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this contract.
16. The submission of a bid offer will constitute an incontrovertible representation by the bidder that he/she has complied with every requirement of the specifications and that the bid documents are

TOWN OF EAST HARTFORD, CONNECTICUT

INSTRUCTIONS FOR CONSTRUCTION AND/OR LABOR SERVICE BIDS (*cont'd*)

sufficient in scope and detail and convey understanding of all terms and conditions for performance of the Work.



TOWN OF EAST HARTFORD, CONNECTICUT

INSURANCE REQUIREMENTS FOR CONSTRUCTION, PROFESSIONAL OR LABOR SERVICE BIDS

NOTE: CERTIFICATE OF INSURANCE WILL ONLY BE REQUIRED OF THE AWARDED BIDDER

A. INDEMNIFICATION

CONTRACTOR agrees to indemnify and hold the Town of East Hartford harmless against and from any and all claims by or on behalf of any person arising from or in connection with:

- A. Any act, error, omission, negligence or fault of CONTRACTORS or any of its agents, servants, employees and sub-contractors.
- B. Any accident, injury or damage whatsoever caused to any person occurring during the performance of this contract.

Further, the CONTRACTOR agrees to indemnify and hold harmless the Town of East Hartford against and from all reasonable costs, counsel fees, expenses and liabilities incurred in or with respect to any such claim and any action or proceeding brought thereon; and in any case any action or proceeding shall be brought against the CONTRACTOR by reason of any such claim, CONTRACTOR upon notice from the Town of East Hartford agrees to resist and defend such action proceeding, unless CONTRACTOR causes the same to be discharged and satisfied.

B. GENERAL REQUIREMENTS

The CONTRACTOR shall be responsible for maintaining insurance coverage in force for the life of this contract of the kinds and adequate amounts to secure all of the CONTRACTOR's obligations under this contract with an insurance company(ies) with an AM Best Rating of A-VII or better licensed to write such insurance in the State of Connecticut and acceptable to the Town of East Hartford.

Additional Insured: The Town of East Hartford, its officials, employees, volunteers, boards and commissions must be named as an Additional Insured on the CONTRACTOR'S General and Business Automobile Liability Insurance Policies. Evidence of this must be provided upon inception of this contract and upon renewal of insurance by the CONTRACTOR to the Town of East Hartford in the form of language on a Certificate of Insurance as well as a policy endorsement.

The CONTRACTOR shall provide the Town of East Hartford with a Certificate(s) of Insurance signed by an authorized representative of the insurance company(ies) prior to the performance of this contract describing the coverage and providing that the insurer shall give the Town of East Hartford written notice at least thirty (30) days in advance of any termination, expiration, or any and all changes in coverage. Such insurance or renewals or replacements thereof shall remain in force during the CONTRACTOR'S responsibility under this contracts. Failure to provide or maintain any of the insurance coverage required herein shall constitute a breach of the Contract.

C. SPECIFIC REQUIREMENTS:

1) Commercial General Liability Insurance

The CONTRACTOR shall carry Commercial General Liability Insurance (broad form coverage) insuring against claims for bodily injury, property damage, personal injury and advertising injury that shall be no less comprehensive and no more restrictive than the coverage provided by Insurance Services Office (ISO) form for Commercial General (CG 00-01-10-01). By its terms or appropriate endorsements such insurance shall include the following coverage, to wit: Bodily Injury, Property Damage, Fire Legal Liability (not less than the replacement value of the portion of

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TOWN OF EAST HARTFORD, CONNECTICUT

INSURANCE REQUIREMENTS FOR CONSTRUCTION, PROFESSIONAL
OR LABOR SERVICE BIDS (*cont'd*)

the premises occupied), Personal Injury, Blanket Contractual, Independent CONTRACTORS, Premises Operations, Products and Completed Operations (for a minimum of two (2) years following Final Completion of the Project). Any deviations from the standard unendorsed form will be noted on the Certificate of Insurance.

Type of Coverage: Occurrence Basis
Amount of Coverage: \$1,000,000 per occurrence
\$2,000,000 aggregate
Policy Period: Annual Policy

2) Workers' Compensation and Employer's Liability Insurance

The CONTRACTOR shall provide Statutory Workers' Compensation Insurance as required by the State of Connecticut, including Employer's Liability.

Amount of Coverage: \$500,000 Each Accident
\$500,000 Disease, Policy Limit
\$500,000 Disease, Each Employee
Policy Period: Annual Policy

3) Business Automobile Liability Insurance

The CONTRACTOR shall carry Comprehensive Business Automobile Liability Insurance insuring against claims for bodily injury and property damage and covering the ownership, maintenance or use of any auto or all owned/leased and non-owned and hired vehicles used in the performance of the Work, both on and off the Project Site, including loading and unloading. The coverage should be provided by Insurance Services Office form for Commercial Auto Coverage (CA-00-01-10-01) or equivalent. "Auto" (symbol 1 or equivalent) is required. Any deviations from the standard unendorsed form will be noted on the Certificate of Insurance.

Type of Coverage: Occurrence Basis
Amount of Coverage: \$1,000,000 combined single limit
Policy Period: Annual Policy

4) Umbrella Liability Insurance

The Town reserves the right to require the CONTRACTOR to carry an umbrella liability insurance policy up to **\$5,000,000**. The necessity and amount of umbrella liability insurance is dependent upon a number of factors including, but not limited to scope, price and duration of the work to be performed. The Town of East Hartford will inform the CONTRACTOR as to the necessity and limits for this insurance.

D. PROFESSIONAL SERVICE CONTRACTOR REQUIREMENTS

(*e.g., Architects, Engineers, et al.*)

The CONTRACTOR shall carry Errors & Omissions coverage in the amount \$1,000,000 per occurrence for all professional services contracts. If the insurance coverage is written on a claims made basis, an extended reporting period of at least 3 years after substantial completion of the project is required.

The Town reserves the right to amend amounts of coverage required and type of coverage provided based on work

TOWN OF EAST HARTFORD, CONNECTICUT

INSURANCE REQUIREMENTS FOR CONSTRUCTION, PROFESSIONAL
OR LABOR SERVICE BIDS (*cont'd*)

or service to be performed.

E. SUBCONTRACTOR REQUIREMENTS:

The CONTRACTOR shall require all subcontractors and independent contractors to carry the coverages set forth in section C and D (if applicable) above and will obtain appropriate Certificates of Insurance before the subcontractors and independent contractors are permitted to begin work.

The CONTRACTOR shall require that the Town of East Hartford be named as Additional Insured on all subcontractors and independent contractors insurance before permitted to begin work.

The CONTRACTOR and all subcontractors and independent contractors and their insurers shall waive all rights of subrogation against the Town of East Hartford, and its officers, agents, servants and employees for losses arising from work performed by each on this contract.

BID FORMS

All of the following documents contained within this section must be completed by the prospective bidder and returned with the bid:

- Bid Bond (To be supplied by the Bidder)
- Form of General Bid
- Bid Proposal Sheets
- Bid Proposal Summary Sheets
- Resolution for Corporations/Professional Corporations
- Resolution for Limited Liability Companies
- Resolution for Partnerships
- Anticipated Source of Materials Form
- List of Proposed Subcontractors (To be provided by Contractor)
- Qualifications of Bidder Form
- Evidence from the CTSOS of Good Standing & Ability to Conduct Business in Connecticut

Note that the correct resolution must be prepared based on the type of business submitting the bid (corporation, professional corporation, limited liability company, partnership, limited liability partnership, or general partnership). Resolutions must be on company letterhead and the date of the resolution must match the bid opening date.

Company Name: _____

FORM OF GENERAL BID

BID NO. 20-15

Town of East Hartford
Purchasing Agent
740 Main Street
East Hartford, CT 06108

Attn. Michelle Enman - Purchasing Agent

Having carefully examined the Invitation to Bid, Instructions for Construction and/or Labor Service bids, Insurance Requirements, Form of General Bid, General Conditions, Supplemental Conditions, Technical Specifications, Appendices, Contract Drawings and Exhibits for the furnishing of all materials, equipment, tools, labor and incidentals necessary to complete the Work "2020 Roadway Improvement Project", as well as having carefully examined the site and having satisfied himself as to conditions affecting the proposed Work and all Addenda issued by the Town, transmitted to the undersigned by electronic mail prior to the date of opening of Bids, the undersigned proposes to complete all Work on the Contract Drawings and as described in the Bid Speciation, for the lump sum and unit prices for the Work (in place) for the items and estimated quantities shown on the Bid Proposal Sheet(s).

Bidder acknowledges receipt of the following addenda:

No. _____, dated _____, 20__

No. _____, dated _____, 20__

No. _____, dated _____, 20__

No. _____, dated _____, 20__

Bid Proposal Sheets

Project: 2020 Roadway Improvement Project

Location: CAMBRIDGE DRIVE NEIGHBORHOOD



Engineering Department
 Town of East Hartford, Connecticut
 740 Main Street
 East Hartford, Connecticut 06108
 860-291-7380



Prepared By: _____
 Vanasse Hangen Brustlin, Inc.
 100 Great Meadow Road, Suite 200
 Wethersfield, Connecticut 06109
 860-807-4300 Fax 860-372-4570

Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
202001	8570	EARTH EXCAVATION at _____ Per Cubic Yard				
202452A	3	TEST PIT at _____ Per Each				
202529A	2550	CUT BITUMINOUS CONCRETE PAVEMENT at _____ Per Linear Foot				
202530A	31000	REMOVE EXISTING HOT MIX ASPHALT PAVEMENT at _____ Per Square Yard				
202559A	2	REMOVE AND RESET SURVEY MONUMENT at _____ Per Each				
205004	235	ROCK IN TRENCH EXCAVATION 0'-10' DEEP at _____ Per Cubic Yard				
209001	20200	FORMATION OF SUBGRADE at _____ Per Square Yard				
211000A	500	ANTI-TRACKING PAD at _____ Per Square Yard				

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Bid Proposal Sheets

Project: 2020 Roadway Improvement Project

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Prepared By: _____
 Vanasse Hangen Brustlin, Inc.
 100 Great Meadow Road, Suite 200
 Wethersfield, Connecticut 06109
 860-807-4300 Fax 860-372-4570

Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
219001	500	SEDIMENTATION CONTROL SYSTEM at _____ Per Linear Foot				
219011A	116	SEDIMENT CONTROL SYSTEM AT CATCH BASIN at _____ Per Each				
304002	3500	PROCESSED AGGREGATE BASE at _____ Per Cubic Yard				
304010A	1510	PROCESSED AGGREGATE FINE GRADING at _____ Per Ton				
304500A	1	ROADWAY AS-BUILT SURVEY at _____ Per Lump Sum				
403161A	1440	HOT MIX ASPHALT LEVELING/SHIM COURSE at _____ Per Ton				
404100A	9590	PARTIAL DEPTH PATCH REPAIR (LOCAL) at _____ Per Square Yard				
404200A	5470	FULL DEPTH PATCH REPAIR (LOCAL) at _____ Per Square Yard				

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Bid Proposal Sheets

Project: 2020 Roadway Improvement Project

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Prepared By: _____
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 860-807-4300 Fax 860-372-4570

Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
404300A	200	BASE PATCH REPAIR at _____ Per Square Yard				
406172A	11800	HMA S0.375 at _____ Per Ton				
406200A	44700	CLEANING AND SEALING CRACKS at _____ Per Linear Foot				
406236	7300	MATERIAL FOR TACK COAT at _____ Per Gallon				
406267A	29000	MILLING HMA (0" TO 4") at _____ Per Square Yard				
406999A	50000	ASPHALT ADJUSTMENT COST at <u>Fifty Thousand Dollars and No Cents</u> Estimated			50000	00
507791A	5	REBUILD CATCH BASIN at _____ Per Vertical Linear Foot				
586001.10	69	TYPE "C" CATCH BASIN - 0' -10' DEEP at _____ Per Each				

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Bid Proposal Sheets

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Prepared By: _____
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 Wethersfield, Connecticut 06109
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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
586040.10	3	TYPE "C-L" CATCH BASIN - 0' -10' DEEP at _____ Per Each				
5861000	2	TYPE 'C-M' CATCH BASIN - 0' - 10' DEEP at _____ Per Each				
5863000.10	8	OFFSET CATCH BASIN - 0'-10' DEEP at _____ Per Each				
586500.10	1	MANHOLE at _____ Per Each				
586651A	62	RESET MANHOLE (STORM) at _____ Per Each				
586700A	30	CONVERT CATCH BASIN TO TYPE "C" CATCH BASIN at _____ Per Each				
586701A	1	CONVERT CATCH BASIN TO TYPE "C-L" CATCH BASIN at _____ Per Each				
586780A	5	MANHOLE FRAME AND COVER at _____ Per Each				

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Bid Proposal Sheets

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Prepared By: _____
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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
651239A	1	CHECKMATE ULTRAFLEX SLIP-IN INLINE CHECK VALVE at _____ Per Each				
651289A	10	GROUT FILL STORM PIPE at _____ Per Cubic Yard				
653001	40	CLEAN EXISTING CATCH BASIN at _____ Per Each				
653010	62	CLEAN EXISTING MANHOLE at _____ Per Each				
653100	20700	CLEAN EXISTING CULVERT 12"-42" DIAMETER at _____ Per Linear Foot				
686000.12	50	12" R.C. PIPE - 0' - 10' DEEP at _____ Per Linear Foot				
686000.18	45	18" R.C. PIPE - 0' - 10' DEEP at _____ Per Linear Foot				
686000.24	50	24" R.C. PIPE - 0' - 10' DEEP at _____ Per Linear Foot				

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Bid Proposal Sheets

Project: 2020 Roadway Improvement Project

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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
686002.12	50	12" R.C. PIPE (CLASS V) - 0' - 10' DEEP at _____ Per Linear Foot				
686002.15	50	15" R.C. PIPE (CLASS V) - 0' - 10' DEEP at _____ Per Linear Foot				
686200.10A	550	10" POLYVINYL CHLORIDE PIPE - 0' -10' DEEP at _____ Per Linear Foot				
686200.12A	50	12" POLYVINYL CHLORIDE PIPE - 0' -10' DEEP at _____ Per Linear Foot				
686716.10A	50	10" DUCTILE IRON PIPE - 0' -10' DEEP at _____ Per Linear Foot				
686719.12A	140	12" DUCTILE IRON PIPE - 0' - 10' DEEP at _____ Per Linear Foot				
813001A	730	5" GRANITE STONE CURBING at _____ Per Linear Foot				
813011A	130	5" GRANITE CURVED STONE CURBING at _____ Per Linear Foot				

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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
815000A	19690	BITUMINOUS CONCRETE LIP CURBING - 5" at _____ Per Linear Foot				
815002A	9890	BITUMINOUS CONCRETE LIP CURBING - 6" at _____ Per Linear Foot				
815010A	4780	BITUMINOUS CONCRETE BERM at _____ Per Linear Foot				
906200A	30	RESET ORNAMENTAL WOOD FENCE at _____ Per Linear Foot				
906201A	30	RESET PICKET FENCE at _____ Per Linear Foot				
906204A	30	RESET SPLIT RAIL FENCE at _____ Per Linear Foot				
906213A	50	RESET VINYL PRIVACY FENCE at _____ Per Linear Foot				
913000	25	REMOVE CHAIN LINK FENCE at _____ Per Linear Foot				

Bid Proposal Sheets

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Prepared By: _____
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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
913001	20	4' CHAIN LINK FENCE at _____ Per Linear Foot				
913817A	30	RESET CHAIN LINK FENCE at _____ Per Linear Foot				
913903	0	10' CHAIN LINK DOUBLE GATE 4' HIGH at _____ Per Each				
921001A	3240	CONCRETE SIDEWALK - 5" at _____ Per Square Foot				
921002A	3000	CONCRETE SIDEWALK - 8" at _____ Per Square Foot				
921005A	5880	CONCRETE SIDEWALK RAMP at _____ Per Square Foot				
921011	330	CONCRETE DRIVEWAY at _____ Per Square Foot				
922500A	170	BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL) at _____ Per Square Yard				

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Bid Proposal Sheets

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Prepared By: _____
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 100 Great Meadow Road, Suite 200
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 860-807-4300 Fax 860-372-4570

Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
922501A	4980	BITUMINOUS CONCRETE DRIVEWAY at _____ Per Square Yard				
922511A	110	BITUMINOUS CONCRETE SNOWSHELF at _____ Per Square Yard				
922503A	10	GRAVEL DRIVEWAY at _____ Per Square Yard				
944001A	19240	FURNISHING AND PLACING TOPSOIL at _____ Per Square Yard				
950005A	19240	TURF ESTABLISHMENT at _____ Per Square Yard				
952001A	1	SELECTIVE CLEARING AND THINNING at _____ Per Lump Sum				
969062A	5	CONSTRUCTION FIELD OFFICE, MEDIUM at _____ Per Month				
970006A	30000	TRAFFICPERSON (TOWN POLICE OFFICER) at <u>Thirty Thousand Dollars and No Cents</u> Estimated			30000	00

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Prepared By: _____
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 100 Great Meadow Road, Suite 200
 Wethersfield, Connecticut 06109
 860-807-4300 Fax 860-372-4570

Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
970007A	4850	TRAFFICPERSON (UNIFORMED FLAGGER) at _____ Per Hour				
971001A	1	MAINTENANCE AND PROTECTION OF TRAFFIC at _____ Per Lump Sum				
975002	1	MOBILIZATION at _____ Per Lump Sum				
980001	1	CONSTRUCTION STAKING at _____ Per Lump Sum				
1206013	1	REMOVAL OF EXISTING SIGNING at _____ Per Lump Sum				
1206092A	42	RESET SIGN at _____ Per Each				
1208929A	57	STREET IDENTIFICATION SIGN at _____ Per Square Foot				
1208931A	400	SIGN FACE - SHEET ALUMINUM - TYPE IX RETROREFLECTIVE SHEETING at _____ Per Square Foot				

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Bid Proposal Sheets

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Prepared By: _____
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Item No.	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
1210101	50	4" WHITE EPOXY RESIN PAVEMENT MARKINGS at _____ Per Linear Foot				
1210102	18680	4" YELLOW EPOXY RESIN PAVEMENT MARKINGS at _____ Per Linear Foot				
1210105	1250	EPOXY RESIN PAVEMENT MARKINGS, SYMBOLS AND LEGENDS at _____ Per Square Foot				
1302060A	57	ADJUST GATE BOX (WATER) at _____ Per Each				
1302062A	26	ADJUST GATE BOX (GAS) at _____ Per Each				
1403010A	5	MANHOLE FRAME AND COVER (SANITARY SEWER) at _____ Per Each				
1403501A	93	RESET MANHOLE (SANITARY SEWER) at _____ Per Each				

Subtotal This Page:

Company Name: _____

TOWN OF EAST HARTFORD
BID PROPOSAL SHEET
2020 ROADWAY IMPROVEMENT PROJECT
Bid No. 20-15

Bidder will complete the Work in accordance with the Contract Documents for the following, all inclusive price:

Grand Total of All Bid Items	(words)
	\$
	(numerals)

- A. The undersigned understands that there may be changes, omissions, or modification in the work, and that appropriate adjustments will be made to the Contract price in accordance with the Contract Documents. The undersigned understands that the Owner reserves the right to accept or reject any or all bids, and to waive all formalities, any irregularities, and accept the Bid deemed to be in the Owner's best interest.
- B. Bid prices shall not include any sales, excise or other taxes for which the Owner is not liable.
- C. Town of East Hartford is the awarding authority. The Bidder agrees to hold the above pricing for sixty (60) days, unless extended by mutual consent.
- D. The Bidder hereby agrees to commence Work under this Contract within ten (10) days of written Notice to Proceed from the Town, and to complete the Work of all base bid items within NINETY (90) CALENDAR DAYS thereafter. The Bidder further agrees to pay as liquidated damages, the sum of FIVE HUNDRED DOLLARS (\$500.00) for each consecutive calendar day beyond the date of completion. Liquidated damages are not intended as a penalty but rather shall be construed as a best estimate of damages which the Town will suffer due to Bidder's refusal, failure or neglect to perform pursuant to his Bid and Contract Documents.
- E. The Bid security in the sum of: 5% OF TOTAL BID is to become the property of the Town in the event the above forms are not executed within the time set forth above, as liquidated damages, and not as a penalty for the delay and additional expense to the Town caused thereby.

Respectfully Submitted By:

(Signature) _____

Name (Please Print): _____

Title: _____

Company: _____

Business Address: _____

Business Phone: _____ () _____

Business Fax: _____ () _____

Email Address: _____

NEW RESOLUTION FOR CORPORATIONS/PROFESSIONAL CORPORATIONS

(TO BE TYPED ON CORPORATION LETTERHEAD)

I (name of Corporation's Secretary), Secretary of (legal name of Corporation) a Corporation duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Board of Directors of such Corporation, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the Board of Directors was present and voted in favor of such Resolution.

RESOLVED: That the following Officers of this Corporation, or any one of them individually:

(Name and title of Officer or Officers)

are empowered to execute and deliver, in the name of and on behalf of this Corporation, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to affix the Corporate Seal to such documents and to bind the Corporation to such contracts, bids and other documents.

I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature and the Corporate Seal of the Corporation, this (date) day of (month) 20__

(Typed name of Corporation's Secretary)

SIGNATURE OF SECRETARY

(Corporate Seal)

PRIOR RESOLUTION FOR CORPORATIONS/PROFESSIONAL CORPORATIONS

(TO BE TYPED ON CORPORATION LETTERHEAD)

I (name of Corporation's Secretary), Secretary of (legal name of Corporation) a Corporation duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Board of Directors of such Corporation, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the Board of Directors was present and voted in favor of such Resolution.

RESOLVED: That the following Officers of this Corporation, or any one of them individually:

(Name and title of Officer or Officers)

are empowered to (recite resolution authorizing submission of bid or execution of contract).

I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature and the Corporate Seal of the Corporation, this (date) day of (month) 20__

(Typed name of Corporation's Secretary)

SIGNATURE OF SECRETARY

(Corporate Seal)

RESOLUTION FOR LIMITED LIABILITY COMPANIES

(TO BE TYPED ON COMPANY LETTERHEAD)

The undersigned, comprising all Members of (legal name of LLC), a Limited Liability Company duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Members, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting Members was present and voted in favor of such Resolution. We further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following Members of this Limited Liability Company, or any one of them:

(Name and title of Members)

are empowered to execute and deliver, in the name of and on behalf of this Limited Liability Company, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the Limited Liability Company to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned have executed this resolution, this (date) day of (month) 20__

(Typed Member Name)

(Typed Member Name)

(Typed Member Name)

(Typed Member Name)

RESOLUTION FOR LIMITED LIABILITY COMPANIES BY MANAGING PARTNER

(TO BE TYPED ON COMPANY LETTERHEAD)

I (name of Managing Member), Managing Member of (legal name of LLC), a Limited Liability Company duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Members, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting Members was present and voted in favor of such Resolution. I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following Members of this Limited Liability Company, or any one of them:

(Name and title of Members)

are empowered to execute and deliver, in the name of and on behalf of this Limited Liability Company, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the Limited Liability Company to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature, this (date) day of (month) 20__

(Typed name of Managing Partner)

SIGNATURE OF MANAGING PARTNER

RESOLUTION FOR PARTNERSHIPS

(TO BE TYPED ON COMPANY LETTERHEAD)

The undersigned, comprising all (partners/general partners) of (legal name of partnership), a (partnership/Limited Partnership/Limited Liability Partnership) duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the voting (partners/general partners), duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting partners was present and voted in favor of such Resolution. We further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following (partners/general partners) of this Limited Liability Company, or any one of them:

(Name and title of partners/general partners)

are empowered to execute and deliver, in the name of and on behalf of this (partnership/Limited Partnership/Limited Liability Partnership), contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the (partnership/Limited Partnership/Limited Liability Partnership) to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned have executed this resolution, this (date) day of (month) 20__

(Typed partner/general partner Name)

(Typed partner/general partner Name)

(Typed partner/general partner Name)

(Typed partner/general partner Name)

QUALIFICATIONS OF BIDDER

The undersigned offers the following information as evidence of his qualifications to perform the Work as bid upon according to all the requirements of the Contract Documents, including Plans and Specifications. ***PLEASE PRINT OR TYPE THE FOLLOWING INFORMATION:***

Project Name 2020 Roadway Improvement Project

Bidder's Name

Bidder's Address

When Organized

1. How many years has Bidder been engaged in the contracting business under present firm name?

1a. Former firm names (if applicable). List previous names.

2. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as Principals, are as follows (attach supplementary list if necessary):

3. The Bidder is requested to state in Table 1 (see following page) a minimum of three (3) projects of similar nature to the project described herein, that the Bidder has completed, with name, address, and telephone number of a reference for each project.

TABLE 1

<p align="center">PROJECT</p> <p>1. Title 2. Description (i.e. square feet of sidewalk)</p>	<p align="center">SPECIALTY WORK</p>	<p align="center">PROJECT DURATION</p> <p>FROM To</p>		<p align="center">PROJECT COST (BID)</p>	<p align="center">PROJECT COST (FINAL)</p>	<p align="center">NAME, ADDRESS & TELEPHONE NO.</p> <p>1. Owner 2. Project Engineer/Architect 3. Project Reference</p>

4. List projects presently under contract by the Bidder, dollar value of the contract, percent and estimated time of completion:

5. Has the Bidder ever failed to complete work awarded; and if so, state where and why:

6. If the Bidder has worked under the direction of a Consulting Engineer, list recent projects with name, address and telephone number of the Consultant:

7. Does the Bidder plan to sublet any part of this work; and if so, give details: including name, address, phone number, contact person and list of references for each subcontractor.

8. List equipment the Bidder owns that is available for this project:

9. List equipment the Bidder plans to rent or purchase for this project:

10. List name, address, and telephone number for the following:

Surety: _____

Bank: _____

Major Material Supplier: _____

11. List Key Personnel to be employed for this project: _____

12. Remarks: _____

Respectfully Submitted:

By: _____

The above statement must be subscribed and sworn to before a Notary Public.

By _____ Date _____

State of _____)
County of _____) ss _____, A.D. 2020

Personally appeared before me _____ who subscribed to and made oath to the truth of the foregoing statement.

Notary Public

AGREEMENT FORMS

Upon receipt of notice of contract award, and receipt of the compiled project Agreement, all of the following documents contained within this section must be completed by the awarded bidder and returned within ten (10) calendar days. Note that a new resolution, with date matching the effective date of the Agreement, must be submitted.

- Fully Endorsed Agreement (*3 originals*)
- Resolution for Corporations/Professional Corporations
- Resolution for Limited Liability Companies
- Resolution for Partnerships
- Certificate of Insurance (To be provided by Contractor)
- Performance Bond
- Labor and Materials Bond
- Forms for Department of Public Works License/Permit
 - Certificate of Insurance
 - Hold Harmless Agreement
 - Driveway, Curb & Walk Layer's Bond
 - Drain Layer's Bond
- Contractor's Wage Certification Form

Note that the correct resolution must be prepared based on the type of business contracting with the Town (corporation, professional corporation, limited liability company, partnership, limited liability partnership, or general partnership). Resolutions must be on company letterhead and the date of the resolution must match the Effective Date of the Agreement.

The *Contractor's Wage Certification Form*, which can be found in the wage rate attachments in an appendix, must be submitted directly to the Connecticut Department of Labor. A copy of the form, as submitted to the CTDOL, must be provided to the Town with the Agreement Forms.



AGREEMENT

2020 ROADWAY IMPROVEMENT PROJECT

BID NO. 20-15

THIS AGREEMENT is by and between the Town of East Hartford, Connecticut, a municipal corporation with principal office and place of business at 740 Main Street, East Hartford, Connecticut 06108, acting herein through the Town's Mayor, (*hereinafter referred to as Owner*) and _____ with an office and place of business at _____ a corporation/partnership/LLC/LLP/sole proprietorship (*hereinafter referred to as Contractor*) for the construction of the project titled 2020 ROADWAY IMPROVEMENT PROJECT (BID NO. 20-15).

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Rehabilitation or resurfacing of various roadways within the Town of East Hartford totaling approximately 20,303 feet.

ARTICLE 3 – ENGINEER

3.01 The Project was designed by VHB, Inc..

3.02 The Owner retained BL Companies ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially completed on or before November 1, 2020, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before November 12, 2020.

AGREEMENT

Page 1 of 7

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal, or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. Substantial Completion: Contractor shall pay Owner \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
 2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500 for each day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.04 *Special Damages*

- A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

- A. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment)
\$_____.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based

on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
 - a. 95 percent (95%) of Work completed (with the balance being retainage).
 - b. There will be no payment for the cost of materials and equipment not incorporated in the Work.
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 99 percent (99%) of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of eight percent (8%) per annum.

ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
 - B. Contractor visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
 - E. Contractor considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the

AGREEMENT

Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to , inclusive).
 - 2. Corporate Resolution
 - 3. Performance bond (pages to , inclusive).
 - 4. Payment bond (pages to , inclusive).
 - 5. General Conditions (pages to , inclusive).
 - 6. Supplemental General Conditions (pages to , inclusive).
 - 7. Technical Specifications as listed in the table of contents of the Bid Specification.
 - 8. Drawings (not attached but incorporated by reference) consisting of sheets with each sheet bearing the following general title: .
 - 9. Addenda (numbers to , inclusive).
 - 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages to , inclusive).
 - b. Committee of Award Documentation (pages to , inclusive).
 - c. Contractor's Letter of Award (pages to , inclusive).
 - d. Contract Award Forms (pages to , inclusive).
 - 11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.

- b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
 - C. There are no Contract Documents other than those listed above in this Article 9.
 - D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor’s Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of

Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, the said parties hereto have caused this instrument to be signed in duplicate by their respective duly constituted officers, attested, and sealed pursuant to proper resolutions. One counterpart each has been delivered to Owner and Contractor.

This Agreement will be effective on Month, Day 20xx (*which is the Effective Date of the Agreement*).

Signed and sealed in the presence of:

OWNER: TOWN OF EAST HARTFORD, CONNECTICUT

Witness

By Marcia A. Leclerc
It's Mayor

Witness

CONTRACTOR: <NAME OF CONTRACTOR>

Witness

By

Witness

Printed Name
It's <Title of Endorser>

NEW RESOLUTION FOR CORPORATIONS/PROFESSIONAL CORPORATIONS

(TO BE TYPED ON CORPORATION LETTERHEAD)

I (name of Corporation's Secretary), Secretary of (legal name of Corporation) a Corporation duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Board of Directors of such Corporation, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the Board of Directors was present and voted in favor of such Resolution.

RESOLVED: That the following Officers of this Corporation, or any one of them individually:

(Name and title of Officer or Officers)

are empowered to execute and deliver, in the name of and on behalf of this Corporation, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to affix the Corporate Seal to such documents and to bind the Corporation to such contracts, bids and other documents.

I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature and the Corporate Seal of the Corporation, this (date) day of (month) 20__

(Typed name of Corporation's Secretary)

SIGNATURE OF SECRETARY

(Corporate Seal)

PRIOR RESOLUTION FOR CORPORATIONS/PROFESSIONAL CORPORATIONS

(TO BE TYPED ON CORPORATION LETTERHEAD)

I (name of Corporation's Secretary), Secretary of (legal name of Corporation) a Corporation duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Board of Directors of such Corporation, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the Board of Directors was present and voted in favor of such Resolution.

RESOLVED: That the following Officers of this Corporation, or any one of them individually:

(Name and title of Officer or Officers)

are empowered to (recite resolution authorizing submission of bid or execution of contract).

I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature and the Corporate Seal of the Corporation, this (date) day of (month) 20__

(Typed name of Corporation's Secretary)

SIGNATURE OF SECRETARY

(Corporate Seal)

RESOLUTION FOR LIMITED LIABILITY COMPANIES

(TO BE TYPED ON COMPANY LETTERHEAD)

The undersigned, comprising all Members of (legal name of LLC), a Limited Liability Company duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Members, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting Members was present and voted in favor of such Resolution. We further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following Members of this Limited Liability Company, or any one of them:

(Name and title of Members)

are empowered to execute and deliver, in the name of and on behalf of this Limited Liability Company, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the Limited Liability Company to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned have executed this resolution, this (date) day of (month) 20__

(Typed Member Name)

(Typed Member Name)

(Typed Member Name)

(Typed Member Name)

RESOLUTION FOR LIMITED LIABILITY COMPANIES BY MANAGING PARTNER

(TO BE TYPED ON COMPANY LETTERHEAD)

I (name of Managing Member), Managing Member of (legal name of LLC), a Limited Liability Company duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the Members, duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting Members was present and voted in favor of such Resolution. I further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following Members of this Limited Liability Company, or any one of them:

(Name and title of Members)

are empowered to execute and deliver, in the name of and on behalf of this Limited Liability Company, contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the Limited Liability Company to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned has affixed his/her signature, this (date) day of (month) 20__

(Typed name of Managing Partner)

SIGNATURE OF MANAGING PARTNER

RESOLUTION FOR PARTNERSHIPS

(TO BE TYPED ON COMPANY LETTERHEAD)

The undersigned, comprising all (partners/general partners) of (legal name of partnership), a (partnership/Limited Partnership/Limited Liability Partnership) duly organized and operating under the laws of (State) and qualified and authorized to do business in the State of Connecticut, DO HEREBY CERTIFY that the following is a true, correct and accurate copy of a Resolution duly adopted at a meeting of the voting (partners/general partners), duly convened and held on (Date of Meeting), at which meeting a duly constituted quorum of the voting partners was present and voted in favor of such Resolution. We further CERTIFY that such Resolution has not been modified, rescinded or revoked since the date on which it was enacted, and it is at present in full force and effect:

RESOLVED: That the following (partners/general partners) of this Limited Liability Company, or any one of them:

(Name and title of partners/general partners)

are empowered to execute and deliver, in the name of and on behalf of this (partnership/Limited Partnership/Limited Liability Partnership), contracts, bids and other documents to the Town of East Hartford, State of Connecticut, and are further authorized to bind the (partnership/Limited Partnership/Limited Liability Partnership) to such contracts, bids and other documents.

IN WITNESS WHEREFORE, the undersigned have executed this resolution, this (date) day of (month) 20__

(Typed partner/general partner Name)

(Typed partner/general partner Name)

(Typed partner/general partner Name)

(Typed partner/general partner Name)

PERFORMANCE BOND

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS:

THAT _____ as Principal,
Hereinafter called "PRINCIPAL," and _____ as Surety,
hereinafter called "SURETY," are held and firmly bound unto the Town of East Hartford, Connecticut,
as Oblige, hereinafter called "TOWN," in the amount of _____ Dollars,
(\$ _____), for the payment whereof PRINCIPAL and SURETY bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, PRINCIPAL has by written Contract dated _____ entered into
a Contract with TOWN for _____, which Contract is by
reference made a part hereof, and is hereinafter referred to as the "CONTRACT."

NOW, THEREFORE, the condition of this obligation is such that, if PRINCIPAL shall promptly
and faithfully perform said CONTRACT, and shall certify in writing that all wages paid under said
CONTRACT to any mechanic, laborer or workman were equal to the rates of wages customary or then
prevailing for the same trade or occupation in the Town of East Hartford, then this obligation shall be
null and void, otherwise it shall remain in full force and effect.

Whenever PRINCIPAL shall be, and declared by the TOWN to be in default under the
CONTRACT, the TOWN having performed its obligations thereunder, the SURETY may promptly
remedy the default, or shall promptly:

1. Complete the CONTRACT in accordance with its terms and conditions; or
2. Obtain a bid or bids for submission to the TOWN for completing the CONTRACT in accordance
with its terms and conditions, and upon determination by the TOWN and SURETY of the lowest
possible bidder, arrange for a CONTRACT between such bidder and the TOWN, and make
available as work progresses (even though there should be a default or a succession of defaults
under the CONTRACT or Contracts of completion arranged under this paragraph) sufficient
funds to pay the cost of completion less the balance of the Contract Price; but not exceeding,
including other costs and damages for which the SURETY may be liable hereunder, the amount
set forth in the first paragraph hereof. The term, "Balance of the Contract Price," as used in this
paragraph, shall mean the total amount payable by the TOWN to PRINCIPAL under the
CONTRACT and any amendments thereto, less the amount properly paid by the TOWN to the
PRINCIPAL.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the TOWN named herein or the heirs, executors, administrators or successors of TOWN.

Signed and sealed this _____ day of _____, A.D., 20 ____.

In the Presence of:

_____ (SEAL)

(PRINCIPAL)

By: _____

(SURETY)

By: _____

LABOR AND MATERIALS BOND

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS:

THAT _____ as Principal,
Hereinafter called "PRINCIPAL," and _____ as Surety,
hereinafter called "SURETY," are held and firmly bound unto the Town of East Hartford, Connecticut,
as Obligee, hereinafter called "TOWN," in the amount of _____ Dollars,
(\$ _____), for the payment whereof PRINCIPAL and SURETY bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, PRINCIPAL has by written Contract dated _____ entered into
a Contract with TOWN for _____, which Contract is by
reference made a part hereof, and is hereinafter referred to as the "CONTRACT."

NOW, THEREFORE, if the CONTRACTOR and his/her subcontractors shall pay all indebtedness
incurred for supplies, materials or labor furnished, used or consumed in connection with, or in or about
the construction or making of, public improvements, including gasoline, lubricating oils, fuel oils,
greases, coal and similar items used or consumed directly in furtherance of such improvements, this
obligation shall be void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that the surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration, or addition to the terms of the contract, or work to be performed
thereunder, or the specifications accompanying the same, shall in any way affect its obligations on this
bond and it does hereby waive notice of any change, extension of time, alteration, or addition to the
terms of the contract, or to the work, or to the specifications;

PROVIDED FURTHER, that the Surety agrees that any person to whom there is due any sum for
supplies, materials or labor, as hereinbefore stated, or his/her assigns, may bring an action on this bond
for the recovery of indebtedness; PROVIDED that no action shall be brought on the bond after twelve
(12) months from the completion of public improvements.

IN TESTIMONY WHEREOF, the CONTRACTOR has hereunto set his/her hand and said surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed, by its attorney-in-fact duly authorized to do so.

Signed and sealed this _____ day of _____, A.D., 20____.

In the Presence of:

_____ (SEAL)
(PRINCIPAL)

By: _____

_____ (SURETY)

By: _____

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
 1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
 1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor’s commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor’s pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
 - C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
 - F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.

- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.



TOWN OF EAST HARTFORD, CONNECTICUT

SUPPLEMENTAL CONDITIONS

These Supplemental Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC_C700, 2013 edition.) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

5.01 Availability of Lands

Amend this article as follows:

- 1) The Contractor shall not store materials or equipment within Town or State right-of-way.
- 2) Evidence of agreement(s) with private property owner(s) for the storage of equipment and materials must be provided to the Town.
- 3) The Contractor may be allowed to store materials or equipment on Town parcels with written permission from the Engineer. Terms and conditions of the use of Town parcels will be negotiated before the start of work.
- 4) In no case, even with the property owner's consent, will storage of materials or equipment be allowed where such storage will impact sightlines at intersecting roadways.
- 5) Access to all businesses and residences within the project limits must be maintained at all times. The Contractor shall coordinate his/her work, provide safe and ready means of ingress and egress to all stores and shops, public and private professional offices, and any other businesses or residences in the project area, both day and night, for the duration of the project. As required by the Engineer, the Contractor shall install and maintain temporary ramps at driveways. If there is a lump sum bid price for the Maintenance and Protection of Traffic, the cost of installing, maintaining, and removing the temporary ramps shall be included in the lump sum price bid for Maintenance and Protection of Traffic. Otherwise, this Work will be performed without additional compensation.

5.02 Use of Site and Other Areas

Amend this article as follows:

- 1) The Contractor shall conduct the Work at all times in such a manner as to ensure the least possible obstruction to both vehicular and pedestrian traffic. All equipment and materials shall be placed or stored in such a way and in such locations as will not create a hazard to the general public.
- 2) The Contractor shall notify residents and businesses in writing at least 24 hours in advance of any Work which will impact access to their property. Work shall be coordinated such that no residential or commercial driveway access is fully closed at any time.
- 3) The Contractor shall provide such barricades, signs, warnings, flagmen and shall conduct his Work in such a manner so that hazards to vehicular and pedestrian traffic are at a minimum. If, in the opinion

TOWN OF EAST HARTFORD, CONNECTICUT

SUPPLEMENTAL CONDITIONS (*cont'd*)

of the Engineer or other Town Public Safety Authorities, additional precautions or measures should be taken in the interest of public safety, the Contractor shall so comply promptly.

- 4) If the Contractor finds it necessary to close a portion of the road to vehicular traffic, then a Road Closure permit shall be obtained from the Engineer and the Chief of the East Hartford Police Department. The Contractor shall notify the Fire Department and any other concerned agencies of such road closing. Access shall be provided at all times to fire hydrants and precautions shall be taken to prevent freezing of any exposed or partially uncovered water lines.

5.05.A.2.c Underground Facilities: Contractor's Responsibilities

Amend this article as follows:

- 1) At least two full days before, (excluding Saturdays, Sundays and holidays) but not more than thirty days prior to commencing excavation, the Contractor shall call the telephone number 1-800-922-4455 (Call Before You Dig) to allow notification of utilities.
- 2) The Contractor shall be responsible to support all utility poles in the vicinity of excavations necessary to perform Work under this project. The Contractor must obtain all approvals required by the custodian of the utility pole, and coordinate all Work. There will be no direct payment for the support of utility poles.

5.06 Hazardous Environmental Conditions at Site

Delete paragraph I in its entirety.

7.08 Permits

Amend this article as follows:

- 1) Permits and licenses obtained by the Contractor prior to performing any Work and may include water and sewer permits (MDC), building permits, driveway and sidewalk permits, excavation permits, and Connecticut Department of Transportation Encroachment permits.
- 2) The Contractor will give all permit notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the Contractor observes that the Contract Drawings and Specifications are at variance therewith, he will give the Engineer prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate modification. If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, he will bear all costs arising there from.
- 3) For any Work within the Town right-of-way, on Town properties, or within the State highway right of way (for sidewalks only), the Contractor shall obtain a license and permit from the East Hartford Department of Public Works for the project. The license requires submission of a separate insurance certificate, a \$10,000 bond, and a hold harmless agreement. Licenses expire on December 31 of the year of issue. The Contractor is required to pay a \$35.00 license fee. Once the license has been

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SUPPLEMENTAL CONDITIONS (*cont'd*)

obtained, the Contractor shall apply for a permit for this project. The \$50.00 permit fee will be waived for this project.

- 4) Prior to any construction involving or impacting facilities owned and/or operated by the Metropolitan District Commission (MDC), the Contractor must obtain all necessary permits pertinent to the work being performed.
- 5) Certain work including, but not limited to, retaining wall construction and electrical work, requires a building permit. The Contractor shall secure building permit(s) for such work at the Town of East Hartford Inspections and Permits Department. Unless otherwise noted in a "Notice to Contractor", the Town's portion of the permit fee will be waived. The Contractor will be required to pay the State of Connecticut portion of any building permit. Contact the Inspections and Permits office at 860-291-7345 for building permit information.
- 6) Some projects require special approval(s) from the Town of East Hartford Planning and Zoning Commission, the State of Connecticut Department of Energy and Environmental Protection (DEEP), the United States Army Corps of Engineers or any other agency with jurisdictional rights. In most of these cases, separate plans have been approved and are on file. Any specific permit approval(s) by another agency or commission will be attached to the Contract Documents. If such permits are identified, then the approved permit plans are hereby made part of the Contract Documents and the Contractor represents that he/she is fully aware of all the requirements of the permit and his/her intention to comply with such requirements.

7.09 Taxes

Amend this article as follows:

- 1) Materials and equipment purchased for installation in this project will be exempt from the Connecticut Sales and Use Tax under the Connecticut Education, Welfare and Public Health Tax Act.

7.12 Safety and Protection

Amend this article as follows:

- 1) The Contractor shall be responsible for the protection and replacement of all survey markers, streetline monuments, and private property markers. Any survey markers, streetline monuments or private property markers disturbed or destroyed during construction will be replaced at the Contractor's own expense. Work must be performed by a Land Surveyor licensed in the State of Connecticut.
- 2) The Contractor shall protect his Work so as to prevent damage and/or vandalism to newly poured sidewalks and other concrete surfaces. Any newly poured sidewalks or ramps which are damaged or defaced shall be promptly repaired or replaced at the Contractor's expense. Determination to repair or replace will be at the sole discretion of the Engineer.

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SUPPLEMENTAL CONDITIONS (*cont'd*)

- 3) The Contractor will take precautionary measures to protect all public and private trees or shrubs remaining within or adjacent to the Project area. This also includes protection of root systems that may become damaged due to the excavation activities near or adjacent to vegetation designated to remain.
- 4) The Contractor shall be fully responsible for compensation, repair, or replacement of any damaged tree or shrub because of neglect by the Contractor or any of his/her assigned Subcontractors.
- 5) The Contractor's attention is called to the fact that there are underground traffic control facilities (e.g. loop detectors) at various intersections in the Town of East Hartford. Should these facilities become damaged during the course of the Work; the Contractor will be responsible for replacement of the equipment in accordance with the current Connecticut DOT installation standards. Splicing of the detector loops will not be permitted. Replacement of traffic control equipment will be at the Contractor's expense.

8.02 Coordination

Amend this article as follows:

- 1) The Contractor shall accommodate routine and emergency maintenance operations performed by the Town (i.e. refuse pickup, leaf collection, snow plowing, etc.) within the Work area.

12.01 Claims

Amend this article as follows:

Any claims received by the Owner for damage to private property as a result of the Contractor's operations, or lack of protective measures to prevent such damage, will be forwarded directly to the Contractor for resolution. For each claim, the Contractor shall provide to the Town evidence that the claim has been resolved. The claim report shall be submitted with each monthly pay request. Payment of monthly invoices will not be made until the claim report is submitted by Contractor in a format acceptable to the Engineer.

14.02 Tests, Inspections and Approvals

Amend this article as follows:

- 1) The Contractor shall always notify the Engineer of its intention to perform work on the Project, including notice of the particular work it intends to perform, at least 24 hours before the Contractor commences that work. The Engineering Division can be reached between 8:30 a.m. and 4:30 p.m. at (860) 291-7380.
- 2) In instances when it shall be necessary to utilize Department inspectors during other than normal Department working hours, the Contractor shall make payment to the Town of East Hartford for such use. Normal working hours for the Department are from 8:30 a.m. to 4:30 p.m. daily, Monday

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SUPPLEMENTAL CONDITIONS (*cont'd*)

through Friday, excluding holidays. Payment will be made in accordance with the following:

- a. For each Department employee utilized by the Contractor, the Town shall receive the standard overtime rate paid to the employee by the Department.
- b. In the event a Department employee is called out after the end of normal working hours, minimum payment to the Town by the Contractor for each Department employee utilized shall be at the standard overtime rate for a period no less than four (4) hours. Payment for overtime that is a continuation of the normal working day shall be at the standard overtime rate for the actual hours worked. There will be no charge for use of Department personnel during normal working hours for services provided by the Department.

15.01 Progress Payments

Amend this article as follows:

- 1) The Contractor shall submit a list of claims, and their status, with each application for a progress payment.

15.06 Final Payment

Amend this article as follows:

- 2) The Town will not release final retainage for any project where there are any unresolved claims for private property damage, as described in the Supplemental Condition for Article 12.01.

16.01 Owner May Suspend Work

Amend this article as follows:

- 1) If the time specified for completion of the Project, with time extensions, is due to expire after November 15TH, then contract time will not be charged during a winter shutdown period between November 15TH and April 1ST. The Contractor will not be allowed to work during the winter shutdown (other than maintaining the project area) without the approval of the Engineer. Prior to a winter shutdown, the Contractor and the Town shall meet to discuss the Contractor's procedures for preparing the Work area for a winter shutdown. No additional compensation will be paid for demobilization, remobilization, or other costs associated with a winter shut down but these costs shall be included in the general cost of the Work.
- 2) However, if the time specified for completion of the Project, with time extensions, is due to expire before November 15TH and the Project is not completed before November 15TH, then the time charged to the Contractor will continue to run through the winter shutdown period.

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SPECIAL PROVISIONS

SCOPE OF WORK

The work under this Contract consists of rehabilitation or resurfacing of various roadways within the Town of East Hartford totaling approximately 20,303 feet (3.9 miles). The locations of work are as follows:

- Cambridge Drive – Evans Avenue to Sutton Street
- Evans Avenue – Handel Road to Handel Road
- Handel Road – Maple Street to Cul-de-sac
- Hollister Drive #1 – Jefferson Lane to Nassau Lane
- Hollister Drive #2 – Hollister Drive (North) to Hollister Drive (North)
- Hollister Drive #3 – Hollister Drive (South) to Hollister Drive (South)
- Jefferson Lane – Brewer Street to Hollister Drive
- Milbrook Drive – Hollister Drive to Cambridge Drive
- Nassau Lane – Cambridge Drive to Hollister Drive
- Oxford Drive – Evans Avenue to Sutton Street
- Princeton Lane – Oxford Drive to Millbrook Drive
- Sutton Avenue – Main Street to Oxford Drive

The limits of work are more precisely shown on the construction plans included in these contract documents. The exact limits of work will be determined by the Engineer prior to the Contractor beginning work.

The Contractor shall review and coordinate the location of all proposed curbing, limits of pavement removal, signs, pavement markings, loop detectors, and all other items that are not specifically detailed within these documents with the Engineer prior to the beginning of work. The Contractor is responsible for taking accurate measurements as needed of actual field conditions prior to ordering proposed materials or beginning construction.

Work under this contract includes, but is not limited to, full-depth road reconstruction, complete removal of existing hot mix asphalt, milling, overlay paving, curb replacement, installing new catch basins and associated drainage pipes, resetting and replacing drainage castings, frames, and grates, cleaning the existing drainage system, installation of a check valve in the outfall pipe on Hollister Drive, sidewalk ramp construction, driveway apron reconstruction, pavement markings, replacing and resetting signs, landscaping and other necessary appurtenances such as maintenance and protection of traffic.

All work done under this Contract shall be in conformance with the following:

1. The State of Connecticut Department of Transportation Specifications for Roads, Bridges, and Incidental Construction Form 817, dated 2016 and supplemental thereto dated July 2019;
2. The latest Manual on Uniform Traffic Control Devices for Streets and Highways;
3. The State of Connecticut Department of Transportation, Sign Catalog, revised July 3, 2019.
4. The Construction Plans;

5. These Special Provisions.

The General Conditions, Supplementary Conditions, and Special Provisions shall take precedence over the General Requirements of Division I of the Standard Specifications.

WORK SCHEDULE

The Contractor is required to submit a schedule of work to be completed to the Engineer and obtain approval from the Engineer on the schedule prior to commencing work. Unless agreed to by the Owner, the progress schedule must be updated and submitted to the Owner with each Progress Payment Request, at each Monthly Status meeting, or when requested by the Owner. Progress Payment Requests will not be processed for payment without the submission of a progress schedule update unless waived by the Owner in writing. If a progress schedule update is not deemed acceptable by the Engineer, the subsequent Progress Payment Requests will not be processed for payment until the corresponding progress schedule update is approved by the Engineer. The Engineer will review the schedule to determine if there will be any increased cost to the Town or potential coordination issues. Any increased costs to the Town resulting from a schedule modification will be paid for by the Contractor.

Work within the project limits for all roadways shall be performed within a normal eight-hour day, five-day week, with the Contractor and all Subcontractors working on the same shift.

No work may begin on any roadway prior to 7:00 am.

No work shall be done on this Contract on Saturdays, Sundays, or holidays, or on the day before or the day after a long weekend, which involves a holiday, without prior approval by the Engineer. The Contractor shall submit any request to work on a holiday to the Engineer for approval. Such request shall include detail information as to the type of work and the locations the work shall be performed.

The Contractor is advised that once a roadway has been milled, it shall be the Contractor's responsibility to immediately proceed with the necessary grading, patching, and crack sealing repairs, as noted on the plans and directed by the Engineer, to prepare the roadways for the application of the specified overlays.

The Contractor is further advised that once the bituminous surface of a project roadway has been removed or reclaimed, it shall be the Contractor's responsibility to immediately proceed with the necessary grading to establish a base that is of the shape and strength to receive the specified overlays. Once the roadway base has been established, it shall be the Contractor's responsibility to obtain an as-built survey of the aggregate or reclaimed base, as described in these special provisions. This survey shall be stamped by a licensed land surveyor and shall be submitted to the Town for approval prior to the application of the specified hot mix asphalt overlays.

The Contractor shall further schedule construction operations to minimize the period of time that vehicle traffic is placed upon any intermediate or leveling overlay course. Prior to the construction of subsequent bituminous courses, any damage noted by the Engineer on the previously placed bituminous courses shall be repaired as directed by the Engineer at the Contractor's expense.

The Contractor shall notify the Engineer 48 hours in advance of the commencement of any paving operations. The purpose of this notice period is to allow ample time to conduct pre-paving condition

inspection. The Contractor is advised that that he is responsible for providing the appropriate quality control associated with all paving operations, including grade control. The Engineer's pre-paving inspection will involve a review of the as-built grades supplied by the Contractor, if required, and a review of field conditions.

NOTICE TO CONTRACTOR – RESOLUTION REQUIREMENTS

The appropriate resolution shall be submitted with all bids. At the time of the contract signing the successful bidder shall resubmit the appropriate resolution.

NOTICE TO CONTRACTOR - INFORMATION AVAILABLE TO BIDDERS

The contractor is advised that pavement cores and pavement test pits have been collected for the various project roadways by Vanasse Hangen Brustlin, Inc. (VHB). Prospective bidders can obtain a copy of this information from the Town's website at no cost. The website address is:

<http://www.easthartfordct.gov/bids>

NOTICE TO CONTRACTOR – SIDEWALKS

At driveways where sidewalk reconstruction is proposed, the Contractor shall not saw cut or remove the existing sidewalk and bituminous concrete driveway at the back of the sidewalk until the intermediate course is placed on the roadway, or directed by the Engineer.

NOTICE TO CONTRACTOR - COORDINATION OF WORK

The Contractor shall coordinate his/her work with any utility companies and other contractors working within the project area. The Contractor shall allow other contractors hired by the Town or a utility company access and use of the project area insofar as this access does not directly impede the Contractor's immediate plan of operations.

The ConnDOT Electrical Division must be notified 48 HOURS in advance of starting any excavation that will affect the operation of State-owned traffic signaling or related devices. They can be reached at (860) 566-3156 (Attention Mr. Peter Tyc). The replacement of any loops damaged during construction will be the responsibility of the permittee. This will require the replacement of the entire loop, splicing of traffic loops will not be allowed.

NOTICE TO CONTRACTOR – CONSTRUCTION STAGING AREA

The Contractor shall submit for review and approval a plan and description for the proposed construction staging area. The plan and description shall be submitted to the Engineer within 7 calendar days after the award of the contract.

The following is to be included in the plan and/or description:

- Location and type of erosion control measures (if required)
- Anti-tracking Pad location(s)

- Location and type of security fence (if required)
- Location and type of stockpiles stored on-site
- Location and type of hazardous materials stored on-site
- Location and type of equipment stored on-site
- Location and type of vehicles stored on-site
- Times and days in which construction activities will use the staging area
- Estimated number of trips in and out of the staging area
- Date the staging area will become active
- Date the staging area will be removed and returned to original conditions

NOTICE TO CONTRACTOR - FINAL ROADWAY GRADES

The Contractor is advised that the proposed grades and profiles along many of the project roadways will require specific attention by the Contractor to ensure the grades are achieved for drainage purposes. The Contractor shall be responsible for implementing all necessary grade controls to provide the designed grades.

NOTICE TO CONTRACTOR - DISPOSAL OF SURPLUS MATERIALS

Surplus materials obtained from any type of excavation or milling operation, and not needed for further use as determined by the Engineer, shall become the property of the Contractor and shall be removed from the site during the construction period and disposed of legally. The removal and disposal of surplus material shall adhere to the regulations and requirements of local authorities governing the disposal of such materials, and these efforts shall occur with no additional compensation for the Contractor.

NOTICE TO CONTRACTOR - METROPOLITAN DISTRICT COMMISSION (MDC) POLICIES CONCERNING THE USE OF MDC MATERIALS

The Contractor shall adhere to the following guidelines when requesting materials from the MDC:

1. Schedule pick of material(s) with Clarence Corbin, ccorbin@themdc.com with at least 30 days prior notice. When scheduling, please provide a written request from the Town Engineer, on official Town letterhead, with the following information: (a) street or project location(s); (b) estimate of bill of materials; (c) anticipated date of construction activity;
2. and (d) name of the authorized contractor representative receiving the materials on behalf of the Town. Operations staff will verify and provide actual takeoffs of MDC infrastructure specific to the town street to ensure the MDC has the inventory necessary to support the Town's request.
3. Upon approval of scheduled appointment, authorized representative will need to bring a copy of the same Request.
4. Representatives will need to report to the Emergency Command Center (Dispatch) prior to proceeding to the Inventory Warehouse.

5. Representatives will require MDC Inventory staff assistance to access the Warehouse due to new security protocols.

At the scheduled pick up, all listed inventory identified in the request and bill of materials must be transferred to the authorized representative. If there is a need to take receipt of material in some other scheduled format, whether daily, weekly, etc., this will need to be outlined in the original town request, with the correlating bill of materials broken down into specific scheduled pickups.

The MDC understands construction is dynamic in nature and anticipates that member towns may need to develop emergency protocols and/or field conditions requiring inventory outside this new scheduling process. The MDC will be flexible and willing to accommodate these protocols and conditions. In such an event, contact Jeff Passardi to coordinate additional material pickup by the authorized representative as necessary.

NOTICE TO CONTRACTOR - SHOP DRAWINGS

The Contractor shall submit shop drawings in electronic format (Adobe Acrobat) to the Engineer for review and approval prior to ordering or installing the items.

NOTICE TO CONTRACTOR - REQUEST FOR INFORMATION (RFI) PROCESS

The Contractor shall forward all RFIs to the Engineer in writing (facsimile or other electronic document) for review. The Engineer will forward the RFI to the Designer for review. Upon receipt of an RFI, the Designer will attempt to determine if additional information is required from the Contractor to respond to the RFI, and request said information from the Engineer.

The Designer shall review and respond, within ten (10) calendar days (using a 7-day calendar, exclusive of holidays) of receipt, to each RFI submitted. RFIs requiring information from outside agencies shall be allocated twenty-one (21) days (using a 7-day calendar, exclusive of holidays), from date of receipt by the Designer.

NOTICE TO CONTRACTOR - REQUEST FOR CHANGE (RFC) PROCESS

The Contractor shall forward all RFCs to the Engineer in writing (facsimile or other electronic document) for review. The Engineer will forward the RFC to the Designer for review. Upon receipt of an RFC, the Designer will attempt to determine if additional information is required from the Contractor to respond to the RFC, and request said information from the Engineer.

The Designer shall be allocated a minimum of thirty (30) calendar days (using a 7-day calendar, exclusive of holidays) for review and response to each RFC submitted. RFCs requiring information from outside agencies shall be allocated sixty (60) days (using a 7-day calendar, exclusive of holidays).

The Engineer reserves the right to reject any RFC submitted in the form of an RFI for the purpose of reducing the Engineer and/or Designer's review and response time. Such documents will not be considered for review by the Engineer and/or the Designer and will be returned to the Contractor for resubmission. Review and response time will commence upon resubmission in the correct format.

NOTICE TO CONTRACTOR - DRAINAGE

The Contractor shall maintain the drainage system in the Contract areas to provide continual drainage of the travel ways and the construction area.

The Contractor shall clean all existing pipes, manholes and catch basins identified on the plans, prior to construction and review conditions to determine if any storm drainage pipes require repair. The Contractor shall expose all buried manholes identified on the plans or as ordered by the Engineer to provide access.

The exposed manholes shall be left in a safe condition. The cost to expose buried manholes shall be covered under the general cost of work. The cost to clean the existing drainage system shall be covered under the respective pay items. The Contractor shall implement and maintain sediment control system at catch basins to prevent sediment from entering the drainage system. The entire drainage system shall be left in a clean and operable condition at the completion of the work. The Contractor will only be paid once to clean the drainage system. The cleaning of the drainage system due the Contractor's operations will be at no cost to the Town.

All pipes and structures installed as part of this Contract shall be left in a clean and operable condition at the completion of the work.

All corrugated metal pipe and clay tile pipe to be abandoned shall be completely removed and paid for in accordance with special provision Section 6.86. All other existing pipes to be abandoned shall be completely filled with grout in conformance with Item #651289A – Grout Fill Storm Pipe, of these Special Provisions.

No separate payment will be made for the maintenance of the existing drainage system or for plugging of pipes, but all costs in connection therewith shall be included in the unit prices bid for the various Contract items.

NOTICE TO CONTRACTOR - DRAINAGE STRUCTURES

Where new structures are to be connected into one or more existing drainages pipe to remain, the proposed structure shall be constructed to minimize damage to the existing pipe(s). The existing pipe(s) shall be carefully and neatly cut to provide a flush surface with the inside face of the proposed structure wall and the remaining space around the pipe completely filled with cement grout for the full thickness of the structure wall.

The Contractor shall replace any existing pipe damaged as a result of the Contractor's operation or shall extend existing pipes that may not meet the new structure.

No separate payment will be made for the cost of connecting existing pipes into proposed structures or for installing new pipe to connect existing pipe to new structures, but all costs in connection therewith shall be included in the unit prices bid for the various contract items.

NOTICE TO CONTRACTOR - SAWCUTS

Existing pavements to remain shall be sawcut at all openings for utility work, for new or reset curb, and at all joints with proposed full-depth hot mix asphalt pavement and sidewalk, as shown on the plans or as directed by the Engineer.

NOTICE TO CONTRACTOR - AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

The Contractor is hereby notified that the Contractor is ultimately responsible for constructing all project elements in compliance with the current ADA rules, regulations, and standards.

The Contractor shall establish grade elevations at all wheelchair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans). If the project limits must be extended to ensure compliance with ADA requirements, the Contractor shall notify the Engineer and request approval of the extended limits prior to proceeding with the work.

All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

The Contractor shall make the necessary field adjustments to ensure that ponding does not occur at the approaches of the wheelchair ramps.

NOTICE TO CONTRACTOR - QUALITY OF WORK

It is the Contractor's responsibility to perform the work of this Contract in accordance with the contract plans and specifications and as directed by the Engineer. The Town reserves the right to withhold payment for any quantity of work which in the Town's sole opinion does not meet the contract requirements.

Any and all improvements, or parts thereof, constructed as part of this contract, which in the Town's opinion do not conform to the contract plans and specifications and has resulted in an unacceptable product, will not be measured for payment until corrected by the Contractor at the Contractor's own expense.

Upon receiving notification from the Town that such work has been identified as unacceptable, the Contractor shall immediately proceed to either repair or remove and replace the unacceptable work as directed by the Town. When, in the opinion of the Town, the corrective work has been completed and accepted, the original pay items will be measured for payment.

NOTICE TO CONTRACTOR - TREE REMOVAL

If it is necessary to remove any trees throughout the project area, the Contractor is required to contact the Town's Tree Warden prior to any removal. The Contractor will be responsible for flagging all public trees to be removed. The Engineer will then review the trees to insure conformance to the plans. The

Town will then post the trees, with a 10-day notice/waiting period required. If the tree removal is protested, an appeal process with a Public Hearing will be held prior to the tree removal.

NOTICE TO CONTRACTOR – SELECTIVE CLEARING AND THINNING

The Connecticut General Statutes give the Town’s Tree Warden powers and duties associated with care and control within the limits of any public road or grounds and within the limits of his/her Town, except along state highways. Such care and control extend to such limbs, roots and parts of trees and shrubs as extend or overhang the limits of any such public road or grounds. Exclusive control of all trees standing in whole part or in part within the limits of a highway is vested in the Tree Warden even though the trees stand on private grounds. The Contractor shall post the trees that will be trimmed for 10 days and a notice is to be left at each affected property. Notices shall not be attached directly to trees that will be trimmed. Written authorization from property owners will not be required. All work shall be done under the direction of an arborist.

NOTICE TO CONTRACTOR - TEMPORARY NO PARKING AREAS

The Town will be responsible for establishing temporary no-parking areas during construction. The Contractor shall coordinate his/her work schedule with the Town so that advance notice can be provided to residences and businesses. The Contractor will be responsible for supplying and posting the necessary temporary no-parking signs.

NOTICE TO CONTRACTOR - CT TRANSIT

The Contractor is advised that CT Transit bus services operate within the project limits. The Contractor shall coordinate his/her work with CT Transit as necessary to provide for operation of these routes during construction.

NOTICE TO CONTRACTOR - POLICE SERVICES

The Contractor shall be responsible for contacting the Town of East Hartford Police Department Safety Officer and coordinating and requesting police services required to direct traffic on existing roadways where traffic is maintained. Police Services will be required on all Collector and Arterial roadways. The Contractor shall utilize uniformed flaggers on Local roadways.

The Contractor is advised that the Town of East Hartford Police Department personnel will charge for a minimum of five (5) hours and for a full eight (8) hours for any time beyond five (5) hours spent. Overtime will be charged for any work beyond eight (8) hours.

All costs in connection with Police Services for traffic control will be paid for by the Contractor with reimbursement by the Town of East Hartford as a direct cost with no mark-up. Contractor shall provide proof of payment for all Police Services prior to requesting reimbursement of these costs from the Town.

NOTICE TO CONTRACTOR – MATERIAL TRANSFER VEHICLE

A Material Transfer Vehicle (MTV) is not required for this project.

NOTICE TO CONTRACTOR – TEMPORARY PAVEMENT MARKINGS

Where temporary pavement markings are required the Contractor shall use temporary plastic pavement marking tape on hot mix asphalt surface courses. Temporary plastic pavement marking tape or hot applied paint may be used on intermediate courses. Temporary pavement markings will not be measured and paid for, but the cost of this work shall be included in the lump sum bid price for “Maintenance and Protection of Traffic”.

NOTICE TO CONTRACTOR – REMOVAL OF EXISTING SIGNING

The Town reserves the right to salvage existing signs that are removed. The Engineer will determine what signs are to be salvaged. The Contractor shall deliver these signs to the Town of East Hartford Public Works Department located at 61 Ecology Drive, East Hartford, CT 06108.

NOTICE TO CONTRACTOR – PLATES

The use of plates will require a submittal stamped by a Professional Engineer to the Town for approval. The submittal will govern the conditions and alignment under which the plates will be utilized. All plates are to be pinned and appropriate transitions provided between adjacent paved surfaces and the plates. Necessary modifications resulting from field conditions will require a revised submittal which is to be stamped by a Professional Engineer. The use of plates will only be allowed from May 1st to September 30th.

NOTICE TO CONTRACTOR – WARM MIX ASPHALT

The Contract shall submit a Certified Test Report showing the results of the warm mix manufacturer’s recommendation for mixing and compaction temperature ranges. If the Contractor is unable to produce, place and compact the warm mix asphalt within these temperature ranges, the Town will not accept the material, and Hot Mix Asphalt should be provided instead.

SECTION 1.05 - CONTROL OF THE WORK

Article 1.05.05 – Cooperation by Contractor

Add the following:

Agents of various public service agencies, municipal and State Departments, and private site contractors may be entering on the work site to remove existing utilities, to construct or place new facilities or to make alterations to existing facilities.

The Contractor shall perform the work in cooperation with the various agencies in a manner which causes the least interference with the operations of the aforementioned agencies and shall have no claim for delay which may be due to, or result from, said work of these agents.

Article 1.05.06 – Cooperation with Utilities (Including Railroads)

Add the following:

Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities at least one week in advance of the commencement of operations that will affect the utilities. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

The following are the names of owners and representatives of the principal utilities affected, but completeness of this list is not guaranteed by the Owner:

TOWN OF EAST HARTFORD

Engineering Division
740 Main Street
East Hartford, CT 06108

Douglas Wilson
Town Engineer
Phone: (860) 291-7383

East Hartford Fire Department
East Hartford, CT, 06108

Fire Dispatcher
Phone: (860) 528-4171

East Hartford Police Department
East Hartford, CT 06108

Watch Commander
Phone: (860) 528-4401

East Hartford Emergency Management
East Hartford, CT 06108

Emergency Management Coordinator
Phone: (860) 291-7411

CABLE

Comcast of Connecticut, Inc
1110 East Mountain Road
Westfield, MA 01085

Mr. Jim Bitzas
Phone: (413) 642-8582

CoxCom, LLC
9 JP Murphy Highway (3rd floor)
West Warwick, RI 02893

Mr. David Velilla
Phone: (401) 615-1284

ELECTRIC DISTRIBUTION

The Connecticut Light and Power Company
dba Eversource Energy – Electric Distribution
22 East High Street
East Hampton, CT 06424

Mr. Thomas Woronik
Phone: (203) 267-3891

COMMUNICATIONS

Lighttower Fiber Networks I, LLC
dba Crown Castle Fiber
1781 Highland Avenue, Suite 102
Cheshire, CT 06410

Mr. Eric Clark
Phone: (203) 649-3904

Level 3 Communications, LLC
aka Century Link Communications, LLC
OSP Relocations
71 Clinton Road
Garden City, NY 11530

Mr. David Vega
(917) 207-4604

The Southern New England Telephone Co.
dba Frontier Communications of Connecticut
1441 North Colony Road
Meriden, CT 06450

Ms. Lynne DeLucia
Phone: (203) 238-5000

WilTel Communications, LLC
dba CenturyLink Communications, LLC
OSP Relocations
71 Clinton Road
Garden City, NY 11530

Mr. David Vega
(917) 207-4606

GAS

Connecticut Natural Gas Corporation
76 Meadow Street, 2nd Floor
East Hartford, CT 06108

Mr. Jonathan Gould
Phone: (860) 727-3044

PETROLEUM

Buckeye Pipe Line Company, L.P.
9999 Hamilton Boulevard
Five TEK Park
Breinigsville, PA 18031

Mr. David Jones
Phone: (610) 904-4409

WATER

The Metropolitan District
555 Main Street, P.O. Box 800
Hartford, CT 06142

Mr. Richard Norris, P.E.
Phone: (860) 278-7850

OTHER AFFECTED PARTIES ARE:

Vanasse Hangen Brustlin, Inc. (VHB)
100 Great Meadow Road, Suite 200
Wethersfield, CT 06109

Mr. Bill Anderson, P.E.
Phone: (860) 807-4300

ConnDOT - District 1
1107 Cromwell Avenue
Rocky Hill, CT 06067

Mr. Tim Isyk
Phone: (860) 258-4541

The Contractor shall make his/her own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of construction operations.

The Contractor shall notify "Call Before You Dig" at 1-800-922-4455, 72 hours prior to disturbing ground in any way.

SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.07 – Public Convenience and Safety

Add the following:

The Contractor shall provide the necessary access for emergency vehicles through the work zones to abutting properties at all times.

Sweeping and cleaning of surfaces beyond the limits of construction required for dust control or to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

The Contractor shall notify all public safety agencies at least 48 hours prior to beginning any construction operation which will provide less than a 12 foot travel lane along any project roadway.

Article 1.07.13 – Contractor’s Responsibility for Adjacent Property, Facilities and Services

Add the following:

The Contractor, in constructing or installing facilities alongside or near sewers, drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults, railroad tracks, railroad crossing signals or arms or other structures shall sustain them securely in place. The Contractor shall coordinate with the officers and agents of the various utility companies and municipal departments to assure that the services of these structures are maintained. The Contractor shall also be responsible for the repair or replacement, at no additional cost to the Town, of any damage to such structures caused by construction operations. The Contractor is responsible to leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities including railroads, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer, furnish labor and equipment to work temporarily under the utility owner's direction. Pipes or other structures damaged by the operation of the Contractor may be repaired by the utility owner which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation from the Town.

If during construction there is an existing utility and/or structure found to be in conflict with the proposed work under this Contract, the Contractor shall protect and maintain the services to the utilities and structures and shall notify the Engineer of the conflict. The Engineer will, as soon as possible, identify the utilities to be relocated or other such activities deemed suitable for resolution.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all of the work involved in protecting or repairing property as specified in this Section shall be included in the prices paid for the various Contract items of work, and no additional compensation will be allowed.

Prior to opening an excavation, effort shall be made to determine whether underground installations, (i.e. sewer, water, fuel, electric lines, etc.) will be encountered and, if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.02 – Establishment of Construction Field Office

Replace with the following:

Prior to the start of Project construction, and within 10 calendar days after the signing of the Contract by the parties, the Contractor shall propose in writing to the Engineer a field office location. The office shall be made acceptable to the Engineer and available for use, including all utility hookups, local permits and inspections, within 30 days of the Engineer's order to establish the office. Such order shall not be deemed the "Notice to Proceed".

Article 1.08.03 – Prosecution of Work

Add the following:

Before starting any work under this Contract, the Contractor shall prepare, and submit to the Engineer for approval, a minimum of 30 days in advance, and a plan illustrating the Typical Traffic Management Plan for all roadways to be constructed. This plan shall illustrate typical use and layout of construction signs, drums, and other traffic control devices to be employed during each time period of work to maintain traffic and access to abutting properties.

The Contractor must obtain approval of the Typical Traffic Management Plans and Staging/Maintenance and Protection of Traffic Plans traffic management plans from the Engineer prior to commencing work on the specified roadways.

All appropriate Maintenance and Protection of Traffic devices are to be installed prior to commencing construction operations.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

The Contractor shall notify all public safety agencies at least 48 hours prior to beginning any construction operation which will provide less than a 12 foot travel lane along any project roadway.

SECTION 2.01 - CLEARING AND GRUBBING

Article 2.01.04 – Method of Measurement

Amend as follows:

The cost of any Clearing and Grubbing, except for trees where called for elsewhere in the contract to be paid for separately, shall be included in the general cost of the project. No direct payment for clearing and grubbing work will be made under this contract.

ITEM #202452A – TEST PIT

DESCRIPTION

The work covered under this item includes furnishing all labor, equipment, materials, and incidentals necessary to perform all operations in connection with excavating and backfilling by machine and/or by hand, exploratory test pits at locations indicated or directed by the Engineer. The purpose of the test pits is for locating and examining soils, groundwater, drains, pipes, rocks, utilities, structure foundations, or any other obstacles.

CONSTRUCTION METHODS

Test pit excavations shall have neat, clean-cut, and vertical sides; hand-digging shall be employed when required by the Engineer. Sawcuts shall be performed where necessary and as directed by the Engineer.

It shall be agreed that the Contractor entered into this contract with full knowledge that in any work involving excavation, operation in public highways or adjacent to other developments, obstacles, difficulties, unforeseen soil or groundwater conditions, etc., may be encountered, and that the Contractor has included in the bid and contract obligations the assumptions of the risks and costs to which such obstacles, etc., may be present.

The Contractor shall perform all work in conformance with local, state, and federal codes.

The Contractor shall dig test pits so as to ensure that underground utilities or structures are not damaged. It shall be solely the Contractor's responsibility for any damages incurred during excavation operations. Any damages shall be repaired or replaced by the Contractor to the satisfaction of the Owner, as directed by the Engineer and at the Contractor's own expense.

The Contractor shall notify the Engineer of any revealed conflicts which may require design revisions, relocations, and/or adjustments as early as possible to avoid unnecessary delays. The Engineer shall be allowed sufficient time to perform all necessary design revisions. No work shall be started within areas of conflict until so authorized.

The Contractor shall protect each pit with steel plates, other coverings, fences, barriers, or other appropriate materials as deemed necessary. Do not backfill pits until authorized. Compact backfill materials 95% to the sub-grade elevation or as otherwise directed.

The surface of test pit areas shall be restored to a condition equal or better than original as approved by the Engineer. Test pits throughout the project area are to be completed prior to beginning actual construction activities.

METHOD OF MEASUREMENT

Test pits will be measured for payment by the number of each test pit dug within the limits and to the depths as ordered and approved by the Engineer.

BASIS OF PAYMENT

Payment for “TEST PIT” shall be made at the contract unit price per each “TEST PIT,” which price shall include the excavation of all materials as required. Included in the unit price bid for Test Pits will be excavation, saw cutting, sheeting, shoring, dewatering, backfill, compacting, and all other materials, equipment, tools, labor and work incidental to or necessary for the completion of the work.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #202452A	TEST PIT	EA

ITEM #202529A – CUT BITUMINOUS CONCRETE PAVEMENT

Section 2.02.03 Construction Methods shall be amended as follows:

Wherever portions of existing bituminous concrete pavement are to be removed, they shall be removed to neat lines shown on the plans, or as directed by the Engineer. Where the delineated limits of the areas in which such bituminous surfaces are to be removed are adjacent to existing bituminous concrete pavement that is to remain in place, the line of delineation shall be saw cut.

ITEM #202530A – REMOVE EXISTING HOT MIX ASPHALT PAVEMENT

DESCRIPTION

Work under this item shall consist of the removal and disposal of the full depth of existing bituminous concrete pavement, which may include some macadam or existing granular base, to achieve the depth as shown on the plans, or as ordered by the Engineer in accordance with these specifications. If cold milling is the method used for pavement removal, then at locations where existing HMA pavement material remains after milling to the established final grades for paving, the Contractor shall remove this material using methods approved by the Engineer. **This item is intended for the rehabilitation of a street or street section and not for localized patch repairs.** The work includes, but it is not limited to: (a) removal of the existing HMA; (b) removal of existing granular base materials to achieve proposed grades; (c) final grading and compaction of the base course to the lines and grades as shown on the plans. The intent is to provide a suitable base for the placement of HMA intermediate course(s) and HMA surface course. Final grading and compaction to provide a well-drained surface will be the responsibility of the Contractor.

It is the responsibility of the Contractor submitting proposals for the work to assure him/her self that the equipment and construction methods they intend to use are capable of complying with the project specifications. It is also the responsibility of the Contractor to assure themselves of all project conditions and, if warranted, to make independent assessments of the pavement structure. Sufficient surface drainage must be provided at all times so that ponding does not occur on the granular base. In-place materials information for bidders have been collected for the various project roadways by Vanasse Hangen Brustlin, Inc, (VHB). This information is available for prospective bidders to review at the Town's

<http://www.easthartfordct.gov/bids>

MATERIALS

It is anticipated that some new medium processed aggregate may be needed to meet the final grades as shown on the plans. This material shall be Processed Aggregate Fine Grading material, shall meet the material requirements of Processed Aggregate Fine Grading of these specifications, and will be paid for as a separate item. The Contractor is advised that the Processed Aggregate Fine Grading specification calls for material that is finer than ConnDOT M.05.01 material.

The Contractor shall determine the amount of new processed aggregate fine grading necessary to be added to the existing base course to achieve the desired final elevation as shown on the plans or directed by the Engineer. Bidders Information is available and on file for those test pits and cores that were taken by the Owner.

EQUIPMENT

The Contractor shall provide a list of the specific equipment to be used in the performance of this work for approval by the Engineer.

Compaction

A 10-ton (minimum) vibratory roller having the capability of producing high amplitude and low frequency vibrations shall be used to achieve the specified density and compaction. The Contractor is responsible for locating and protecting all utilities from damage caused by compaction. When conditions warrant, the

Contractor may compact the material in the static mode. This does not relieve the Contractor from achieving specification compaction. The equipment shall be maintained in satisfactory working condition at all times.

Additional rollers of the type and weight sufficient to compact the material to the required density may be utilized around structures.

SAMPLING AND TESTING

The Contractor shall notify the Engineer a minimum of 72 hours prior to when operations commence and when any new materials are incorporated into the base.

A random sample of the medium processed aggregate material, if incorporated, will be selected and tested in accordance with AASHTO T11 and T27 for conformance to the gradation requirements. The optimum density of the material will be determined in accordance with the modified proctor test AASHTO T180.

A minimum of one sample per street, or for each 2400 square yards, may be selected and tested by the Engineer prior to paving with hot mix asphalt. The Engineer reserves the right to require additional samples and testing prior to approval for paving.

CONSTRUCTION METHODS

Prior to removal of the HMA pavement adjacent to an HMA roadway which is to remain in place, a cold joint shall be saw cut full depth to a neat, vertical edge according to Item 202524A Cut Bituminous Concrete Pavement of these special provisions.

All work shall proceed in accordance with the special provisions "Prosecution and Progress," "Maintenance and Protection of Traffic," and "Work Schedule" found elsewhere herein.

The removal operations shall not begin until the Contractor is prepared to immediately perform the work. Drainage, structural, and utility subsurface work, shall be completed prior to the removal of the pavement. Pavement removal shall be limited to 1,000 linear feet of roadway at any given time, unless otherwise approved or ordered by the Engineer.

The Contractor shall note areas of low roadway vertical curvature, or areas having high silt or clay subgrade materials as evidenced by the materials information provided.

The Contractor's attention is directed to the 20-day limit for exposed base materials described in the "Work Schedule" section of these special provisions. The intent of this requirement is to provide for the least possible time lapse between the removal of the HMA pavement and the restoration of the roadway to paved condition, for the protection of traveling public and the road structure. During these 20 days, the Contractor shall grade the base materials to final grades, perform an as-built survey of the roadway base, process the survey information, submit the as-built survey to the Town for approval, and install the HMA intermediate course according to the plans. The Contractor shall be responsible for maintaining the grades of the roadway base during this 20-day period and shall notify the Engineer of any deficiencies that develop.

The as-built survey of the roadway base shall be performed in accordance with Item 304500A – Roadway Base As-Built Survey of these special provisions.

In the event that the as-built survey is not accepted, the Contractor shall make any necessary adjustments to the grading of the base, re-survey the base, and submit the updated survey to the Town for approval within the original 20-day window. There shall be no additional 20-day time limit for any changes required for the base or for the as-built survey.

The Contractor shall take adequate precautions to prevent machinery, tools, and materials onto adjacent traffic lanes.

Lines & Grades

The existing HMA pavement shall be removed and the base fine graded and compacted to the lines and grades specified on the plans. The Contractor will be responsible for setting and maintaining grade stakes and elevations that will provide a suitable, well drained pavement facility. The cost of supplying/maintaining lines & grades shall be included in this item.

Structures

The Contractor shall be responsible for determining the exact location of all structures and obstructions that may affect the HMA pavement removal operation, and the Contractor must also guarantee repair or replacement of any and all damaged structures when encountered. The Contractor must also prevent any material, silt, or runoff from plugging the drainage system.

The Contractor shall contact the respective utility companies and must be careful not to disturb or break existing manholes, catch basins, valve boxes and other castings, which may be located in the road. Utilities that are disturbed or broken by the Contractor will be repaired by the Contractor at no cost to the Town.

Excavation

The Contractor shall remove all existing bituminous pavement, including bound penetrated stone courses if present, by approved methods. The existing base material shall remain in place unless additional excavation is required to achieve final pavement grades. In the event that the Contractor performs additional excavation that has not been approved by the Engineer or that has been determined by the Engineer to be in excess of that which is necessary to achieve the proposed grades, the Contractor shall replace this excavated material with materials approved by the Engineer at no cost to the Town.

Processed Materials

If additional materials are required to supplement the existing roadway base so to meet final grades, they shall be Processed Aggregate Fine Grading of these specifications and shall be placed over the entire area and uniformly graded and compacted.

At no time shall Supplemental Aggregate, as defined in these special provisions, be used to achieve grades on roadways for which this item has been proposed.

The pavement removal operation shall be conducted so as not to permit the contamination of the existing base material with any shoulder debris, grass, leaves or dirt. No cobbles in excess of 3-1/2” shall remain

in the surface of the existing base prior to the application of medium processed aggregate or HMA.

Weather Limitations

Work on the structurally sound base course shall not be permitted when temperatures are less than 35 degrees F nor when the subgrade is frozen or excessively wet to the extent that the existing materials are unstable in a saturated condition. The Contractor at his/her cost shall repair any damage resulting to the base course for any reason, which is attributed to his/her negligence, as determined by the Engineer.

Grading & Compacting

The base materials shall be uniformly graded and compacted to the lines and grades specified on the plans or as established by the Engineer. Areas of special cross slope shall be compacted by beginning at the lowest edge and proceeding towards the higher edge. The Contractor will be required to have dust control equipment available on-site until such time that the base has been properly compacted and paved.

Transitions

Driveway, sidewalk, pedestrian ramp and intersecting street transitions are to be maintained for public use at all times during this operation. Millings, cold patch or hot patch shall be ramped in order to safely accommodate residential driveways or sidewalk and ramps for public access. Cold or hot patch shall be ramped in order to safely accommodate commercial driveway public access or intersecting streets. Care should be taken not to use a cold patch material without a blotting material that may otherwise cause tracking into adjacent buildings.

FINISHING

Tolerances

The final surface of the base course shall be fine graded so that, after final compaction and just prior to placement of the HMA courses, the surface elevation shall not vary more than one-half (1/2) inch above or below the design line and grade at any location. If after approval, the base course becomes displaced or disturbed in any way for any reason, the Contractor shall repair the damage then regrade the base. All repaired sections shall be recompacted until they meet the requirements of this specification.

Compaction

The base materials will be thoroughly compacted with roller(s) to produce a minimum of ninety-five (95) percent compaction and uniform base density when compared to the Modified Proctor Test, (AASHTO T180). The in-place field density shall be determined in accordance with ASTM D1556, D2167, or ASTM D2922. If the specified density is not attained, the entire area shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Water may need to be applied to ensure optimum moisture content during compaction and to aid in achieving maximum compaction.

As-Built Survey

The Contractor shall complete an as-built survey of the base materials once these materials have been graded and compacted. This as-built survey and all related work shall be completed according to the "Roadway Base As-Built Survey" item in these special provisions.

UNSUITABLE MATERIAL

Dust Control

This section requires controlling dust generated as a result of work under this item. The Contractor is responsible for controlling dust at all times, including nonworking hours, weekends, nights, and holidays. Dust control procedures shall be conducted when particulate matter concentrations exceed the National Air Quality Standard of 150 micro-grams/m³ on a 24 hour average basis or as designated by the Engineer. Wet suppression shall consist of applications of water, or a wetting agent in solution with water if approved by the Engineer. Wet suppression equipment shall consist of sprinkler pipelines, tanks, tank trucks, or other devices capable of providing regulated flow, uniform spray, and positive shut-off. Water will be spread at a uniform rate of 1.0 gal./s.y. and when wetting agents are used they will be added at the manufacturer's recommended rates. Wetting agents for dust suppression shall be water soluble, nontoxic, nonreactive, nonvolatile, and nonfoaming. Calcium chloride shall NOT be used to control dust.

Dust control operations do not relieve the Contractor of compaction requirements.

Cobbles

Any exposed cobbles greater than three and one half (3-1/2") inches in diameter within the pavement area shall be "culled-out" and wasted as directed by the Engineer. Payment for this work shall be incidental to this bid item and it will be the responsibility of the Contractor to dispose of the cobbles properly.

Plastic Silty Sands and Clays

Existing base material found to be unsuitable by the Engineer shall be removed to the lines and grades established by the Engineer and repaired and paid for in accordance with the Base Patch Repair item.

METHOD OF MEASUREMENT

Remove Existing Hot Mix Asphalt Pavement will be measured for payment in square yards of existing bituminous pavement removed as specified on the plans and to the depths required by the plans or as directed by the Engineer.

Processed Aggregate Fine Grading, as required, shall be measured by the number of tons of Processed Aggregate Fine Grading used. Recorded truck scale weights will be used to determine the basis for the tonnage. Certified weight tickets shall be provided to the Engineer for each delivery. Surplus processed aggregate fine grading that is delivered to the site but not used to achieve the necessary grades on project roadways shall be measured by the Engineer and shall be deducted from the total of the certified weight tickets for this item.

The as-built survey for the roadway base shall not be measured for payment, but shall be paid for according to the lump-sum price for "Roadway Base As-Built Survey."

Localized Base Patch will be measured by the Engineer and shall be the actual number of square yards of Base Patch Repair completed.

Cut Bituminous Concrete Pavement will be measured by the Engineer and shall be the actual number

of linear feet of Cut Bituminous Concrete Pavement completed.

BASIS OF PAYMENT

The accepted quantity of Remove Existing Hot Mix Asphalt Pavement will be paid for at the contract unit price bid per square yard. This price shall include all compensation for removal, spreading, grading, compacting, maintenance of the roadway base, and dust control. The unit price shall also include full compensation for all labor, tools, equipment, materials, disposal of HMA pavement, excess existing base material and unsuitable materials, cobble removal, transitions, and all incidental work necessary to complete the work as specified.

The cost to establish existing and proposed lines and grades shall be included in the price bid for “Construction Staking.”

Payment shall be made at the contract unit price per ton for “Processed Aggregate Fine Grading” used in accordance with these specifications.

Payment shall be made at the lump-sum price bid for “Roadway Base As-Built Survey.”

Payment shall be made for the number of square yards of “Base Patch Repair” installed.

Payment shall be made for the number of lineal feet of “Cut Bituminous Concrete Pavement” completed.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #202530A	REMOVE EXISTING HOT MIX ASPHALT PAVEMENT	S.Y.

ITEM #202559A – REMOVE AND RESET SURVEY MONUMENT

DESCRIPTION

This work shall consist of removing and resetting existing survey monument; providing all new materials if necessary; related survey work; submittal of survey data and monument certification prepared by a Land Surveyor licensed to practice in the State of Connecticut that the work completed meets the standards and specification as required in the contract documents or as ordered by the Engineer.

MATERIALS

The material used shall be as shown on the plans or as directed by the engineer. The Contractor shall submit the material to the Engineer for approval.

CONSTRUCTION METHODS

Adjustment of survey monuments shall be completed under the direction of a Land Surveyor licensed to practice in the State of Connecticut. The Town of East Hartford shall be provided with the final positional data (both horizontal and/or vertical), along with certification by the Land Surveyor supervising the work that the position of adjusted monument meets the specification.

The Land Surveyor shall submit a plan to the Town of East Hartford as to the procedures and equipment that will be used to make the vertical adjustment of the monument. Once the Contractor’s Land Surveyor has received written notification to proceed, the adjustment may be started. Once the work is complete the Contractor’s Land Surveyor shall submit the original field notes of the measurements made and a copy of a report outlining the way the work was performed.

In the event that a survey monument is destroyed during construction, the survey monument shall be replaced by the Contractor at his expense.

METHOD OF MEASUREMENT

This work will be measured for payment by the actual number of monuments removed and reset and accepted by the Engineer.

BASIS OF PAYMENT

This work will be paid for at the contract unit price each for ‘Remove and Reset Survey Monument’ complete in place, which price shall include the cost of: related survey work; preparation and submittal of survey data; excavation; furnishing and installing concrete and select granular backfill; and furnishing all labor, material and equipment necessary to complete the work.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #202559A	REMOVE AND RESET SURVEY MONUMENT	EA

ITEM #211000A – ANTI-TRACKING PAD

Description: Work under this item shall consist of the installation, maintenance, and removal of an anti-tracking pad for the Contractor Staging Area, of the dimensions specified and at the locations shown on the Plan or as ordered by the Engineer.

Materials: The crushed stone for this work shall conform to the requirements of Article M.01.01 for No. 3 coarse aggregate. Geotextile shall conform to the requirements of Article M.08.01-26. Materials incidental to and necessary for the installation of the geotextile, such as, but not limited to sewing thread, staples, pins, etc. shall conform to the requirements of the manufacturer of the geotextile.

Construction Methods: The area on which the anti-tracking pad is to be placed shall be shaped to a reasonable true surface prior to the installation of the geotextile. The geotextile shall be installed at the location and to the dimensions shown on the plans or as directed by the Engineer. Geotextile shall be installed as recommended by the manufacturer for the specific use or purpose intended, or as otherwise approved by the Engineer. The crushed stone shall be spread by any suitable means that will not crush the stone and shall be shaped to a smooth uniform finished grade.

Upon completion of the project, the anti-tracking pad shall be removed and the site restored.

Method of Measurement: This work will be measured by the actual number of square yards of completed and accepted anti-tracking pad. The geotextile will not be measured for payment but shall be considered incidental to the work.

Basis of Payment: This work will be paid for at the contract unit price per square yard for “Anti-Tracking Pad” which price shall include all excavation, backfill, disposal of surplus material, crushed stone, geotextile, and all equipment, tools, labor and materials incidental to installing, maintaining and removing the anti-tracking pad.

Pay Item	Pay Unit
Anti-Tracking Pad	S.Y.

ITEM #219011A – SEDIMENT CONTROL SYSTEM AT CATCH BASIN

Work under this item shall conform to the applicable provisions of Section 2.19 of the Standard Specifications Form 817 amended as follows:

DESCRIPTION

This work shall consist of furnishing, placing, maintaining and removing sedimentation control systems at catch basins as shown on the plans and as directed by the Engineer. Maintaining shall include the cleanout and proper disposal of accumulated sediment.

MATERIALS

Geotextile for this work shall conform to Section 7.55 and M.08.

CONSTRUCTION METHODS

Sediment Control System at Catch Basin shall be installed by the Contractor at locations shown on the plans or as directed by the Engineer in accordance with the applicable sections of Section 2.19 of the Standard Specifications and the details in the plans.

METHOD OF MEASUREMENT

This work will be measured for payment by the actual number of catch basins installed and accepted with a Sediment Control System at Catch Basin installation.

BASIS OF PAYMENT

This work will be paid for at the contract unit price each for ‘Sediment Control System at Catch Basin’ complete in place, which price shall include all materials, equipment, tools, and labor incidental to the installation, maintenance, replacement, removal and disposal of the system and surplus material. No payment shall be made for the cleanout of accumulated sediment.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #219011A	SEDIMENT CONTROL SYSTEM AT CATCH BASIN	EA

SECTION 2.86 - DRAINAGE TRENCH EXCAVATION, ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01—Description

2.86.03—Construction Methods

2.86.04—Method of Measurement

2.86.05—Basis of Payment

2.86.01—Description: Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items.

It shall include earth and rock excavation, removal of existing pipes, dewatering, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:

- (1) **Drainage Trench Excavation** will include only the excavation necessary for the construction of the drainage items and the removals specified above.
- (2) **Rock in Drainage Trench Excavation**, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:
 - (a) rock in definite ledge formation
 - (b) boulders, or portions of boulders
 - (c) cement masonry structures
 - (d) concrete or reinforced concrete structures
 - (e) reinforced concrete pipe
 - (f) subsurface concrete pavement or concrete base

The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.03—Construction Methods:

(1) Drainage Trench Excavation Limits:

Horizontal Limits: Trench widths for pipes, pipe ends, pipe-arches, and drainage structures shall be as follows:

- (a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe-arch for such diameters or spans of less than 30 inches
- (b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe-arch for such diameters or spans that are 30 inches or greater
- (c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe-arches fabricated from structural plates
- (d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures

Vertical Limits: Trench depths shall extend vertically as follows:

- (a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.
- (b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Drainage Trench Excavation: Drainage trench excavation shall be made in conformity with

the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, pumps, or ancillary equipment as needed for the proper protection of property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations and ensure that pumped water from the drainage excavation is discharged in accordance with the requirements of 1.10.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

(3) Rock in Drainage Trench Excavation:

- (a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.
- (b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.
- (c) Rock in Drainage Trench Excavation - Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(4) Backfill: Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04—Method of Measurement:

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment.

If granular fill or borrow is required to replace unsuitable material it will be measured for payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05—Basis of Payment:

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools, equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work.

There will be no direct payment made for shoring, bracing, dewatering, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

Pay Item	Pay Unit
Rock in Drainage Trench Excavation 0' - 10' Deep	c.y.
Rock in Drainage Trench Excavation 0' - 20' Deep	c.y.

ITEM #304010A – PROCESSED AGGREGATE FINE GRADING

DESCRIPTION

Work under this item consists of the Contractor furnishing, grading, and compacting medium processed aggregate base material in locations and depths where the existing base material is insufficient to meet final grades per the plans and as approved by the Engineer, or as base material for specified roadway reconstruction. Work under this item shall conform to the applicable provisions of Section 3.04 of the Standard Specifications Form 817 for the top course placement, except where amended herein.

MATERIALS

Subarticle 3.04.02 - Materials:

- 1.0 Gradation: Delete the gradation table requirement in Section M.05.01-1 and replace with the following:

<u>Square Mesh Sieves</u>	<u>Percent Passing by Weight</u>
1-1/2"	100
1"	90-100
3/4"	75-100
1/4"	30-60
#40	5-25
#100	3-12

- 2.0 Coarse Aggregate: Reclaimed Miscellaneous Aggregate may not be used.

METHOD OF MEASUREMENT

Determination of Thickness is to be amended as follows:

The thickness shall be as indicated on the plans, or as ordered by the Engineer, and within a tolerance of -1/2" to +1/2".

The work will be measured for payment by the accepted number of tons of "Processed Aggregate Fine Grading," complete and in place. Recorded truck scale weights will be used to determine the basis for the tonnage. Certified weight tickets shall be provided to the Engineer for each delivery. Surplus Processed Aggregate Fine Grading that is delivered to the site but not used to achieve the necessary grades on project roadways shall be measured by the Engineer, and the tonnage of this material shall be deducted from the total of the certified weight tickets.

BASIS OF PAYMENT

The furnishing and installation of Processed Aggregate Fine Grading shall be paid for at the contract price per ton. Payment shall include all labor, equipment, grading and compaction of processed aggregate materials, and incidentals necessary to complete the work described. Excavation of existing localized, unsuitable base materials as required and approved by the Engineer shall be measured and paid for separately under "Base Patch Repair."

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #304010A	PROCESSED AGGREGATE FINE GRADING	TON

Special Provisions

ITEM #304010A

ITEM #304500A – ROADWAY AS-BUILT SURVEY

DESCRIPTION

Work under this item consists of the Contractor, or the Contractor's representative, completing an as-built survey of the finished and graded roadway base for all roads within this Contract that will be rehabilitated. The intent of this item is for the Contractor to certify that the roadway base and intermediate paving courses have been constructed to grade according to the plans and these special provisions.

Work under this item shall also consist of the Contractor, or the Contractor's representative, completing an as-built survey of the underdrain install at the locations shown on the plans or as ordered by the Engineer.

CONSTRUCTION METHODS

The survey described in this item shall follow the requirements and descriptions of the specified services located in the Standards for Surveys and Maps in the State of Connecticut, dated September 26, 1996, unless otherwise specified herein.

The Roadway As-Built Survey shall consist of spot elevations that conform to a "Class T-1" horizontal and vertical standard, shall have a vertical accuracy of +/- 0.02 feet (0.25 inches), and shall reference the control points defined in the construction plans. The Land Surveyor shall record the elevation of the same location on the base, intermediate and surface course where required.

The Contractor shall establish new control points as necessary to complete the work. Any new control points shall be horizontally and vertically referenced to the Connecticut NAD83 and NAVD88 datum.

The survey shall record horizontal and vertical data for the roadway base along the proposed roadway baselines and the proposed edges of pavement at 25-foot intervals that correspond to the roadway stationing and at the proposed high and low points for the roadway. Horizontal and vertical data shall also be recorded at the rim of each catch basin, top of frame of utility structures, and sidewalk ramps, along rehabilitated roadways.

Survey will be required to record the horizontal and vertical data of the intermediate course prior to installing the surface course. The survey is to document the roadway high points, low points, cross slope, sidewalk ramps and intersection grading to insure the proposed finished surface grades can be achieved before the placement of the final hot mix asphalt course. If the surface course cannot be installed as specified due to the grades of the intermediate course, the Contractor is to develop a corrective action plan to remove and reinstall the intermediate course(s). The work associated with the corrective action will be at no cost to the Town.

The Contractor will also be required to perform as-built survey of the finish surface at locations where there are grading issues with the potential to cause ponding. The Contractor shall make the necessary corrections to address these grading issues. The work associated with completing the survey, and making the necessary corrections in accordance with Section 4.06 –Bituminous Concrete of these special provisions will be at no cost to the Town.

Upon completion, the Roadway As-Built Survey shall be reviewed and have its accuracy certified by a Connecticut-licensed Land Surveyor. The Land Surveyor shall provide a certification as to the accuracy of the data being submitted. The documents shall be stamped and signed. Upon receiving this certification, the Roadway As-Built Survey shall be submitted by the Contractor to the Town for review and approval.

The Contractor shall present the as-built survey information to the Town in a clear and concise manner that includes the proposed and as-built information listed below. The data shall be provided in Microsoft Excel or a compatible file format. Prior to the beginning of construction work, the Contractor shall submit to the Town for approval a spreadsheet indicating the data and format that will be submitted following the completion of the as-built survey. At a minimum, the as-built survey data presented to the Town shall include the following:

- Proposed and as-built base elevations at the proposed centerline;
- Proposed and as-built base elevations at the proposed edge-of-pavement;
- Proposed and as-built base cross slopes;
- Proposed and as-built intermediate course high points and low points
- Proposed and as-built intermediate course cross slope
- Proposed and as-built intermediate course intersection grading
- Proposed and as-built base elevations on intersecting streets;
- Proposed and as-built final course elevations at locations with grading issues;
- Proposed and as-built catch basin rim elevations;
- As-built utility structure top-of-frame elevations;
- Proposed and as-built sidewalk ramp elevations;
- Stationing and offsets for all points;
- Comparison between the proposed and as-built base elevations indicating whether each point meets the tolerances included in the project specifications.

The data is to be formatted as noted in the sample include on the next page to allow for data scoring.

Roadway: _____
Approximate limits of survey: _____
Date of survey completion: _____

Feature	Station	Offset	RT/LT	Proposed Elevation (feet)	As-Built Elevation (feet)	Difference (feet)	Proposed Cross Slope	As-Built Cross Slope	Difference
Centerline	10+00	0		35.00	35.02	0.02	n/a	n/a	n/a
Edge of pavement	10+00	15.00 ft	RT	34.53	34.50	-0.03	3.125%	3.467%	0.342%
Edge of pavement	10+00	15.00 ft	LT	34.53	34.53	0.00	3.125%	3.267%	0.142%

The Contractor shall also submit to the Town contour plans that show the proposed contours as well as actual contours.

In the event that the as-built survey is not approved, the Contractor shall be responsible for developing and implementing a plan to modify the roadway base as necessary to bring it into compliance with the construction plans and the project specifications. The Contractor shall be responsible for addressing any discrepancies between the roadway base depicted in the as-built survey and the base proposed in the construction plans at no additional cost to the Town.

Only after the Contractor has received the approval of the Roadway As-Built Survey from the Town may the Contractor proceed to pave the surveyed length of roadway.

The Contractor shall have 72 hours beginning with the completion of the survey field work to process the data, have the data certified by a Land Surveyor, and present the data to the Town in the format described in this specification. Any survey information presented to the Town longer than 72 hours after the survey was taken shall be considered out of date and shall be rejected. If the Contractor exceeds this 72-hour window, the Contractor shall re-grade the roadway base, perform a new survey, process the new information, have the new survey certified, and present the new survey information to the Town at no additional cost.

The Contractor will be responsible for maintaining the roadway base and access to all abutting properties during the review and approval process.

The Contractor shall record the final location of the underdrain installed and provide the Town for approval as-built plans with this information.

METHOD OF MEASUREMENT

The work will not be measured for payment, but shall be paid for according to the Contract lump sum for “Roadway As-Built Survey,” complete and accepted.

BASIS OF PAYMENT

The as-built survey of the finished roadway base, intermediate course, and underdrain shall be paid for at the Contract lump sum price for “Roadway As-Built Survey,” which price shall include field survey work, establishment of geodetic control points, data processing, drafting, certification, and all work associated with obtaining approval of the as-built survey from the Town, as well as all materials, tools, equipment, labor, and work incidental thereto. The as-built survey of the finished surface will be at no cost to the Town.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #304500A	ROADWAY AS-BUILT SURVEY	L.S.

Special Provisions

ITEM #304500A

ITEM #403161A – HOT MIX ASPHALT LEVELING/SHIM COURSE

DESCRIPTION

The Hot Mix Asphalt (HMA) Leveling/Shim Course consists of a thin application of hot mix asphalt, paver machine applied and roller compacted, placed on a clean, prepared roadway surface that may or may not have been milled, using an asphalt emulsion tack coat. It is the intent of this work to apply a leveling/shim course only on milled surfaces that will be receiving one lift of hot mix surface. The tack coat is distributor truck spray applied just prior to the application of the leveling/shim course to produce a bonded prepared surface that can be ready to receive subsequent hot mix asphalt layers. The finished leveling/shim course is to have a nominal thickness of 1/2" except where noted otherwise on the plans or directed by the Engineer. All pavement repairs, patching, and crack filling will be paid for under their appropriate items.

EQUIPMENT AND MATERIALS

HMA Leveling/Shim Course: The requirements of Section 4.06 Bituminous Concrete apply, except as modified herein. The hot mix asphalt mixture to be used for this item shall be HMA S0.25, Level 2.

Tack Coat: Emulsified asphalt; AASHTO M140/ASTM D 997 or AASHTO M 208/ASTM D 2397, RS-1 or CRS-1.

CONSTRUCTION DETAILS

- A. Surface Preparation:** All surface preparations shall be completed prior to applying the leveling/shim course. Contractor to request and obtain approval of surface conditions from the Engineer prior to commencing operations for constructing Level/Shim Course.
1. Cover all manhole covers, water boxes, catch basins and other such utility structures.
 2. Clean and flush fill all cracks and joints greater than three sixteenths of an inch (3/16") wide with material approved by the Engineer. No over banding will be permitted.
 3. Patch all surface deficiencies indicating weak base as directed by the Engineer.
 4. Thoroughly clean the entire area to be leveled/shimmed.
- B. Tack Coat Application:** Contact surfaces of manholes, structures, vertical pavement edges, etc. shall be painted with a thin, uniform tack coat just before the material is placed against them.

Tack coat is required on all surfaces to be paved. This includes freshly placed layers of HMA if one day has elapsed since HMA placement, or if dust or debris has contaminated the fresh surface.

A thin uniform coating of tack coat shall be applied to the pavement immediately before overlaying and be allowed sufficient time to break (set). This should be carefully applied by a distributor truck

having calibrated nozzles set to provide a triple overlap of spray on the pavement surface that results in a uniform overlapping coverage at a target application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and a target application rate of 0.05 to 0.07 gallons per square yard for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be a target application rate of 0.03 to 0.05 gallons per square yard. Dribbling emulsion on the surface is not acceptable. RS-1 and CRS-1 type asphalt emulsions for tack coating are preferred as little or no cure time is needed; brown to black occurs rapidly. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall not be heated in excess of 160°F and shall not be further diluted. Tack coat shall be supplied and paid for as a separate item.

Allow tack coat to dry from a brown color to a black color prior to paving.

- C. **Leveling/Shim Application.** The minimum pavement surface temperature for application of the leveling/shim course is 50° F.
- D. **Compaction.** Begin compaction immediately after the application of the HMA Leveling/Shim course.
 - 1. Use a minimum of two passes.
 - 2. Use an adequate number of rollers to complete compaction before the pavement temperature falls below 185° F. (85°C).
 - 3. Protect the Leveling/Shim course from traffic until the rolling operation is complete and the material has cooled sufficiently to resist damage.
- E. **Traffic Control.** The Contractor shall control and protect public traffic adjacent to and within the project site. The Contractor shall provide a traffic control plan conforming to the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.
- F. **Emergency Operations.** The pavements shall be cleaned and open to travel at the end of each working day. The Contractor will designate an Emergency Operations Representative, who will be responsible for the project on a 24 hour basis, 7 days a week. The Contractor will provide the Engineer with the name and phone number of their representative who must respond to any emergency regardless of time, night or day, within a timely manner.

METHOD OF MEASUREMENT

The quantity of hot mix asphalt to be paid for shall be measured by the number of tons of hot mix asphalt Leveling/Shim Course used in the accepted work. The quantity of each truckload shall be obtained from printed tickets indicating the recorded batch weights or certified truck scale weights that have been properly countersigned by an authorized representative of the Engineer at the time of delivery. HMA quantities shall be verified by the Engineer using HMA yield calculations which will include the in-place bulk specific gravity and actual area and nominal depth for the mixture placed.

BASIS OF PAYMENT

Payment shall be made at the contract unit prices per ton complete in place. This payment shall be full compensation for furnishing and placing all quality hot mix asphalt materials, including tack coat where specified, mechanical sweeping of streets, and for all labor, tools, equipment, materials, and all incidentals necessary to complete the work.

Asphalt Adjustment Cost will be applied to the ‘Hot Mix Asphalt Leveling/Shim Course’ item.

<u>ITEM #</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #403161A	HOT MIX ASPHALT LEVELING/SHIM COURSE	TON

ITEM #404100A – PARTIAL-DEPTH PATCH REPAIR (LOCAL)

DESCRIPTION

Work under this item consists of the Contractor constructing pavement repairs at various locations involving unclassified excavation followed by the installation of hot mix asphalt (HMA) in accordance with these specifications. This work may be undertaken on existing roadways or milled surfaces. It is understood that this work will then be followed by the applicable surface course(s) installation (paid under a separate item).

The work shall be comprised of the following:

Patch Excavation – Unclassified: Depth as required for minimum HMA thickness per Table 1 or to the bottom of existing bound pavement, whichever is greater.

Hot Mix Asphalt (HMA): Minimum depths per Table 1 or as required to match the existing bound pavement depths, whichever is greater.

Table 1 – Minimum HMA Thickness

Road Classification	Intermediate Course	Surface Course(s)
Local	2.5 inches Minimum* HMA S0.375, Level 2	Overlays per Typical Section
Collector	3.0 inches Minimum* HMA S0.50, Level 2	Overlays per Typical Section
Arterial	5.0 inches Minimum* HMA S0.50, Level 2 (install in two equal lifts)	Overlays per Typical Section

* - Intermediate Course shall be installed in lifts (3” maximum per lift). At locations where the existing bound pavement depths exceed the minimum depths specified in Table 1, the additional HMA material required to match the existing depths shall be Intermediate Course material. The cost for any additional HMA material required shall be included in the unit cost per square yard of the patch type constructed.

MATERIALS

A. HMA Courses. The requirements of Section 4.06 entitled Bituminous Concrete, apply, except as modified herein. The hot mix asphalt mixtures to be used for this item shall be as stated above in Table 1 – Minimum HMA Thickness, and in accordance with the minimum binder content table in Section 4.06.

CONSTRUCTION DETAILS

The applicable requirements of Section 4.06 entitled Bituminous Concrete apply.

- A. Excavation.** Partial Depth patch excavation shall consist of the removal and satisfactory disposal of all bound materials, the removal of which is necessary for the proper completion of the work. The excavation will be made to a depth at the interface elevation of the bottom of the existing bound pavement or to a total depth as stated in Table 1, whichever is greater.
1. Make the excavation square or rectangular with faces straight and vertical.
 2. The Contractor may use pavement saw-cutting or milling or equipment approved by the Engineer which will not damage adjacent pavement. A jack-hammer and compressor will not be allowed for cutting the pavement surface.
- B. Existing Granular Base.** Grade and compact the existing granular base to a minimum of 95% of laboratory modified proctor, AASHTO T-180, and to an elevation which will allow the proper thickness of HMA as stated in Table 1 above. Where the soil in the bottom of the excavation is found to be unsuitable, the Engineer shall order it removed and this location will be repaired as required under the Item for Full-Depth Patch Repair.
- C. HMA.** Swab or paint the existing vertical faces of the pavement with approved emulsified asphalt such that a uniform film of asphalt will remain when cured. Tack coat material shall also be applied between courses of HMA as directed by the Engineer.
- Place the HMA intermediate course(s) using approved methods and compact to a minimum of 92% of maximum theoretical specific gravity using power rollers or other mechanical methods to achieve satisfactory results.
- The perimeter of the patch shall be painted with tack coat or approved equal such that a 4" wide strip will be equally spaced on the new and existing pavement. The tack coat material shall be dusted with stone screenings or stone dust such that no tracking or pick-up of the seal will occur.
- Traffic Control.** The Contractor shall control and protect public traffic adjacent to and within the project site. The Contractor shall provide a traffic control plan conforming to the Manual on Uniform Traffic Control Devices (MUTCD), latest edition and Connecticut Department of Transportation (ConnDOT) Construction Traffic Control Plans as specified in these special provisions.
- No open excavations or partially completed patches shall be left open or uncompleted overnight.
- D. Emergency Operations.** The pavements shall be cleaned and open to travel at the end of each working day. The Contractor will designate an Emergency Operations Representative, who will be responsible for the project on a 24 hour basis, 7 days a week. The Contractor will provide the Engineer with the name and phone number of their representative who must respond to any emergency regardless of time, night or day, within a timely manner.

E. One-Year Warranty. The Partial-Depth Patch Repairs shall be warranted for one (1) year after final acceptance of the work.

1. The work shall be warranted against defects as defined in the manual “Field Network & Condition Survey Manual for Pavement Distress Identification” prepared by Vanasse Hangen Brustlin, Inc. Defects shall be measured by the Engineer for Potholes/Non-Utility Patches, Alligator or Fatigue Cracking, Rutting, Distortion, Bleeding/Polished Aggregate, Raveling and Surface Wear, and Corrugation, Shoving, Slippage. Areas exhibiting medium, heavy, or hazard severity levels will be repaired.
2. The Contractor will perform all warranty work, including but not limited to replacement, traffic control, and incidentals, at NO cost to the Town as long as written notification is provided within the warranty period, even if the repair work extends beyond the warranty period. Failure to perform the warrantee work, when notified, will limit the Contractor from future work in the Town.
3. The Contractor will submit a proposed repair procedure to the Town for approval before performing any repairs.
4. The Contractor shall perform all required repairs, including replacement, to meet the requirements of this specification. Temporary repairs will be replaced with permanent repairs as weather allows. When repairs are complete and accepted by the Town, the Town will release the performance bond.

METHOD OF MEASUREMENT

The work will be measured for payment by the accepted number of square yards of Partial Depth Patch Repairs of the type specified, complete and in place.

There will be no direct measurement for payment of the sawcutting, excavation, disposal of materials, preparation of the patch, tack coating and construction of the required depth of HMA Intermediate Course(s). This work and material will be included in the unit price bid for “Partial-Depth Patch Repair (Local).”

Where the soil in the bottom of the excavation is found to be unsuitable, the Engineer shall order it removed and replaced with material as required. Excavation and replacement of unsuitable base material and all associated patch work will be measured and paid for as Full-Depth Patch Repair.

BASIS OF PAYMENT

The construction of ‘Partial-Depth Patch Repair’ of the type specified shall be paid for at the contract price per square yard. The unit price shall include sawcutting excavation, furnishing and installing HMA pavement, tack coat and warrantee in accordance with these specifications and as ordered by the Engineer. Payment shall include all labor, materials, equipment, traffic control, cleaning of pavement surface, material disposal, and incidentals necessary to complete the work described.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #404100A	PARTIAL-DEPTH PATCH REPAIR (LOCAL)	SY

Special Provisions

ITEM #403161A

ITEM #404200A – FULL-DEPTH PATCH REPAIR (LOCAL)

DESCRIPTION

Work under this item consists of the Contractor constructing pavement repairs at various locations involving unclassified excavation followed by the installation of new compacted processed aggregate base and the installation of hot mix asphalt (HMA) in accordance with these specifications, the plans, and as directed by the Engineer. This work may be undertaken on existing roadways or milled surfaces. It is understood that this work will then be followed by the applicable surface course(s) installation, as described in the plans and paid under a separate item.

The work shall be comprised of the following:

- Patch Excavation –Unclassified: Total depth as required to excavate to the bottom of the bound pavement (or minimum per Table 1 whichever is greater) plus 9” for Processed Aggregate Base
- Processed Aggregate Base: 9 Inches
- Hot Mix Asphalt (HMA): Minimum depths per Table 1 or as required to match the existing bound pavement depths, whichever is greater.
- Earth Excavation: As required and as directed by the Engineer
- Grading “C” Gravel Subbase: As required and as directed by the Engineer

Table 1 – Minimum HMA Thickness

Road Classification	Intermediate Course	Surface Course(s)
Local	2.5 inches Minimum* HMA S0.375, Level 2	Overlays per Typical Section
Collector	3.0 inches Minimum* HMA S0.50, Level 2	Overlays per Typical Section
Arterial	5.0 inches Minimum* HMA S0.50, Level 2 (install in two equal lifts)	Overlays per Typical Section

* - Intermediate Course shall be installed in lifts (3” maximum per lift). At locations where the existing bound pavement depths exceed the minimum depths specified in Table 1, the additional HMA material required to match the existing depths shall be Intermediate Course material. The cost for any additional HMA material required shall be included in the unit cost per square yard of the patch type constructed.

MATERIALS

- A. **Processed Aggregate Base.** The requirements of Section M.05.01 Processed Aggregate Base apply except as modified herein.

Processed Aggregate Base shall be graded in accordance with M.05.01.1 with the additional requirement that no more than 5% material pass the #200 square mesh sieve.

- B. **Grading “C” Gravel Subbase.** The requirements of Section M.02 Grading C Gravel apply except as modified herein.

- C. **HMA Courses.** The requirements of Section 4.06 entitled Bituminous Concrete apply except as modified herein. The hot mix asphalt mixtures to be used for this item shall be as stated in Table 1 – Minimum HMA Thickness, above.

CONSTRUCTION DETAILS

The applicable requirements of Section 4.06 Bituminous Concrete, apply, except as modified herein.

- A. **Patch Excavation.** Full-Depth Patch Repair excavation shall consist of the removal and satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, to a depth below the elevation of the existing pavement surface to allow for placement of the Processed Aggregate Base and HMA as stated in Table 1.

1. Make the excavation square or rectangular with faces straight and vertical.
2. The Contractor may use pavement saw-cutting or milling or equipment approved by the Engineer which will not damage adjacent pavement. A jack-hammer and compressor will not be allowed for cutting the pavement surface.
3. Cut back and excavate the existing bound pavement an additional 12” in width from the limits of the proposed soil excavation as indicated on the plans and as directed by the Engineer.

- B. **Earth Excavation and Granular Subbase.** Where the soil in the bottom of the patch is found to be unsuitable, the Engineer shall order it removed and replaced with Grading “C” Gravel. The subbase shall be placed in lifts not be exceed 6” and shall be constructed to allow proper placement and thickness of the base and HMA materials. The subbase materials shall be compacted to a minimum of 95% of laboratory modified proctor, AASHTO T-180. This additional excavation and construction of the granular subbase shall be measured and paid for separately under the items ‘Earth Excavation’ and ‘Subbase’.

- C. **Processed Aggregate Base.** The base shall consist of two equal lifts of granular material constructed to a total compacted depth of 9 inches. Compact the subgrade to a minimum of 95% of laboratory modified proctor, AASHTO T-180.

Place the aggregate base in two equal lifts, compacting each lift to a minimum of 95% of laboratory modified proctor, AASHTO T-180. The surface of the processed aggregate base course shall be prepared such that the compacted thickness of the HMA material shall not be less than that specified in Table 1.

- D. HMA.** Swab or paint the existing vertical faces of the pavement with approved emulsified asphalt such that a uniform film of asphalt will remain when cured.

Place the intermediate binder course(s) using approved methods and compact to a minimum of 92% of maximum theoretical specific gravity using power rollers or other mechanical methods to achieve satisfactory results.

The perimeter of the patch shall be painted with tack coat or approved equal such that a 4" wide strip will be equally spaced on the new and existing pavement. The tack coat material shall be dusted with stone screenings or stone dust such that no tracking or pick-up of the seal will occur.

- E. Traffic Control.** The Contractor shall control and protect public traffic adjacent to and within the project site. The Contractor shall provide a traffic control plan conforming to the Manual on Uniform Traffic Control Devices (MUTCD), latest edition and Connecticut Department of Transportation (ConnDOT) Construction Traffic Control Plans as specified in these special provisions.

No open excavations or partially completed patches shall be left open or uncompleted overnight.

- F. Emergency Operations.** The pavements shall be cleaned and open to travel at the end of each working day. The Contractor will designate an Emergency Operations Representative, who will be responsible for the project on a 24 hour basis, 7 days a week. The Contractor will provide the Engineer with the name and phone number of their representative who must respond to any emergency regardless of time, night or day, within a timely manner.

- G. One-Year Warranty.** The Full-Depth Patch Repairs shall be warranted for one (1) year after final acceptance of the work.

1. The work shall be warranted against defects as defined in the manual "Field Network & Condition Survey Manual for Pavement Distress Identification" prepared by Vanasse Hangen Brustlin, Inc. Defects shall be measured by the Engineer for Potholes/Non-Utility Patches, Alligator or Fatigue Cracking, Rutting, Distortion, Bleeding/Polished Aggregate, Raveling and Surface Wear, and Corrugation, Shoving, Slippage. Areas exhibiting medium, heavy or hazard severity levels will be repaired.

2. The Contractor will perform all warranty work, including but not limited to, replacement, traffic control and incidentals, at NO cost to the Town as long as written notification is provided within the warranty period, even if the repair work extends beyond the warranty period. Failure to perform the warrantee work, when notified, will limit the Contractor from future work in the Town.

3. The Contractor will submit a proposed repair procedure to the Town for approval before performing any repairs.
4. The Contractor shall perform all required repairs, including replacement, to meet the requirements of this specification. Temporary repairs will be replaced with permanent repairs as weather allows.

METHOD OF MEASUREMENT

The work will be measured for payment by the accepted number of square yards of “Full-Depth Patch Repair,” of the type specified, complete and in place. Measured limits of the Full-Depth Patch Repair of the type specified shall be made to the outside limits of the 12” cut back of the existing bound surface, as shown in the details in the construction plans.

There will be no direct measurement for payment of the sawcutting, excavation, disposal of materials, installation of processed aggregate base course, preparation of the patch, tack coating and construction of the required depth of HMA Intermediate Course(s). This work and material will be included in the unit price bid for “Full-Depth Patch Repair,” of the type specified.

Where the soil in the bottom of the excavation is found to be unsuitable, the Engineer shall order it removed and replaced with Grading “C” Gravel Subbase material as required and as directed by the Engineer. The excavation depths beyond the patching limits required due to unsuitable materials shall be measured and paid for separately as “Earth Excavation.” The additional quantity of grading “C” gravel subbase material shall be measured and paid for separately as “Subbase.”

BASIS OF PAYMENT

The furnishing and installation of ‘Full-Depth Patch Repair’ of the type specified shall be paid for at the contract price per square yard. The unit price shall include, excavation, furnishing and installing processed aggregate base course, HMA pavement, tack coat, and warrantee in accordance with the specifications and as ordered by the Engineer. Payment shall include all labor, materials, equipment, cleaning of pavement surface, material disposal, and incidentals necessary to complete the work described.

Over-excavation and placement of Grading “C” Gravel Subbase, as required and as directed by the Engineer, shall be measured and paid for separately.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #404100A	FULL-DEPTH PATCH REPAIR (LOCAL)	SY

Special Provisions

ITEM #404200A

ITEM #404300A – BASE PATCH REPAIR

DESCRIPTION

Work under this item consists of the Contractor constructing pavement repairs at various locations involving localized, unclassified excavation followed by the installation of new compacted processed aggregate base in accordance with these specifications, the plans and as directed by the Engineer. This work may be undertaken on milled or edged milled surfaces where all bound bituminous pavement surfaces have been removed or after the complete removal of bituminous concrete pavements.

The work shall be comprised of the following:

Earth Excavation: As required and as directed by the Engineer to accommodate for 9” of Processed Aggregate Base. If unsuitable material is discovered below this depth, it shall be removed as directed by the Engineer up to an additional 9” depth.

Processed Aggregate Base: 9 Inches or as directed by the Engineer

MATERIALS

Processed Aggregate Base. Material shall conform to the requirements of article M.05.01, amended as follows:

- 1.0 Gradation: Delete the gradation table requirement in Section M.05.01-1 and replace with the following:

<u>Square Mesh Sieves</u>	<u>Percent Passing by Weight</u>
1-1/2”	100
1”	90-100
3/4”	75-100
1/4”	30-60
#40	5-25
#100	3-12

- 2.0 Coarse Aggregate: Reclaimed Miscellaneous Aggregate may not be used.

CONSTRUCTION DETAILS

A. Earth Excavation. Where the surface of the base material is found to be unsuitable, the Engineer shall order it removed and replaced with Processed Aggregate Base according to this special provision. The base shall be placed in lifts not to exceed 6” compacted and shall be constructed to allow proper placement and thickness of the 9” compacted base and HMA materials. The base materials shall be compacted to a minimum of 95% of laboratory modified proctor, AASHTO T-180.

Additional excavation and construction beyond the 9” depth of the base shall be measured and paid for separately under the items ‘Earth Excavation’ and ‘Processed Aggregate Base’.

B. Processed Aggregate Base. The base shall consist of two equal lifts of granular material constructed to a total compacted depth of 9 inches or as directed by the Engineer. Compact the subgrade to a minimum of 95% of laboratory modified proctor, AASHTO T-180.

Place the aggregate base in two equal lifts, or as directed by the Engineer, compacting each lift to a minimum of 95% of laboratory modified proctor, AASHTO T-180. The surface of the processed aggregate base course shall be prepared to meet the lines and grades as shown on the plans.

C. Traffic Control. The Contractor shall control and protect public traffic adjacent to and within the project site. The Contractor shall provide a traffic control plan conforming to the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

No open excavations or partially completed patches shall be left open or uncompleted overnight.

D. Emergency Operations. The pavement shall be ready and open to travel at the end of each working day. The Contractor will designate an Emergency Operations Representative, who will be responsible for the project on a 24 hour basis, 7 days a week. The Contractor will provide the Engineer with the name and phone number of their representative who must respond to any emergency regardless of time, night or day, within a timely manner.

METHOD OF MEASUREMENT

The work will be measured for payment by the accepted number of square yards of Base Patch Repairs, complete and in place. Measured limits of the Base Patch Repairs shall be made by the Engineer.

There will be no direct measurement for payment of excavation, disposal of materials and installation of processed aggregate base course. This work and material will be included in the unit price bid.

Where the soil in the bottom of the excavation for this bid item is found to be unsuitable, the Engineer shall order it removed and replaced with Processed Aggregate Base material as required and directed. The excavation depths beyond the patching limits required due to unsuitable materials shall be measured and paid for separately as "Earth Excavation." The additional quantity of Processed Aggregate Base material shall be measured and paid for separately as "Processed Aggregate Base."

BASIS OF PAYMENT

The furnishing and installation of 'Base Patch Repair' shall be paid for at the contract price per square yard.

The unit price shall include excavation, furnishing and installing processed aggregate base course in accordance with the specifications and as ordered by the Engineer. Payment shall include all labor, materials, equipment, preparation of pavement surface, material disposal, and incidentals necessary to complete the work described.

Over-excavation and placement of processed aggregate base, as required and as directed by the Engineer, shall be measured and paid for separately.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #404300A	BASE PATCH REPAIR	SY
Special Provisions		ITEM #404300A

SECTION 4.06 - BITUMINOUS CONCRETE

Section 4.06 is being deleted in its entirety and replaced with the following:

4.06.01—Description**4.06.02—Materials****4.06.03—Construction Methods**

1. **Material Documentation**
2. **Transportation of Mixture**
3. **Paving Equipment**
4. **Test Section**
5. **Transitions for Roadway Surface**
6. **Spreading and Finishing of Mixture**
7. **Longitudinal Joint Construction Methods**
8. **Contractor Quality Control (QC) Requirements**
9. **Temperature and Seasonal Requirements**
10. **Field Density**
11. **Acceptance Sampling and Testing**
12. **Density Dispute Resolution Process**
13. **Corrective Work Procedure**
14. **Protection of the Work**
15. **Cut Bituminous Concrete Pavement**

4.06.04—Method of Measurement**4.06.05—Basis of Payment**

4.06.01—Description: Work under this Section shall include the production, delivery, placement and compaction of a uniform textured, non-segregated, smooth bituminous concrete pavement to the grade and cross section shown on the plans.

The following terms as used in this specification are defined as:

Bituminous Concrete: A composite material consisting of prescribed amounts of asphalt binder and aggregates. Asphalt binder may also contain additives engineered to modify specific properties and/or behavior of the composite material. References to bituminous concrete apply to all of its forms, such as those identified as hot-mix asphalt (HMA) or polymer-modified asphalt (PMA).

Bituminous Concrete Plant (Plant): A structure where aggregates and asphalt binder are combined in a controlled fashion into a bituminous concrete mixture suitable for forming pavements and other paved surfaces.

Course: A continuous layer (a lift or multiple lifts) of the same bituminous concrete mixture placed as part of the pavement structure.

Density Lot: The total tonnage of all bituminous concrete placed in a single lift which are:

PWL density lots = When the project total estimated quantity per mixture is larger than 3,500 tons

Simple Average density lots = When the project total estimated quantity per mixture is 3,500 tons or less

Disintegration: Erosion or fragmentation of the pavement surface which can be described as polishing, weathering-oxidizing, scaling, spalling, raveling, or formation of potholes.

Dispute Resolution: A procedure used to resolve conflicts between the Engineer and the Contractor's results that may affect payment.

Hot Mix Asphalt (HMA): A bituminous concrete mixture typically produced at 325°F.

Job Mix Formula (JMF): A recommended aggregate gradation and asphalt binder content to achieve the required mixture properties.

Lift: An application of a bituminous concrete mixture placed and compacted to a specified thickness in a single paver pass.

Percent Within Limits (PWL): The percentage of the lot falling between the Upper Specification Limit (USL) and the Lower Specification Limit (LSL).

Polymer Modified Asphalt (PMA): A bituminous concrete mixture containing a polymer-modified asphalt binder and using a qualified warm mix technology.

Production Lot: The total tonnage of a bituminous concrete mixture from a single source that may receive an adjustment.

Production Sub Lot: Portion of the production lot typically represented by a single sample.

Quality Assurance (QA): All those planned and systematic actions necessary to provide CTDOT the confidence that a Contractor will perform the work as specified in the Contract.

Quality Control (QC): The sum total of activities performed by the vendor (Producer, Manufacturer, and Contractor) to ensure that a product meets contract specification requirements.

Superpave: A bituminous concrete mix design used in mixtures designated as "S*" Where "S" indicates Superpave and * indicates the sieve related to the nominal maximum aggregate size of the mix.

Segregation: A non-uniform distribution of a bituminous concrete mixture in terms of gradation, temperature, or volumetric properties.

Warm Mix Asphalt (WMA) Technology: A qualified additive or technology that may be used to produce a bituminous concrete at reduced temperatures and/or increase workability of the mixture.

4.06.02—Materials: All materials shall meet the requirements of Section M.04.

1. Materials Supply: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Engineer.

2. Recycled Materials: Reclaimed Asphalt Pavement (RAP), Crushed Recycled Container Glass (CRCG), Recycled Asphalt Shingles (RAS), or crumb rubber (CR) from recycled tires may be incorporated in bituminous concrete mixtures in accordance with Project Specifications.

4.06.03—Construction Methods

1. Material Documentation: All vendors producing bituminous concrete must have Plants with automated vehicle-weighting scales, storage scales, and material feeds capable of producing a delivery ticket containing the information below.

- a. State of Connecticut printed on ticket.
- b. Name of Producer, identification of Plant, and specific storage silo if used.
- c. Date and time.
- d. Mixture Designation, mix type and level. Curb mixtures for machine-placed curbing must state "curb mix only."
- e. If WMA Technology is used, "-W" must be listed following the mixture designation.
- f. Net weight of mixture loaded into the vehicle. (When RAP and/or RAS is used, the moisture content shall be excluded from mixture net weight.)
- g. Gross weight (equal to the net weight plus the tare weight or the loaded scale weight).
- h. Tare weight of vehicle (daily scale weight of the empty vehicle).
- i. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
- j. Vehicle number - unique means of identification of vehicle.

- k. For Batch Plants: individual aggregate, recycled materials, and virgin asphalt max/target/min weights when silos are not used.
- l. For every mixture designation: the running daily and project total delivered and sequential load number.

The net weight of mixture loaded into the vehicle must be equal to the cumulative measured weights of its components.

The Contractor must notify the Engineer immediately if, during production, there is a malfunction of the weight recording system in the automated Plant. Manually written tickets containing all required information will be allowed for no more than 1 hour.

The State reserves the right to have an Inspector present to monitor batching and/or weighing operations.

2. Transportation of Mixture: The mixture shall be transported in vehicles that are clean of all foreign material, excessive coating or cleaning agents, and that have no gaps through which material might spill. Any material spilled during the loading or transportation process shall be quantified by re-weighing the vehicle. The Contractor shall load vehicles uniformly so that segregation is minimized. Loaded vehicles shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The cover must minimize air infiltration. Vehicles found not to be in conformance shall not be loaded

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list and allowable weights of all vehicles transporting mixture. The State reserves the right to check the gross and tare weight of any vehicle. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4%, the Engineer will recalculate the net weight. The Contractor shall correct the discrepancy to the satisfaction of the Engineer.

If a vehicle delivers mixture to the Project and the delivery ticket indicates that the vehicle is overweight, the load may not be rejected but a "Measured Weight Adjustment" will be taken in accordance with Article 4.06.04.

Vehicle body coating and cleaning agents must not have a deleterious effect on the mixture. The use of solvents or fuel oil, in any concentration, is prohibited for the coating of vehicle bodies.

For each delivery, the Engineer shall be provided a clear, legible copy of the delivery ticket.

3. Paving Equipment: The Contractor shall have the necessary paving and compaction equipment at the Project Site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective, or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. During the paving operation, the use of solvents or fuel oil, in any concentration, is strictly prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

Refueling or cleaning of equipment is prohibited in any location on the Project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off of areas paved or to be paved.

Pavers: Each paver shall have a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. The paver shall be equipped with and use a vibratory screed system with heaters or burners. The screed system shall be capable of producing a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screed units as part of the system shall have auger extensions and tunnel extenders as necessary. Automatic screed controls for grade

and slope shall be used at all times unless otherwise authorized by the Engineer. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable, and shall operate from a fixed or moving reference such as a grade wire or floating beam (minimum length 20 feet).

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Roller types shall include steel wheeled, pneumatic, or a combination thereof. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination. Vibratory rollers shall be equipped with indicators for amplitude, frequency, and speed settings/readouts to measure the impacts per foot during the compaction process. Oscillatory rollers shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

Pneumatic tire rollers shall be equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 psi uniformly over the surface. The Contractor shall furnish documentation to the Engineer regarding tire size, pressure and loading to confirm that the proper contact pressure is being developed and that the loading and contact pressure are uniform for all wheels.

Lighting: For paving operations which will be performed during hours of darkness the paving equipment shall be equipped with lighting fixtures as described below or with an approved equal. Lighting shall minimize glare to passing traffic. The lighting options and minimum number of fixtures are listed in Tables 4.06-1 and 4.06-2.

TABLE 4.06-1: Minimum Paver lighting

Option	Fixture Configuration	Fixture Quantity	Requirement
1	Type A	3	Mount over screed area
	Type B (narrow) or Type C (spot)	2	Aim to auger and guideline
	Type B (wide) or Type C (flood)	2	Aim 25 feet behind paving machine
2	Type D Balloon	2	Mount over screed area

TABLE 4.06-2: Minimum Roller Lighting

Option	Fixture Configuration	Fixture Quantity	Requirement
1	Type B (wide)	2	Aim 50 feet in front of and behind roller
	Type B (narrow)	2	Aim 100 feet in front of and behind roller
2	Type C (flood)	2	Aim 50 feet in front of and behind roller
	Type C (spot)	2	Aim 100 feet in front of and behind roller
3	Type D Balloon	1	Mount above the roller

*All fixtures shall be mounted above the roller.

Type A: Fluorescent fixture shall be heavy duty industrial type. Each fixture shall have a minimum output of 8,000 lumens. The fixtures shall be mounted horizontally and be designed for continuous row installation.

Type B: Each floodlight fixture shall have a minimum output of 18,000 lumens.

Type C: Each fixture shall have a minimum output of 19,000 lumens.

Type D: Balloon light – each balloon light fixture shall have minimum output of 50,000 lumens and emit light equally in all directions.

Material Transfer Vehicle (MTV): A MTV shall be used when placing bituminous concrete surface course (a lift or multiple lifts) as indicated in the Contract except as noted on the plans or as directed by the Engineer. In addition, continuous paving lengths of less than 500 feet may not require the use of a MTV as determined by the Engineer.

The MTV must be a vehicle specifically designed for the purpose of delivering the bituminous concrete mixture from the delivery vehicle to the paver. The MTV must continuously remix the bituminous concrete mixture throughout the placement process.

The use of a MTV will be subject to the requirements stated in Article 1.07.05 Load Restrictions. The Engineer may limit the use of the vehicle if it is determined that the use of the MTV may damage highway components, utilities, or bridges. The Contractor shall submit to the Engineer at time of pre-construction the following information:

1. The make and model of the MTV.
2. The individual axle weights and axle spacing for each piece of paving equipment (haul vehicle, MTV and paver).
3. A working drawing showing the axle spacing in combination with all pieces of equipment that will comprise the paving echelon.

4. Test Section: The Engineer may require the Contractor to place a test section whenever the requirements of this specification or Section M.04 are not met.

The Contractor shall submit the quantity of mixture to be placed and the location of the test section for review and approval by the Engineer. The same equipment used in the construction of a passing test section shall be used throughout production.

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, Plant operations, or procedures for placement and compaction. The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

5. Transitions for Roadway Surface: Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall meet the criteria below unless otherwise specified.

Permanent Transitions: Defined as any gradual change in pavement elevation that remains as a permanent part of the work.

A transition shall be constructed no closer than 75 feet from either side of a bridge expansion joint or parapet. All permanent transitions, leading and trailing ends shall meet the following length requirements:

Posted Speed Limit	Permanent Transition Length Required
> 35 mph	30 feet per inch of elevation change
35 mph or less	15 feet per inch of elevation change

In areas where it is impractical to use the above-described permanent transition lengths, the use of a shorter permanent transition length may be permitted when approved by the Engineer.

Temporary Transitions: Defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

Posted Speed Limit	Temporary Transition Length Required
> 50 mph	Leading Transition: 15 feet per inch of vertical change (thickness) Trailing Transition: 6 feet per inch of vertical change (thickness)
40, 45 or 50 mph	Leading and Trailing: 4 feet per inch of vertical change (thickness)
35 mph or less	Leading and Trailing: 3 feet per inch of vertical change (thickness)

Note: Any temporary transition to be in place over the winter shutdown period or during extended periods of inactivity (more than 14 calendar days) shall meet the greater than 50 mph requirements shown above.

6. Spreading and Finishing of Mixture: Prior to the placement of the mixture, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance.

Immediately before placing a bituminous concrete lift, a uniform coating of tack coat shall be applied to all existing underlying pavement surfaces and on the exposed surface of a wedge joint. Such surfaces shall be clean and dry. Sweeping or other means acceptable to the Engineer shall be used.

The mixture shall not be placed whenever the surface is wet or frozen.

Tack Coat Application: The tack coat shall be applied by a pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gal./s.y. for a non-milled surface and an application rate of 0.05 to 0.07 gal./s.y. for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gal./s.y. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall be heated to 160°F ± 10°F and shall not be further diluted.

Tack coat shall be allowed sufficient time to break prior to any paving equipment or haul vehicles driving on it.

The Contractor may request to omit the tack coat application between bituminous concrete layers that have not been exposed to traffic and are placed during the same work shift. Requests to omit tack coat application on the upper and lower surfaces of a wedge joint will not be considered.

Placement: The mixture shall be placed and compacted to provide a smooth, dense surface with a uniform texture and no segregation at the specified thickness and dimensions indicated in the plans and specifications.

When unforeseen weather conditions prevent further placement of the mixture, the Engineer is not obligated to accept or place the bituminous concrete mixture that is in transit from the Plant.

In advance of paving, traffic control requirements shall be set up, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The mixture temperature will be verified by means of a probe or infrared type of thermometer. The placement temperature range shall be listed in the quality control plan (QCP) for placement and meet the requirements of Table M.04.03-4. Any HMA material that falls outside the specified temperature range as measured by a probe thermometer may be rejected.

The Contractor shall inspect the newly placed pavement for defects in mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by

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placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impracticable due to physical limitations to operate the paving equipment, the Engineer may permit the use of other methods or equipment. Where hand spreading is permitted, the mixture shall be placed by means of suitable shovels and other tools, and in a uniformly loose layer at a thickness that will result in a completed pavement meeting the designed grade and elevation.

Placement Tolerances: Each lift of bituminous concrete placed at a specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an adjustment or removal. Lift tolerances will not relieve the Contractor from meeting the final designed grade. Lifts of specified non-uniform thickness, i.e. wedge or shim course, shall not be subject to thickness and area adjustments.

- a) Thickness: Where the average thickness of the lift exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the Engineer will calculate the thickness adjustment in accordance with Article 4.06.04.

TABLE 4.06-3: Thickness Tolerances

Mixture Designation	Lift Tolerance
S1	+/- 3/8 inch
S0.25, S0.375, S0.5	+/- 1/4 inch

Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this Section.

- b) Area: Where the width of the lift exceeds that shown on the plans by more than the specified thickness, the Engineer will calculate the area adjustment in Article 4.06.04.
- c) Delivered Weight of Mixture: When the delivery ticket shows that the truck exceeds the allowable gross weight for the vehicle type, the Engineer will calculate the weight adjustment in accordance with Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting to expose the full thickness of the lift. Tack coat shall be applied to the sawn face immediately prior to additional mixture being placed.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.04 and eliminate all roller marks without displacement, shoving cracking, or aggregate breakage.

When placing a lift with a specified thickness less than 1 1/2 inches, or a wedge course, the Contractor shall provide a minimum rolling pattern as determined by the development of a compaction curve. The procedure to be used shall be documented in the Contractor's QCP for placement and demonstrated on the first day of placement.

The use of the vibratory system on concrete structures is prohibited. When approved by the Engineer, the Contractor may operate a roller using an oscillatory system at the lowest frequency setting.

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities or adjacent property, the Contractor shall provide alternate compaction equipment.

Rollers operating in the dynamic mode shall be shut off when changing directions.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements:

Each lift of the surface course shall not vary more than 1/4 inch from a Contractor-supplied 10 foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be 3/8 inch. Such tolerance will apply to all paved areas.

Any surface that exceeds these tolerances shall be corrected by the Contractor at its own expense.

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I - Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are 1 1/2 inches to 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II - Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1 1/2 inches or greater than 3 inches. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed 1/4 inch at any location.

Method I - Notched Wedge Joint:

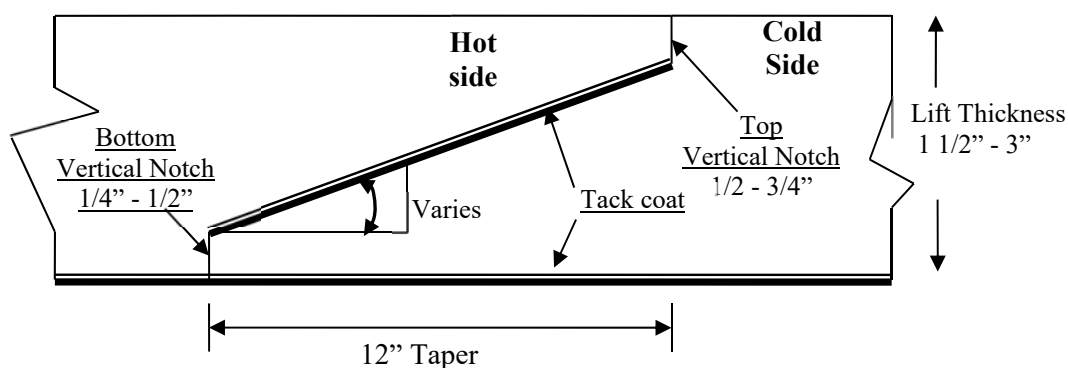
A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width "curb to curb" as described in Method II may be waived if addressed in the QC plan and approved by the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device. The compaction device shall be the same width as the taper and not reduce the angle of the wedge or ravel the top notch of the joint during compaction.

When placed on paved surfaces, the area below the sloped section of the joint shall be treated with tack coat. The top surface of the sloped section of the joint shall be treated with tack coat prior to placing the completing pass.

The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

Figure 4.06-1: Notched Wedge Joint (Not to Scale)



Any exposed wedge joint must be located to allow for the free draining of water from the road surface.

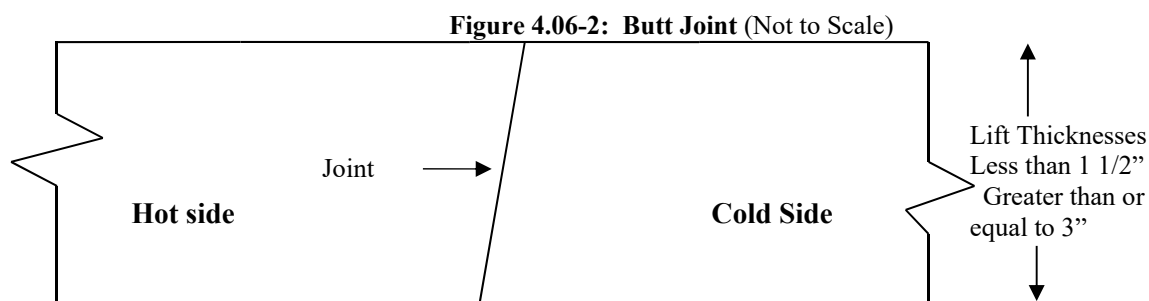
The Engineer reserves the right to define the paving limits when using a wedge joint that will be exposed to traffic.

If Method I cannot be used on those lifts which are 1 1/2 inches to 3 inches, Method III may be substituted according to the requirements below for "Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment."

Method II - Butt Joint:

When adjoining passes are placed, the Contractor shall use the end gate to create a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inch from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

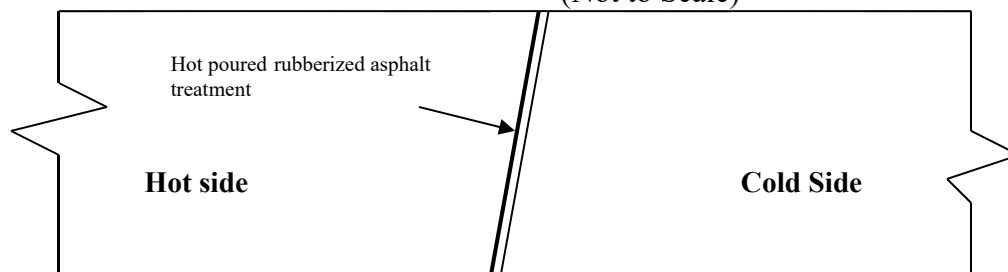
The Contractor shall not allow any butt joint to be incomplete at the end of a work shift unless otherwise allowed by the Engineer. When using this method, the Contractor is not allowed to leave a vertical edge exposed at the end of a work shift and must complete paving of the roadway full width “curb to curb.”



Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment:

If Method I cannot be used due to physical constraints in certain limited locations, the Contractor may submit a request in writing for approval by the Engineer to use Method III as a substitution in those locations. There shall be no additional measurement or payment made when Method III is substituted for Method I. When required by the Contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.

Figure 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment (Not to Scale)



All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D6690, Type 2. The joint sealant shall be placed on the face of the “cold side” of the butt joint as shown above prior to placing the “hot side” of the butt joint. The joint seal material shall be applied in accordance with the manufacturer’s recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

8. Contractor Quality Control (QC) Requirements: The Contractor shall be responsible for maintaining adequate quality control procedures throughout the production and placement operations. Therefore, the Contractor must ensure that the materials, mixture, and work provided by Subcontractors, Suppliers, and Producers also meet Contract specification requirements.

This effort must be documented in Quality Control Plans (QCP) and must address the actions, inspection, or sampling and testing necessary to keep the production and placement operations in control, to determine when an operation has gone out of control and to respond to correct the situation in a timely fashion.

The Standard QCP for production shall consist of the quality control program specific to the production facility.

There are 3 components to the QCP for placement: a Standard QCP, a Project Summary Sheet that details Project-specific information, and, if applicable, a separate Extended Season Paving Plan as required in 4.06.03-9 "Temperature and Seasonal Requirements."

The Standard QCP for both production and placement shall be submitted to the Department for approval each calendar year and at a minimum of 30 days prior to production or placement.

Production or placement shall not occur until all QCP components have been approved by the Engineer.

Each QCP shall include the name and qualifications of a Quality Control Manager (QCM). The QCM shall be responsible for the administration of the QCP, and any modifications that may become necessary.

The QCM shall have the ability to direct all Contractor personnel on the Project during paving operations.

The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QC Technician performing in-place density testing shall be NETTCP certified as a paving inspector.

Approval of the QCP does not relieve the Contractor of its responsibility to comply with the Project specifications. The Contractor may modify the QCPs as work progresses and must document the changes in writing prior to resuming operations. These changes include but are not limited to changes in quality control procedures or personnel. The Department reserves the right to deny significant changes to the QCPs.

QCP for Production: Refer to M.04.03-1.

QCP for Placement: The Standard QCP, Project Summary Sheet, and Extended Season Paving Plan shall conform to the format provided by the Engineer. The format is available at http://www.ct.gov/dot/lib/dot/documents/dconstruction/pat/qcp_outline_hma_placement.pdf

The Contractor shall perform all quality control sampling and testing, provide inspection, and exercise management control to ensure that bituminous concrete placement conforms to the requirements as outlined in its QCP during all phases of the work. The Contractor shall document these activities for each day of placement.

The Contractor shall submit complete field density testing and inspection records to the Engineer within 48 hours in a manner acceptable to the Engineer.

The Contractor may obtain 1 mat core and 1 joint core per day for process control, provided this process is detailed in the QCP. The results of these process control cores shall not be used to dispute the Department's determinations from the acceptance cores. The Contractor shall submit the location of each process control core to the Engineer for approval prior to taking the core. The core holes shall be filled to the same requirements described in Subarticle 4.06.03-10.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary

pavements, shall be divided into 2 seasons, “In-Season” and “Extended-Season.” In-Season paving occurs from May 1 to October 14, and Extended Season paving occurs from October 15 to April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

- Mixtures shall not be placed when the air or subbase temperature is less than 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the Project that addresses minimum delivered mix temperature considering WMA, PMA, or other additives; maximum paver speed; enhanced rolling patterns; and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

10. Field Density The Contractor shall obtain cores for the determination of mat and longitudinal joint density of bituminous concrete pavements. Within five calendar days of placement, mat and joint cores shall be extracted on each lift with a specified thickness of 1 1/2 inches or more. Joint cores shall not be extracted on HMA S1.0 lifts.

The Contractor shall extract cores from random locations determined by the Engineer in accordance with ASTM D3665. Four (4) or six (6) inch diameter cores shall be extracted for S0.25, S0.375 and S0.5 mixtures; 6 inch diameter cores shall be required for S1.0 mixtures. The Contractor shall coordinate with the Engineer to witness the extraction, labeling of cores, and filling of the core holes. Each lift will be separated into lots as follows:

- a. Simple Average Density Lots: For total estimated quantities below 2,000 tons, the lift will be evaluated in one lot which will include the total paved tonnage of the lift and all longitudinal joints between the curb lines.
For total estimated quantities between 2,000 and 3,500 tons, the lift will be evaluated in two lots in which each lot will include approximately half of the total tonnage placed for the full paving width of a lift including all longitudinal joints between the curb lines.
- b. PWL Density Lots: Mat density lots will include each 3,500 tons of mixture placed within 30 calendar days. Joint density lots will include 14,000 linear feet of constructed joints. Bridge density lots will always be analyzed using simple average lot methodology.
- c. Partial Density Lot (For PWL only): A mat density lot with less than 3,500 tons or a joint density lot with less than 14,000 linear feet due to:
 - completion of the course; or
 - a lot spanning 30 calendar days.

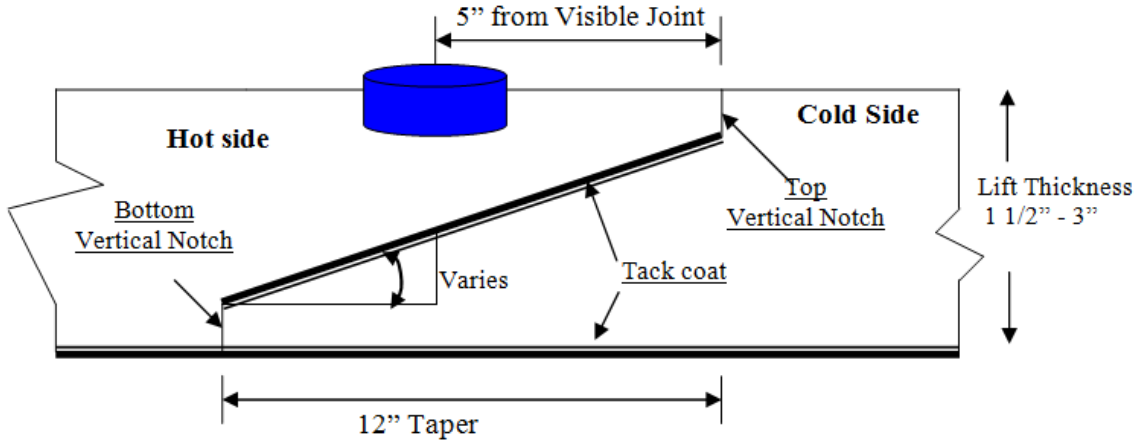
Prior to paving, the type and number of lot(s) will be determined by the Engineer. Noncontiguous areas such as highway ramps may be combined to create one lot.

After the lift has been compacted and cooled, the Contractor shall cut cores to a depth equal to or greater than the lift thickness and shall remove them without damaging the lift(s) to be tested. Any core that is damaged or obviously defective while being obtained will be replaced with a new core from a location within 2 feet measured in a longitudinal direction.

A mat core shall not be located any closer than 1 foot from the edge of a paver pass. If a random number locates a core less than 1 foot from any edge, the location will be adjusted by the Engineer so that the outer edge of the core is 1 foot from the edge of the paver pass.

Method I, Notched Wedge Joint cores shall be taken so that the center of the core is 5 inches from the visible joint on the hot mat side (Figure 4.06-4).

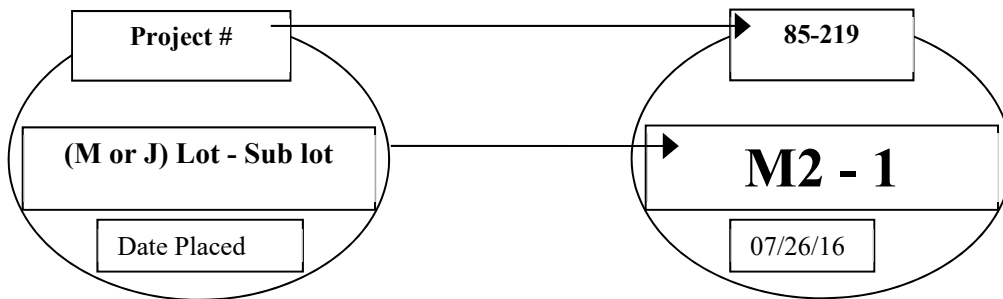
Figure 4.06-4: Notched Wedge Joint Cores (Not to Scale)



When Method II or Method III Butt Joint is used, cores shall be taken from the hot side so the edge of the core is within 1 inch of the longitudinal joint.

The cores shall be labeled by the Contractor with the Project number, date placed, lot number, and sub-lot number. The core's label shall include "M" for a mat core and "J" for a joint core. For example, a mat core from the first lot and the first sub-lot shall be labeled with "M1 - 1." A mat core from the second lot and first sub-lot shall be labeled "M2-1" (see Figure 4.06-5). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the cores and MAT-109 to the Department's Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using security seals at the removable hinges(s) and at the lid opening(s). The security seals' identification number must be documented on the MAT-109. All sealed containers shall be delivered to the Department's Central Lab within two working days from time of extraction. Central Lab personnel will break the security seal and take possession of the cores.

Figure 4.06-5: Labeling of Cores



Each core hole shall be filled within 4 hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other means to uniformly cover the cut surface. The core hole shall be filled using a bituminous concrete mixture at a minimum temperature of 240°F containing the same or smaller nominal maximum aggregate size and

compacted with a hand compactor or other mechanical means to the maximum compaction possible. The bituminous concrete shall be compacted to 1/8 inch above the finished pavement.

Simple Average Density Lots:

A standard simple average density lot is the quantity of material placed within the defined area excluding any bridge decks.

A combo simple average density lot is the quantity of material placed within the defined area including bridge decks less than or equal to 500 feet long.

A bridge simple average density lot is the quantity of material placed on a bridge deck longer than 500 feet.

The number of cores per lot shall be determined in accordance with Table 4.06-4. If a randomly selected mat or joint core location is on a bridge deck, the core is to be obtained on the bridge deck in addition to the core(s) required on the bridge deck.

The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

The longitudinal locations of mat cores within a standard, combo, or bridge lot containing multiple paving passes will be determined using the combined length of the paving passes within the lot.

TABLE 4.06-4: Number of Cores per Lot (Simple Average)

Lot Type	No. of Mat Cores		No. of Joint Cores	
Standard Lot < 500 Tons	3		3	
Standard Lot ≥ 500 Tons	4		4	
Combo Lot < 500 Tons	2 plus	1 per bridge (≤ 300')	2 plus	1 per bridge (≤ 300')
Combo Lot ≥ 500 Tons ⁽¹⁾	4 plus	2 per bridge (301' – 500')	4 plus	2 per bridge (301' – 500')

TABLE 4.06-5: Number of Core per Bridge Density Lot (Simple Average)

Length of Bridge(s) (Feet)	Minimum No. of Mat Cores	Minimum No. of Joint Cores
< 500	2	2
501 – 1,500	3	3
1,501 – 2,500	4	4
2,501 and greater	5	5

PWL Density Lots:

A PWL mat density lot is 3,500 tons of material placed within the defined area excluding any bridges. One mat core will be obtained per every 500 tons placed.

A PWL joint density lot is 14,000 linear feet of longitudinal joint excluding any joints on bridge decks. One joint core will be obtained per every 2,000 linear feet of joint.

Bridge density lots will always be analyzed as using the simple average lot methodology. The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks

are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

11. Acceptance Sampling and Testing: Sampling shall be performed in accordance with ASTM D3665 or a statistically-based procedure of stratified random sampling approved by the Engineer.

Plant Material Acceptance: The Contractor shall provide the required sampling and testing during all phases of the work in accordance with M.04. The Department will verify the Contractor's acceptance test results. Should any test results exceed the specified tolerances in the Department's current QA Program for Materials, the Contractor's test results for a subject lot or sub lot may be replaced with the Department's results for the purpose of calculating adjustments. The verification procedure is included in the Department's current QA Program for Materials.

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production's average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department's current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within five calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results from samples taken prior to and after finish rolling, and within the timeframe described in 4.06.03-8 supporting its position. No request for dispute resolution will be allowed for a density lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new core or set of core samples per disputed lot. The core samples must be extracted no later than seven calendar days from the date of the Engineer's authorization. All such core samples shall be extracted and the core hole filled using the procedure outlined in 4.06.03-10.

a) Simple Average Lots: The Contractor may only dispute any simple average lot that is adjusted at or below 95 percent payment. The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. The dispute resolution results shall be combined with the original results and averaged for determining the final in-place density value.

b) PWL Lots: The Contractor may dispute any PWL subplot when the PWL falls below 50% calculated in accordance with section 4.06.04.2.b. An additional random core in the subplot may be taken to validate the accuracy of the core in question. The Department will verify the additional core test result and may average the original test result with the additional core result for purpose of calculating adjustments.

13. Corrective Work Procedure:

If pavement placed by the Contractor does not meet the specifications, and the Engineer requires its replacement or correction, the Contractor shall:

- a) Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:
 - Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.

- Proposed work schedule.
 - Construction method and sequence of operations.
 - Methods of maintenance and protection of traffic.
 - Material sources.
 - Names and telephone numbers of supervising personnel.
- b) Any corrective courses placed as the final wearing surface shall match the specified lift thickness after completion.

14. Protection of the Work: The Contractor shall protect all sections of the newly finished pavement from damage that may occur as a result of the Contractor's operations for the duration of the Project.

15. Cut Bituminous Concrete Pavement: Work under this item shall consist of making a straight-line cut in the bituminous concrete pavement to the lines delineated on the plans or as directed by the Engineer. The cut shall provide a straight, clean, vertical face with no cracking, tearing or breakage along the cut edge.

4.06.04—Method of Measurement:

1. HMA S* or PMA S*: Bituminous concrete will be measured for payment as the amount of material in tons placed as determined by the net weight on the delivered tickets and adjusted by area, thickness and weight as follows:

Quantity Adjustments: Adjustments may be applied to the placed bituminous concrete quantities that will be measured for payment using the following formulas:

Yield Factor for Adjustment Calculation = 0.0575 tons/SY/inch

Actual Area (SY) = [(Measured Length (ft)) x (Avg. of width measurements (ft))] ÷ 9 s.f./SY

Actual Thickness (t) = Total tons delivered / [Actual Area (SY) x 0.0575 tons/SY/inch]

- a) Area: If the average width exceeds the allowable tolerance, an adjustment will be made using the following formula. The tolerance for width is equal to the specified thickness (inch) of the lift being placed.

Quantity Adjusted for Area (T_A) = [(L x W_{adj})/9] x (t) x 0.0575 Tons/SY/inch = (-) tons

Where: L = Length (ft)

(t) = Actual thickness (inches)

W_{adj} = (Designed width (ft) + tolerance /12) - Measured Width)

- b) Thickness: If the actual average thickness is less than the allowable tolerance, the Contractor shall submit a repair procedure to the Engineer for approval. If the actual thickness exceeds the allowable tolerance, an adjustment will be made using the following formula:

Quantity Adjusted for Thickness (T_T) = A x t_{adj} x 0.0575 = (-) tons

Where: A = Area = {[L x (Design width + tolerance (lift thickness)/12)] / 9}

t_{adj} = Adjusted thickness = [(Dt + tolerance) - Actual thickness]

Dt = Designed thickness (inches)

- c) Weight: If the quantity of bituminous concrete representing the mixture delivered to the Project is

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in excess of the allowable gross vehicle weight (GVW) for each vehicle, an adjustment will be made using the following formula:

Quantity Adjusted for Weight (T_w) = GVW – DGW= (-) tons

Where: DGW = Delivered gross weight as shown on the delivery ticket or measured on a certified scale

2. Bituminous Concrete Adjustment Cost:

a) Production Lot Adjustment: An adjustment may be applied to each production lot as follows:

i. Non-PWL Production Lot (less than 3,500 tons):

The adjustment values in Tables 4.06-6 and 4.06-7 will be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day’s production (lot) will be computed as follows:

Tons Adjusted for Superpave Design (T_{SD}) = [(AdjAV_t + AdjPB_t) / 100] x Tons

Where: AdjAV_t: Percent adjustment for air voids

AdjPB_t: Percent adjustment for asphalt binder

Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

Percent Adjustment for Air Voids = AdjAV_t = [AdjAV₁ + AdjAV₂ + AdjAV_i + ... + AdjAV_n]/n

Where: AdjAV_t = Total percent air void adjustment value for the lot

AdjAV_i = Adjustment value from Table 4.06-6 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.

n = number of sub lots based on Table M.04.03-2

TABLE 4.06-6: Adjustment Values for Air Voids

Adjustment Value (AdjAV _i) (%)	S0.25, S0.375, S0.5, S1 Air Voids (AV)
+2.5	3.8 - 4.2
+3.125*(AV-3)	3.0 - 3.7
-3.125*(AV-5)	4.3 – 5.0
20*(AV-3)	2.3 – 2.9
-20*(AV-5)	5.1 – 5.7
-20.0	≤ 2.2 or ≥ 5.8

Percent Adjustment for Asphalt Binder = AdjPB_t = [(AdjPB₁ + AdjPB₂ + AdjPB_i + ... + AdjPB_n)] /n

Where: AdjPB_t = Total percent liquid binder adjustment value for the lot

AdjPB_i = Adjustment value from Table 4.06-7 resulting from each sub lot

n = number of binder tests in a production lot

TABLE 4.06-7: Adjustment Values for Binder Content

Adjustment Value (AdjAV _i) (%)	<u>S0.25, S0.375, S0.5, S1</u> Pb
0.0	JMF Pb ± 0.3
- 10.0	≤ JMF Pb - 0.4 or ≥ JMF Pb + 0.4

ii. PWL Production Lot (3500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on AV, VMA, and PB test results. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

Only one test result will be considered for each sub lot. The specification limits are listed in M.04.

For AV, PB, and voids in mineral aggregate (VMA), the individual material quantity characteristic adjustment (Adj) will be calculated as follows:

For PWL between 50 and 90%: $Adj(AV_t \text{ or } PB_t \text{ or } VMA_t) = (55 + 0.5 \text{ PWL}) - 100$

For PWL at and above 90%: $Adj(AV_t \text{ or } PB_t \text{ or } VMA_t) = (77.5 + 0.25 \text{ PWL}) - 100$

Where: AdjAV_t = Total percent AV adjustment value for the lot

AdjPB_t = Total percent PB adjustment value for the lot

AdjVMA_t = Total percent VMA adjustment value for the lot

A lot with PWL less than 50% in any of the 3 individual material quality characteristics will be evaluated under 1.06.04.

The total adjustment for each production lot will be computed using the following formula:

$$\text{Tons Adjusted for Superpave Design (T}_{SD}) = [(0.5AdjAV_t + 0.25AdjPB_t + 0.25 AdjVMA_t) / 100] \times \text{Tons}$$

Where Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

iii. Partial Lots:

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material or if the last test result of the prior lot is over 30 calendar days old, the adjustment will be calculated as indicated in 4.06.04-2.a)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.a)ii.

Production Lot Adjustment: T_{SD} x Unit Price = Est. (Pi)

Where: Unit Price = Contract unit price per ton per type of mixture

Est. (Pi) = Pay Unit in dollars representing incentive or disincentive per lot

b) Density Lot Adjustment: An adjustment may be applied to each density lot as follows:

i. Simple Average Density Lot (less than 3500 tons) and Bridge Lots:

The final lot quantity shall be the difference between the total payable tons for the Project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace,” the density lot shall be removed and replaced (curb to curb).

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

$$\text{Tons Adjusted for Density (T}_D) = [\{(PAM \times 0.50) + (PAJ \times 0.50)\} / 100] \times \text{Tons}$$

Where: T_D = Total tons adjusted for density for each lot
 P_{AM} = Mat density percent adjustment from Table 4.06-8
 P_{AJ} = Joint density percent adjustment from Table 4.06-9
Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

TABLE 4.06-8: Adjustment Values for Pavement Mat density

Average Core Result Percent Mat Density	Percent Adjustment (Bridge and Non-Bridge) ⁽¹⁾⁽²⁾
97.1 - 100	-1.667*(ACRPD-98.5)
94.5 - 97.0	+2.5
93.5 - 94.4	+2.5*(ACRPD-93.5)
92.0 - 93.4	0
90.0 - 91.9	-5*(92-ACRPD)
88.0 - 89.9	-10*(91-ACRPD)
87.0 - 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:

⁽¹⁾ ACRPD = Average Core Result Percent Density

⁽²⁾ All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67.

TABLE 4.06-9: Adjustment Values for Pavement Joint Density

Average Core Result Percent Joint Density	Percent Adjustment (Bridge and Non-Bridge) ⁽¹⁾⁽²⁾
97.1 - 100	-1.667*(ACRPD-98.5)
93.5 - 97.0	+2.5
92.0 - 93.4	+1.667*(ACRPD-92)
91.0 - 91.9	0
89.0 - 90.9	-7.5*(91-ACRPD)
88.0 - 88.9	-15*(90-ACRPD)
87.0 - 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:

⁽¹⁾ ACRPD = Average Core Result Percent Density

⁽²⁾ All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

ii. PWL Density Lot (3,500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on mat and joint density test results. Only one result will be included for each subplot. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and

AASHTO R 42 Appendix X4 will apply.

The specification limits for the PWL determination are as follows:

Mat Density: 91.5-98%

Joint Density: 90-98%

For mat and joint density, the individual percent adjustment (PA) will be calculated as follows:

For PWL between 50 and 90%: $PA_{(M \text{ or } J)} = 0.25 * PWL - 22.50$

For PWL at and above 90%: $PA_{(M \text{ or } J)} = 0.125 * PWL - 11.25$

Where: PA_M = Total percent mat density adjustment value for the PWL mat density lot

PA_J = Total percent joint density adjustment value for the PWL joint density lot

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

A lot with PWL less than 50% will be evaluated under 1.06.04.

The total adjustment for each PWL mat density lot will be computed as follows:

Tons Adjusted for Mat Density (T_{MD}) = $(PA_M / 100) \times \text{Tons}$

Where: Tons = Weight of material (tons) in the lot adjusted by 4.06.4-1.

The total adjustment for each PWL joint density lot will be computed as follows:

Tons Adjusted for Joint Density (T_{JD}) = $(PA_J / 100) \times J_Tons$

Tons Adjusted for Joint Density will be calculated at the end of each project or project phase.

Where: J_Tons = Tons in project or phase adjusted by 4.06.4 – 1 $\times \frac{\text{Lot joint length}}{\text{Joint length in project or phase}}$

All bridge density lot adjustments will be evaluated in accordance with 4.06.04-2.b)i.

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

iii. Partial Lots:

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material and placement conditions or if the last test result of the prior lot is over 30 calendar days old, the mat and joint individual adjustments will be calculated in accordance to Tables 4.06-8 and 4.06-9. T_{MD} and T_{JD} will be calculated as indicated in 4.06.04-2.b)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.b)ii.

Density Lot Adjustment (Simple Average Lots): $T_D \times \text{Unit Price} = \text{Est. (Di)}$

Density Lot Adjustment (PWL Lots): $(T_{MD} \text{ or } T_{JD}) \times \text{Unit Price} = \text{Est. (DMi or DJi)}$

Where: Unit Price = Contract unit price per ton per type of mixture

Est. (Di) = Pay Unit in dollars representing incentive or disincentive per simple average density lot

Est. (DMi) = Pay Unit in dollars representing incentive or disincentive per PWL mat lot

Est. (D_{Ji})= Pay Unit in dollars representing incentive or disincentive per PWL joint lot

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

3. Transitions for Roadway Surface: The installation of permanent transitions will be measured under the appropriate item used in the formation of the transition.

The quantity of material used for the installation of temporary transitions will be measured for payment under the appropriate item used in the formation of the transition. The installation and removal of a bond breaker and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is not measured for payment.

4. Cut Bituminous Concrete Pavement: The quantity of bituminous concrete pavement cut will be measured in accordance with 2.02.04.

5. Material for Tack Coat: The quantity of tack coat will be measured for payment by the number of gallons furnished and applied on the Project and approved by the Engineer. No tack coat material shall be included that is placed in excess of the tolerance described in 4.06.03.

a. Container Method – Material furnished in a container will be measured to the nearest 1/2 gallon.

The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest 1/2 gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

b. Vehicle Method

i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:

Tack Coat (gallons at 60°F) = Measured Weight (pounds) / Weight per gallon at 60°F

Tack Coat (gallons at 60°F) = 0.996 x Measured Weight (pounds) / Weight per gallon at 77°F

ii. Measured by automated metering system on the delivery vehicle:

Tack Coat (gallons at 60°F) = 0.976 x Measured Volume (gallons).

6. Material Transfer Vehicle (MTV): The furnishing and use of a MTV will be measured separately for payment based on the actual number of surface course tons delivered to a paver using the MTV.

4.06.05—Basis of Payment:

1. HMA S* or PMA S*: The furnishing and placing of bituminous concrete will be paid for at the Contract unit price per ton for " HMA S*" or " PMA S*."

All costs associated with providing illumination of the work area are included in the general cost of the work.

All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.

All costs associated with obtaining cores for acceptance testing and dispute resolution are included in the general cost of the work.

2. Bituminous Concrete Adjustment Costs: This adjustment will be calculated using the formulas shown below if all of the measured adjustments in 4.06.04-2 are not equal to zero. A positive or negative adjustment will be applied to monies due the Contractor.

- Production Lot: $\Sigma \text{ Est (Pi)} = \text{Est. (P)}$**
- Density Lot (Simple Average Lots): $\Sigma \text{ Est (Di)} = \text{Est. (D)}$**
- Density Lot (PWL): $\Sigma \text{ Est (DMi)} + \Sigma \text{ (DJi)} = \text{Est. (D)}$**
- Bituminous Concrete Adjustment Cost= Est. (P) + Est. (D)**

Where: Est. ()= Pay Unit in dollars representing incentive or disincentive in each production or density lot calculated in 4.06.04-2

The Bituminous Concrete Adjustment Cost item, if included in the bid proposal or estimate, is not to be altered in any manner by the Bidder. If the Bidder should alter the amount shown, the altered figure will be disregarded and the original estimated cost will be used for the Contract.

3. Transitions for Roadway Surface: The installation of permanent transitions will be paid under the appropriate item used in the formation of the transition. The quantity of material used for the installation of temporary transitions will be paid under the appropriate pay item used in the formation of the transition. The installation and removal of a bond breaker, and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is included in the general cost of the work.

4. The cutting of bituminous concrete pavement will be paid in accordance with 2.02.05.

5. Material for tack coat will be paid for at the Contract unit price per gallon at 60°F for "Material for Tack Coat."

6. The Material Transfer Vehicle (MTV) will be paid at the Contract unit price per ton for "Material Transfer Vehicle."

Pay Item	Pay Unit
HMA S*	ton
PMA S*	ton
Bituminous Concrete Adjustment Cost	est.
Material for Tack Coat	gal.
Material Transfer Vehicle	ton

ITEM #406200A – CLEANING AND SEALING CRACKS

DESCRIPTION

The work covered under this item shall consist of performing all operations and furnishing all materials, labor, and equipment necessary for preparing, cleaning, drying, and flush-fill sealing of cracks in the existing pavement having an average width greater than 3/16” and less than 1-1/2”. Vegetation removal and sterilization of cracks shall be completed where necessary. All materials and equipment shall be approved by the Town or designated agent prior to work commencing.

MATERIALS

1. Asphalt: The asphalt material shall conform to the following requirements:

PERFORMANCE GRADE BINDER: PG 58-28 (formerly AC-10), PG 64-22 (formerly AC-20), or PG 64-28 with a penetration of 75-100. The penetration shall be conducted in accordance with AASHTO T49.

The Asphalt Binder shall be a Performance Graded Asphalt Binder (PG) which meets the specification requirements of AASHTO M320 and AASHTO R29. Acceptance of the PG will be in accordance with AASHTO R26 “Standard Recommended Practice for Certifying Suppliers of Performance-Graded Asphalt Binders, Single User Digital Publication.” PG shall be provided by an Approved Supplier (AS) under the Approved Supplier Certification (ASC) system.

The Contractor shall furnish vendor's certified test reports for each load of asphalt binder material shipped to the project. The vendor's certified test report for the asphalt binder material can be used for acceptance or tested independently by the Town or designated agent.

The blending at the project site of PG binders from different suppliers is strictly prohibited. Contractors who blend PG binders will be reclassified as a supplier and required to certify the binder in accordance with AASHTO R26.

A copy of the Material Certificate shall be provided in accordance with the frequency requirements established in the latest version of AASHTO M320, and shall include the following:

- 1) Flash point
- 2) Rotational viscosity at 135°C and 165°C
- 3) Specific gravity at 25°C
- 4) Original $G^*/\sin\delta$ and phase angle at test temperature
- 5) RTFO percent mass loss
- 6) RTFO - $G^*/\sin\delta$ and phase angle at test temperature
- 7) PAV Residue - $G^*(\sin\delta)$ and phase angle at test temperature
- 8) Creep stiffness and m-value at test temperature
- 9) Direct tension results (when equipment available)
- 10) Strain sweep in accordance with AASHTO T315 (optional)
- 11) Physical hardening after 24 hours in accordance with AASHTO T313 (optional)

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2. Hot-Poured Elastomeric: The sealing compound may be a hot-poured rubberized joint-sealing material, which will form a resilient and adhesive compound conforming to AASHTO M324, Type II:

- (a) Pour Point minimum of 20 deg. F. lower than the safe-heating temperature;
- (b) Penetration: @ 77 deg. F./load 150 grams./5 sec. shall not exceed 90 dmm.;
- (c) Resilience (ASTM D5329): @ 77 deg. F, minimum recovery of 60%;
- (d) Flow (ASTM D5329): @ 140 deg. F. shall not exceed 3 mm.;
- (e) Bond (ASTM D5329): @ -20 deg. F. for three cycles, at any time during the test, there shall not develop a crack, separation, or other opening which is at any point over 1/4" deep, in the sealer or between the sealer and mortar block;

The sealant shall be composed of a mixture of materials that will form a resilient and adhesive compound capable of effectively sealing cracks in asphaltic pavements without incompatibility bond failures, and against the infiltration of moisture and foreign material throughout repeated cycles of expansion and contraction with temperature changes, and that will not, at ambient temperatures, flow from the crack or be picked up by vehicle tire. The material shall be capable of being brought to a uniform pouring consistency suitable for completely filling the cracks without inclusion of large air holes or discontinuities and without damage to the material. It shall remain relatively unchanged in application characteristics for at least six hours at the recommended pouring temperature in the field.

3. Fiber Reinforced Asphalt Cement: The sealing compound will be a liquid asphalt material, conforming to the PG requirements above, which is reinforced with a polyester or polypropylene fiber conforming to the following properties:

- (a) Fibers: Polyester fiber
 - Concentration – 5% by weight to asphalt
 - Length - 1/4 inch (6.25mm)
 - Diameter - 0.0008 inch \pm 0.0001 inch
 - Specific Gravity - 1.32 to 1.40
 - Melt Temperature - 480 F minimum
 - Ignition Temperature - 1000 F minimum
 - Tensile Strength - 75,000 psi \pm 5,000 psi
 - Break Elongation - 33% \pm 9% (Fully drawn)

This fiber is a polyester which is the polymerized product of crude oil components. These fibers will not shrink, distort, or lose their strength at temperatures below 480 deg. F. The fibers are produced by continuous melt-spinning.

Composition: 5% minimum by weight of the asphalt material.

5. Cover Materials: Cover Materials to eliminate tracking from traffic shall be stone screenings, crusher dust, slag, toilet paper, or other material found to prevent adhesion of the crack sealer to tires or pedestrians.

EQUIPMENT

Equipment used in the performance of the work required by this section of the specification shall be subject to the approval of the Town or designated agent and maintained in a satisfactory working condition at all times.

- (a) Equipment for cleaning, heating, drying cracks: Equipment for cleaning, heating and drying cracks shall be a hot air lance, or approved equal. The hot air lance shall have a minimum heat capacity of 2500°F (1370°C) and a minimum blast velocity of 2001 ft/s (610 m/s).
- (b) Air Compressor: Air compressors for cleaning cracks shall be portable and capable of furnishing a blast pressure not less than 90 lbs per square inch (690 kPa) and a minimum blast flow of 150 cubic feet of air per minute at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.
- (c) Self-Propelled Vacuum Sweeper: Small self-propelled vacuum sweeper designed especially for use in cleaning highway and airfield pavements shall be used to remove debris, dirt, and dust from cleaned and dried cracks.
- (d) Hand Tools: Hand tools shall consist of brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work.
- (e) Melting Kettle: The unit used to melt the joint sealing compound shall be a double boiler, indirect fired type. The space between the inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point not less than 530 deg. F. The kettle shall be equipped with separate automatic temperature controls for the oil and melting chamber. The kettle shall have accurately calibrated material and heating oil temperature gauges. The kettle shall be equipped with a satisfactory means of agitating the crack sealer at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or by a continuous circulating gear pump attached to the heating unit. The kettle must be equipped with thermostatic control calibrated between 200 deg. F. and 550 deg. F.

Heavy duty application pumps, large hoses, and full-sweep agitation equipment is required. A 20 HP (15 kW) engine with a 2" (50mm) recirculating pump and discharge line is recommended.

- (f) Applicator: The application hose shall be insulated and the applicator wand shall meet or exceed the kettle manufacturer's specifications.
- (g) Routers (only when directed by the Town):
 - Vertical-Spindle Router – equipped with sharp carbide tipped or diamond router bits.
 - Rotary-Impact Router – equipped with sharp carbide tipped router bits.
- (h) Wirebrushing: Mechanical, power-driven wirebrushes shall be used in conjunction with some form of compressed air. The brush attachment shall contain bristles flexible enough to allow penetration into the crack channel, yet rigid enough to remove dirt and debris.

- (i) Finishing Tools: Squeegee - heavy-duty, industrial rubber U- or V- shaped squeegee. Prior to installation the Contractor shall demonstrate to the Town or designated agent, by the test strip, that the desired configuration is achieved with the finishing tool.

SAMPLING AND TESTING

The Town or designated agent shall be notified in writing of the proposed sources of crack sealants at least 60 days prior to the date the materials will be required at the project site. The Contractor shall supply to the Town or designated agent copies of all certified test reports for each load of sealant prior to use of the materials. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the materials and are in conflict with these specifications, printed copies of these recommendations shall be furnished to the Town or designated agent prior to use on the project. Installation of the material shall not be allowed until the recommendations are received and reviewed by the Town or designated agent.

Crack sealants may be tested for conformance to the referenced applicable material specifications. The Contractor shall furnish samples of materials, in sufficient quantity to be tested, upon request, at no additional cost. If a sample fails to meet specification requirements, the material represented by the sample shall be removed and replaced at no additional cost.

CONSTRUCTION DETAILS

Crack sealing will be applied to cracks on streets where the average crack width is greater than 3/16" (inch). Cracks with widths less than 3/16" will not be sealed. Cracks shall be cleaned to a depth of 1" and cracks greater than 1" depth shall have backer rod. Backer rod shall be placed to seal the full-width of the crack, multiple sections may be required. Cracks shall not be "over-filled" by more than 1/16". Checking for bond shall be conducted by peeling "cooled" material from crack channel. Cracks where the average crack width is greater than 1-1/2" shall be filled with hot mix asphalt applied at minimum temperature of 265 deg. F and a maximum temperature of 325 deg. F, or proprietary cold patch, unless otherwise directed by the Engineer.

Prior to applying the crack sealant material all cracks shall be thoroughly cleaned, removal of any loose materials or vegetation, dried and heated using a hot air lance or approved equal.

In areas where hot poured joint material was previously used and where bond has broken, that area shall be cleaned prior to sealing. After the cleaning of the cracks, all material removed from the cracks shall be removed from pavement surface by means of power sweepers, hand brooms or air brooms, to the satisfaction of the Town or designated agent. No crack sealing material shall be applied in wet cracks or where fog, frost, and snow or ice is present or when the ambient temperature is below 40 deg. F. All cracks are to be dried prior to material application.

The type of crack sealant material, crack preparation, and placement procedure to utilize will be determined by the maintenance or rehabilitation needs of the pavement and the type of cracks. Pavements that are to receive an overlay in conjunction with the cracking sealing operation can be sealed with fiber reinforced crack sealant. Rubberized crack sealant can be utilized on pavements receiving an overlay provided, the finished product is level with the surface and, a leveling course is utilized prior to

the overlay unless the Contractor warrants that no deformations will result in the subsequent overlay. Rubberized crack sealant or fiberized crack sealant can be utilized on roadways receiving routine or preventative maintenance.

Preparation of Cracks - The cracks shall be thoroughly cleaned, dried, and heated prior to application of the crack sealant. The hot air lance shall be utilized to remove dirt, debris, vegetation, and moisture, just prior to installation of the crack sealant. Loosened fragments encountered while cleaning shall be removed. The hot air lance shall provide a continuous stream of hot, high pressure air with no flame at the exit nozzle. The hot airblasting shall be conducted in two steps. The first pass shall be made along the crack in a steady fashion and should clean and heat but not burn the crack sidewalls. The hot air lance shall be held approximately 2" (50mm) above the crack channel. Proper heating is manifested by a slightly darkened color. The pavement shall not be burned, which is apparent by a black color and gritty texture. The second pass of the hot air lance shall completely remove all debris and particles. The crack sealant shall follow the second pass of the hot air lance at a maximum distance of 5 minutes or 164 feet (50 meters).

Fiber-Reinforced Crack Sealing - The pre-packaged fibers shall be supplied in polyethylene bags which will dissolve when introduced into the hot (above 275 deg. F) asphalt binder. The melting kettle shall mix and agitate the compounds until a homogenous mixture is achieved. Prior to applying the sealant, it should be heated to a temperature recommended by the manufacturer. Following appropriate cleaning, the sealant should be applied to a slightly overfilled condition and then leveled with a squeegee. All applied sealant shall be "warm-rolled" or "squeegeed" in place such that the sealant forms a 3" to 5" (75mm to 125mm) band with a maximum thickness of 0.06" (1.5mm) over the crack. Any sealant which is greater than 3/16" below the pavement surface when cooled shall be resealed to the satisfaction of the Town or designated agent. Any sealant sunk into the crack or in insufficient quantity from the pavement surface shall be re-sealed such that its surface is not greater than 1/16" above the pavement surface. The finished band width shall not exceed 6".

For pavements receiving an overlay the cracks shall be filled flush with the pavement surface such that the membrane is well bonded to the pavement.

The crack sealant materials shall not be overheated, subject to prolonged heating, or reheated beyond the manufacturers' recommendations. Carbon buildup should be cleaned off the melting vat walls before the kettle is used. The heating oil temperature should be kept no more than 82°F to 108°F above the safe heating temperature of the material, as stated on the manufacturer's recommendations. Continuous recirculation of the material through the wand into the melting vat during idle periods is required.

Application - Joint sealing material shall be heated and applied at the temperature specified by the manufacturer and approved by the Town or designated agent. The minimum application temperature shall be 320 deg. F. The crack sealant material shall be applied with the nozzle in the crack channel, so that the channel is filled from the bottom up and air is not trapped beneath the material. The material shall be applied in a continuous motion to the desired level. Material must be reapplied to crack segments where the material has sunk into the crack or an insufficient amount was furnished in the previous pass.

Following the filling operation, the crack sealant shall be leveled with a squeegee. The squeegee shall follow closely behind the wand and be centered over the crack channel. The squeegee shall be kept free of buildup material by regular scraping or use of a propane torch.

The crack sealant shall be installed and finished such that it conforms to the dimensions stated in preparation of cracks. Where traffic requires immediate use of the roadway, an approved covering material shall be utilized. The covering material shall be applied immediately after finishing and in a thin layer fully covering the exposed treatment material.

Spilled or excess material shall be removed from the pavement surface. Excessive crack sealing will not be allowed. Areas of alligator cracking should not be repaired by any crack sealing procedures unless directed by the Engineer to minimize deterioration.

Asphalt Kettle Cleanout - Prior to work commencing, the Contractor shall provide written details on the clean out operations to the Town or designated agent. At the end of each day's work, the applicator lines must be purged of sealant material. Non-heatable materials must be removed from the melting vat and discharged into containers for disposal. Reheatable materials may remain in the melting vat provided the quantity is minimized as much as possible. If flushing solvents are utilized, the operator must ensure that they do not contaminate the sealant or filler materials.

PERFORMANCE

Prior to work commencing, the Contractor must submit to the Town or designated agent a list of six (6) jobs, which he/she has successfully completed, giving the name and address of these projects so they can be investigated by the Town or designated agent.

The Contractor shall successfully perform a 200-foot test strip in the field prior to commencing work.

MEASUREMENT

The "Cleaning and Sealing Cracks" shall be measured by the actual number of linear feet of filler acceptably applied to the pavement.

The Town reserves the right to impose penalties or reject material not conforming to the dimensional criteria established by these specifications.

PAYMENT

"Cleaning and Sealing Cracks" will be paid for at the contract unit price bid per linear feet, complete and accepted, including all materials, labor, equipment, all cleaning, drying, sealing and incidentals necessary to complete the work as specified.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #406200A	CLEANING AND SEALING CRACKS	L.F.

Special Provisions

ITEM #406200A

ITEM #406267A – MILLING HMA (0"-4")

DESCRIPTION

Scope - The work covered by these specifications shall consist of removal of hot mix asphalt (HMA) including bituminous concrete curbing, cold mix, and/or surface treatment pavement by cold milling; hauling of cuttings; cleaning of asphaltic concrete pavement and concrete pavements in preparation for an overlay; and may include stockpiling for reuse in a Recycling Program, in conformity with these specifications, and to the lines, grades, and cross sections shown on the plans or ordered by the Engineer. This work includes milling of intersecting streets to the limits shown on the plans or ordered by the Engineer. This work also includes micro-milling of the pavement surface to remove irregularities in surface tolerance.

All work shall be performed in a manner which prevents the tearing and breaking of underlying and adjacent pavement.

Ownership – The pavement material shall become the property of the Contractor and shall be removed from the site.

Performance - Each proposer should visit the site of the proposed work and fully acquaint themselves with the existing conditions relating to construction, labor, and traffic. Each proposer should be fully informed as to the facilities involved and the difficulties and restrictions regarding the performance of the contract.

Scheduling of Milling and Paving - The Contractor will be allowed to cold mill within the time limits specified by the Town. Streets shall not be left in a milled condition for more than ten (10) calendar days prior to paving, unless otherwise approved by the Engineer. The Engineer may further restrict the time limits when conditions warrant.

EQUIPMENT

Pavement Profilers - The Contractor shall furnish one (1) or more machine(s) operated by experienced operators. The equipment for removing the pavement surface shall be a cold planing (milling) machine specifically designed for automatically controlled profiling which has operated successfully for a minimum of one (1) year on similar work, or equipment proven through test results to be satisfactory to the Town.

The Equipment shall be maintained in a satisfactory working condition so as not to cause delays, and the machine must be equipped with taillights, headlights, and necessary reflectors so that it can be operated in traffic with complete safety.

Pavement profilers shall have a means of loading by an integral loading belt, and it shall have the ability to cold mill concrete patches when encountered in the pavement.

Restrictions – Track-mounted cold milling equipment will be required for primary operations on roadway surfaces in which the Town anticipates pavement milling down to within three quarters (3/4) of an inch of Special Provisions

ITEM #406267A

an unbound base course. Either track or conventional wheel milling machines will be acceptable on work requiring only partial-depth milling of the bound materials such that sufficient pavement materials exist after removal to support the cold milling operation. Wheel machines of sufficient size will be permitted for trimming operations.

Grade Control - The automatic controls on the milling machine shall provide accurately established profile grades at each edge of the machine by referencing from the existing pavement or an independent grade reference, where required, or be capable of automatically maintaining a designated cross slope from a single reference.

For conventional milling equipment: The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding ½ inch under a 16 foot string line or straightedge placed parallel to the centerline will be corrected to the satisfaction of the Engineer. Special attention is directed to those approach and departing areas on either side of roadway structures. Any deviations in the cross-slope that exceed 3/8 inch under a 10 foot stringline or straightedge placed transversely to centerline will be corrected to the satisfaction of the Engineer. All corrections will be made with approved methods and materials. Any areas that require corrective measures will be subject to the same acceptance tolerances. Excess material that becomes bonded to the milled surface will be removed to the Town's satisfaction before the area is accepted.

For micro-milling equipment: The finished milled surface will be inspected before being accepted, and any deviations in the surface exceeding ¼ inch under a 10 foot straightedge placed parallel to the centerline will be corrected to the satisfaction of the Engineer.

The milling machine shall be self-propelled and shall have sufficient power, traction, and stability to maintain an accurate depth of cut.

Documentation – The Contractor shall provide to the Engineer at the Pre-Construction meeting full details concerning the machine to be used, including type, weight, milling width (sixty (60) inch minimum for primary operations), milling depth per pass (two (2) inch minimum), operating speeds, air pollution control, dust suppression, and assurance that no tree damage will occur as a result of the process used, for review and approval by the Town.

Sweepers - The textured surface shall be left clean and dust free by the use of self-propelled power sweepers with spray bar, vacuums, hand sweepers, or other methods approved by the Engineer. All equipment shall be equipped with or provide a means of effectively limiting the amount of dust escaping during the milling and removal operation.

Pollution Control - All equipment will be operated such that it will effectively control dust generated by cutting, loading, and/or cleaning operations. All equipment must meet or be lower than the current standards set by the Air Quality Act of noise and air pollution as well as any additional local, state, or federal pollution laws and regulations.

To prevent the infiltration of milled materials into the storm water system the Contractor shall take special care to prevent the milled material from falling through structures. Any material that has fallen through the structures shall be removed at the Contractor's expense.

Dust Control - This section requires controlling dust generated as a result of work under this item. The Contractor is responsible for controlling dust at all times, including nonworking hours, weekends, nights, and holidays. Dust control procedures shall be conducted when particulate matter concentrations exceed the National Air Quality Standard of 150 micro-grams/m³ on a 24-hour average basis or as designated by the Engineer. Wet suppression shall consist of applications of water, or a wetting agent in solution with water if approved by the Engineer. Wet suppression equipment shall consist of sprinkler pipelines, tanks, tank trucks, or other devices capable of providing regulated flow, uniform spray, and positive shut-off. Water will be spread at a uniform rate of 1.0 gal./s.y. and when wetting agents are used they will be added at the manufacture's recommended rates. Wetting agents for dust suppression shall be water soluble, nontoxic, nonreactive, nonvolatile, and nonfoaming.

TRANSPORTATION OF MATERIAL

Clean Vehicles - Caution shall be taken to insure that any vehicle used to transport milled material intended for use in recycled asphalt concrete will be free from any foreign matter (such as dirt, debris, leaves, solvents, etc.)

Disposal of the sweepings or oversized pieces of pavement will not be permitted near the cold milling stockpiles.

CONSTRUCTION METHODS

Surface - The milled surface produced by the pavement profilers operation should be characterized by uniform discontinuous longitudinal striations or other patterns which will meet the requirements of the contract documents, and in the opinion of the Engineer, provide a satisfactory riding surface and suitable surface for paving.

Bituminous Concrete Curbing – Bituminous concrete curbing that is to be removed, shall be removed during the milling process. The cost of this removal shall be included in the price proposal for the various milling items. If existing curb is to remain, the Contractor shall take care not to damage the curb during milling operations. Any curb damaged during milling operations, shall be repaired by the Contractor at no expense to the Town.

Milling HMA 0"-4"– It is the intent of this item to remove HMA to a depth as noted on the plans and indicated by the Engineer. Variable milling depths may be required to improve drainage and cross slope.

The milling machine shall be equipped with a built-in automatic grade control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results.

The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, ski (30 foot minimum), mobile string line (30 foot minimum), or matching shoe. The transverse controls shall have an automatic system for controlling cross-slope at a given rate.

The Contractor shall be responsible for the maintenance of milled roadway. Exposed granular material shall be compacted to proper lines and grades prior to HMA paving. Included in this item will be all labor, equipment, materials and maintenance necessary to provide a satisfactory surface for paving.

Special Provisions

ITEM #406267A

Care shall be utilized by the Contractor to insure that the milling operation does not further disturb or damage pavement areas to remain. If milling operations begin to displace or damage pavement to remain, then the Contractor shall cease milling operations and make any and all adjustments as required and as approved by the Engineer to limit and control such impacts from the milling operations. Any damage caused by the milling operations shall be repaired at the Contractor's expense and as directed by the Engineer.

Structures - Care shall be utilized by the Contractor to insure that no damage occurs to curbing, median barriers, bridge scuppers, parapets, manholes, utility valve boxes, and/or similar structures installed in or adjacent to the street, and the Contractor must guarantee repair or replacement of any structures damaged by his/her negligence.

If concrete pavement base is present within the construction limits, the Contractor shall inform the Engineer of the location. Milling of the various asphaltic pavement overlays on the concrete base shall be performed where directed by the Engineer in a manner that does not damage the concrete base. This work shall be included in the various milling items and no additional payment or compensation shall be made for work necessary due to the concrete pavement base.

Intersecting Streets –All streets intersecting the proposed work area shall be milled to a minimum one and one-half (1-1/2) inch depth within the limits shown on the plans or where directed by the Engineer, and shall match the new grade line of said work area. All irregularities shall be eliminated to the satisfaction of the Engineer. At local street intersections classified as “local”, where more than a two (2) inch vertical face is anticipated, the butt joint created by the milling operation shall be stepped in such a manner that the rise is no greater than two (2) inches and the run (horizontal distance) is no less than twelve (12) inches. At local street intersections classified as “collector or arterial”, and median cross over locations, the butt joint shall be eliminated, and a temporary bituminous transition shall be placed from the milled surface to the adjacent milled or unmilled surface.

Joints - Where the milling area terminates and abuts the existing adjacent pavement, a neat straight line shall be cut with suitable power-driven equipment before commencing the pavement removal with a milling machine. It is the intention of this operation and the obligation of the Contractor to produce a uniform straight line at the joint.

All butt joints created by the milling operation at driveways which are greater than two (2) inches in depth shall be filled with millings or cold patch material and maintained by the Contractor to allow a safe egress and ingress for the traveling public at all times. All butt joints created by the milling operation at intersecting streets which are greater than one-and-one-half (1-1/2) inches in depth shall be filled with cold patch material and maintained by the Contractor to allow a safe egress and ingress for the traveling public at all times.

Safety - The Contractor will provide all necessary labor, materials, and equipment for protection of motorists and pedestrians from any protruding structures that may result from the milling operation. The Contractor shall also be responsible for the protection of motorists and pedestrians from any irregularities and pavement drop-offs that may result from the milling operation.

In the event of rain or inclement weather, the Contractor shall suspend milling operations. The Contractor shall make necessary allowances for drainage of water that may pond in areas where the milling was completed and the paving has not been completed.

In the event of prolonged heat and dry weather, the Contractor shall provide a means to effectively limit the amount of airborne dust created during trafficking. The use of self-propelled sweepers may be necessary during the time in which the street is left in a milled state.

The milling operation shall not proceed until the Contractor is prepared to overlay the milled section with its intended wearing or surface course. A street may be left in a milled condition for no more than ten (10) calendar days, unless otherwise approved by the Engineer. The intent of this requirement is to limit the time in which the street is left in an unsurfaced condition for the protection of the traveling public.

Sweeping - The Contractor shall provide sweeping equipment to remove all cuttings from the surface on a daily basis. The Contractor shall sweep and remove loose cuttings, dust or other objectionable material from the roadway by the end of each working day using power brooms, power vacuums or both; and whatever ancillary equipment, tools and labor necessary to properly prepare the road for subsequent tack coat and paving.

The pavement removal and cleaning operations shall be conducted in such a manner as to effectively minimize the amount of dust being emitted. The operation shall be planned and conducted so as to be safe for persons and property adjacent to the work, including the traveling public.

Asphalt concrete that cannot be removed by cold planing equipment because of physical or geometrical restraints should be removed by other methods acceptable to the Engineer.

Patching - During the cold-milling operation, any localized areas of exposed base materials will be repaired by the Contractor at the expense of the Town only if the Contractor has held to the specified milling depth. Areas of base exposure caused by the milling Contractor as a direct result of adjusting profiling equipment, overcut beyond specified depths, use of jackhammer around structures, or utilizing equipment not specifically designed to cold plane pavements will be repaired and paid for by the Contractor.

These areas of base exposure shall be repaired by partial depth patching, full depth patching, base patch repair, or as otherwise directed by the Engineer. Any patching required shall be repaired before the end of the working day, and in a manner satisfactory to the Engineer.

The Engineer may require re-milling of any area where a non-uniform surface has resulted from the Contractor's operations; these areas will be corrected at no additional expense to the Town.

SURFACE TEXTURE

Deviation - The milled surface texture deviation produced by pavement profilers should not exceed one quarter (1/4) of an inch in ten (10) feet in any direction in preparation for placing a final wearing surface, or three eighths (3/8) of an inch for an intermediate course. Milling teeth shall be replaced periodically such that no groove is deeper than 5/8" as measured from the adjacent ridge.

Milling work shall be of varying depths, as required by the plans and/or specifications, or as directed by the Engineer, and shall be such that the pavement is not torn, gouged, shoved, broken, sooted, oil coated, or otherwise injured by the planing operation.

STOCKPILING MATERIALS

For Recycling - The salvaged material intended for use in the recycled asphalt concrete shall be segregated and stockpiled separately so as not to be contaminated by any foreign matter.

The planing operation shall be conducted so as not to permit the contamination of the salvaged pavement material by any unbound pavement materials, shoulder debris, grass, sweepings, oversized cuttings, leaves, or dirt.

METHOD OF MEASUREMENT

Work shall be measured by the actual number of square yards of surface area milled to a specified depth in accordance with this specification, as shown on the plans, and accepted by the Engineer. Cut Bituminous Concrete Pavement will be measured by the Engineer and shall be the actual number of lineal feet of Cut Bituminous Concrete Pavement completed.

BASIS OF PAYMENT

Payment for accepted quantities as measured will be at the contract unit price per square yard per specified depth, which price shall include full compensation for milling, loading, hauling, cleaning the milled pavement surface, temporary transitions, and stockpiling the reclaimed milled material, and for all labor, tools, equipment, materials, supplies, sweeping, dust control, and all incidentals necessary to complete the work. The work for milling for the removal of bituminous concrete curb shall be considered incidental and shall be included in the price proposal for Pavement Milling per specified depth. Payment shall be made for the number of lineal feet of “Cut Bituminous Concrete Pavement” completed.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #406267A	MILLING HMA (0"-4")	S.Y.

ITEM #406999A - ASPHALT ADJUSTMENT COST

Description: The Asphalt Adjustment Cost will be based on the variance in price for the performance-graded binder component of hot mix asphalt (HMA), Polymer Modified Asphalt (PMA), and Ultra-Thin Bonded Hot-Mix Asphalt mixtures completed and accepted during the Contract.

The Asphalt Price is available on the Department of Transportation website at:

<http://www.ct.gov/dot/asphaltadjustment>

Construction Methods:

An asphalt adjustment will be applied only if all of the following conditions are met:

- I. For HMA and PMA mixtures:
 - a. The HMA or PMA mixture for which the adjustment would be applied is listed as a Contract item with a pay unit of tons.
 - b. *The total quantity for all HMA and PMA mixtures in the Contract or individual purchase order (Department of Administrative Service contract awards) exceeds 1000 tons or the Project duration is greater than 6 months.*
 - c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than \$5.00 per ton.
- II. For Ultra-Thin Bonded HMA mixtures:
 - a. The Ultra-Thin Bonded HMA mixture for which the adjustment would be applied is listed as a Contract item.
 - b. The total quantity for Ultra-Thin Bonded HMA mixture in the Contract exceeds:
 - i. 800 tons if the Ultra-Thin Bonded HMA item has a pay unit of tons.
 - ii. 30,000 square yards if the Ultra-Thin Bonded HMA item has a pay unit of square yards.

Note: The quantity of Ultra-Thin Bonded HMA measured in tons shall be determined from the material documentation requirements set forth in the Ultra-Thin Bonded HMA item Special Provision.
 - c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than \$5.00 per ton.
 - d. No Asphalt Adjustment Cost will be applied to the liquid emulsion that is specified as part of the Ultra-Thin Bonded HMA mixture system.
- III. Regardless of the binder used in all HMA or PMA mixtures, the Asphalt Adjustment Cost will be based on PG 64-22.

The Connecticut Department of Transportation (CTDOT) will post on its website, the average per ton selling price (asphalt price) of the performance-graded binder. The average is based on the high and low selling price published in the most recent available issue of the **Asphalt Weekly Monitor®** furnished by Poten & Partners, Inc. under the “East Coast Market – New England, New Haven, Connecticut area,” F.O.B. manufacturer’s terminal.

The selling price furnished from the Asphalt Weekly Monitor ® is based on United States dollars per standard ton (US\$/ST).

Method of Measurement:

Formula: $HMA \times [PG\%/100] \times [(Period\ Price - Base\ Price)] = \$ \underline{\hspace{2cm}}$

where

- **HMA:**
 1. For HMA, PMA, and Ultra-Thin Bonded HMA mixtures with pay units of tons: The quantity in tons of accepted HMA, PMA, or Ultra-Thin Bonded HMA mixture measured and accepted for payment.
 2. For Ultra-Thin Bonded HMA mixtures with pay units of square yards: The quantity of Ultra-Thin Bonded HMA mixture delivered, placed, and accepted for payment, calculated in tons as documented according to the Material Documentation provision (Construction Methods, paragraph G) of the Ultra-Thin Bonded HMA Special Provision.
- **Asphalt Base Price:** The asphalt price posted on the CTDOT website 28 days before the actual bid opening posted.
- **Asphalt Period Price:** The asphalt price posted on the CTDOT website during the period the HMA or PMA mixture was placed.
- **PG%:** Performance-Graded Binder percentage
 1. For HMA or PMA mixes:
 - PG% = 4.5 for HMA S1 and PMA S1
 - PG% = 5.0 for HMA S0.5 and PMA S0.5
 - PG% = 6.0 for HMA S0.375, PMA S0.375, HMA S0.25 and PMA S0.25
 2. For Ultra-Thin Bonded HMA mixes:

PG% = Design % PGB (Performance Graded Binder) in the approved job mix formula, expressed as a percentage to the tenth place (e.g. 5.1%)

The asphalt adjustment cost shall not be considered as a changed condition in the Contract as result of this provision since all bidders are notified before submission of bids.

Basis of Payment: The "Asphalt Adjustment Cost" will be calculated using the formula indicated above. A payment will be made for an increase in costs. A deduction from monies due the Contractor will be made for a decrease in costs.

The sum of money shown on the Estimate and in the itemized proposal as "Estimated Cost" for this item will be considered the bid price although the adjustment will be made as described above. The estimated cost figure is not to be altered in any manner by the bidder. If the bidder should alter the amount shown, the altered figure will be disregarded and the original cost figure will be used to determine the amount of the bid for the Contract.

Pay Item	Pay Unit
Asphalt Adjustment Cost	est.

ITEM #507791A – REBUILD CATCH BASIN

DESCRIPTION

This item shall include rebuilding catch basins as shown on the plans so that new tops may be placed on them. The catch basins shall be rebuilt in conformity with the designations, dimensions, and details shown on the plans or as ordered by the Engineer.

MATERIALS

The materials to be used in the construction shall be those indicated on the plans or ordered by the Engineer and shall conform to Section 5.86 and Article M.08.02.

Mortar shall conform to Article M.11.04.

Pervious Material shall conform to Article M.02.05.

CONSTRUCTION METHODS

The existing top assembly and barrel section shall be removed down to sound material to the extent required, as determined by the Engineer, and shall be rebuilt and a new top, frame and grate furnished and installed at the required line and grade. Concrete blocks may be used to rebuild the barrel section, if necessary, due to existing conditions.

All catch basin tops shall be set with two courses of brick as the final course to allow future adjustments to the structures. Pre-cast rings are acceptable if 2” high risers are utilized.

METHOD OF MEASUREMENT

Existing catch basins rebuilt will be measured by the vertical linear feet of catch basin rebuilt. The length shall be measured along the inside of the basin, between the top of the basin and the beginning of the rebuilding. At locations where the catch basin is being reset or converted, or where new tops being constructed, the measured limits for payment of “Rebuild Catch Basin” shall not include the 3 feet of rebuild which is included in other pay items.

BASIS OF PAYMENT

Rebuild catch basin will be paid for at the contract unit price per vertical linear feet as indicated on the plans or ordered by the Engineer, complete in place. The price shall include all excavation, pervious material, backfill, cutting of pavement, removal, and replacement of pavement structure, blocks, bricks, mortar, and all other materials, equipment, tools, and labor incidental thereto. The new catch basin top, frame, and grate will be paid for separately.

ITEM NO.
ITEM #507791A

DESCRIPTION
REBUILD CATCH BASIN

UNIT
V.L.F.

Special Provisions

ITEM #507791A

ITEM #586651A – RESET MANHOLE (STORM)

Work under this item shall conform to the applicable provisions of Section 5.86 of these Special Provisions amended as follows:

DESCRIPTION

Add the following to Subarticle 5.86.01:

The Contractor shall reset to final grade the manhole frames and covers on the drainage manholes, all as shown, specified or directed. Also included are the furnishing and installing of additional manhole riser sections, if necessary.

MATERIALS

Add the following to Subarticle 5.86.02:

BRICK UNITS - Shall conform to ASTM C-32, Grade MS

MORTAR – Shall conform to Section M.11

CONSTRUCTION METHODS

Add the following to Subarticle 5.86.03:

The Contractor shall carefully excavate the manhole frame and cover and add or delete brick masonry as necessary to reset the frame and cover to the final grade. Manhole extension rings shall not be used to reset the frame and cover.

The present cover slab or cone section may be reused if it is not damaged. If the cover slab or cone section is damaged, it shall be replaced by the Contractor at his/her expense.

The Contractor may be required to “un-stack” the existing cone section so that riser sections can be added or deleted, where the change in grade is greater than 12 inches.

Any material damaged by the Contractor shall be repaired or replaced by the Contractor at no cost to the Town.

SECTION 5.86 - CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01—Description

5.86.02—Materials

5.86.03—Construction Methods

5.86.04—Method of Measurement

5.86.05—Basis of Payment

5.86.01—Description: The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes and drop inlets (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans.

This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

The work will also include casting a metal plaque furnished by the Town with the embossed words “DRAINS TO WATERWAY” into the top of the curb surface of the type “C” catch basin top.

5.86.02—Materials: The materials for this work shall meet the following requirements:

Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.

Galvanizing shall meet the requirements of M.06.03.

Mortar shall meet the requirements of M.11.04.

Butyl rubber joint seal shall meet the requirements of ASTM C990.

Granular fill, if necessary, shall meet the requirements of M.02.01.

Protective compound material shall be a type appearing on the Department’s Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

The adhesive used to secure the metal plaque to the catch basin top must be able to provide permanent bonding. The Contractor shall submit shop drawing and obtain approval prior to ordering the adhesive.

5.86.03—Construction Methods: Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer.

Backfilling shall be performed in accordance with 2.86.03.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

All catch basin tops shall be set with two courses of brick as the final course to allow future adjustments to the structures. Pre-cast rings are acceptable if 2" high risers are utilized.

The catch basin tops shall be cast with a depression to fit a 3 inch x 10 inch plaque that is 0.063 inches thick. Allowances should also be made for the adhesive. The raised surface of the plaque shall be flushed with the catch basin top when installed.

5.86.04—Method of Measurement:

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed.

Rock in Drainage Trench Excavation: Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.

Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.

Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.

Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units.

There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work.

Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04.

There will be no measurement or direct payment for plugging existing pipes with cement masonry, the cost of this work will be considered as included in the general cost of the work.

The Town will furnish the metal plaque. There will be no measurement or direct payment for coordinating, picking up and installing the metal plaque to the catch basin top, but the cost of this work shall be considered as included in the general cost of work.

5.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of proposed structures described herein will be paid for under the respective drainage Contract item(s) for which the excavation is being performed, in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

The price for each unit shall also include the metal plaque, new catch basin top, frame and grate as required and as specified.

Seventy percent (70%) payment minus retainage will be paid for catch basin installed without the required plaque. The remaining 30% minus retainage will be made once the plaques are installed and the unit is complete in place.

Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Manholes, Catch Basins and Drop Inlets constructed to modified dimensions as directed by the Engineer, will be paid for as follows:

Where the interior floor area has to be increased to accommodate existing field conditions, as measured horizontally at the top of the base of the completed structure, and does not exceed 125% of the interior floor area as shown on the plans for that structure, then the structure shall be paid for at the Contract unit price for each "Manhole," "Catch Basin," or "Drop Inlet" of the type specified. Where the floor area is greater than 125%, the increase in the unit price for the individual structure shall be in direct proportion to the increase of the completed structure interior floor area as compared to the interior floor area as shown on the plans for that structure. Such increased unit price shall include all excavation, materials, equipment, tools, and labor incidental to the completion of the structure.

Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.

Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.

When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."

Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or "Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.

Removal or abandonment of drainage structures outside of drainage trench excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
(Type) Catch Basin – 0' to 10' Deep	ea.
(Type) Catch Basin – 0' to 20' Deep	ea.
Manhole (Size) – 0' to 10' Deep	ea.
Manhole (Size) – 0' to 20' Deep	ea.
(Type) Drop Inlet	ea.
Reset Catch Basin	ea.
Reset Manhole	ea.
Reset Drop Inlet	ea.
Convert Catch Basin to (Type) Catch Basin	ea.
Convert Catch Basin to (Type) Manhole	ea.
Convert Manhole to (Type) Catch Basin	ea.
Manhole Frame and Cover	ea.
(Type) Catch Basin Top	ea.
Remove Drainage Structure – 0' to 10' Deep	ea.
Remove Drainage Structure – 0' to 20' Deep	ea.
Abandon Drainage Structure	ea.

ITEM #651239A – CHECKMATE ULTRAFLEX SLIP-IN INLINE CHECK VALVE

DESCRIPTION

Work under this item consists of installing a CheckMate Ultraflex Valve in the 24” RCP outfall on Hollister Drive in accordance with the manufacturer’s recommendation.

GENERAL

1.01 SUBMITTALS

A. Submit product literature that includes information on the performance and operation of the valve, materials of construction, dimensions and weights, elastomer characteristics, headloss, flow data and pressure ratings. Water should be able to flow out of the pipe when the outfall is submerged to top of pipe (elevation = 18.6) while maintaining a free board elevation of 24.5 at the catch basins connected to the manhole by pipes P114 and P115. The valve should remain closed under the 100-year flooding conditions (elevation = 31).

B. Upon request, provide shop drawings that clearly identify the valve materials of construction and dimensions.

1.02 QUALITY ASSURANCE

A. Supplier shall have at least twelve (12) years experience in the design and manufacture of “CheckMate™” style elastomeric check valves.

B. Manufacturer shall have designed, fabricated and have at least five (5) current installation of a “CheckMate” style elastomeric check valves in the 72” (1800mm) size. Manufacturer must provide documentation, including project name, location, and references.

C. Manufacturer shall have conducted independent hydraulic testing to determine headloss, jet velocity and vertical opening height characteristics on a minimum of three (3) sizes of CheckMate Valves ranging from 6” (150mm) through 24” (600mm). The testing must have been conducted for free discharge (pressurized and open channel flow discharging to atmosphere) and submerged conditions.

PRODUCTS

2.01 CHECKMATE ULTRAFLEX ELASTOMERIC CHECK VALVES

A. Check Valves are to be all rubber and the flow operated check type with slip-in cuff connection. The entire CheckMate Ultraflex Valve shall be ply reinforced throughout the body, saddle and bill, which is cured and vulcanized into a one-piece unibody construction. A separate valve body or pipe

Special Provisions

ITEM #651239A

used as the housing is not acceptable. The valve shall be manufactured with no metal, mechanical hinges or fasteners, which would be used to secure any component of the valve to a valve housing. The port area of the saddle shall contour into a circumferential sealing area (the “bill”) that is concentric with the pipe which shall allow passage of flow in one direction while preventing reverse flow. The entire valve shall fit within the pipe inside diameter. The saddle area of the valve must be flat, not conical, and integral with the rubber body above centerline in order to not produce any areas or voids that can collect or trap debris. The valve must be easily installed in pipes with poor end condition without the need to modify or utilize the headwall or structure to seal and anchor the valve. Once installed, the CheckMate Ultraflex Valve shall not protrude beyond the face of the structure or end of the pipe.

B. The CheckMate Ultraflex Valve shall incorporate multiple concave grooves molded integrally into the flat saddle wall thickness extending longitudinally a minimum of 80% of the length of the saddle to reduce opening resistance and reduce headloss.

C. The CheckMate Ultraflex Valve shall incorporate a customized geometrical notch in the end of the bill to reduce cracking pressure. The notch shall be at the invert/bottom of the bill and symmetrical about the valve centerline. The longitudinal length of the notch shall be no greater than half the length of the bill.

D. The outside diameter of the upstream and downstream sections of the valve must be circumferentially in contact with the inside diameter of the pipe.

E. Slip-in style CheckMate Ultraflex Valves will be furnished with a set of stainless steel expansion clamps. The clamps, which will secure the valve in place, shall be installed in the upstream or downstream cuff of the valve, depending on installation orientation, and shall expand outwards by means of a turnbuckle. Each band shall be pre-drilled allowing for the valve to be pinned and secured into position in accordance with the manufacturer’s installation instructions.

F. Manufacturer must have flow test data from an accredited hydraulics laboratory to confirm pressure drop and hydraulic data.

E. Company name, plant location, valve size patent number, and serial number shall be bonded to the check valve.

2.02 FUNCTION

A. When line pressure exceeds the backpressure, the line pressure forces the bill and saddle of the valve open, allowing flow to pass. When the backpressure exceeds the line pressure, or in the absence of any upstream or downstream pressure, the bill and saddle of the valve is forced closed, preventing backflow.

2.03 MANUFACTURER

A. All valves shall be Series CMUF-SL slip-in CheckMate Ultraflex Valves as manufactured by Tideflex Technologies®, A Division of Red Valve Company, Carnegie, PA 15106. All valves shall be manufactured in the U.S.A.

EXECUTION

3.01 INSTALLATION

A. Valve shall be installed in accordance with manufacturer’s written Installation and Operation Manual and approved submittals.

3.02 MANUFACTURER’S CUSTOMER SERVICE

A. Manufacturer’s authorized representative shall be available for customer service during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.

B. If specified, the manufacturer shall also make customer service available directly from the factory in addition to authorized representatives for assistance during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.

METHOD OF MEASUREMENT

CheckMate Ultraflex Valve will be measured as units, in place, and acceptable by the Engineer.

BASIS OF PAYMENT

This work will be paid for at the Contract unit price each for “CheckMate Ultraflex Valve” complete in place, which price shall include all materials, equipment, tools and labor incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #651239A	CHECKMATE ULTRAFLEX SLIP-IN INLINE CHECK VALVE	EA.

ITEM #651289A – GROUT FILL STORM PIPE

Work under this item shall include completely filling existing storm drain pipes with grout at the locations shown on the plans or as directed by the Engineer.

MATERIALS

The grout shall conform to Section M.03.01.12 of the Standard Specifications.

CONSTRUCTION METHODS

The Contractor shall prepare the grout mixture in accordance with the manufacturer’s specifications. The existing storm drain pipe shall be completely filled with the grout mixture and to the satisfaction of the Engineer.

METHOD OF MEASUREMENT

This work will be measured for payment by the number of cubic yards of grout actually installed and accepted by the Engineer.

BASIS OF PAYMENT

Grout Fill Storm Pipe will be paid for at the contract unit price per cubic yard installed, completed and accepted by the Engineer, which price shall include all materials, equipment, tools and labor incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #651289A	GROUT FILL STORM PIPE	C.Y.

ITEM #686200.10A – 10” POLYVINYL CHLORIDE PIPE – 0’ -10’ DEEP
ITEM #686200.12A – 12” POLYVINYL CHLORIDE PIPE – 0’ -10’ DEEP

Work under this item shall conform to the applicable provisions of Section 6.86 of these Special Provisions except as modified herein.

MATERIALS

The materials shall be JM Eagle’s ‘Blue Brute’, SDR-18, or approved equal conforming to the AWWA C900 specification, with gaskets meeting ASTM F 477, and joints shall be in compliance with ASTM D 3139. The Connection of new PVC pipe to existing pipe shall utilize couplings by Fernco Inc. or approved equal.

BASIS OF PAYMENT

10” Polyvinyl Chloride Pipe and 12” Polyvinyl Chloride Pipe will be paid for at the contract unit price per linear foot installed, completed and accepted by the Engineer, which price shall include all materials, equipment, tools and labor incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #686200.10A	10” POLYVINYL CHLORIDE PIPE – 0’ -10’ DEEP	LF
ITEM #686200.12A	12” POLYVINYL CHLORIDE PIPE – 0’ -10’ DEEP	LF

Special Provisions

ITEM #686200.10A
ITEM #686200.12A

ITEM #686716.10A – 10” DUCTILE IRON PIPE – 0’ – 10’ DEEP
ITEM #686719.12A – 12” DUCTILE IRON PIPE – 0’ – 10’ DEEP

Work under this item shall conform to the applicable provisions of Section 6.86 of these Special Provisions amended as follows:

MATERIALS

Type of Pipe

Ductile iron pipe shall conform to ANSI A21.51 (AWWA C151) class to thickness designed per ANSI 21.50 (AWWA C150), Tar (Seal) coated and cement mortar lined per ANSI A21.4 (AWWA C104) unless otherwise specified, with bolted mechanical joints or push-on joints as indicated on the plans or special provisions. Delivered pipe to include 5% +/- short joints.

Class of Pipe

Ductile iron pipe shall be Class 52 unless otherwise noted.

Type of Fittings

Fittings shall be gray or ductile iron and shall conform to ANSI A21.10 (AWWA C110) or A21.53 (AWWA C153), and ANSI A21.11 (AWWA C111). Fittings shall be bolted mechanical joints or push-on joints unless otherwise indicated on the plans, bid items, or the special provisions. Fittings shall be tar (seal) coated and cement mortar lined per ANSI A21.4 (AWWA C104). Above grade fittings shall be flanged and from the list of approved manufacturers.

BASIS OF PAYMENT

10” Ductile Iron Pipe and 12” Ductile Iron Pipe will be paid for at the contract unit price per linear foot installed, completed and accepted by the Engineer, which price shall include all materials, equipment, tools and labor incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #686716.10A	10” DUCTILE IRON PIPE – 0’ – 10’ DEEP	LF
ITEM #686719.12A	12” DUCTILE IRON PIPE – 0’ – 10’ DEEP	LF

Special Provisions

ITEM #686716.10A
ITEM #686719.12A

SECTION 6.86 - DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01—Description

6.86.02—Materials

6.86.03—Construction Methods

6.86.04—Method of Measurement

6.86.05—Basis of Payment

6.86.01—Description: This work shall consist of furnishing, preparing and installing drainage pipes of the size and type specified, bedding material, joint sealant, rubber gaskets, clamps, collars, grout, grout collars, drainage trench excavation, backfilling or satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, connecting proposed drainage systems to existing systems, plugging or abandoning existing pipes and removal of existing pipe within trench limits, as shown on the plans or as directed by the Engineer.

This Section shall also include removal of drainage pipes outside of drainage trench excavation limits, as defined in 2.86.03-1.

6.86.02—Materials: The materials for this work shall meet the following requirements:
Drainage Pipe, Drainage Pipe Ends, Sealers, Gaskets and connection hardware shall meet the requirements of M.08.01.

Bedding Material shall meet the requirements of M.08.03-1.

Granular Fill, if necessary, shall meet the requirements of M.02.01.

Brick Masonry shall meet the requirements of M.11.03 and Mortar shall meet the requirements of M.11.04.

Concrete used for Concrete Pipe Connections shall be Class “F” Concrete meeting the requirements of M.03.

6.86.03—Construction Methods:

(1) Drainage Trench Excavation: Drainage trench excavation and backfilling shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where drainage pipe is to be laid below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the bedding material.

Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Rock in Drainage Trench Excavation: When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

(3) Drainage Pipe Installation: New or re-laid drainage pipes shall be installed on 4 inches of bedding material (12 inches if over rock in ledge formation), the details as shown on the plans, or as directed by the Engineer. Prior to placement of the drainage pipe, in accordance with the plans, bedding material shall be pre-shaped to 10% of the total height of the pipe in order to keep the pipe in the center of the trench. Following placement of the drainage pipe, bedding material backfill shall be placed in accordance with the following table:

Internal Pipe Diameter	Required Bedding Material Backfill
< 48 inches*	25% of total height of the pipe
≥ 48 inches*	12 inches above the top of the pipe
*Includes pipe arch of equivalent internal horizontal span See Standard Drawing	

The placement of the drainage pipe shall start at the downstream end and progress upstream or as shown on the plans, or as directed by the Engineer. All drainage pipes shall be carefully laid in the center of the drainage trench, true to the lines and grades given. Bell ends shall face upgrade and all joints shall be tight.

Joints in concrete pipe shall be sealed with cold-applied bituminous sealer, preformed plastic gaskets or flexible, watertight, rubber-type gaskets. Portland cement mortar shall not be used for sealing pipe joints except with permission of the Engineer.

When cold-applied bituminous sealer is used, the bell and spigot ends shall be wiped clean and dry before applying the bituminous sealer to the pipe ends. Before the drainage pipes are placed in contact with each other, the spigot or tongue end shall be completely covered with bituminous sealer; then the pipe shall be laid to line and grade so the inside surface of all abutting pipes are flush. Additional bituminous sealer shall be applied to the joint after the connection has been made to ensure a water tight connection.

Where the end of an existing drainage pipe is not compatible with the end of a proposed concrete pipe, the Contractor shall align the inner diameters of the pipes being connected, butt the pipe ends together, and construct a cast-in-place concrete pipe connection, as shown in the plans. Incompatible bell/spigot or tongue/groove ends shall be cut off as required to ensure the interior drainage pipe walls are aligned to provide a smooth transition between the pipes.

Metal pipe and pipe arches shall be carefully joined and firmly clamped together by approved connecting bands, which shall be properly bolted in place before any backfill is placed.

Newly installed drainage pipe which is not in true alignment, or which shows any settlement or distortion, shall be reinstalled in accordance with 1.05.03.

When drainage pipe outside of proposed drainage trench limits is to be removed, it shall be removed to the limits shown on the plans and all remaining pipes shall be plugged with cement masonry.

Where shown on the plans or directed by the Engineer, the Contractor shall plug abandoned existing pipes with cement masonry.

- (4) Drainage Pipe End Installation:** Reinforced concrete drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. The joints shall be sealed as specified in 6.86.03-3 and backfill shall be placed around both sides of the unit simultaneously to the elevation shown on the plans.

Metal drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. After the attachment of the drainage pipe end, backfill shall be placed around both sides of the unit up to the elevation shown on the plans, exercising caution to avoid displacement or deformation of the unit.

6.86.04—Method of Measurement: This work will be measured as follows:

Drainage Trench Excavation, in accordance with 2.86.04, will not be measured for payment.

Rock in Drainage Trench Excavation will be measured in accordance with 2.86.04.

Bedding Material will not be measured for payment.

New and Re-laid Pipes and Pipe Arches will be measured for payment by the actual number of linear feet of pipe or pipe arch of the various sizes and types, completed and accepted and measured in place along the invert. Coupling bands and fittings for pipes and pipe arches will not be measured for payment.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be measured for payment as separate units.

Corrugated Metal Pipe Elbows (of the Size and Type specified) will be measured for payment by the actual number of linear feet of pipe elbows completed and accepted, based on 6 linear feet per elbow, as shown on the plans. Coupling bands for elbows will not be measured for payment.

Concrete Pipe Connection will be measured for payment by the number of each concrete pipe connection constructed at locations where proposed concrete pipes tie into an existing pipe with an incompatible end, completed and accepted by the Engineer.

Removal of drainage pipe outside of drainage trench excavation limits, as defined in 2.86.03, will be measured for payment by the actual number of linear feet of drainage pipe removed.

There will be no measurement for plugging existing pipes with cement masonry.

6.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of drainage pipes will not be paid separately but shall be included in the Contract unit price for the respective drainage pipe or pipe end item(s), in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Bedding Material necessary for the installation of drainage items described herein will be included in the Contract unit price for the respective drainage pipe or pipe end item(s). Bedding material required to fill voids when rock in drainage trench is encountered will not be measured for payment but shall be included in the Contract unit price for "Rock in Drainage Trench Excavation," in accordance with 2.86.05.

New Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "(Size and Type) Pipe (Thickness) – 0' to 10' Deep," "(Size and Type) Pipe (Thickness) – 0' to 20' Deep," "(Size) Pipe Arch (Thickness) – 0' to 10' Deep" or "(Size) Pipe Arch (Thickness) – 0' to 20' Deep" complete in place, including materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Relaid Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "Relaid Pipe (Size and Type) – 0' to 10' Deep," "Re-laid Pipe (Size and Type) – 0' to 20' Deep," "Relaid Pipe Arch (Size and Type) – 0' to 10' Deep," or "Relaid Pipe Arch (Size and Type) – 0' to 20' Deep," complete in place, including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be paid for at the Contract unit price for each drainage pipe end of the Size and Type specified, complete in place, including all excavation, materials, attachment systems, equipment, tools and labor incidental thereto.

Corrugated Metal Pipe Elbows will be paid for at the Contract unit price per linear foot for "(Size and Type) Corrugated Metal Pipe Elbow" including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Concrete Pipe Connection will be paid for at the Contract unit price each for "Concrete Pipe Connection" complete in place, including all materials, equipment, tools and labor incidental thereto.

Removal of drainage pipes of all types and sizes, outside of drainage trench excavation limits, as defined in 2.86.03-1, will be paid for at the Contract unit price per linear foot for "Remove Existing Pipe – 0' to 10' Deep," or "Remove Existing Pipe – 0' to 20' Deep," which price shall include excavation, temporary trench protection, backfill, and all equipment, tools and labor incidental thereto.

There will be no direct payment for the plugging of existing drainage pipes, but the cost thereof shall be included in the respective drainage Contract item(s).

Pay Item	Pay Unit
(Size and Type) Pipe (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe (Thickness) – 0' to 20' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 20' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 10' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 20' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 10' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 20' Deep	l.f.
(Size) Reinforced Concrete Drainage Pipe End	ea.
(Size) Metal Drainage Pipe End	ea.
(Size and Type) Corrugated Metal Pipe Elbow	l.f.
Concrete Pipe Connection	ea.
Remove Existing Pipe – 0' to 10' Deep	l.f.
Remove Existing Pipe – 0' to 20' Deep	l.f.

ITEM #813001A – 5” GRANITE STONE CURBING
ITEM #813011A – 5” GRANITE CURVED STONE CURBING

The provisions of Section 8.13 of the Standard Specifications shall apply, with the following modifications:

Article 8.13.02 – Materials

Revise to read that the Class “C” concrete base shall conform to the requirements of Article M.03.01.

Article 8.13.03 - Construction Methods

1. Excavation. Replace with the following:

Excavation shall be made to the bottom of the 12-inch concrete base below the curbing, the trench being sufficiently wide to permit the necessary forms. The base shall be formed and poured so to provide a consistent base for the curbing, and the base shall be approved by the Engineer prior to installing the curbing and backfilling.

The Contractor shall remove existing granite curbing at the locations shown on the plans or where new granite curbing will be install. The Contractor shall safely dispose of the existing curbing.

Add the following

5. Installing Stone Curbing:

Stone curbing and curved stone curbing used at sidewalk ramps shall be set into a concrete base as detailed on the plans and as directed by the Engineer. Stone curbing used at other locations shall be set in a processed aggregate base as detailed on the plans and as directed by the Engineer.

Article 8.13.05 – Basis of Payment. Add the following:

There will be no direct payment for removing existing granite curbing, excavating for concrete base, or for furnishing, placing and finishing concrete base, but the cost of this work shall be considered as included in the general cost of the work.

ITEM #815000A – BITUMINOUS CONCRETE LIP CURBING – 5”

ITEM #815002A – BITUMINOUS CONCRETE LIP CURBING – 6”

ITEM #815010A – BITUMINOUS CONCRETE BERM

DESCRIPTION

This item shall include installing 5” or 6” high “East Hartford” bituminous concrete curb and bituminous concrete berms as shown in the details and at the locations shown on the plans or as ordered by the Engineer.

Work under this item shall conform to the applicable provisions of Section 8.15 of the Standard Specifications Form 817 except where amended herein.

MATERIALS

The provisions of Section 8.15.02 shall apply;

CONSTRUCTION METHODS

The provisions of Section 8.15.03 shall apply;

METHOD OF MEASUREMENT

The provisions of Section 8.15.04 shall apply.

BASIS OF PAYMENT

The provisions of Section 8.15.05 shall apply and supplement as follows:

Tack coat placed in accordance with the details of the plans for the construction of the curb as specified shall not be measured for payment but shall be included in the unit cost of the curb constructed.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #815000A	BITUMINOUS CONCRETE LIP CURBING – 5”	L.F.
ITEM #815002A	BITUMINOUS CONCRETE LIP CURBING – 6”	L.F.
ITEM #815010A	BITUMINOUS CONCRETE BERM	L.F.

Special Provisions

ITEM #815000A
ITEM #815002A
ITEM #815010A

ITEM #906200A – RESET ORNAMENTAL WOOD FENCE

ITEM #906201A – RESET PICKET FENCE

ITEM #906204A – RESET SPLIT RAIL FENCE

ITEM #906213A – RESET VINYL PRIVACY FENCE

ITEM #913817A – RESET CHAIN LINK FENCE

DESCRIPTION

The work covered by this section consists of removing and resetting existing fences of various types at the locations indicated in the plans or by the Engineer.

MATERIALS

The materials shall be the components salvaged from each of the various type of fences (metal, wood, wire, plastic, etc.) existing, which are to be reset. The Contractor shall furnish all such additional materials required to reset the fence at the locations shown on the plans or as directed by the Engineer. The Contractor shall also furnish all such additional new material for the replacement of existing materials which are damaged or otherwise unsatisfactory, in the opinion of the Engineer, for incorporation in the resetting of the fence. If it is determined that any of the materials cannot be reused in resetting the fence, the Contractor shall provide all new materials. All fence material or components' parts furnished shall conform in type, size, kind and shape to those existing which they replace and shall be acceptable to the Engineer.

CONSTRUCTION METHODS

The fence shall be set at the same location as existing or as directed by the Engineer. Posts and anchors shall be set at the same depth and spacing as the original fence. Wire shall be drawn taut but care shall be taken to avoid over-stressing the salvaged materials. Permanent anchors, end posts or other parts which cannot be economically moved shall be replaced by equivalent construction. If any new materials require painting, they shall be painted to match the original materials as nearly as possible. If a match cannot be attained to the satisfaction of the Engineer, the entire fence will be painted. The reset fence shall be placed in at least as good condition as the existing fence before it was removed. If it is determined that existing materials cannot be reused the Contractor shall install new fence.

METHOD OF MEASUREMENT

The quantity of fence reset to be paid for will be the actual number of linear feet of fence that has been acceptably reset. Measurement will be made along the fence after it has been reset from center of end post to center of end post.

BASIS OF PAYMENT

This work will be paid for at the contract unit price per linear foot for “Reset Ornamental Wood Fence”, “Reset Picket Fence”, “Reset Split Rail Fence”, and “Reset Chain Link Fence” complete in place, which price shall include all materials, equipment, tools, excavation, backfill, disposal of surplus material and labor incidental thereto.

Special Provisions

ITEM #906200A, #906201A
906204A, #906213A, #913817A

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #906200A	RESET ORNAMENTAL WOOD FENCE	L.F.
ITEM #906201A	RESET PICKET FENCE	L.F.
ITEM #906204A	RESET SPLIT RAIL FENCE	L.F.
ITEM #906213A	RESET VINYL PRIVACY FENCE	L.F.
ITEM #913817A	RESET CHAIN LINK FENCE	L.F.

Special Provisions

ITEM #906200A, #906201A
906204A, #906213A, #913817A

ITEM #921001A – CONCRETE SIDEWALK – 5”
ITEM #921002A – CONCRETE SIDEWALK – 8”
ITEM #921005A – CONCRETE SIDEWALK RAMP

Concrete sidewalks and monolithic concrete sidewalk and curb shall be constructed in accordance with Article 9.21, supplemented as follows:

Article 9.21.01 - Description: Add the following:

Monolithic concrete sidewalk and curb shall consist of monolithic concrete sidewalk and curb constructed on an 8” thick processed gravel base course in the locations and to the dimensions and details shown on the plans or as ordered in accordance with these specifications.

This item shall include furnishing and installing non-removable Detectable Warning Strips for new construction in the locations and to the dimensions and details shown on the plans or as ordered by the Engineer.

Article 9.21.02 – Materials is to be amended by the following:

- a. Expansion Joint Material shall be ½ inch thick and the full depth of the concrete slab as well as comply with Article M.03.01-05 for Preformed Bituminous Cellular Type or approved equal.
- b. Reinforcement shall conform to the requirements of Article M.06.01.

The Detectable Warning Strip shall be a prefabricated detectable warning surface tile for the application designated as manufactured from Armor-Tile 300 International Drive, Suite 100 Williamsville, NY 14221, telephone number (800) 682-2525 or the approved equal from ADA Solutions, Inc. P.O Box 179 North Billerica, MA 01862, telephone number (978) 262-9900 or Cape Fear Systems, LLC, 215 South Water Street, Suite 103, Wilmington, NC, telephone number (800) 456-5263. The tile shall conform to the dimensions shown on the plans and have a brick red homogeneous color throughout in compliance with Federal Standard 595A Color #22144 or approved equal. The same color tile shall be used for the entire project.

All Concrete Sidewalk Ramps shall be constructed with 5” granite stone curbing as shown in the details. All granite stone curbing shall conform to Section 8.13 of these Special Provisions.

The concrete sidewalk, and concrete sidewalk ramps shall be sealed with Consolideck Saltguard WB by ProSoCo, Inc., 3741 Greenway Circle Lawrence, Kansas 66046, telephone number (800) 255-4255 or approved equal. The sealant shall meet the test requirements outlined in NCHRP 244, ASTM E 514 and ASTM C 672.

Article 9.21.03 – Construction Methods: Add the following:

The Detectable Warning Strip for new construction shall be set directly in poured concrete according to the plans and the manufacturer’s specifications or as directed by the Engineer. The Contractor shall place two 25 pound concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

Special Provisions

ITEM #921001A
ITEM #921002A
ITEM #921005A

The Contractor is responsible for removing any material spatters or debris and repairing any damage to the existing sidewalk arising from the installation of the tile.

Forms - The expansion joint filler material shall be installed at the intervals indicated on the plans

Finishing - The concrete sidewalks shall receive a medium broom finish.

Removal of existing sidewalk for the installation of new sidewalk shall be made at an existing joint utilizing a saw cut where necessary to provide a clean vertical edge. Saw cut shall not be measured for payment but shall be included in the unit cost for the new sidewalk installed.

Article 9.21.04 - Method of Measurement: Add the following:

Concrete Sidewalk: This work will be measured by the actual number of square feet of completed and accepted Concrete Sidewalk of the type specified.

Expansion Joint Material: This material will not be measured for payment.

The Detectable Warning strip required per the details for new construction of the accessible curb ramps will not be measured for payment. All materials, equipment, tools and labor incidental thereto shall be included in the Bid price for Concrete Sidewalk Ramp.

The sealant will not be measured for payment, but the cost shall be included in the Bid price for Concrete Sidewalk and Concrete Sidewalk Ramp.

Granite stone curbing shall be measured for payment by the actual number of linear feet of granite stone curbing installed.

Article 9.21.05 - Basis of Payment is to be supplemented by the following:

This work will be paid for at the contract unit price per square foot for “Concrete Sidewalk” of the type specified, approved, complete in place, which price shall include all excavation, saw cut, backfill, disposal of surplus material, gravel or reclaimed miscellaneous aggregate base, reinforcement, expansion joint material, detectable warning strip, sealant, equipment, tools, materials and labor incidental thereto.

Granite stone curbing installed or reset at Concrete Sidewalk shall be measured and paid for according to the applicable granite stone curbing item.

Eighty percent (80%) payment minus retainage will be paid for sidewalk constructed without the sealant applied. The remaining 20% minus retainage will be made once the sealant is applied and accepted by the Engineer.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #921001A	CONCRETE SIDEWALK – 5”	S.F.
ITEM #921002A	CONCRETE SIDEWALK – 8”	S.F.
ITEM #921005A	CONCRETE SIDEWALK RAMP	S.F.

Special Provisions	ITEM #921001A
	ITEM #921002A
	ITEM #921005A

ITEM #922500A – BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)

ITEM #922501A – BITUMINOUS CONCRETE DRIVEWAY

ITEM #922511A – BITUMINOUS CONCRETE SNOW SHELF

Work under this item shall conform to the applicable provisions of Section 9.22 of the Standard Specifications Form 817 amended as follows:

DESCRIPTION

The item ‘Bituminous Concrete Driveway’ of the type specified shall include excavation to the required depth below finished grades and furnishing and installing all materials to construct the bituminous concrete residential or commercial driveway complete with compacted aggregate base to the lines and grades shown on the plans and as directed by the Engineer.

The item ‘Bituminous Concrete Snow Shelf’ shall include excavation to the required depth below finished grades and furnishing and installing all materials to construct the bituminous concrete snow shelf complete on a compacted subgrade to the lines and grades shown on the plans and as directed by the Engineer.

MATERIALS

1. Bituminous Concrete: Materials shall meet the requirements of Special Provision Section 4.06 Bituminous Concrete – HMA S0.375, Level 1.
2. Processed Aggregate Base: Materials shall conform to the requirements of Section 3.04 - Processed Aggregate Base of the Standard Specifications.
3. Backfill: Suitable earth material which shall be free from admixture of subsoil, refuse, stumps, roots, rocks, brush, weeds, and other material which will prevent the formation of a suitable bed.

CONSTRUCTION METHODS

1. Excavation: Excavation, including removal of any existing asphalt, bituminous concrete snow shelf, bituminous sidewalk or bituminous driveway shall be made to the required depth below the finished grade, as shown on the plans or as directed by the Engineer. Sawcuts shall be made at all limits of work to provide a clean vertical joint. Sawcuts at limits of work, or any intermediate sawcut performed to facilitate excavation shall not be measured for payment separately. All soft and yielding material shall be removed and replaced with suitable backfill material.
2. Base Course: Processed Aggregate for the base course shall be uniformly spread to the required depth and thoroughly compacted with a self-propelled roller with a mass of not less than 1 ton. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers and vibratory plate compactors.
3. Bituminous Concrete Surface: This surface shall be constructed in accordance with the requirements of Special Provision Section 4.06, except that the material may be spread by hand.

Special Provisions

ITEM #922500A, #922501A, #922511A

Residential driveway aprons and snow shelves shall be placed and compacted in one lift. Compaction of the driveway bituminous concrete material shall be attained by self-propelled roller(s) with a mass of not less than 1-ton and to a minimum density of 90.0% of the theoretical maximum specific gravity of the mixture, or by methods approved by the Engineer. Bituminous concrete snow shelf shall be thoroughly compacted with hand tampers and vibratory plate rollers. A tack coat shall be applied as indicated on the plans and as directed by the Engineer prior to the placement of any bituminous materials.

The Contractor shall protect existing features to remain such as sidewalks, curbing and utilities. Any damage to existing features shall be repaired at no cost to the Town.

METHOD OF MEASUREMENT

The Bituminous Concrete Driveway aprons shall be measured for payment by the actual number of square yards of completed and accepted Bituminous Concrete Driveway Residential/Commercial.

The Bituminous Concrete Snow Shelf shall be measured for payment by the actual number of square yards of completed and accepted Bituminous Concrete Snow Shelf.

BASIS OF PAYMENT

This work will be paid for at the contract unit price per square yard for “BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)”, “BITUMINOUS CONCRETE DRIVEWAY” or “BITUMINOUS CONCRETE SNOW SHELF” completed in place and accepted, which price shall include all excavation as specified above, sawcuts, preparation of subgrade, suitable backfill, processed aggregate, bituminous materials, disposal of surplus material, tack coat and all equipment, tools, labor and materials incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #922500A	BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	S.Y.
ITEM #922501A	BITUMINOUS CONCRETE DRIVEWAY	S.Y.
ITEM #922511A	BITUMINOUS CONCRETE SNOW SHELF	S.Y.

ITEM #922503A – GRAVEL DRIVEWAY

Work under this item shall conform to the applicable provisions of Section 9.22 of the Standard Specifications Form 817 amended as follows:

MATERIALS

Granular Fill Base: Replace with the following:

Granular fill shall conform to the requirements of M.02.01 for granular base. Gravel or reclaimed miscellaneous aggregate will not be accepted.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #0922503A	GRAVEL DRIVEWAY	S.Y

ITEM #944001A – FURNISHING AND PLACING TOPSOIL

A. GENERAL DESCRIPTION

Topsoil furnished by the CONTRACTOR shall consist of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials. It shall be free from refuse, stumps, roots, hard clay, coarse gravel, stones larger than 1/2 inches in any dimension, noxious weeds, tall grass, brush, sticks, stubble or other material which would prevent the formation of a suitable seedbed or prevent seed germination and plant growth. The topsoil shall be placed to a depth of 6 inches unless stated otherwise in the contract. The Contractor is to achieve a satisfactory seed bed which will have sufficient compaction to insure the final grades shown on the plans are achieved after settlement of the 6" of topsoil. The Contractor will be responsible for re-grading, supplementing and re-establishing turf grasses in any area receiving topsoil which does not meet the final grades after settlement.

B. TEXTURE

The following USDA textural classifications shall be acceptable for topsoil:

- Loamy sand, including coarse, loamy fine, and loamy very fine sand
- Sandy loam, including coarse, fine and very fine sandy loam
- Loam
- Silt loam, with not more than 60% silt

Topsoil shall conform to the following grading:

Sieve Sizes	Percentage Passing
1-inch	100%
1/2 inch	95% - 100%
No.4	75% - 100%
No.10	60% - 100%
No.200	10% - 60%

C. ORGANIC MATTER CONTENT

Topsoil shall contain not less than 6%, or more than 20% organic matter, by weight as determined by loss-on-ignition of oven-dried samples dried at 221°F (105°C) in accordance with ATM T-6. Organic material shall be decomposed and free of wood.

Topsoil sources lacking organic matter may be used if, prior to delivery to the Project, sufficient organic matter in the form of pulverized peat moss or rich organic soil from other sources is thoroughly mixed with the topsoil to provide a product meeting the above requirements.

Organic material for incorporation into topsoil, if required, shall be partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses, or rotted manure. Organic material may require chopping to shredding to insure thorough mixing with the topsoil.

D. NUTRIENT AND pH REQUIREMENTS

All topsoil shall be fertilized as follows: the application rates of the fertilizer and limestone per 1,000 square feet of ground area of topsoil furnished by the CONTRACTOR shall be determined by the CONTRACTOR based on soil analysis tests so that the total natural and applied chemical constituents are as follows.

Nitrogen: 1.0 lb. minimum - 1.5 lb. maximum per 1,000 square feet

Phosphoric Acid: 1.0 lb. minimum - 2.0 lb. maximum per 1,000 square feet

Potassium: 1.0 lb. minimum - 2.0 lb. maximum per 1,000 square feet

Limestone: Limestone requirements shall conform to the following table:

LIMESTONE REQUIREMENTS

Soil pH	Limestone Pounds per 1,000 SF
Above 6.0	0
5.0 - 6.0	7
Below 5.0	14

E. NOTIFICATION AND APPROVAL OF TOPSOIL

The results of soil analysis tests for texture, organic matter content, nutrient content and pH level along with recommendations for fertilizer shall be furnished by the CONTRACTOR to the ENGINEER for approval of the topsoil.

The CONTRACTOR shall notify the ENGINEER of the location from which the CONTRACTOR proposes to furnish topsoil to the project at least 30 calendar days prior to delivery of topsoil to the project. The ENGINEER reserves the right to inspect and topsoil at its source and test the material before approval will be granted for its use.

Any material delivered to the project, which does not meet specifications or which has become mixed with undue amounts of subsoil during any operation at the source or during placing and spreading, will be rejected and shall be replaced by the CONTRACTOR with acceptable material.

F. CONSTRUCTION METHODS

Section 9.44.03 of the Standard Specifications shall apply and amended as follows:

Add the following:

The Contractor is to determine the means and methods required to insure that the final grades after settlement of the topsoil conforms to the final grades shown on the plans. Final acceptance will require Special Provisions

ITEM #944001A

the establishment of a suitable stand of turf grasses as specified under Item #950005A and the area is sufficiently compacted to avoid rutting and scarring during normal operations such as lawn cutting operations.

G. METHOD OF MEASUREMENT

Section 9.44.03 of the Standard Specifications shall apply and amended as follows:

Add the following:

Adjustment to nutrient and PH requirements will not be measured for payment. The costs are to be included in the unit cost bid for “Furnishing and Placing Topsoil”. Supplemental placement of topsoil or regarding of topsoil in order to meet the final grades will not be measured for payment.

H. BASIS OF PAYMENT

This work will be paid for at the contract unit price per square yard for “Furnishing and Placing Topsoil”, which price shall include all nutrient adjustments, PH adjustments, materials, equipment, tools, labor and work incidental thereto. In order to insure that the appropriate lines and grades are achieved after the settlement of the topsoil, partial payment in the amount of 25% of the unit price will be allowed for work completed but not accepted. Final acceptance will require the establishment of a suitable stand of turf grasses as specified under Item #950005A and the area is sufficiently compacted to avoid rutting and scarring during normal operations such as lawn cutting operations.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #944001A	FURNISHING AND PLACING TOPSOIL	S.Y.

ITEM #950005A – TURF ESTABLISHMENT

Work under this item shall conform to the applicable provisions of Section 9.50 of the Standard Specifications Form 817, amended as described below:

Insert the following:

Section 9.50.02 - Materials

The seed mixture for seeding lawn areas shall meet the following requirements:

Seed shall be fresh, clean and selected from the previous year's crop; weed seed content not to exceed 1 percent; complying with applicable Federal and State seed laws; furnished and delivered premixed in unopened containers in the following proportions:

	Percent Proportion	Percent Germination Minimum	Percent Purity Minimum
1. For Lawns:			
Creeping Red Fescue	50%	85%	95%
Kentucky Bluegrass (improved varieties)	25	85	90
Fiesta 4 Perennial Rye	25	90	95

Delete **Section 9.50.03-(5)** – Stand of Perennial Turf Grasses and insert the following:

The Contractor shall provide and maintain a uniform, weed free stand of established turf grass species having attained a height of 6” consisting of no less than 200 plants per square foot throughout the seeded areas until the entire project has been accepted. Prior to seeding or reseeding an area the Contractor shall ensure the area is weed free. The Contractor shall submit to the Town for approval the type of product or method to be used to remove weeds from the area to be seeded. The submittal should include the manufacturer’s specifications for applying the product and safeguards to avoid damage to other areas.

Insert the following in **Section 9.50.03-(6)**:

The initial application of top soil, turf establishment and erosion control matting (as required) shall be measured and paid for separately as ‘Furnishing and Placing Topsoil’, ‘Turf Establishment’ and ‘Erosion Control Matting’ respectively. Subsequent applications of topsoil or seeding required to establish turf in conformance with these specifications shall not be measured for additional payment.

Add the following to Section 9.50.05:

The Contractor is advised that the turf area must be adequately established to the specified requirements prior to acceptance, measurement and payment. Any reworking necessary, including redressing of topsoil, adding fertilizers, watering and reseeding, of previously seeded areas which have not yet been accepted shall be the responsibility of the Contractor and no additional measurement or payment shall be made.

Partial payment of 25% will be made for work completed but not accepted. The Contractor is advised that the turf area must be adequately established to the specified requirements and the topsoil seed bed sufficiently compacted as specified under Item #944001A – “Furnishing and Placing Topsoil” to meet the required grades shown on the plans prior to acceptance and payment. Any reworking necessary, including, but not limited to the redressing of topsoil, regarding, adding of fertilizers, watering and reseeding of previously seeded areas which have not been accepted shall be the responsibility of the Contractor and no additional measurement or payment will be made.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #950005A	TURF ESTABLISHMENT	S.Y.

SECTION 9.52 – SELECTIVE CLEARING AND THINNING

The provisions of Section 9.52 of the Standard Specifications shall apply, with the following modifications:

Article 9.52.03 - Construction Methods. Amended as follows:

The Contractor shall clear any tree branches overhanging the roadway and sidewalk to provide a 3 feet minimum clearance from the edge of pavement and vertical clearances of 8 feet over the sidewalk and 16 feet over roadway. All clearing of vegetation adjacent to the sidewalk and roadway should be to the limits shown on the plans or as ordered by the Engineer. All work shall be done under the direction of an arborist.

The Contractor shall post the trees that will be trimmed for 10 days and a notice is to be left at each affected property. Notices shall not be attached directly to trees that will be trimmed. Written authorization from property owners will not be required.

The Contractor shall follow the Town of East Hartford's tree warden requirements for the removal of trees.

ITEM #969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

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

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

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

Description \ Office Size	Med.
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400
Minimum number of exterior entrances.	2
Minimum number of parking spaces.	7

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be open floor plan.

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

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

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

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

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

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

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
- E. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- F. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- G. After work is complete and prior to energizing, the Town’s electrical inspector, must be contacted at 860-291-7347.

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

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

Furnishing Description	Quantity
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	3
Personal computer tables (4 ft. x 2.5 ft.).	3
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1
Office Chairs.	4
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1
Rain Gauge	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*
First Aid Kit	1

Special Provisions

ITEM #969062A

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

Computer Related Hardware and Software: The Engineer will supply by its own means the actual Personal Computers for the inspection staff.

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

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

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

Maintenance: During the occupancy by the Engineer, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday.

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

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

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #969062A	CONSTRUCTION FIELD OFFICE, MEDIUM	MONTH

Special Provisions

ITEM #969062A

ITEM #970006A - TRAFFICPERSON (TOWN POLICE OFFICER)
ITEM #970007A - TRAFFICPERSON (UNIFORMED FLAGGER)

Replace Section 9.70 of the Standard Specifications with the following:

9.70.01—Description: Under this item the Contractor shall provide the services of Trafficpersons of the type and number, and for such periods, as the Engineer approves for the control and direction of vehicular traffic and pedestrians. Traffic persons requested solely for the contractor's operational needs will not be approved for payment.

The Contractor shall be responsible for contacting the Town of East Hartford Police Department Safety Officer and coordinating and requesting police services required to direct traffic on existing roadways where traffic is maintained.

9.70.03—Construction Method: Prior to the start of operations on the project requiring the use of Trafficpersons, a meeting will be held with the Contractor, Trafficperson agency or firm, Engineer, and State Police, if applicable, to review the Trafficperson operations, lines of responsibility, and operating guidelines which will be used on the project. A copy of the municipality's billing rates for Municipal Police Officers and vehicles, if applicable, will be provided to the Engineer prior to start of work.

On a weekly basis, the Contractor shall inform the Engineer of their scheduled operations for the following week and the number of Trafficpersons requested. The Engineer shall review this schedule and approve the type and number of Trafficpersons required. In the event of an unplanned, emergency, or short term operation, the Engineer may approve the temporary use of properly clothed persons for traffic control until such time as an authorized Trafficperson may be obtained. In no case shall this temporary use exceed 8 hours for any particular operation.

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

Trafficpersons assigned to a work site are to only take direction from the Engineer.

Trafficpersons shall wear a high visibility safety garment that complies with OSHA, MUTCD, ASTM Standards and the safety garment shall have the words "Traffic Control" clearly visible on the front and rear panels (minimum letter size 2 inches (50 millimeters)). Worn/faded safety garments that are no longer highly visible shall not be used. The Engineer shall direct the replacement of any worn/faded garment at no 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 a Trafficperson to operate in a manner contrary to the Maintenance and Protection of Traffic specification shall be authorized in writing by the Engineer.

Trafficpersons shall consist of the following types:

Special Provisions

ITEM #970006A, #970007A

1. Uniformed Law Enforcement Personnel: Law enforcement personnel shall wear the high visibility safety garment provided 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 for the Uniformed Flaggers' garment.

Law Enforcement Personnel may be also be used to conduct motor vehicle enforcement operations in and around work areas as directed and approved by the Engineer.

Municipal Police Officers: Uniformed Municipal Police Officers shall be sworn Municipal Police Officers or Uniformed Constables who perform criminal law enforcement duties from the Municipality in which the project is located. Their services will also include an official Municipal Police vehicle when requested by the Engineer. Uniformed Municipal Police Officers will be used on all Collector and Arterial roadways. If Uniformed Municipal Police Officers are unavailable, other Trafficpersons may be used when authorized in writing by the Engineer.

Uniformed Municipal Police Officers and requested Municipal Police vehicles will be used at such locations and for such periods as the Engineer deems necessary to control traffic operations and promote increased safety to motorists through the construction sites.

2. Uniformed Flagger: Uniformed Flaggers shall be persons who have successfully completed flagger training by the American Traffic Safety Services Association (ATSSA), National Safety Council (NSC) or other programs approved by the Engineer. A copy of the Flagger's training certificate shall be provided to the Engineer before the Flagger performs any work on the project. Uniformed Flaggers shall conform to Chapter 6E, Flagger Control, in the Manual of Uniformed Traffic Control Devices (MUTCD) and shall wear high-visibility safety apparel, use a STOP/SLOW paddle that is at least 18 inches (450 millimeters) in width with letters at least 6 inches (150 millimeters) high. The paddle shall be mounted on a pole of sufficient length to be 6 feet (1.8 meters) above the ground as measured from the bottom of the sign.

Uniformed Flaggers will only be used on non-limited access highways to control traffic operations when authorized in writing by the Engineer. Uniformed Flaggers shall be used on Local roadways.

9.70.04—Method of Measurement: Services of Trafficpersons will be measured for payment by the actual number of hours for each person rendering services approved by the Engineer. These services shall include, however, only such trafficpersons as are employed within the limits of construction, project right of way of the project or along detours authorized by the Engineer to assist the motoring public through the construction work zone. Services for continued use of a detour or bypass beyond the limitations approved by the Engineer, for movement of construction vehicles and equipment, or at locations where traffic is unnecessarily restricted by the Contractor's method of operation, will not be measured for payment.

Trafficpersons shall not work more than twelve hours in any one 24 hour period. In case such services are required for more than twelve hours, additional Trafficpersons shall be furnished and measured for payment.

In cases where the Trafficperson is an employee on the Contractor’s payroll, payment under the item “Trafficperson (Uniformed Flagger)” will be made only for those hours when the Contractor’s employee is performing Trafficperson services.

Travel time will not be measured for payment for services provided by Uniformed Municipal Police Officers or Uniformed Flaggers.

Mileage fees associated with Trafficperson services will not be measured for payment.

Safety garments and STOP/SLOW paddles will not be measured for payment.

9.70.05—Basis of Payment: Trafficpersons will be paid in accordance with the schedule described herein.

There will be no direct payment for safety garments or STOP/SLOW paddles. All costs associated with furnishing safety garments and STOP/SLOW paddles shall be considered included in the general cost of the item.

1. Uniformed Law Enforcement Personnel: The sum of money shown on the Estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the bid price even though payment will be made as described below. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount for the contract.

The Town will pay the Contractor the actual costs for “Trafficperson (Municipal Police Officer)” without any markup.

The invoice must include a breakdown of each officer’s actual hours of work and actual rate applied. Mileage fees associated with Trafficperson services are not reimbursable expenses and are not to be included in the billing invoice.

The use of a municipal police vehicle authorized by the Engineer will be paid at the actual rate charged by the municipality. Upon receipt of the invoice from the municipality, the Contractor shall forward a copy to the Engineer for review and approval. The Contractor will be reimbursed after submitting cancelled checks or receipted invoices, which confirm proof of payment to the municipality. The rate charged by the municipality for use of a uniformed municipal police officer and/or a municipal police vehicle shall not be greater than the rate it normally charges others for similar services.

2. Uniformed Flagger: Uniformed flaggers will be paid for at the contract unit price per hour for “Trafficperson (Uniformed Flagger)”, which price shall include all compensation, insurance benefits and any other cost or liability incidental to the furnishing of the trafficpersons ordered.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #970006A	TRAFFICPERSON (TOWN POLICE OFFICER)	EST
ITEM #970007A	TRAFFICPERSON (UNIFORMED FLAGGER)	HOUR

Special Provisions

ITEM #970006A, #970007A

ITEM #971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01

The Contractor shall maintain and protect traffic as described in Section 9.71 of the Standard Specifications and as follows:

The Contractor shall maintain and protect existing traffic operations on project roadways within the project limits, on the existing pavement, the roadway under construction, the completed roadway, or a combination thereof.

When actively working on local and collector roadways, the Contractor shall maintain local access on a travel path not less than 12 feet in width.

Temporary detours will be allowed while actively working on local roadways. The Contractor shall provide emergency and local access at all times. The Contractor will be required to submit to the Engineer and Public Safety Agencies for review and approval detour and signing plans before implementation. In addition to the detour and signing plan, the Contractor shall be required to post the necessary informational signage regarding the proposed construction and detour a minimum of three (3) weeks prior to the anticipated date of work.

At the completion of the workday, the Contractor shall restore all roadways to normal traffic operations.

At the end of each workday, the Contractor shall construct a compacted processed aggregate ramp at the end of any unpaved section, including at all driveways and intersecting roadways. On milled roadways, Contractor shall install a temporary bituminous concrete ramp. The cost of constructing, maintaining and removing these ramps shall be included in the price bid for "Maintenance and Protection of Traffic."

Advance warning signs ("gravel road ahead" and "bump") shall be used at unpaved sections as needed to warn motorists of the change in travel surface. The Contractor shall spray paint (orange) the edges of any raised and/or exposed utility structures. Drums or cones shall be placed on all raised and/or exposed utility structures where feasible, or as ordered by the Engineer.

“Road Work Ahead Fines Doubled” signs shall be posted at the beginning of construction zones and “End Road Work” signs shall be installed at the end of construction zones.

Following the milling of arterial roadways the Contractor shall reset all utility gates and manhole frame and covers to be flushed with the milled surface when gates and frame and covers present a hazard to the traveling public. Adjustment of these gates and manhole frame and covers shall not be measured and paid for, but shall be included in the cost of work for Maintenance and Protection of Traffic.

All gates and manhole frames and covers shall be reset to the final roadway grades after the placement of the intermediate course. Under no circumstances shall resetting of utility gates and manhole frame and covers be allowed after the final course is placed. The cost to reset utility gates and manhole frame and covers to the final roadway grade will be paid for under the respective pay items for each.

For all roadways which are designated for reclamation and reconstruction, following the establishment of the base material, Contractor shall adjust all utility gates and manhole frame and covers to be flush

with the graded surface when gates and frame and covers present a hazard to the traveling public. Access to all gates and frame and covers shall be maintained at all times. Adjustment of these gates and manhole frame and covers shall not be measured and paid for, but shall be included in the cost of work for Maintenance and Protection of Traffic. All gates and manhole frames and covers shall be reset to the final roadway grades after the placement of the intermediate course. Under no circumstances shall resetting of utility gates and manhole frame and covers be allowed after the final course is placed. The cost to reset utility gates and manhole frame and covers to the final roadway grade will be paid for under the respective pay items for each.

The Town reserves the right to direct the Contractor to adjust utility gates and manhole frame and covers if they are determined to be too high or exceed the tolerances for being low.

For all roadways which are designated for removal of hot mix asphalt, reclamation and reconstruction, the Contractor must submit for approval a maintenance and protection of traffic plan to the Engineer 30 days prior to beginning work.

The Contractor shall prepare, and submit to the Engineer for approval, a minimum of 30 days in advance, a plan illustrating the Typical Traffic Management Plan for all roadways identified to be milled. This plan shall illustrate typical use and layout of construction signs, drums, and other traffic control devices to be employed during each time period of work to maintain traffic and access to abutting properties. The Contractor must obtain approval of the traffic management plans from the Engineer prior to commencing work on the specified roadways.

At the completion of work each day, the Contractor will be required to open the entire roadway to traffic. The length of alternating one-way traffic operations shall not exceed 500 feet. There shall be no more than one alternating one-way traffic operation within the roadway under construction at any one time.

The Contractor shall notify all public safety agencies 48 hours prior to beginning any construction operation which will provide less than a 12 foot travel lane.

The Contractor shall schedule operations so that pavement milling, hot mix asphalt removal, reclamation, reconstruction, grading or roadway paving shall be completed full width across a roadway section by the end of a workday. All transverse height differentials on all roadway surfaces shall be tapered to negate any "bump" to traffic.

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure. All temporary connections to abutting driveways and existing roadways must be accomplished in a satisfactory manner prior to the end of the work day/night. At all times the Contractor shall provide emergency vehicle access. Temporary ramps at limits of construction shall be constructed the day of the milling and shall be paved bituminous as indicated on the plans.

The final pavement course shall be placed curb to curb for the entire length of the project as the last paving operation after all work is completed.

Special Provisions

ITEM #971001A

The Contractor shall place traffic drums or cones on top of or adjacent to all raised utility structures within the roadway.

The Contractor shall be responsible to protect and maintain pedestrian access along each roadway during construction.

Traffic Control During Construction Operations

The following guidelines have been prepared to assist construction personnel in determining when and what type of traffic control patterns to use for various work items under certain conditions. These guidelines are directed to the safe and expeditious movement of traffic through work zones and to the safety of the work forces performing these operations. Also, it is necessary that all traffic control patterns be uniform, neat, and orderly so as to command respect by the motorists.

The attached basic principles and standards are minimum, and methods illustrated for controlling traffic through work areas are typical situations. The proper application of the standard protective devices depends on actual field conditions.

Traffic Control Patterns: Traffic control patterns will be used when a work operation requires that all or part of any vehicle protrude onto any part of the travel lanes. The protection prescribed for each situation shall be based on the following:

1. Speed and volume of traffic.
2. Duration of operation.
3. Exposure of hazards.

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

If any type of taper is present on the traffic control pattern to shift traffic, the entire length of the taper should be installed on a tangent section of roadway.

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

When installing the traffic control pattern, a "Buffer Space" should be provided. The Buffer Space should extend from the end of the transition taper to the beginning of the work area and should be free of equipment, workers, material, and parked vehicles. On multi-lane highways, where the posted speed limits are 45 MPH or more, the Buffer Space should not be less than 350 feet in length.

No traffic control patterns will be required when vehicles are on emergency patrol type activity or when short duration stops are made and the equipment can be contained within the shoulder area. Flashing lights and flaggers will be used when required.

Although each situation must be dealt with individually, conformity with these provisions is required. In situations not adequately covered by these provisions set forth in the traffic control patterns, the Contractor must contact the Engineer for assistance prior to setting up the work area.

Placement of Signs: Signs must be placed in such a position to allow a motorist the opportunity to reduce speed prior to the location where the Contractor's workforce is present. Signs are generally placed on the right side of the roadway. On multi-lane divided highways, when the traffic lane is impeded, dual installation of the advance signs on the right and left side of the highway should be installed where the median permits. On directional roadways, such as an off-ramp, where the sight distance to the sign on the right side of the highway is restricted, a duplication of this sign may be installed on the left side of the highway.

*Allowable Adjustment of Signs and Devices
shown on the Maintenance and Protection of Traffic Patterns*

The traffic control plans and patterns contained herewith indicate the locations and spacing of the signs and devices under ideal conditions. It is desirable to have signs and devices installed as shown thereon.

Adjustments to standard signing plans and patterns shall be made only at the direction of the Engineer. The signing patterns are to be installed, as directed by the Engineer, to consider abutting properties, driveways, side roads and the vertical and horizontal curvature of the roadway.

If adjustments are made to these standard-signing patterns, the adjustments shall always be to improve the visibility of the signing and devices and to better control traffic.

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

Table 1 indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall be used only when the recommended taper lengths shown on the traffic control plans cannot be achieved.

NOTES FOR TRAFFIC CONTROL PLANS

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

TABLE 1 - MINIMUM TAPER LENGTHS

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

METRIC CONVERSION CHART (1" = 25mm)

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



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

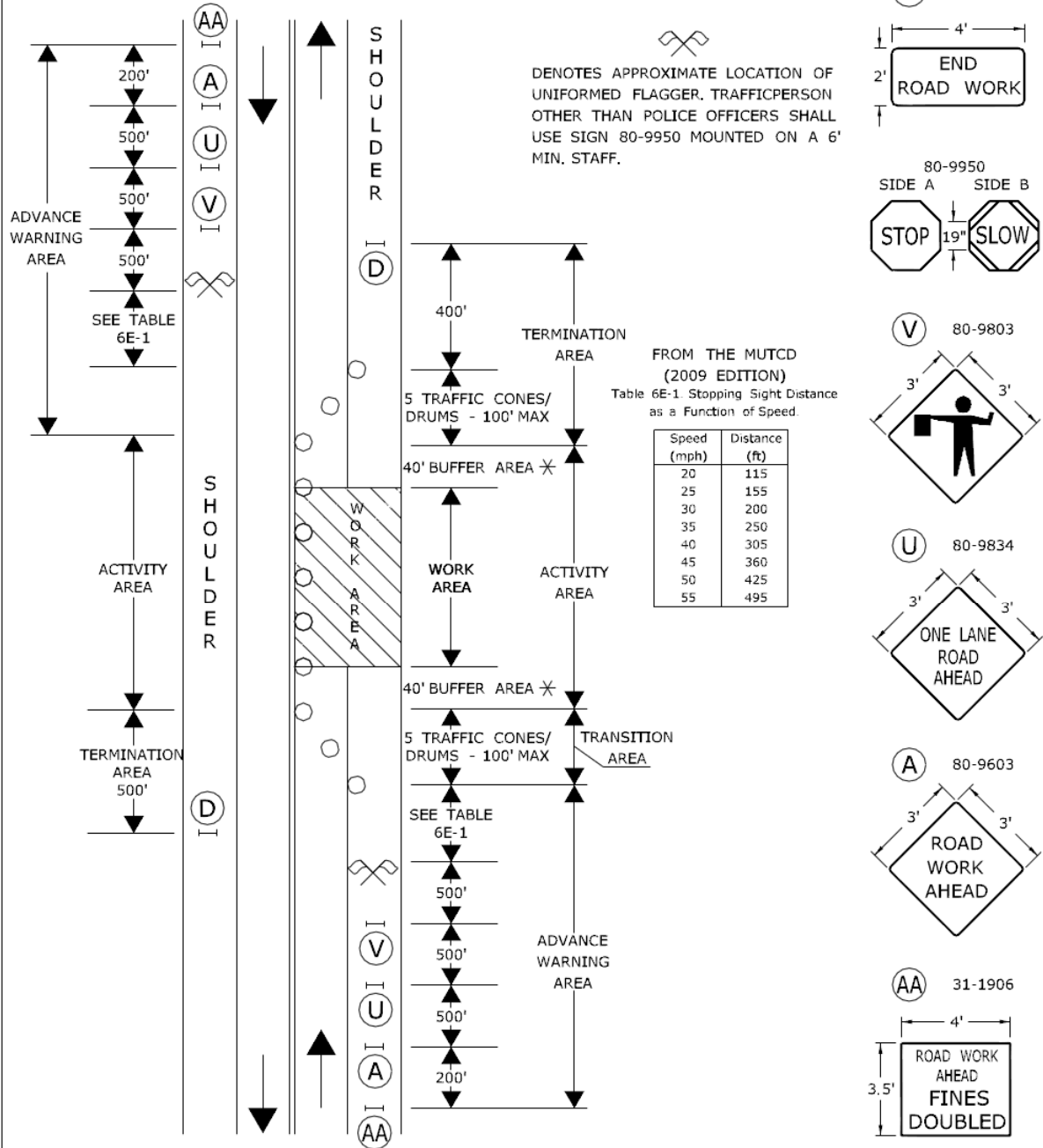
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Special Provisions

ITEM #971001A

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



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

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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

Special Provisions

ITEM #971001A

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

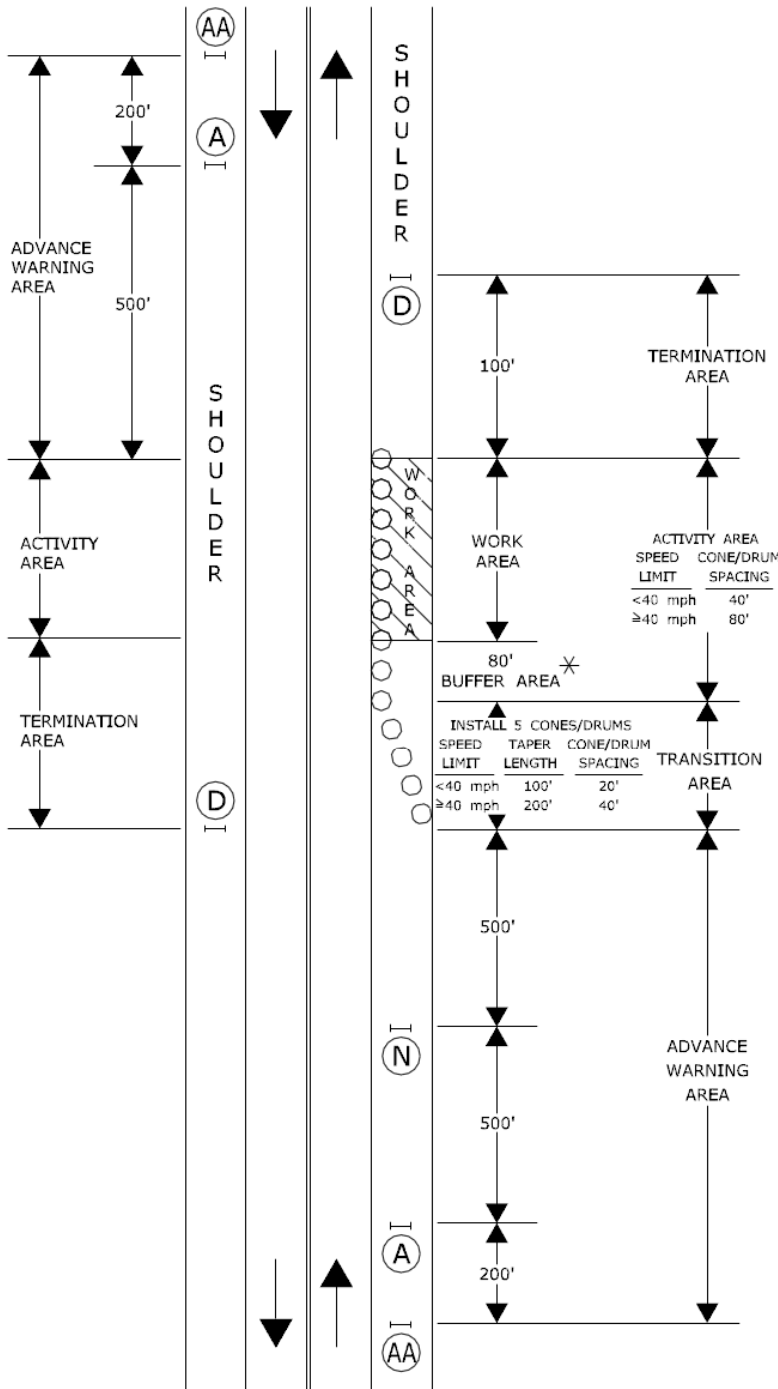
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 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 14

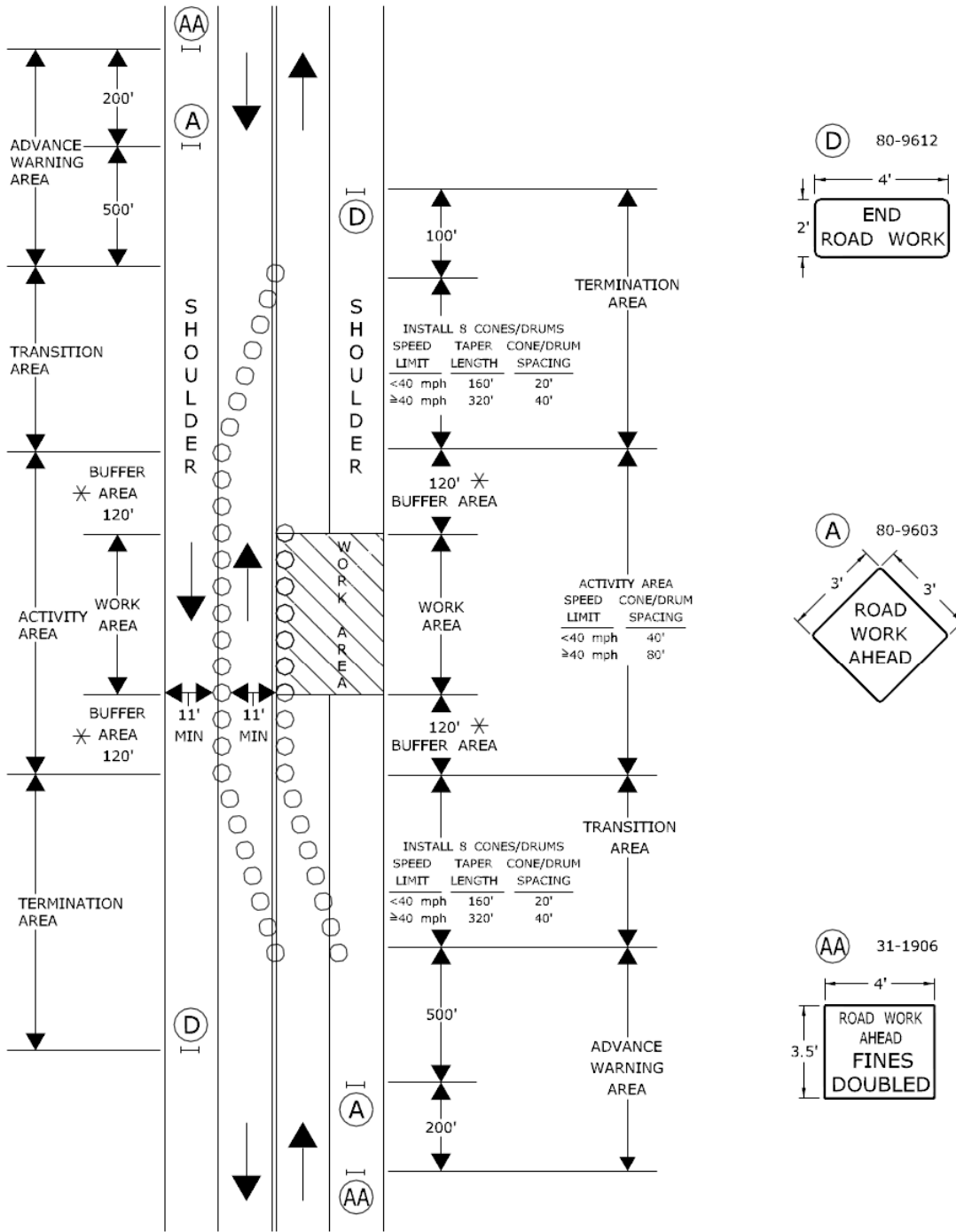
SEE NOTES 1, 2, 4, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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2012.06.05 15:56:09-04'00"
PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY

SIGN FACE
62 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 15
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

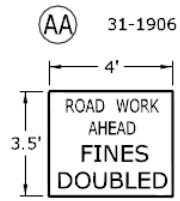
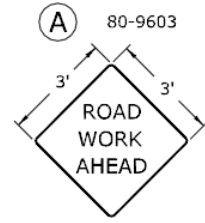
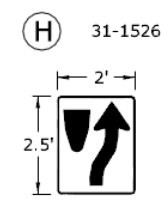
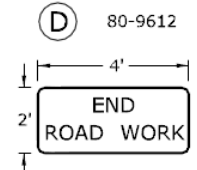
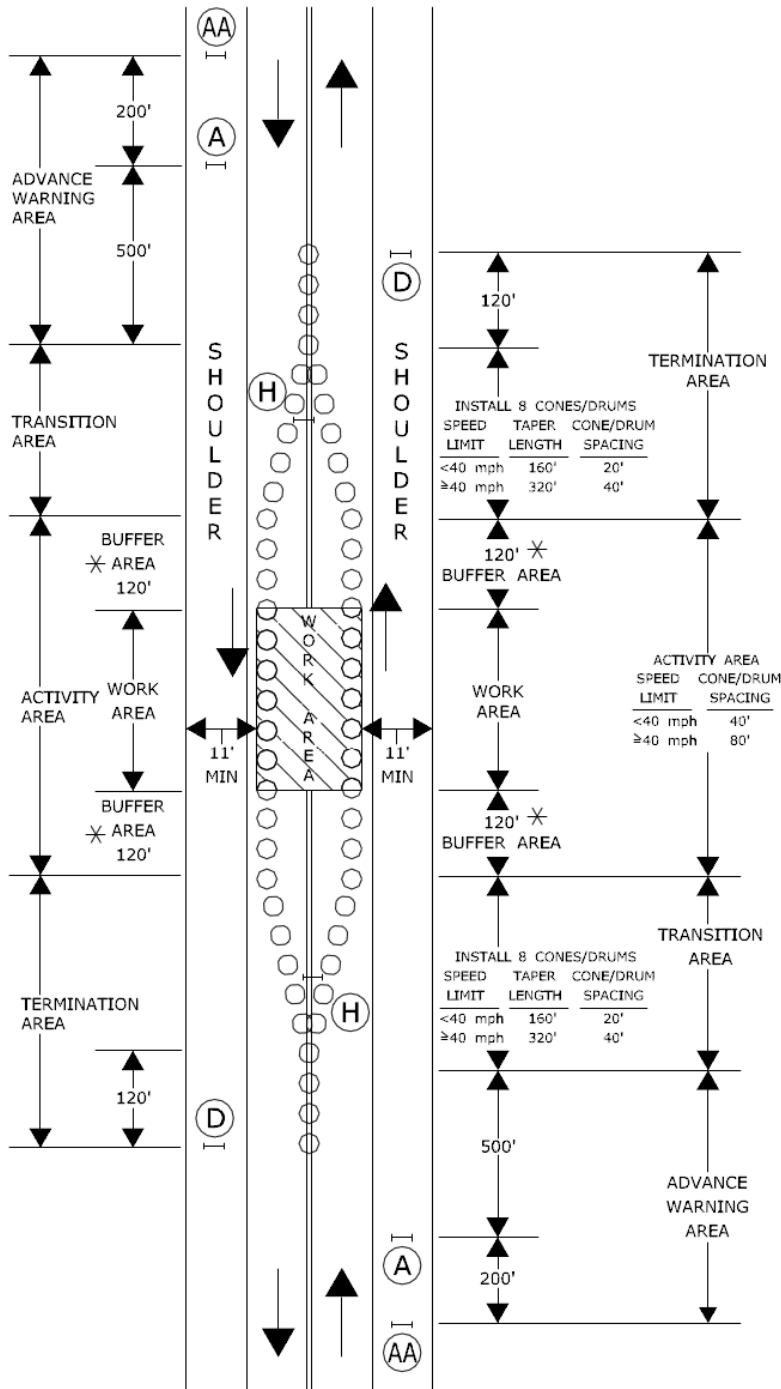
APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.06.05 15:56:29-04'00"

WORK IN MIDDLE OF ROADWAY TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



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



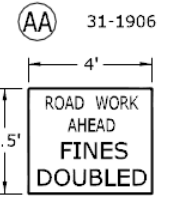
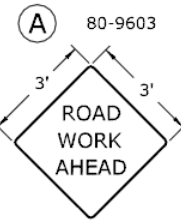
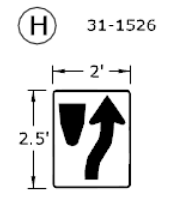
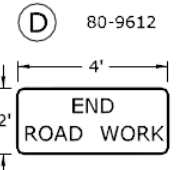
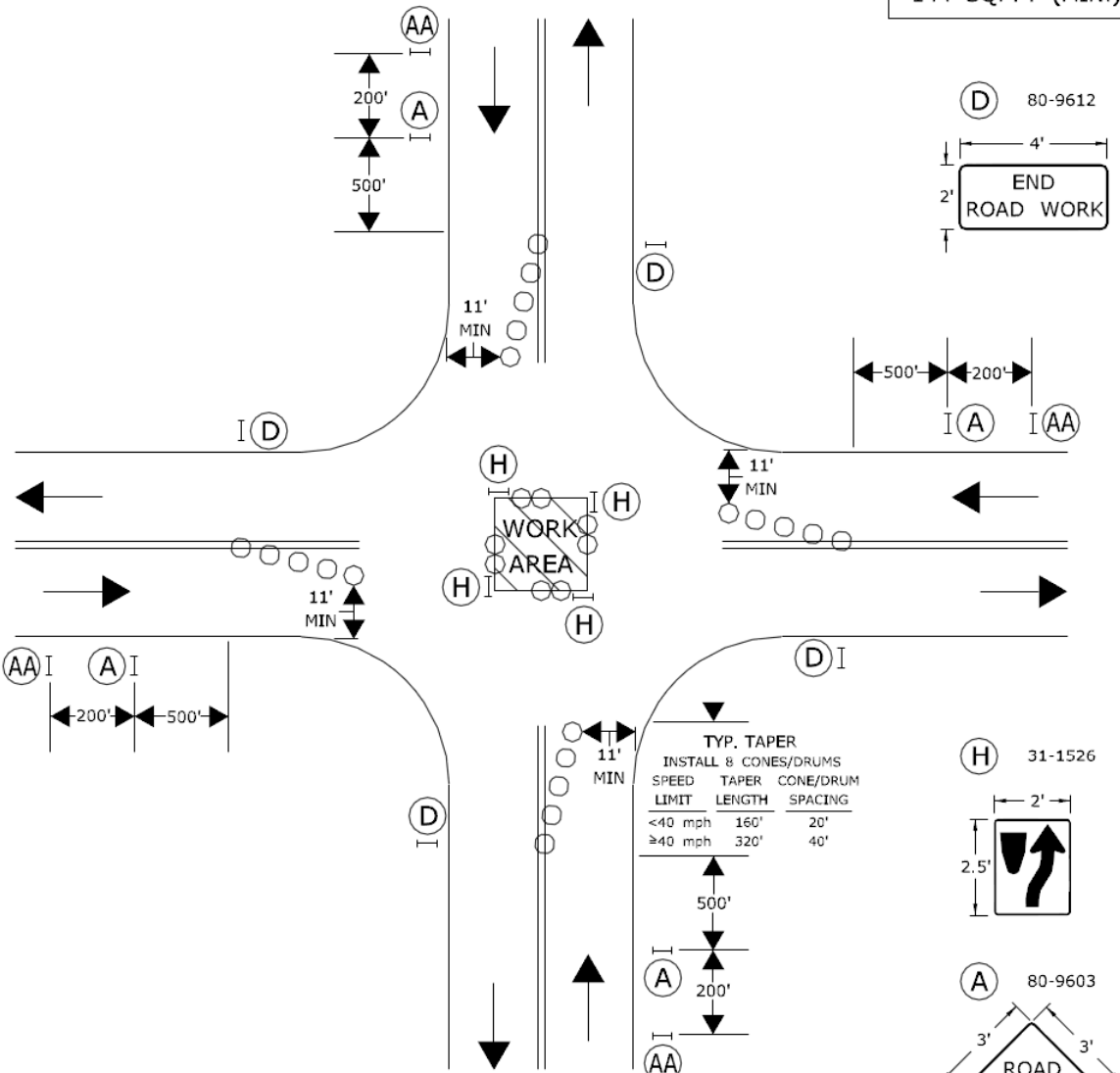
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 16
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
PRINCIPAL ENGINEER 2012.06.05 15:56:51-04'00"

WORK IN MIDDLE OF ROADWAY AT INTERSECTION

SIGN FACE
144 SQ. FT (MIN.)



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



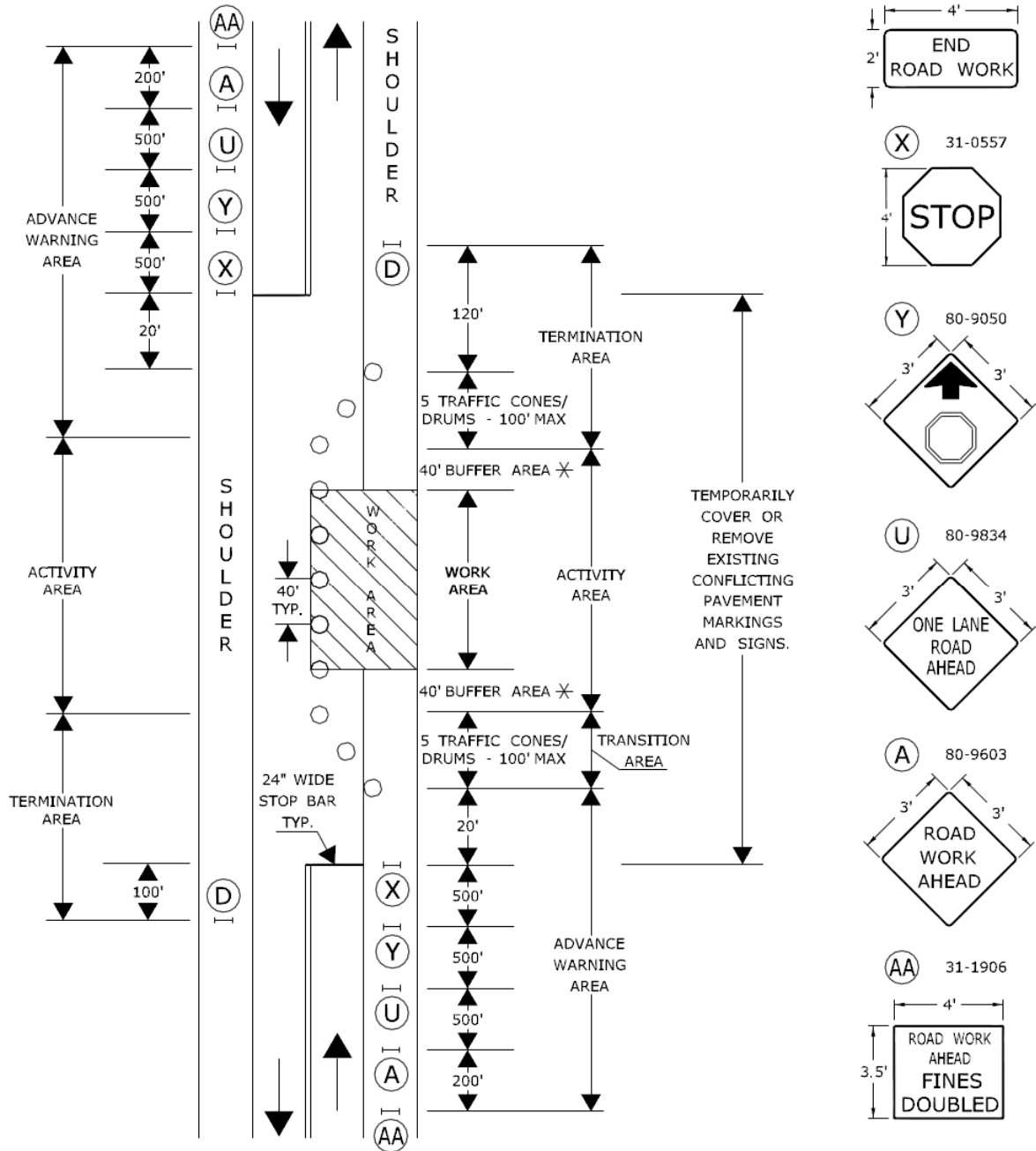
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 17
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:57:16-04'00"
PRINCIPAL ENGINEER

**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' Arrow pointing up
- (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

CONNECTICUT DEPARTMENT OF TRANSPORTATION
 BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
 2012.06.05 15:57:37-0400
 PRINCIPAL ENGINEER

Section 9.71.02 – Materials

Add the following:

1. Barricade Warning lights shall meet the requirements of Section 9.76
2. Traffic cone shall meet the requirements of Section 9.77
3. Traffic Drum shall meet the requirements of Section 9.78
4. Construction Barricade shall meet the requirements of Section 9.79
5. Construction Signs shall meet the requirements of Section 12.20

Section 9.71-.05 Basis of Payment

Add the following:

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary traversable slope in those areas where a longitudinal dropdown exists and to maintain access to adjoining properties.

If there is no method for payment for the temporary transition in those areas where a transverse dropdown exists, then the contract lump sum price for the “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary transitions and touchdowns.

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include temporarily relocating existing signs and sign supports as many times as deemed necessary and furnishing, installing, and removing temporary sign supports and foundations if necessary during construction of the project. It shall also include furnishing and installing all construction signs, barricades, barricade warning lights, traffic drums, and traffic cones that may be necessary to maintain traffic through the various construction zones.

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include all costs associated with developing, obtaining approval for, and implementing any and all required traffic control plans for the various project roadways.

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include all costs associated with resetting utility gates and manhole frame and covers to be flushed with the milled or graded base surface.

ITEM #1206092A – RESET SIGN

DESCRIPTION

This item shall consist of resetting existing signs on new metal sign posts at locations indicated on the plans or as ordered by the Engineer.

MATERIALS

Metal sign posts shall conform to the requirements of Article M.18.14 of the Standard Specifications Form 817.

Sign mounting bolts shall conform to the requirements of Article M.18.15 of the Standard Specifications Form 817.

CONSTRUCTION METHODS

The Contractor shall remove the existing signs from existing sign posts at the locations shown on the plans or as ordered by the Engineer and store them in a safe place to prevent damage. The existing sign posts shall be removed and disposed of by the Contractor. For side-mounted sign foundations, the stub post or anchor bolts and concrete foundations shall be removed to a depth of 12 inches below finish grade. The portion of stub posts or anchor bolts and concrete removed shall be disposed of by the Contractor. Where sign support foundations existing without stub posts or anchor bolts, the Contractor will have the option of removing the concrete foundation in its entirety or remove the concrete and post to a depth of 12 inches below finished grade. Whichever option the Contractor chooses, the Contractor shall remove the excavated material from the site.

The existing signs shall be reset on the type of support designated on the plans after the support has been satisfactory installed at its proper location.

METHOD OF MEASUREMENT

Reset Sign will be paid for at the contract price for each “Reset Sign” completed and accepted.

BASIS OF PAYMENT

Payment for “Reset Sign” shall be made at the contract price for each “Reset Sign”, which price shall include removing the existing signs from existing sign posts, removing and disposing the existing sign posts and foundation, new sign posts, mounting hardware, including reinforcing plates, and all materials, equipment, labor, and work incidental thereto.

ITEM NO.
ITEM #1206092A

DESCRIPTION
RESET SIGN

UNIT
EA

Special Provisions

ITEM #1206092A

ITEM #1208929A – STREET IDENTIFICATION SIGN

DESCRIPTION

This item shall consist of furnishing and installing street identification signs (with lettering and background on both sides of the sign) on metal sign posts at locations indicated on the plans or as ordered and in conformance with plans and these special provisions.

MATERIALS

White reflective sheeting for lettering shall conform to ASTM D4956-09, Type VIII, and shall be Avery 7500 MVP or approved equal. Green silk screen installed on white reflective sheeting for background shall be 3M Series 3930 or approved equal.

Green reflective sheeting for background shall conform to ASTM D4956-04, Type IV and shall be 3M Series 3930 or approved equal.

Sheet aluminum sign blanks shall conform to the requirements of Article M.18.13 of the Standard Specifications.

Silk screening shall conform to the requirements specified by the reflective sheeting manufacturer.

Metal sign posts shall conform to the requirements of Article M.18.14 of the Standard Specifications.

Brackets shall be standard 12 inch brackets.

CONSTRUCTION METHODS

The Contractor shall utilize 9 inch x 30 inch, 9 inch x 36 inch or 9 inch x 48 inch sheet aluminum blanks. Reflective sheeting shall be attached to both sides of the aluminum blank with pressure sensitive adhesive and shall be applied in such a manner that the finished sign will be wrinkle and bubble free. Splicing of the sheeting is not allowed.

The font style shall be Clearview T-Cad-1B Normal VEF with the letters spaced at 104% minimum. Street names and abbreviations (St, Ave, Blvd, etc.) shall be lower case with the first letter capitalized. Street names shall be 6" letters. The intent is to maintain 1.25 inches from the base of the sign to the base of the text as well as 1.25 inches on either end of the sign. The placement of the letters may have to be adjusted to accommodate the letter g and y which have a tail that drops far below the base of standard letters. Abbreviations shall be 4" letters centered vertically on the sheeting. Signs shall be furnished without a border.

The silk screening of all lettering and background shall be accomplished prior to the application of the sheeting to the finished aluminum sign blank.

The fabrication of aluminum sign blanks including cutting to size and shape shall be completed prior to metal degreasing and the application of reflective sheeting. Aluminum sign blanks shall be free of buckles, warp, dents, cockles, burrs and defects resulting from fabrication.

After complete fabrication of the sign as indicated on the plans and in conformance with these requirements contained in these special provisions, the sign shall be mounted with standard brackets on the type of support designated on the plans after the support has been satisfactorily installed at its proper location.

Metal sign posts shall be driven or the holes augured and the backfill thoroughly tamped after the post have been set level and plumb.

METHOD OF MEASUREMENT

This work will be measured for payment by the number of square feet of street identification sign which shall be limited to the area of one side of the aluminum sign blank for each sign.

BASIS OF PAYMENT

This work will be paid for at the contract unit price per square foot for “Street Identification Sign” complete in place, which price shall include both the application of reflective sheeting and street identification lettering on both sides of the street identification sign, metal sign post(s), mounting hardware, including brackets, and all material, equipment, labor and work incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #1208929A	STREET IDENTIFICATION SIGN	SF

ITEM #1208931A – SIGN FACE – SHEET ALUMINUM – TYPE IX RETROREFLECTIVE SHEETING

Section 12.08 is supplemented and amended as follows:

12.08.01—Description:

Add the following:

This item shall also include field testing of metal sign base posts as directed by the Engineer.

12.08.03—Construction Methods:

Delete the last sentence and add the following:

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

12.08.04—Method of Measurement:

Add the following:

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

12.08.05—Basis of Payment:

Replace the entire Article with the following:

This work will be paid for at the Contract unit price per square foot for “Sign Face - Sheet Aluminum” of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted brackets, mounting hardware, including reinforcing

plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	51-100	101-250	251-1000	>1000
Sample Size=>	5 Posts	10 Posts	40 Posts	60 Posts
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933
5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing

ITEM #1302060A – ADJUST GATE BOX (WATER)

Work under this item shall conform to the applicable provisions of the Standard Specifications Form 817 amended as follows:

DESCRIPTION

Reference to “District” in this item refers to “The Metropolitan District”.

The Contractor shall adjust to intermediate and final grades as required, the gate boxes and covers appurtenant to the water mains as required and furnish and install extension rings, extension stems and air valve extensions, if necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

MATERIALS

The District shall furnish standard District cast iron Dwyer type gate box sections as required and extension stems if necessary.

All additional materials, including any resurfacing materials and any additional fill required, shall be furnished and placed by the Contractor. Gravel shall conform to Article M.02.01.

CONSTRUCTION METHODS

The Contractor shall carefully excavate around the gate boxes, remove the boxes, install extension stems and air valve extensions, if necessary, reinstall the present gate box, if reusable, adjust the box to final grade using extension rings, if necessary, and refill the excavation. Care shall be taken to prevent material from filling the inside of the gate box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to the detail shown on sheet WS-25 of the District’s “Developers Manual.”

Any damage done to District facilities by the Contractor shall be repaired or replaced by the Contractor at his/her expense.

Contractor shall adjust/lower gate boxes to match the exposed aggregate or milled surface grades where necessary to provide for safe traffic operations. Prior to paving the final course, Contractor shall adjust/raise gate boxes to final grades.

METHOD OF MEASUREMENT

The resetting of gate boxes to the final grades, complete with extension stems, air valve extensions, gate box extension rings, and additional top or bottom sections, if necessary, will be measured for payment as a unit. Adjustment of gate boxes to match the exposed aggregate or milled surface grades shall not be measured and paid for, but shall be included in the cost for Maintenance and Protection of Traffic.

Special Provisions

ITEM #1302060A

BASIS OF PAYMENT

This work will be paid for at the contract unit price for “Adjust Gate Box (Water)” to the final grades, complete in place, which price shall include the cost of furnishing material, including labor and equipment to incorporate them into the work. It shall also include the clearing, trenching and disposal of excavated materials, refilling trenches, multiple adjustments, furnishing the additional material for refilling, grading, sheeting, bracing, and pumping.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #1302060A	ADJUST GATE BOX (WATER)	EA

ITEM #1302062A – ADJUST GATE BOX (GAS)

DESCRIPTION

Work under this item shall include furnishing materials, equipment and labor for the adjustment of utility gas gates, within the project limits to meet the proposed grades at each location as ordered by the Engineer. This work includes the necessary coordination with the utility companies and customers as required

MATERIALS

All materials shall be provided by the Contractor and shall meet the current standards of the affected utility.

CONSTRUCTION METHODS

The Contractor shall perform all work in coordination with the Utility company and affected property owner and as directed by the Engineer. Certain work may require use of a licensed and/or certified tradesman when such work is required by local and/or state codes.

Any utility customer’s service interruption shall be done in a manner that minimizes adverse impacts to the customer and affected utility.

Any work and materials supplied by the utility company shall be on a billable basis to the Contractor.

Any damage resulting from the Contractor’s operations to the utility shall be corrected as ordered by the Engineer, without additional compensation to the Contractor.

Contractor shall adjust/lower gate boxes to match the exposed aggregate or milled surface grades where necessary to provide for safe traffic operations. Prior to paving the final course, Contractor shall adjust/raise gate boxes to final grades.

METHOD OF MEASUREMENT

Adjust gate box (gas) to the final grades will be measured for payment as units, completed and accepted by the Engineer. Adjustment of gate boxes to match the exposed aggregate or milled surface grades shall not be measured and paid for, but shall be included in the cost for Maintenance and Protection of Traffic.

BASIS OF PAYMENT

This work will be paid for at the contract unit price each for “Adjust Gate Box (Gas)” to the final grades, complete in place, including all materials, equipment, tools, labor and all incidental expenses.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #1302062A	ADJUST GATE BOX (GAS)	EA

Special Provisions

ITEM #1302062A

ITEM #1403010A - FRAME AND COVER (SANITARY SEWER)

Work under this item shall conform to the applicable provisions of Section 5.86 of the Standard Specifications Form 817 amended as follows:

DESCRIPTION

Add the following to Subarticle 5.86.01:

The work shall include furnishing and installing new cast iron frames and covers on sanitary sewer manholes.

MATERIALS

Add the following to Subarticle 5.86.02:

Manhole Frame and covers shall conform to AASHTO M105, Class 35/35B.

Manhole frame and cover castings shall be capable of withstanding AASHTO H-25 loading.

BRICK UNITS - Shall conform to ASTM C-32, Grade MS

MORTAR – Shall conform to Section M.11

CONSTRUCTION METHODS

Add the following to Subarticle 5.86.03:

The Contractor shall carefully excavate the existing manhole frame and cover and add or delete brick masonry as necessary before installing the new manhole frame and cover to the final grade. Manhole extension rings shall not be used to set the frame and cover.

The present cover slab or cone section may be reused if it is not damaged. If the cover slab or cone section is damaged, it shall be replaced by the Contractor at his/her expense.

The Contractor may be required to “un-stack” the existing cone section so that riser sections can be added or deleted, where the change in grade is greater than 12 inches.

Any material damaged by the Contractor shall be repaired or replaced by the Contractor at no cost to the Town or District.

The Contractor shall adjust/lower manhole frame and cover to match the exposed aggregate or milled surface grades where necessary to provide for safe traffic operations. Prior to paving the final course, Contractor shall adjust/raise manhole frame and cover to final grades.

METHOD OF MEASUREMENT

Add the following to Subarticle 5.86.04:

“Frame and Covers (Sanitary Sewer)” will be measured for payment by the number of “Frame and Cover (Sanitary Sewer) installed to the final grade and accepted by the Engineer. Adjustment of manhole frame and cover to match the exposed aggregate or milled surface grades shall not be measured and paid for, but shall be included in the cost for Maintenance and Protection of Traffic.

BASIS OF PAYMENT

Add the following to Subarticle 5.86.05:

“Frame and Cover (Sanitary Sewer)” will be measured per each sanitary structure frame and cover furnished and installed to correct grade. Measurement shall include all materials, equipment, tools, excavation, and labor incidental thereto.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #1403010A	FRAME AND COVER (SANITARY SEWER)	EACH

ITEM #1403501A – RESET MANHOLE (SANITARY SEWER)

Work under this item shall conform to the applicable provisions of Section 5.86 of the Standard Specifications Form 817 amended as follows:

Delete the term “Reset Manhole” and insert “Reset Manhole (Sanitary Sewer)”.

DESCRIPTION

Add the following to Subarticle 5.86.01:

The Contractor shall reset to final grade the manhole frames and covers on the sanitary sewer, all as shown, specified or directed. Also included are furnishing and installing additional manhole riser sections, if necessary.

Reference to the “District” in this item refers to “The Metropolitan District.”

MATERIALS

Add the following to Subarticle 5.86.02:

BRICK UNITS - Shall conform to ASTM C-32, Grade MS

MORTAR – Shall conform to Section M.11

MANHOLE RISER SECTIONS - Shall conform to ASTM C-478

MANHOLE RUNGS (STEPS) - Shall be 14 inches x 10 7/8 inches forged aluminum safety rung fabricated from 6061-T6 aluminum alloy as manufactured by ALCOA, or equal; or copolymer polypropylene steps in conformance with ASTM D4101, Grade 60 steel reinforcing rod, ASTM A615, with epoxy coating, ASTM A-934/M-95. The steps shall be either Model PS-1B or PS2-PFSL as manufactured by M.A. Industries, Inc. or equal.

CONSTRUCTION METHODS

Add the following to Subarticle 5.86.03:

The Contractor shall carefully excavate the manhole frame and cover and add or delete brick masonry as necessary to reset the frame and cover to the final grade. Manhole extension rings shall not be used to reset the frame and cover.

The present cover slab or cone section may be reused if it is not damaged. If the cover slab or cone section is damaged, it shall be replaced by the Contractor at his/her expense.

The Contractor may be required to “un-stack” the existing cone section so that riser sections can be added or deleted, where the change in grade is greater than 12 inches.

Any material damaged by the Contractor shall be repaired or replaced by the Contractor at no cost to the Town or District.

The Contractor shall adjust/lower manhole frame and cover to match the exposed aggregate or milled surface grades where necessary to provide for safe traffic operations. Prior to paving the final course, Contractor shall adjust/raise manhole frame and cover to final grades.

METHOD OF MEASUREMENT

Add the following to Subarticle 5.86.04:

The work of resetting sanitary sewer manholes to the final grades will be measured for payment by the number of manholes (sanitary sewer) reset to grade and accepted by the Engineer. Adjustment of manhole frame and cover to match the exposed aggregate or milled surface grades shall not be measured and paid for, but shall be included in the cost for Maintenance and Protection of Traffic.

BASIS OF PAYMENT

Add the following to Subarticle 5.86.05:

The work of resetting sanitary sewer manholes to the final grades will be paid for at the contract unit price each bid for “Reset Manhole (Sanitary Sewer)” complete in place, which price shall include all labor and equipment necessary to incorporate the manhole into the work.

It shall also include the clearing, trenching, excavation and disposal of excavated materials, refilling trenches, furnishing additional material for refilling, grading, sheeting, bracing, pumping, and temporary and permanent resurfacing of disturbed areas.

The maximum 3 feet vertical adjustments shall not apply to adjusting sanitary sewer manholes, and there will be no extra compensation for adjusting the manhole in excess of 3 feet.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
ITEM #1403501A	RESET MANHOLE (SANITARY SEWER)	EACH

SECTION M.04 - BITUMINOUS CONCRETE MATERIALS

Section M.04 is being deleted in its entirety and replaced with the following:

M.04.01—Bituminous Concrete Materials and Facilities

M.04.02—Mix Design and Job Mix Formula (JMF)

M.04.03—Production Requirements

M.04.01—Bituminous Concrete Materials and Facilities: Each source of material, Plant, and laboratory used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. AASHTO or ASTM Standards noted with an (M) have been modified and are detailed in Table M.04.03-5.

Aggregates from multiple sources of supply must not be blended or stored in the same stockpile.

1. Coarse Aggregate: All coarse aggregate shall meet the requirements listed in M.01.

2. Fine Aggregate: All fine aggregate shall meet the requirements listed in M.01.

3. Mineral Filler: Mineral filler shall conform to the requirements of AASHTO M 17.

4. Performance Graded (PG) Asphalt Binder:

(a) General:

- i. PG asphalt binder shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binder shall be properly heated and stored to prevent damage or separation.
- ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 77°F; rotational viscosity at 275°F and 329°F; and the mixing and compaction viscosity-temperature chart for each shipment.
- iii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder. Contractor Plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport vehicle was inspected before loading was found acceptable for the material shipped and that the binder is free of contamination from any residual material, along with 2 copies of the bill of lading.
- iv. The blending or combining of PG binders in 1 storage tank at the Plant from different suppliers, grades, or additive percentages is prohibited.

(b) Basis of Approval: The request for approval of the source of supply shall list the location where the material will be manufactured, and the handling and storage methods, along with necessary certification in accordance with AASHTO R 26(M). Only suppliers/refineries that have an approved “Quality Control Plan for Performance Graded Binders” formatted in accordance with AASHTO R 26(M) may supply PG binders to Department projects.

(c) Standard Performance Grade (PG) Binder:

- i. Standard PG binder shall be defined as “Neat.” Neat PG binders shall be free from

modification with: fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives such as re-refined motor oil, and shall indicate such information on each bill of lading and Certified Test Report.

ii. The standard asphalt binder shall be PG 64S-22.

(d) Modified Performance Grade (PG) Binder: The modified asphalt binder shall be Performance Grade PG 64E-22 asphalt modified solely with a Styrene-Butadiene-Styrene (SBS) polymer. The polymer modifier shall be added at either the refinery or terminal and delivered to the bituminous concrete production facility as homogenous blend. The stability of the modified binder shall be verified in accordance with ASTM D7173 using the Dynamic Shear Rheometer (DSR). The DSR $G^*/\sin(\delta)$ results from the top and bottom sections of the ASTM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report. The binder shall meet the requirements of AASHTO M 332 (including Appendix X1) and AASHTO R 29.

(e) Warm Mix Additive or Technology:

- i. The warm mix additive or technology must be listed on the North East Asphalt User Producer Group (NEAUPG) Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at <http://www.neaupg.uconn.edu>. **Error! Hyperlink reference not valid.**
- ii. The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer's recommendations.
- iii. The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing demonstrating the binder grade. In addition, it must include the grade of the virgin binder, the brand name of the warm mix additive, the manufacturer's suggested rate for the WMA additive, the water injection rate (when applicable), and the WMA Technology manufacturer's recommended mixing and compaction temperature ranges.

5. Emulsified Asphalts:

(a) General:

- i. The emulsified asphalt shall meet the requirements of AASHTO M 140(M) or AASHTO M 208 as applicable.
- ii. The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.
- iii. The blending at mixing Plants of emulsified asphalts from different suppliers is prohibited.

(b) Basis of Approval:

- i. The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO R 77. Only suppliers that have an approved "Quality Control Plan for Emulsified Asphalt" formatted in accordance with AASHTO R 77 and that submit monthly split samples per grade to the Engineer may supply emulsified asphalt to Department projects.
- ii. Each shipment of emulsified asphalt delivered to the Project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material

Certificate.

- iii. Anionic emulsified asphalts shall meet the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1 or RS-1h. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1h may be substituted if permitted by the Engineer.
- iv. Cationic emulsified asphalt shall meet the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80°F and rising, grade CSS-1 or CSS-1h may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

(a) General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the 1/2 inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.

(b) Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:

- i. When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
- ii. When the RAP material source or quality is not known, the Contractor shall request approval from the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of M.04.01-1 through M.04.01-3 and that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
 - 1. A 50-lb. sample of the RAP to be incorporated into the recycled mixture.
 - 2. A 25-lb. sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

(a) Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.

(b) Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG. The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic, and metal and conforms to the following gradation:

CRCG Grading Requirements	
<u>Sieve Size</u>	<u>Percent Passing</u>
3/8 inch	100
No. 4	35-100
No. 200	0.0-10.0

The Contractor shall submit a Material Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this Section.

8. Joint Seal Material: Joint seal material must meet the requirements of ASTM D6690 - Type 2. The Contractor shall submit a Material Certificate in accordance with 1.06.07 certifying that the joint seal material meets the requirements of this Section.

9. Recycled Asphalt Shingles (RAS): RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos-free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23.

The Producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The Producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Material Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this Section.

10. Plant Requirements:

(a) General: The Plant producing bituminous concrete shall comply with AASHTO M 156.

(b) Storage Silos: The Contractor may use silos for short-term storage with the approval of the Engineer. A storage silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge 1 silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.

Type of silo cylinder	Maximum storage time for all classes (hr)	
	<u>HMA</u>	<u>WMA/PMA</u>
Open Surge	4	Mfg Recommendations*
Unheated - Non-insulated	8	Mfg Recommendations*
Unheated - Insulated	18	Mfg Recommendations*
Heated - No inert gas	TBD by the Engineer	TBD by the Engineer

*Not to exceed HMA limits

(c) Documentation System: The mixing Plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence, and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage, and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage

rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of 3 years after the completion of the Project.

For batch Plants, the Plant ticket shall be produced for each batch and maintained by the vendor for a period of 3 years after the completion of the Project. In addition, an asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

Each Aggregate Component	±1.5% of individual or cumulative target weight for each bin
Mineral Filler	±0.5% of the total batch
Bituminous Material	±0.1% of the total batch
Zero Return (Aggregate)	±0.5% of the total batch
Zero Return (Bituminous Material)	±0.1% of the total batch

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.

The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the truck and batch plant printout when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

(d) Aggregates: Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum Plants only, the percent moisture content, at a minimum prior to production and half way through production, shall be determined.

(e) Mixture: The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASTO T 195(M).

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

(f) RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).

(g) Asphalt Binder: A binder log shall be submitted to the Department’s Central Lab on a monthly basis.

(h) Warm mix additive: For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.

(i) Testing Laboratory: The Contractor shall maintain a laboratory to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 s.f., have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with

a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have a high speed internet connection and a functioning web browser with unrestricted access to <https://ctmail.ct.gov> . This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all the applicable tests in their entirety that are referenced in AASHTO R 35 and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the Project with all necessary testing materials and equipment.

The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including, but not limited to, balances, scales, manometer/vacuum gauge, thermometers, and gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

M.04.02—Mix design and Job Mix Formula (JMF)

1. Curb Mix:

(a) Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.

(b) Basis of Approval: Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use.

The Contractor shall test the mixture for compliance with the submitted JMF and Table M.04.02-1. The maximum theoretical density (Gmm) will be determined by AASHTO T 209. If the mixture does not meet the requirements, the JMF shall be adjusted within the ranges shown in Table M.04.02-1 until an acceptable mixture is produced.

An accepted JMF from the previous operating season may be acceptable to the Engineer provided that there are no changes in the sources of supply for the coarse aggregate, fine aggregate, recycled material (if applicable) and the Plant operation had been consistently producing acceptable mixture.

Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.

**TABLE M.04.02-1:
Control Points for Curb Mix Mixtures**

Mix	Curb Mix	Production Tolerances from JMF Target
Grade of PG Binder content %	PG 64S-22 6.5 - 9.0	0.4
Sieve Size		
No. 200	3.0 - 8.0 (b)	2.0
No. 50	10 - 30	4
No. 30	20 - 40	5
No. 8	40 - 70	6
No. 4	65 - 87	7
1/4 inch		
3/8 inch	95 - 100	8
1/2 inch	100	8
3/4 inch		8
1 inch		
2 inch		
Additionally, the fraction of material retained between any 2 consecutive sieves shall not be less than 4%.		
Mixture Temperature		
Binder	325°F maximum	
Aggregate	280-350°F	
Mixtures	265-325°F	
Mixture Properties		
Air Voids (VA) %	0 – 4.0 (a)	
Notes: (a) Compaction Parameter 50 gyrations (N_{des}) (b) The percent passing the No. 200 sieve shall not exceed the percentage of bituminous asphalt binder.		

2. Superpave Design Method – S0.25, S0.375, S0.5, and S1:

(a) Requirements: All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 to M.04.02-5. Each JMF and component samples must be submitted no less than 7 days prior to production and must be approved by the Engineer prior to use. All JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP Certified Technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the TSR test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of laboratory or plant blended mixture and the

corresponding complete Form MAT-412s shall be submitted to the Division of Material Testing (DMT) for design TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer.

- i. Superpave Mixtures with RAP: RAP may be used with the following conditions:
 - RAP amounts up to 15% may be used with no binder grade modification.
 - RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
 - Two (2) representative samples of RAP shall be obtained. Each sample shall be split, and 1 split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance with AASHTO T 308.
 - RAP material shall not be used with any other recycling option.
 - ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:
 - RAS amounts up to 3% may be used.
 - RAS total binder replacement up to 15% may be used with no binder grade modification.
 - RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
 - Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations.
 - iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent (1%) of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.
- (b) Basis of Approval: The following information must be included in the JMF submittal:
- i. Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
 - ii. Average asphalt content of the RAP or RAS by AASHTO T 164.
 - iii. Source of RAP or RAS and percentage to be used.
 - iv. Warm mix Technology, manufacturer's recommended additive rate and tolerances, and manufacturer recommended mixing and compaction temperatures.
 - v. TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
 - vi. Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
 - vii. JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:

- 4 - one (1) quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs. bag of RAP
- 2 - 50 lbs. bags of Plant-blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department's current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated Plant, it utilizes the same components, and the production of material continues to meet all criteria as specified in Tables M.04.02-2, M.04.02-3 and M.04.02-4. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only 1 mix with 1 JMF will be approved for production at a time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

TABLE M.04.02-2: Superpave Master Range for Bituminous Concrete Mixture Design Criteria

Sieve	S0.25		S0.375		S0.5		S1	
	Control Points		Control Points		Control Points		Control Points	
	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)
2.0	-	-	-	-	-	-	-	-
1.5	-	-	-	-	-	-	100	-
1.0	-	-	-	-	-	-	90	100
3/4	-	-	-	-	100	-	-	90
1/2	100	-	100	-	90	100	-	-
3/8	97	100	90	100	-	90	-	-
No. 4	72	90	-	72	-	-	-	-
No. 8	32	67	32	67	28	58	19	45
No. 16	-	-	-	-	-	-	-	-
No. 30	-	-	-	-	-	-	-	-
No. 50	-	-	-	-	-	-	-	-
No. 100	-	-	-	-	-	-	-	-
No. 200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0
VMA (%)	16.5 ± 1		16.0 ± 1		15.0 ± 1		13.0 ± 1	
VA (%)	4.0 ± 1		4.0 ± 1		4.0 ± 1		4.0 ± 1	
Gse	JMF value		JMF value		JMF value		JMF value	
Gmm	JMF ± 0.030		JMF ± 0.030		JMF ± 0.030		JMF ± 0.030	
Dust / effective binder	0.6 - 1.2		0.6 - 1.2		0.6 - 1.2		0.6 - 1.2	
TSR	≥ 80%		≥ 80%		≥ 80%		≥ 80%	
T-283 Stripping	Minimal as determined by the Engineer							

(c) **Mix Status:** Each facility will have each type of bituminous concrete mixture rated based on the results of the previous year of production. Mix status will be provided to each

bituminous concrete Producer prior to the beginning of the paving season.

The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.

Criteria B: The average of the percentage of acceptance results with compliant VMA and the percentage of acceptance results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or Criteria B.

Mix status is defined as:

“A” – Approved: Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.

“PPT” – Pre-Production Trial: Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components;
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season;
6. it is a new JMF not previously submitted; or
7. the average of 10 consecutive acceptance results for VFA, Density to N_{ini} or dust to effective binder ratio does not meet the criteria in tables M.04.02-2 and M.04.02-4.

Bituminous concrete mixtures rated with a “PPT” status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specification requirements in Tables M.04.02-2 through M.04.02-4 are met and the binder content (Pb) meets the requirements in Table M.04.03-2 before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing

Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval

Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the Contractor’s laboratory

Witnessing or verifying by the Department of compliant test results will change the mix’s status to “A”

The differences between the Department’s test results and the Contractor’s must be within the “C” tolerances included in the [Department’s QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures](#) in order to be verified.

“U” – Not Approved: Status assigned to a type of mixture that does not have an approved JMF. Bituminous concrete mixtures with a “U” status cannot be used on Department projects.

**TABLE M.04.02-3:
Superpave Consensus Properties Requirements for Combined Aggregate**

Traffic Level	Design ESALs (80kN) Millions	Coarse Aggregate Angularity ⁽¹⁾	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles ⁽²⁾ ASTM D4791, Maximum %	Sand Equivalent AASHTO T 176, Minimum %
		ASTM D5821, Minimum %			
1	< 0.3	55/- -	40	10	40
2	0.3 to < 3.0	75/- -	40	10	40
3	≥ 3.0	95/90	45	10	45

Notes:
⁽¹⁾ 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.
⁽²⁾ Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the No. 4 sieve, determined at 5:1 ratio.

TABLE M.04.02-4: Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs (million)	Number of Gyration by Superpave Gyrotory Compactor			Percent Density of Gmm from HMA/ WMA Specimen			Voids Filled with Asphalt (VFA) Based on Nominal Mix Size - Inch			
		N _{ini}	N _{des}	N _{max}	N _{ini}	N _{des}	N _{max}	0.25	0.375	0.5	1
1	<0.3	6	50	75	≤91.5	96.0	≤98.0	70-80	70-80	70-80	67-80
2	0.3 to <3.0	7	75	115	≤90.5	96.0	≤98.0	65-78	65-78	65-78	65-78
3	≥3.0	7	75	115	≤90.0	96.0	≤98.0	65-77	65-76	65-75	65-75

**TABLE M.04.02-5:
Superpave Minimum Binder Content by Mix Type and Level**

Mix Type	Level	Binder Content Minimum
S0.25	1	5.80
S0.25	2	5.70
S0.25	3	5.70
S0.375	1	5.70
S0.375	2	5.60
S0.375	3	5.60
S0.5	1	5.10
S0.5	2	5.00
S0.5	3	5.00
S1	1	4.60
S1	2	4.50
S1	3	4.50

M.04.03—Production Requirements:

1. Standard Quality Control Plan (QCP) for Production: The QCP for production shall describe the organization and procedures, which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts:

- percent passing No. 4 sieve
- percent passing No. 200 sieve
- binder content
- air voids
- Gmm
- Gse
- VMA

The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling and testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

(a) General:

For those mixes with a total estimated project tonnage over 500 tons, a NETTCP HMA Paving Inspector certified Contractor representative shall obtain a field sample of the material placed at the project site in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.3 or an alternate procedure approved by the Engineer. Sampling from the truck at the Plant in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.2 will be allowed for those mixes with a total estimated project tonnage equal to or less than 500 tons. Regardless of sampling location, the sample shall be quartered by the Contractor in accordance with AASHTO R 47 and placed in an approved container. The container shall be sealed with a security tape provided by the Department and labelled to include the project number, date of paving, mix type, lot and subplot numbers and daily tonnage. The minimum weight of each quartered sample shall be 14000 grams. The Contractor shall transport one of the containers to the Departments Central Laboratory in Rocky Hill, retain one of the sealed containers for potential use in dispute resolution and test the remaining samples for acceptance in accordance with past practice.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day's production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing QC and acceptance testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Verification and dispute resolution testing will be performed by the Engineer in accordance with the Department's QA Program for Materials.

Should the Department be unable to validate the Contractor's acceptance test result(s) for a lot of material, the Engineer will use results from verification testing and re-calculate the pay adjustment for that lot. The Contractor may request to initiate the dispute resolution process in writing within 24 hours of receiving the adjustment and must include supporting documentation or test results to justify the request.

(b) Curb Mix Acceptance Sampling and Testing Procedures: Curb Mixes shall be tested by the Contractor at a frequency of 1 test per every 250 tons of cumulative production, regardless of the day of production.

When these mix designs are specified, the following acceptance procedures and AASHTO test methods shall be used:

TABLE M.04.03-1: Curb Mix Acceptance Test Procedures

Protocol	Reference	Description
1	AASHTO T 30(M)	Mechanical Analysis of Extracted Aggregate
2	AASHTO T 168	Sampling of Bituminous Concrete
3	AASHTO T 308	Binder Content by Ignition Oven Method (adjusted for aggregate correction factor)
4	AASHTO T 209(M)⁽²⁾	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	AASHTO T 312⁽²⁾	⁽¹⁾ Superpave Gyrotory Molds Compacted to N _{des}
6	AASHTO T 329	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

Notes: ⁽¹⁾ One (1) set equals 2 each of 6-inch molds. Molds to be compacted to 50 gyrations.
⁽²⁾ Once per year or when requested by the Engineer.

- i. Determination of Off-Test Status:
 1. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1 for that mixture. If the mix is “off test,” the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
 2. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “off test” status.
 3. The Engineer may cease supply from the Plant when test results from 3 consecutive samples are not within the JMF tolerances or the test results from 2 consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.
 - ii. JMF Revisions
 1. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
 2. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.
- (c) Superpave Mix Acceptance:
- i. Sampling and Testing Procedures

Production Lot: The lot will be defined as one of the following types:

 - Non-PWL Production Lot for total estimated Project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
 - PWL Production Lot for total estimated Project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:

- For Non-PWL: As defined in Table M.04.03-2
- For PWL: 500 tons (The last sub lot may be less than 500 tons.)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:

- completion of the course;
- a Job Mix Formula revision due to changes in:
 - o cold feed percentages over 5%,
 - o target combined gradation over 5%,
 - o target binder over 0.15%,
 - o any component specific gravity; or
- a lot spanning 30 calendar days.

The acceptance sample(s) location(s) shall be selected using stratified - random sampling in accordance with ASTM D3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total size for PWL lots.

One (1) acceptance sample shall be obtained and tested per sub lot with quantities over 125 tons. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one (1) acceptance test shall always be performed in the last sub lot based on actual tons of material produced.

For non-PWL lots, quantities of the same mixture per Plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

**TABLE M.04.03-2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL Lots**

Daily Quantity Produced in Tons (Lot)	Number of Sub Lots/Tests
0 to 125	0, Unless requested by the Engineer
126 to 500	1
501 to 1,000	2
1,001 to 1,500	3
1,500 or greater	1 per 500 tons or portions thereof

The following test procedures shall be used for acceptance:

TABLE M.04.03-3: Superpave Acceptance Testing Procedures

Protocol	Procedure	Description
1	AASHTO T 168	Sampling of bituminous concrete
2	AASHTO R 47	Reducing samples to testing size
3	AASHTO T 308	Binder content by ignition oven method (adjusted for aggregate correction factor)
4	AASHTO T 30(M)	Gradation of extracted aggregate for bituminous concrete mixture
5	AASHTO T 312	⁽¹⁾ Superpave gyratory molds compacted to N _{des}
6	AASHTO T 166	⁽²⁾ Bulk specific gravity of bituminous concrete
7	AASHTO R 35	⁽²⁾ Air voids, VMA
8	AASHTO T 209(M)	Maximum specific gravity of bituminous concrete (average of 2 tests)
9	AASHTO T 329	Moisture content of bituminous concrete

- Notes:** ⁽¹⁾ One (1) set equals 2 each of 6-inch molds. Molds to be compacted to N_{max} for PPTs and to N_{des} for production testing. The first sub lot of the year shall be compacted to N_{max}.
- ⁽²⁾ Average value of 1 set of 6-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in 5 consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause, and correct the issue. When 2 consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last 5 acceptance results.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 Plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of plant blended mixture and the corresponding complete Form MAT-412s shall be submitted to the DMT for production TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer. Additionally, the TSR test report and tested specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

i. Determination of Off-Test Status:

1. Superpave mixes shall be considered “*off test*” when any control point sieve, binder content, VA, VMA, and Gmm value is outside of the limits specified in Table

M.04.03-4 or the target binder content at the Plant is below the minimum binder content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.

2. Any time the bituminous concrete mixture is considered off-test:
 - A. The Contractor shall notify the Engineer when the Plant is “*off test*” for any mix design that is delivered to the Project in any production day. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “*off test*” determination.
 - B. The Contractor must take immediate actions to correct the deficiency, minimize “*off test*” production to the Project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance with the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

ii. Cessation of Supply for Superpave Mixtures in Non-PWL Lots:

A mixture **shall not be used** on Department projects when it is “off test” for:

1. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or
2. two (2) consecutive tests in the control point sieves in 1 production shift.

As a result of cessation of supply, the mix status will be changed to PPT

iii. JMF revisions:

JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).

JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate or RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP or bin percentage deviates by more than 5% or the Plant target binder content deviates by more than 0.15% from the active JMF.

TABLE M.04.03-4: Superpave Mixture Production Requirements

	S0.25		S0.375		S0.5		S1		Tolerances
Sieve	Control Points		Control Points		Control Points		Control Points		From JMF Targets ⁽²⁾
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	+/- Tolerance
1.5	-	-	-	-	-	-	100	-	
1.0	-	-	-	-	-	-	90	100	
3/4	-	-	-	-	100	-	-	90	
1/2	100	-	100	-	90	100	-	-	
3/8	97	100	90	100	-	90	-	-	
No. 4	72	90	-	72	-	-	-	-	
No. 8	32	67	32	67	28	58	19	45	
No. 16	-	-	-	-	-	-	-	-	
No. 200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0	
Pb	JMF value		JMF value		JMF value		JMF value		0.3 ⁽³⁾
VMA (%)	16.5		16.0		15.0		13.0		1.0 ⁽⁴⁾
VA (%)	4.0		4.0		4.0		4.0		1.0 ⁽⁵⁾
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Mix Temp. – HMA ⁽⁶⁾	265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		
Mix Temp. – PMA ⁽⁶⁾	285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		
Prod. TSR	N/A		N/A		≥80%		N/A		
T-283 Stripping	N/A		N/A		Minimal TBD by the Engineer		N/A		

Notes: ⁽¹⁾ 300°F minimum after October 15.

⁽²⁾ JMF tolerances shall be defined as the limits for production compliance.

⁽³⁾ 0.4 for PWL lots

⁽⁴⁾ 1.3 for all PWL lots except S/P 0.25 mixes. 1.1 for S/P 0.25 Non-PWL lots. 1.4 for S/P 0.25 PWL lots

⁽⁵⁾ 1.2 for PWL lots

⁽⁶⁾ Also applies to placement

**Table M.04.03-5:
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures**

AASHTO Standard Method of Test	
Reference	Modification
T 30	Section 7.2 through 7.4 Samples are not routinely washed for production testing
T 209	Section 7.2 The average of 2 bowls is used proportionally in order to satisfy minimum mass requirements. 8.3 Omit Pycnometer method.
T 283	When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufacturer’s recommended compaction temperature prior to fabrication of the specimens.
AASHTO Standard Recommended Practices	
Reference	Modification
R 26	<p>All laboratory technician(s) responsible for testing PG binders shall be certified or Interim Qualified by NETTCP as a PG Asphalt Binder Lab Technician.</p> <p>All laboratories testing binders for the Department are required to be accredited by the AMRL.</p> <p>Sources interested in being approved to supply PG binders to the Department by use of an “in-line blending system” must record properties of blended material and additives used.</p> <p>Each source of supply of PG binder must indicate that the binders contain no additives used to modify or enhance their performance properties.</p> <p>Binders that are manufactured using additives, modifiers, extenders, etc., shall disclose the type of additive, percentage and any handling specifications or limitations required.</p> <p>All AASHTO M 320 references shall be replaced with AASHTO M 332.</p> <p>Once a month, 1 split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department’s Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for 2 BBR tests at 2 different temperatures in accordance with AASHTO R 29.</p>

**APPENDIX A
DEPARTMENT OF PUBLIC WORKS LICENSE
AND PERMIT REQUIREMENTS**

LICENSE AND PERMIT REQUIREMENTS

For all work involving excavation in the Town right-of-way or on a Town-owned property, a license is required before a permit can be issued by the Engineering Division. Required documents for a license include:

1) Proof of Insurance

- a) The Certificate must contain the following language in the comments section: “The Town of East Hartford, its officials, employees, volunteers and boards are named as additional insured’s with respect to all liability arising out of the permit activities of the business”.
- b) The Certificate must have at least the following liabilities limits:
 - i) Commercial General Liability: \$1,000,000/\$2,000,000
 - ii) Business Auto Liability: \$1,000,000 combined single limit
 - iii) Worker’s Compensation: As required by State Law [Currently \$500,000/\$500,000/\$500,000]
- c) The cancellation clause must not be less than 30 days.
- d) Insurance certificates may be sent via email.
- e) Insurance review by the Town’s Risk Manager is normally complete in 1-2 business days.

2) Bonds (Drainlayer and/or Driveway Curb & Walk)

- a) Renewal certificates are not accepted.
- b) Bonds must be on Town’s Bond Form. Original form must be filed with the Engineering Division.
- c) See the document *Instructions for Filling Out a Town of East Hartford Bond*.
- d) The bonding company must be approved to do business in the State of Connecticut.
- e) Bond review by the Town’s Corporation Counsel Office is normally complete in 1-2 business days.

3) License form

A *License Application* must be filed with the Engineering Division.

The fee for an annual license is \$35.00. We accept cash or check payments only. All licenses expire on December 31st of the year issued.

Once a license is issued, a *Permit Application Form* must be submitted. For all permits:

- a. A “Call Before You Dig” (DigSafe) number for the project.
- b. All contractors working for a utility company must provide a work order number

Permit Fee Schedule: Driveway and Sidewalk Permits - \$50.00/per location
Excavation Permits - \$50.00/per permit

Note: Any sidewalk work performed in a State road right-of-way requires a permit from the Town in addition to the DOT Encroachment Permit.



Town of East Hartford

Department of Public Works

LICENSE APPLICATION

LICENSE FEE: \$35.00 VALID JANUARY 1 THROUGH DECEMBER 31 EACH CALENDAR YEAR

LICENSE TYPE: Driveway, Curb & Sidewalk Drainage Layer

LICENSEE INFORMATION

1. Contractor / Owner Name: _____
2. Company Name: _____
3. "Doing Business As" Name: _____
4. Address: _____

Street # & Name
P.O. Box #
City, State, Zip Code
5. Phone #: _____
9. Cell Phone #: _____
6. Email Address: _____

In consideration of a permit or license issued to it by the Town of East Hartford, the licensee hereby covenants and agrees to and shall, at all times, indemnify, protect and save harmless and defend the Town from and against all costs or expenses resulting from any and all losses, damages, detriment, suits, claims, demands, costs and charges, including attorneys' fees, if any, which the Town may directly or indirectly suffer, sustain or be subjected to by reason or on account of the work to be performed pursuant to such license or permit or any activities in connection with said license or permit, whether such losses and damages be suffered or sustained by the Town directly or by its employees, licensees or invitees, or be suffered or sustained by other persons or corporations who may seek to hold the Town liable therefor. The existence (or non-existence) of any insurance coverage purchased by the licensee shall in no way affect the Town's rights pursuant to the terms of this agreement.

OWNER SIGNATURE: _____ **DATE:** _____

(OFFICE USE ONLY)

Corporation Council Bond Approval DATE: _____

Risk Management/ Insurance Requirement Approval DATE: _____

Payment Received: DATE: _____

CASH CHECK NUMBER _____

This application is hereby: APPROVED LICENSE EMAILED

BY: _____ **DATE:** _____ **EXP. DATE:** _____

LICENSE REQUIREMENTS

1. Proof of Insurance

- a. A Certificate of Insurance form must be on file in the Engineering Division.
- b. The Certificate must contain the following language in the comments section: “The Town of East Hartford, its officials, employees, volunteers and boards are named as additional insured’s with respect to all liability arising out of the permit activities of the business”.
- c. The Certificate must have at least the following liabilities limits:
 - Commercial General Liability: \$1,000,000/\$2,000,000
 - Business Auto Liability: \$1,000,000 combined single limit Worker’s Compensation: As required by
 - State Law [Currently \$500,000/\$500,000/\$500,000]
- d. The cancellation clause must not be less than 30 days.

2. Bonds

- a. RENEWAL CERTIFICATES ARE NOT ACCEPTABLE.
- b. Bonds must be on Town’s Bond Form. Original form must be filed with the Engineering Division.
- c. Bonds must be signed, sealed, and dated by person named on power of attorney and also by contractors (President or Secretary for Contractors). For corporations, the corporate seal will be required. A Power of Attorney form must be attached to the bond with the same date as the bond. Contractors name must be printed. At least two witnesses must sign the bond.
- d. All signatures including witnesses must have printed names and titles below signatures.
- e. The bonding company must be approved to do business in the State of Connecticut.

RULES PERTAINING TO EXCAVATION PERMITS

In consideration of the grant by the Town of East Hartford of an Excavation Permit, the undersigned agrees, for itself and its agents, assigns, employees, contractors and/or subcontractors to adhere to the following rules while carrying out the work detailed in its application for such permit:

1. The road or roads on or around the work area will not be closed to traffic at any time while the work is being carried out. At least one lane, wide enough to permit the safe passage of all vehicles, shall be maintained fully open at all times.
2. Traffic on roads on or around the work areas will not be detoured prior to receipt of express permission to do so from the Director of Public Works. If the detouring of traffic becomes necessary, the undersigned will submit for approval by the Director of Public Works a detailed plan showing signs, arrangement of traffic lanes, number of flag persons to be used at the detour, the period of time during which traffic will be detoured and any other safety measures that may be ordered by the Director.
3. Any and all portions of the road(s) disturbed by the applicant and/or its agents, assigns, employees, contractor and/or sub-contractors shall be speedily restored to their original condition in accordance with the Temporary Patch detail plan or as directed by the Director of Public Works.
4. In the event the Town is required to repair, alter or improve any temporary patch or patches installed by the applicant on Town roads, the applicant will reimburse the Town for all costs of such work.
5. Applicant will comply with all laws, ordinances, rules and regulations of the Town and/or State while carrying out the work detailed in its application and permit. Applicant agrees that it will promptly comply with any and all requests and/or orders related to such work issued by the Town and will hold the Town harmless for any and all injuries, (including death), and/or damage to property related to its work which may occur while such work is being carried out for its benefit.
6. The excavation permit shall become null and void if the work for which such permit has been issued is not commenced within thirty (30) calendar days from the date of issue. Any failure by the applicant, its agents, assigns, employees, contractors and/or sub-contractors to adhere to the preceding rules will result in immediate revocation of the excavation permit. In addition, such failure will result in denial by the Town of further excavation permits to the applicant.

INSTRUCTIONS FOR FILLING OUT A
TOWN OF EAST HARTFORD BOND
(for Driveway, Curb and Walk Layer's or Drain Layer's Bond)

Know ALL MEN BY THESE PRESENT, that _____ (1) _____,
(NAME OF CONTRACTOR)
a _____ (2) _____, (type of organization, e.g. Corp., partnership, sole proprietor, LLC,) ACTING HEREIN BY _____ (3) _____, ITS _____ (4) _____ as principal,
(PRINTED NAME) (TITLE)
and _____ (5) _____ ACTING HEREIN BY _____ (6) _____,
(BONDING COMPANY) (PRINTED NAME)
its attorney in fact pursuant to the attached Power of Attorney, as surety, are held and firmly bound unto the TOWN OF EAST HARTFORD (The "TOWN"), in the sum of Ten Thousand Dollars (\$10,000.00), lawful money of the United States of America, to be paid to the Town, its successors and assigns, for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the above bonded principal has been duly licensed by the Town as a drainlayer for a term beginning on the _____ (7a) day of _____ (7b), 20(7c) and ending on _____ (8a) day of _____ (8b), 20(8c)

NOW, THEREFORE, IF THE SAID _____ (9) _____ shall well and truly keep and perform, during said term all the terms and conditions of the ordinances of the Town, regulating the laying of private drains, and rules specified by the Director of Public Works relating to driveway apron, and shall indemnify and save harmless the Town and its servants and employees from all suits and actions of every name and description brought against the Town, or any officers of said Town, for or on account of any injuries or damages received or sustained by any person in consequence of or resulting from any work performed by said principal _____ (10) _____ servants or agents, shall faithfully perform said work in all respects and shall also guarantee his work for a period of XXX year after completion of the latest work performed under a permit obtained pursuant to this Bond, against any failure caused by defective materials, or defective workmanship and will make good such defects, if so ordered, to the satisfaction of the Director of Public Works, and shall comply in all respects with the rules and regulations established by the said Director,

relative to such work, and with the terms of the permits that may be issued to him, and shall also pay all fines imposed upon him for violation of any such rule, or regulations, then this obligation shall be of no effect, otherwise, it shall remain in full force and virtue.

DATED AT _____ (11) _____, this (12a) day of (12b) _____, 20(12c)

SIGNED, SEALED AND WITNESSED IN THE PRESENCE OF:

WITNESS OF PRINCIPAL:

_____ (15a) _____
(Signature)

_____ (15b) _____
(Printed Name)

PRINCIPAL:

BY _____ (13a) _____ (SEAL)
(Signature)

_____ (13b) _____
(Printed Name)

ITS _____ (13c) _____
(Title)

WITNESS OF SURETY:

_____ (16a) _____
(Signature)

_____ (16b) _____
(Printed Name)

SURETY:

BY _____ (14a) _____ (SEAL)
(Signature)

_____ (14b) _____
(Printed Name)

ITS _____ (14c) _____
(Title)

INSTRUCTIONS FOR FILLING OUT A TOWN OF EAST HARTFORD BOND

TYPE OR WRITE IN:

- (1) the **full legal name of the contractor**.
- (2) the contractor's **form of organization**. (ex., Corporation, Limited Liability Company, Partnership, Sole Proprietor)
- (3) the **name of the person** who is authorized by the contractor to sign as principal on page 2.
- (4) the **correct title** of the person named in (3). (ex., Corporations [President, Vice President, Secretary, Treasurer], LLC [Member or Managing Member], Partnership [Partner, General Partner].
- (5) the **name of the bonding (insurance) company**. (The full name of the underwriting company must appear; not the name of the agent, agency or broker.)
- (6) the **name of the authorized Agent** at the bonding company who will be signing the Bond on page 2 under "SURETY". See (14a,b,c).
- (7a,b,c) the **beginning date** of the Bond's term of coverage.
- (8a,b,c) the **ending date** of the Bond's term of coverage.
- (9) the **full legal name of the contractor** - same as (1).
- (10) the **full legal name of the contractor** - same as (1).
- (11) the **city and state** where the Bond was produced.
- (12a,b,c) the **day**, **month** and **year** the Bond was produced.

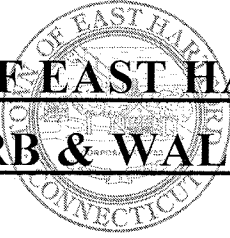
THEN:

- (13a,b,c) The Principal - same as (3) - must fill in **Signature, Printed Name**, and **Title** - same as (4), and affix the corporate **SEAL**, if a corporation.
- (14a,b,c) The authorized Agent – same as (6) – must fill in **Signature, Printed Name**, and **Title**, ("Attorney In Fact"), and affix the company **SEAL**.
- (15a,b) The person witnessing the Principal's signature – see (13a) – must **sign** and **print** his/her **name**.
- (16a,b) The person witnessing the Agent's signature – see (14a) – must **sign** and **print** his/her **name**.

ALSO:

- The Bond must be filled out completely, including signatures. Do not leave any spaces blank.
- A **Power of Attorney** form must be attached to the Bond. The dates on the POA must be consistent with the dates on 12a, 12b and 12c of the Bond.
- The person named on the **Power of Attorney** must be the same as (6) & (14).

Updated 18 April 2019



TOWN OF EAST HARTFORD
DRIVEWAY, CURB & WALK LAYER'S BOND

Know ALL MEN BY THESE PRESENT, that _____,
(NAME OF COMPANY)

a _____, (type of organization, e.g. Corp., partnership, sole proprietor, LLC,) ACTING HEREIN BY _____, ITS _____ as principal,
(PRINTED NAME) (TITLE)

and _____ ACTING HEREIN BY _____,
(BONDING COMPANY) (PRINTED NAME)

its attorney in fact pursuant to the attached Power of Attorney, as surety, are held and firmly bound unto the TOWN OF EAST HARTFORD (The "TOWN"), in the sum of Ten Thousand Dollars (\$10,000.00), lawful money of the United States of America, to be paid to the Town, its successors and assigns, for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the above bonded principal has been duly licensed by the Town as a driveway, curb and walk layer for a term beginning on the _____ day of _____, 20____, and ending on _____ day of _____, 20____.

NOW, THEREFORE, IF THE SAID _____ shall well and truly keep and perform, during said term all the terms and conditions of the ordinances of the Town, regulating the laying of driveways, curbs and walks, and rules specified by the Director of Public Works relating to driveway apron, and shall indemnify and save harmless the Town and its servants and employees from all suits and actions of every name and description brought against the Town, or any officers of said Town, for or on account of any injuries or damages received or sustained by any person in consequence of or resulting from any work performed by said principal _____ servants or agents, shall faithfully perform said work in all respects and shall also guarantee his work for a period of two years after completion of the latest work performed under a permit obtained pursuant to this Bond, against any failure caused by defective materials, or defective workmanship and will make good such defects, if so ordered, to the satisfaction of the Director of Public Works, and shall comply in all respects with the rules and regulations established by

the said Director, relative to such work, and with the terms of the permits that may be issued to him, and shall also pay all fines imposed upon him for violation of any such rule, or regulations, then this obligation shall be of no effect, otherwise, it shall remain in full force and virtue.

DATED AT _____, this _____ day of _____, 20_____.

SIGNED, SEALED AND WITNESSED IN THE PRESENCE OF:

WITNESS OF PRINCIPAL:

PRINCIPAL:

(Signature)

BY _____ (SEAL)
(Signature)

(Printed Name)

(Printed Name)

ITS _____
(Title)

WITNESS OF SURETY:

SURETY:

(Signature)

BY _____ (SEAL)
(Signature)

(Printed Name)

(Printed Name)

ITS _____
(Title)



TOWN OF EAST HARTFORD
DRAIN LAYER'S BOND

Know ALL MEN BY THESE PRESENT, that _____,
(NAME OF COMPANY)

a _____, (type of organization, e.g. Corp., partnership, sole proprietor, LLC,) ACTING HEREIN BY _____, ITS _____ as principal,
(PRINTED NAME) (TITLE)

and _____ ACTING HEREIN BY _____,
(BONDING COMPANY) (PRINTED NAME)

its attorney in fact pursuant to the attached Power of Attorney, as surety, are held and firmly bound unto the TOWN OF EAST HARTFORD (The "TOWN"), in the sum of Ten Thousand Dollars (\$10,000.00), lawful money of the United States of America, to be paid to the Town, its successors and assigns, for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the above bonded principal has been duly licensed by the Town as a drainlayer for a term beginning on the _____ day of _____, 20____, and ending on _____ day of _____, 20____.

NOW, THEREFORE, IF THE SAID _____ shall well and truly keep and perform, during said term all the terms and conditions of the ordinances of the Town, regulating the laying of private drains, and rules specified by the Director of Public Works relating to driveway apron, and shall indemnify and save harmless the Town and its servants and employees from all suits and actions of every name and description brought against the Town, or any officers of said Town, for or on account of any injuries or damages received or sustained by any person in consequence of or resulting from any work performed by said principal _____ servants or agents, shall faithfully perform said work in all respects and shall also guarantee his work for a period of one year after completion of the latest work performed under a permit obtained pursuant to this Bond, against any failure caused by defective materials, or defective workmanship and will make good such defects, if so ordered, to the satisfaction of the Director of Public Works, and shall comply in all respects with the rules and regulations established by the said Director,

relative to such work, and with the terms of the permits that may be issued to him, and shall also pay all fines imposed upon him for violation of any such rule, or regulations, then this obligation shall be of no effect, otherwise, it shall remain in full force and virtue.

DATED AT _____, this _____ day of _____, 20_____.

SIGNED, SEALED AND WITNESSED IN THE PRESENCE OF:

WITNESS OF PRINCIPAL:

(Signature)

(Printed Name)

PRINCIPAL:

BY _____ (SEAL)
(Signature)

(Printed Name)

ITS _____
(Title)

WITNESS OF SURETY:

(Signature)

(Printed Name)

SURETY:

BY _____ (SEAL)
(Signature)

(Printed Name)

ITS _____
(Title)



**Town of East Hartford
Department of Public Works
Engineering Division**

PERMIT APPLICATION

PERMIT TYPE:

- Fee \$50.00:** Driveway Sidewalk Excavation
Fee \$35.00: Temporary Obstruction Road Closure/Detour

ALL WORK REQUESTED BY THIS APPLICATION SHALL BE AUTHORIZED BY THE TOWN OF EAST HARTFORD PRIOR TO COMMENCEMENT AND SHALL BE CARRIED OUT ACCORDING TO THE REGULATIONS AND BY-LAWS OF THE TOWN OF EAST HARTFORD.

ON SITE CONTACT MUST CONTACT ENGINEERING DEPARTMENT AT 860-291-7380 PRIOR TO WORK START

WORK LOCATION INFORMATION

1. Location of Work: _____ End Address: _____
 2. Call Before You Dig # _____ Work Order # _____
 3. Start Date: _____ End Date: _____ Extended Work Date: _____

APPLICANT INFORMATION

4. License Number: _____
 5. Company Name: _____
 6. On Site Contact Name: _____ Cell Phone # _____

DESCRIPTION OF WORK

7. **Description of Work:** (Include appropriate dimensions, names of nearest cross streets, and any other necessary details sketch on back of form if necessary.)

8. Attach all necessary drawings, work orders, approvals, etc.

APPLICANT SIGNATURE: _____ TITLE: _____

PRINT NAME: _____

DATE: _____

WORK AREA SKETCH

(OFFICE USE ONLY)

CURRENT BOND: Driveway, Curb, & Walk Layer's Drain Layer's

CURRENT CERTIFICATE OF INSURANCE:

CURRENT LICENSE & HOLD HARMLESS AGREEMENT:

Driveway apron replacement: Yes No

8" reinforced concrete sidewalk required: Yes No

Inland Wetlands / Buffer Zone _____

Site Review _____

Zoning Approval (Inspections & Permits) _____

This application is hereby: APPROVED DISAPPROVED APPROVED W/CONDITIONS

Permit Number: _____

BY: _____ **DATE:** _____ **EXP. DATE:** _____

CONDITIONS: _____

**APPENDIX B
CONNECTICUT DEPARTMENT OF LABOR
WAGE RATES**

Minimum Rates and Classifications for

ID# 20-9143

**Connecticut Department of Labor
Wage and Workplace Standards**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay

Project unk

Project Town:East Hartford

State#:

FAP#:

Project: East Hartford

CLASSIFICATION	Hourly	Benefits
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	35.72	33.16
2) Carpenters, Piledrivermen	33.53	25.66
2a) Diver Tenders	33.53	25.66
3) Divers	41.99	25.66
03a) Millwrights	34.94	26.19
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	51.0	21.80
4a) Painters: Brush and Roller	34.62	21.80
4b) Painters: Spray Only	36.62	21.80
4c) Painters: Steel Only	35.62	21.80
4d) Painters: Blast and Spray	37.62	21.80
4e) Painters: Tanks, Tower and Swing	36.62	21.80

As of: January 28, 2020

Project: East Hartford

5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	40.0	27.67+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	36.67	35.77 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	43.62	32.06
-----LABORERS-----		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	30.75	20.84
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	31.0	20.84
10) Group 3: Pipelayers	31.25	20.84
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	31.25	20.84
12) Group 5: Toxic waste removal (non-mechanical systems)	32.75	20.84
13) Group 6: Blasters	32.5	20.84
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	31.75	20.84
Group 8: Traffic control signalmen	18.0	20.84
Group 9: Hydraulic Drills	29.3	18.90
-----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.-----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.98	20.84 + a
13b) Brakemen, Trackmen	32.01	20.84 + a
-----CLEANING, CONCRETE AND CAULKING TUNNEL-----		

As of: January 28, 2020

14) Concrete Workers, Form Movers, and Strippers	32.01	20.84 + a
15) Form Erectors	32.34	20.84 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	32.01	20.84 + a
17) Laborers Topside, Cage Tenders, Bellman	31.9	20.84 + a
18) Miners	32.98	20.84 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	39.47	20.84 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	39.27	20.84 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	37.29	20.84 + a
21) Mucking Machine Operator	40.06	20.84 + a
----TRUCK DRIVERS----(*see note below)		
Two axle trucks	29.51	24.52 + a
Three axle trucks; two axle ready mix	29.62	24.52 + a
Three axle ready mix	29.67	24.52 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	29.72	24.52 + a
Four axle ready-mix	29.77	24.52 + a
Heavy duty trailer (40 tons and over)	29.98	24.52 + a

Project: East Hartford

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.77	24.52 + a
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----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	40.97	24.80 + a
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Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	40.64	24.80 + a
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Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	39.88	24.80 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	39.48	24.80 + a
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Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24	38.87	24.80 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	38.87	24.80 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	38.55	24.80 + a
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Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24	38.2	24.80 + a
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	37.79	24.80 + a
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Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	37.34	24.80 + a
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Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	35.24	24.80 + a
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Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	35.24	24.80 + a
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As of: January 28, 2020

Project: East Hartford

Group 12: Wellpoint Operator.	35.18	24.80 + a
Group 13: Compressor Battery Operator.	34.58	24.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	33.41	24.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	32.99	24.80 + a
Group 16: Maintenance Engineer/Oiler	32.32	24.80 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	36.76	24.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	34.26	24.80 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)---

-

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.1	6.5% + 10.70

As of: January 28, 2020

Project: East Hartford

27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
<hr/>		
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45
<hr/>		

As of: January 28, 2020

Project: East Hartford

Welders: Rate for craft to which welding is incidental.

*Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

- 1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)**
- 2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson**

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work

--Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

As of: January 28, 2020

Project: East Hartford

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.



Opportunity * Guidance * Support



THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

**If you have QUESTIONS regarding your wages
CALL (860) 263-6790**

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the **contractor's** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

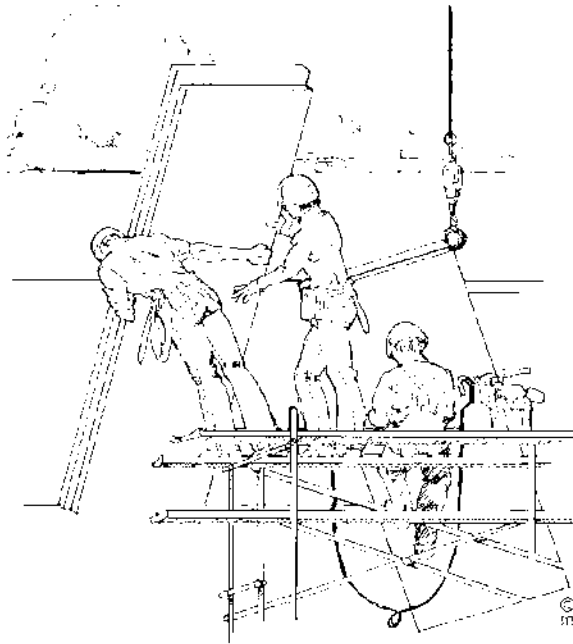
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached “Contracting Agency Certification Form” to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

 Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with
_____, located at _____,
project name and number address

shall be \$_____, which includes all work, regardless of whether such project
consists of one or more contracts.

CONTRACTOR INFORMATION

Name: _____

Address: _____

Authorized Representative: _____

Approximate Starting Date: _____

Approximate Completion Date: _____

Signature

Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

CONTRACTOR NAME AND ADDRESS:											SUBCONTRACTOR NAME & ADDRESS				WORKER'S COMPENSATION INSURANCE CARRIER					
PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS									POLICY #				EFFECTIVE DATE:		EXPIRATION DATE:			
PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/FEMALE AND RACE*	WORK CLASSIFICATION	DAY AND DATE						Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY	
				S	M	T	W	TH	F	S				Total O/T Hours	FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING			LIST OTHER
			Trade License Type & Number - OSHA 10 Certification Number	HOURS WORKED EACH DAY																
												\$	1. \$							
												Base Rate	2. \$							
													3. \$							
													4. \$							
												\$	5. \$							
												Cash Fringe	6. \$							
												\$	1. \$							
												Base Rate	2. \$							
													3. \$							
													4. \$							
												\$	5. \$							
												Cash Fringe	6. \$							

12/9/2013 *IF REQUIRED *SEE REVERSE SIDE PAGE NUMBER ____ OF

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker’s compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care _____ 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____ of _____, (hereafter known as Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such person is covered by a worker’s compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

 (Signature) (Title) Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT***
DO NOT INCLUDE SOCIAL SECURITY NUMBERS**

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS												Connecticut Department of Labor Wage and Workplace Standards Division 200 Folly Brook Blvd. Wethersfield, CT 06109												
In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.												WEEKLY PAYROLL												
CONTRACTOR NAME AND ADDRESS: Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472						SUBCONTRACTOR NAME & ADDRESS XYZ Corporation 2 Main Street Yantic, CT 06389						WORKER'S COMPENSATION INSURANCE CARRIER Travelers Insurance Company POLICY # #BAC8888928 EFFECTIVE DATE: 1/1/09 EXPIRATION DATE: 12/31/09												
PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS	PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/FEMALE AND RACE*	WORK CLASSIFICATION	DAY AND DATE							Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY	
							S	M	T	W	TH	F	S					26	Total O/T Hours	FICA	FEDERAL WITH-HOLDING			STATE WITH-HOLDING
Trade License Type & Number - OSHA 10 Certification Number							HOURS WORKED EACH DAY							TOTAL FRINGE BENEFIT PLAN CASH		Per Hour 1 through 6 (see back)								
1	9/26/09	DOT 105-296, Route 82	Robert Craft 81 Maple Street Willimantic, CT 06226		M/C	Electrical Lineman E-1 1234567 Owner OSHA 123456		8	8	8	8	8	8		S-TIME 40 O-TIME		\$ 30.75 Base Rate \$ 8.82 Cash Fringe	1. \$ 5.80 2. \$ 3. \$ 2.01 4. \$ 5. \$ 6. \$	\$1,582.80					
			Ronald Jones 212 Elm Street Norwich, CT 06360	65%	M/B	Electrical Apprentice OSHA 234567		8	8	8	8	8		S-TIME 40 O-TIME	\$ 19.99 Base Rate \$ 16.63 Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	\$1,464.80	xx.xx	xxx.xx	xx.xx	G-xxx	\$1,464.80	#124 \$xxx.xx	
			Franklin T. Smith 234 Washington Rd. New London, CT 06320 SECTION B		M/H	Project Manager			8					S-TIME 8 O-TIME	\$ Base Rate \$ Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	\$1,500.00	xx.xx	xxx.xx	xx.xx	M-xxx		#125 xxx.xx	
														S-TIME O-TIME	\$ Base Rate \$ Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$								

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care Blue Cross 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of 9/26/09,

I, Robert Craft of XYZ Corporation, (hereafter known as Employer) in my capacity as Owner (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

Robert Craft owner 10/2/09
 (Signature) (Title) Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft owner 10/2/09
 (Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

*****THIS IS A PUBLIC DOCUMENT***
DO NOT INCLUDE SOCIAL SECURITY NUMBERS**

Information Bulletin ***Occupational Classifications***

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

- The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. **License required by Connecticut General Statutes: R-1,2,5,6.*

- **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- **LEAD PAINT REMOVAL**

- Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

- Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.

****License required per Connecticut General Statutes: F-1,2,3,4.***

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➤ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543.

**Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES**

⇒ Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

- a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

- a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

- a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

- a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

APPENDIX C
CNG DEPARTMENTAL PROCEDURES

**CNG GENERAL PROVISIONS FOR CONTRACTORS
WHEN EXCAVATING OVER CAST IRON GAS MAINS**

1. Vibratory rollers shall not be used on subbase materials in the vicinity of cast iron mains closer than the distance equal to the width of the roller drum from the axis of the pipe. Static-type rollers are allowed. Once subbase materials have been placed to grade, vibratory rollers are permitted for installing bituminous pavement.
2. When excavating to subgrade, the use of heavy duty bulldozers, scrapers, or other types of heavy earth-moving equipment are not allowed over cast iron gas mains. This type of equipment is limited to within 18 inches of cast iron pipe as measured from its o.d. Small lightweight dozers or tractor payload type equipment is permitted.
3. When excavating to subgrade, contractors must not allow use of heavy equipment to traverse across or over the cast iron gas main facility until the first course of base material has been installed. Compaction of the subbase material directly over the facility must be completed in the prescribed lifts without the use of heavy-duty impactors.
4. Hand probing to locate gas mains and services is required by Public Act 87-71. It is required that this procedure be practiced by all excavators prior to performing any excavation over the gas facilities. Especially susceptible to damage from road excavation are gas services and the hubs or flanges of cast iron gas mains.
5. When breaking roadway concrete, the use of a "headache ball" and impactors is not allowed.
6. Contractors are required to maintain the markout that the CNG representative has provided. Offset markers are permissible provided they are placed in an area where they are not covered or in any way encumbered from view. The contractor must maintain these marks for the duration of his work in that area.
7. When excavating a trench resulting in the crossing of a cast iron gas facility, exposure or undermining must be kept to a minimum. Contractors are responsible for providing temporary and permanent supports in these areas. Replacement of the cast iron facility at the contractor's expense can be avoided if exposure is limited as outlined in CNG Company Policy 480.01 (enclosed).
8. When an excavation parallels a cast iron facility, conflicts resulting in the replacement of the cast iron pipe can be avoided by prescribing to CNG Company Policy 930.01 (enclosed).
9. Contractors are required by State law to telephone "Call Before You Dig" prior to performing actual excavation, blasting, or demolition. The notifications to "Call Before You Dig" should be made at least 48 hours in advance.
10. When a contractor anticipates blasting to be necessary, the requirements of CNG's Blasting Policy 482.01 must be upheld (enclosed).

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (480.01)
PROTECTION/REPLACEMENT OF EXPOSED GAS FACILITIES

PURPOSE

This procedure establishes Corporate policy for the protection/replacement of gas facilities when exposed.

The practice of the Corporation is to adhere to the prescriptions of appropriate sections of Title 49 of the Code of Federal Regulations, Part 192.614. Any contractor, utility company crew, builder, or excavator must adhere to the regulations.

PROCEDURE

I. DEFINITIONS

- A. Excavation - An operation for the purpose of movement or removal of earth, rock, or other materials in or on the ground, or otherwise disturbing the subsurface of the earth, by the use of powered or mechanized equipment. This includes, but is not limited to, digging, pile driving, augering, backfilling, test boring, drilling, grading, plowing-in, hammering, pulling-in, trenching, and tunneling.
- B. Damage - Includes, but is not limited to, the weakening of structure or support, penetration or destruction of the protective coating, housing, or the severance, partial or complete, of gas facilities.
- C. Gas Facility - All physical facilities which house or move gas for transportation and distribution including pipe, valves, and other appurtenances attached to the pipe.

II. NOTIFICATION

- A. A copy of this procedure is given to all agencies requesting review of their proposed construction designs.
- B. Upon receipt of outside agencies' plans, maps, and correspondence, Engineering Services reviews the project relative to the Corporation's facilities and responds to the requesting party.
- C. The excavator notifies "Call Before You Dig" (CBYD) as prescribed by Connecticut State Law, Section 16-345 of Public Act 87-71.
- D. Once excavation is started, the construction site supervisors are responsible for visiting the excavation site as outlined in Procedure #929.01 - "Monitoring of CNG Gas Facilities."

Refer to Procedure Memorandum #480.01

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (480.01)
PROTECTION/REPLACEMENT OF EXPOSED GAS FACILITIES

III. GUIDELINES

A. General

1. The support for the gas facility either by strapping (see EXHIBITS I and III) or wooden vertical supports (see EXHIBIT II) is installed in a manner that the pipe does not move when the soil is removed from under the pipe and that undue stress is not imposed at fittings, valves, and other accessories on the pipe.
2. Trench shoring practices are not affected by the requirements outlined in this procedure.
3. An excavator is responsible for any damages that he/she inflicts upon the Corporation's facilities.
4. If the excavator/contractor is to be billed for damages or a replacement, the Distribution Supervisor documents, takes photographs of the affected facility, and immediately sends a letter (Exhibit IV) to the excavator/contractor stating that a bill will be forthcoming.
5. Any conflicts between CNG or the excavator/contractor regarding the billing for repair of the damage or the possible replacement are resolved by a Distribution Manager.

B. Crossings

1. Temporary Support - Cast Iron, Steel, Plastic

EXHIBIT I is a drawing which depicts a temporary support for a gas main that crosses a trench at any angle with an exposed pipe length of greater than six feet for cast iron or ten feet for plastic or steel (see 2b).

2. Permanent Support - Cast Iron

- a. When cast iron pipe crossing exposure is six feet or less in length, one permanent pipe support is required (see EXHIBIT II).
- b. When cast iron pipe is six inches or less in diameter and crossing exceeds six feet in length, the pipe is replaced. When this condition exists, the replacement consists of the length of exposure plus a minimum of four feet measured perpendicular from the trench wall to the pipe. The removal and replacement expense is borne by the excavator/contractor.

Refer to Procedure Memorandum #480.01

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (480.01)
PROTECTION/REPLACEMENT OF EXPOSED GAS FACILITIES

- c. When cast iron pipe is greater than six inches in diameter and is crossed and exceeds six feet in length, two or more permanent pipe supports are required.
 - d. When cast iron pipe is greater than six inches in diameter and is crossed and the exposure exceeds 12 feet in length, it is considered for possible replacement depending on site conditions.
3. Permanent Support - Steel, Plastic

A firm foundation of properly compacted backfill is the only permanent support required for plastic or steel pipe.

C. Parallel Excavation

- 1. Temporary Support - Cast Iron, Steel, Plastic
 - a. The EXHIBIT III drawing depicts a type of temporary support for a gas main that is exposed or undermined by a parallel excavation.
 - b. The policy of the Company is to replace the cast iron pipe at the excavator's/contractor's expense.
 - 1) If the relocation is not possible at the start of the project, temporary supporting may be permitted by CNG after consideration is given to the type of pipe, length of exposed pipe, service lines, and other pertinent facts.
 - 2) When temporary support is allowed, it should be done in a manner similar to EXHIBIT III. After the completion of the project, the replacement of a facility is scheduled to be replaced in accordance with Procedure #930.01 - "Replacement of Cast Iron Pipe."

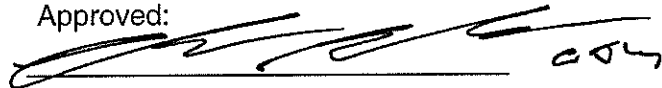
Refer to Procedure Memorandum #480.01

Date: 3/22/07

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (480.01)
PROTECTION/REPLACEMENT OF EXPOSED GAS FACILITIES

2. Permanent Support - Cast Iron
 - a. After the excavation and before backfilling, if the length of exposure of a cast iron main is less than six feet, the main must be permanently supported as shown in EXHIBIT III.
 - b. If the length of exposure is greater than six feet, the pipe is replaced in compliance with Departmental Procedure #930.01. The cost of this replacement will be borne by the excavator/contractor.

Approved:



Regional Director – CNG Field Operations

3/22/07

Refer to Procedure Memorandum #480.01

EXHIBIT I

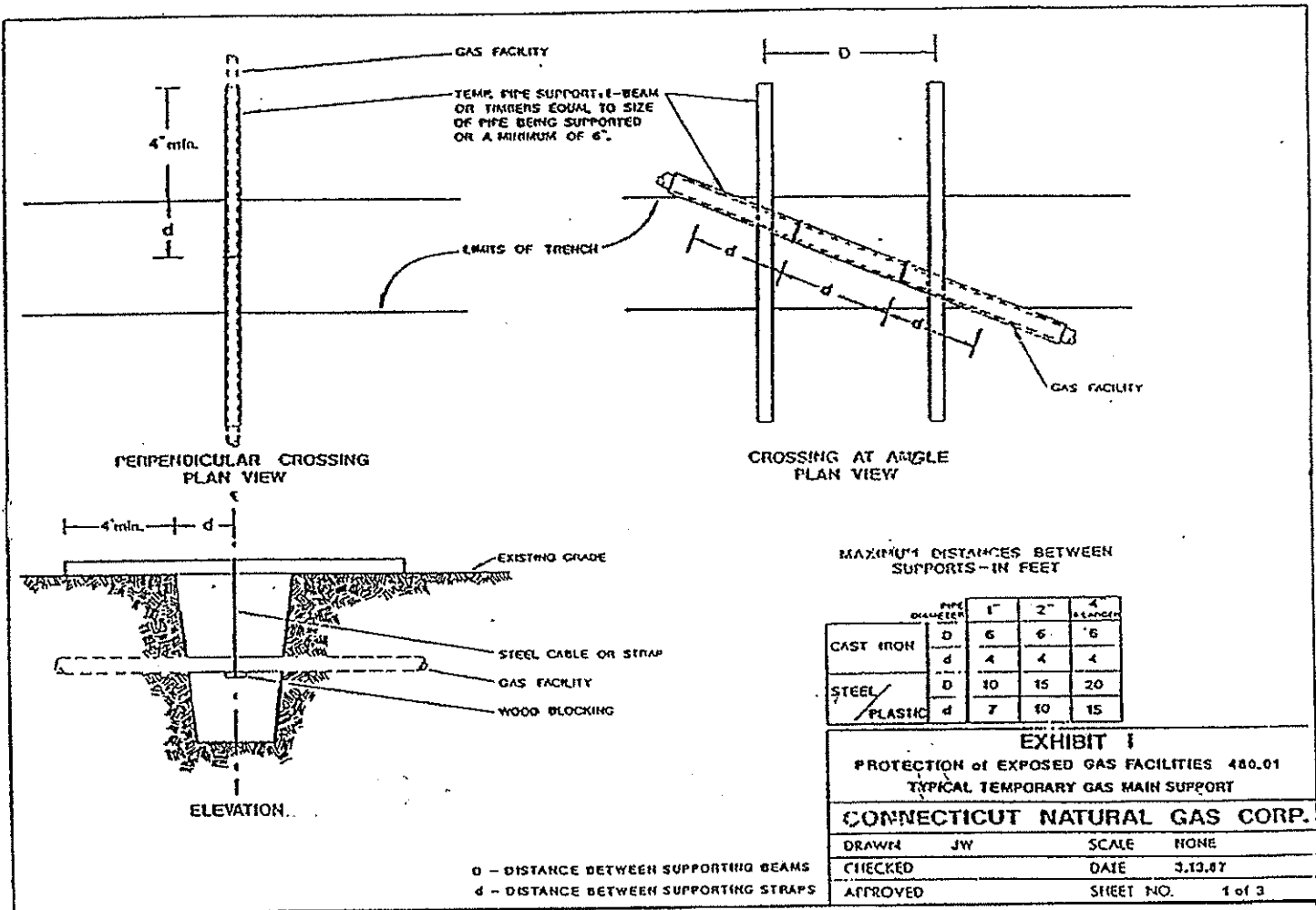
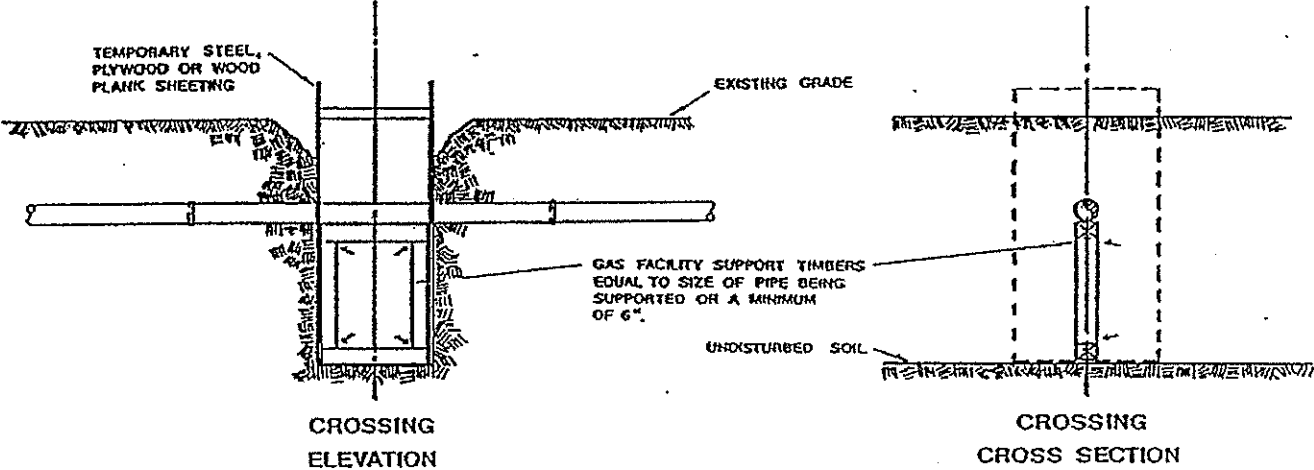


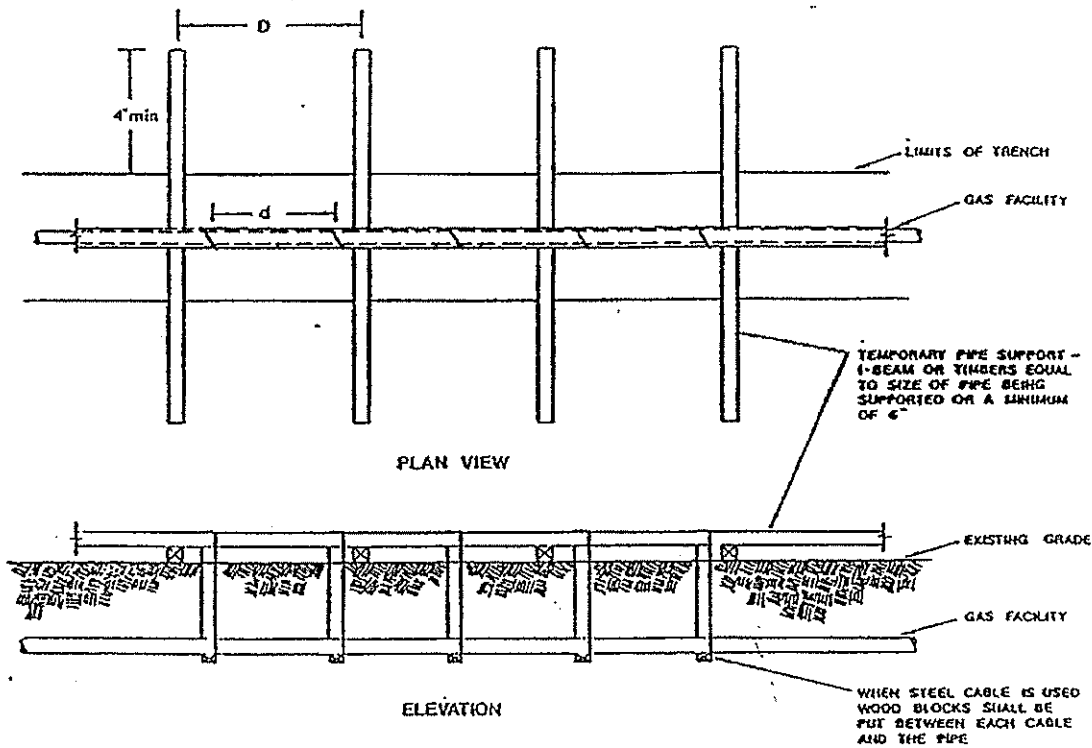
EXHIBIT II



WOOD WEDGES AS REQUIRED

EXHIBIT II			
PROTECTION of EXPOSED GAS FACILITIES 480.01			
TYPICAL PERMANENT CAST IRON GAS MAIN SUPPORT			
CONNECTICUT NATURAL GAS CORP.			
DRAWN	JW	SCALE	NONE
CHECKED		DATE	3.13.87
APPROVED		SHEET NO.	2 of 3

EXHIBIT III



MAXIMUM DISTANCES BETWEEN SUPPORTS - IN FEET

		PIPE DIAMETER		
		1"	2"	4" & LARGER
CAST IRON	D	6	6	6
	d	4	4	4
STEEL / PLASTIC	D	10	15	20
	d	7	10	15

D - DISTANCE BETWEEN SUPPORTING BEAMS
d - DISTANCE BETWEEN SUPPORTING STRAPS

EXHIBIT III	
PROTECTION OF EXPOSED GAS FACILITIES 480.01	
TYPICAL TEMPORARY GAS MAIN SUPPORT/PARALLEL EXCAVATIONS	
CONNECTICUT NATURAL GAS CORP.	
DRAWN J.W.	SCALE NONE
CHECKED	DATE 3.13.87
APPROVED	SHEET NO. 3 of 3

Date: 3/22/07

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (480.01)
PROTECTION/REPLACEMENT OF EXPOSED GAS FACILITIES

Excavator's Name
Excavator's Address
City, State, Zip

Exhibit IV

Re:

Gentlemen:

Connecticut Natural Gas Construction Site Inspector, _____, states that as a result of your excavating operations on _____, approximately _____ feet of _____ inch cast iron pipe was exposed and/or undermined.

It is the responsibility of the excavator to exercise reasonable care in accordance with the State of Connecticut Public Act 87-71, Section 16-345-4, Responsibility of Excavators:

("a") [V] (5) Exercise reasonable care when working in proximity to the under-ground facilities of any public utility. REASONABLE CARE SHALL INCLUDE, WITHOUT LIMITATION, THE USE OF CONSTRUCTION METHODS APPROPRIATE TO ENSURE THE INTEGRITY OF EXISTING UTILITY FACILITIES AND THEIR TEMPORARY AND PERMANENT SUPPORT INCLUDING BUT NOT LIMITED TO ADEQUATE AND PROPER SHORING AND PROPER BACKFILL METHODS AND TECHNIQUES; THE SELECTION OF EQUIPMENT AND EXPLOSIVES CAPABLE OF PERFORMING THE WORK WITH THE MINIMUM REASONABLE LIKELIHOOD OF DISTURBANCE TO UNDERGROUND FACILITIES; ADEQUATE SUPERVISORY PERSONNEL TO ENSURE PROPER ACTIONS; PROPER UNDERSTANDING BY THE PERSONNEL ON THE JOB SITE OF THE AUTHORITY OF ALL PARTIES INVOLVED IN THE ACTIVITY SO THAT PROMPT ACTION CAN BE TAKEN IN THE EVENT OF UNANTICIPATED CONTACT WITH UNDERGROUND FACILITIES; ADEQUATE TRAINING OF EMPLOYEES IN EXECUTING THEIR ASSIGNMENTS TO ENSURE PROTECTION OF UTILITY FACILITIES AND THE PUBLIC; MAINTAINING NECESSARY LIAISON WITH OWNERS OF UNDERGROUND FACILITIES; SPONSORING PREPLANNING AND PRECONSTRUCTION MEETINGS AS NECESSARY AND COMPLYING WITH ALL APPLICABLE LAWS AND REGULATIONS."

The cast iron pipe appears to have been undermined to an extent that jeopardizes the integrity of the facility. As a result, replacement of the facility in the immediate vicinity of excavation may be necessary. If replacement is necessary, a bill for the replacement will be submitted to you in the near future once the work is complete.

If you have any questions regarding this matter, please contact me.

Very truly yours,

Construction Site Inspector

Refer to Procedure Memorandum #480.01

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

PURPOSE

This outlines the procedures followed when blasting is required near pipes conveying combustible gas.

The practice of the Corporation is to assure the safety of its facilities by assuring that contractors comply with the Connecticut General Statute Sections 16-345 through 16-355 and the Connecticut Regulations of State Agencies Sections 16-345-1 et. seq. (see EXHIBIT I).

PROCEDURE

I. ADMINISTRATION

CNG shall obey and comply with all pertinent provisions of the Connecticut State Statutes and Regulations.

- A. Engineering Services provides each city or town fire chief and state fire marshal a copy of the CNG guidelines for blasting and the guidelines are updated as necessary.
- B. When notified by Call Before You Dig (CBYD) that there will be blasting near a CNG facility, the Distribution Supervisor obtains the time of blasting, the blaster's name, the person calling and the time notified. A Construction Site Inspection Form (See EXHIBIT II) is completed by the Distribution Supervisor.
- C. The Distribution Supervisor obtains the necessary gas facility records and schedules the inspection at the job site.

II. DISTRIBUTION RESPONSIBILITIES

- A. Prior to each blasting project, a Distribution Supervisor or their designee arranges to meet with the contractor and the blaster to:
 - 1. Check the contractor's and blaster's permits and insurance certificates;
 - 2. Review CNG's blasting policy with the general and blasting contractor;
 - 3. Perform a leak survey of the entire blasting project area.

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

- B. Prior to each detonation, the Distribution Supervisor or their designee arranges to meet with the contractor and the blaster to:
1. Complete Parts A through R and U through W of the CNG Blasting Investigation Report (see EXHIBIT III).
 2. Conduct a leak survey prior to each detonation and record the results on Part S of the CNG Blasting Investigation Report. In the event a gas leak is detected, the Distribution Supervisor or his designee shall ensure that no further blasting occurs until the leak is repaired and all residual gas is cleared.
 3. Inspect the site and plot W (maximum pounds/delay of eight milli-seconds or more) versus R (horizontal distance between explosion and pipeline) on EXHIBIT IV, using the appropriate pipe material type.
 - a. If the plot of the parameters lies in the area marked "Blasting Allowed Upon Permission of Area Inspector", the Manager, Distribution Services is contacted.
 - b. If the plot of the parameters lies in the area marked "Blasting Not Allowed", the Manager of Distribution Services is contacted.
 - c. If any unusual conditions exist, the city or town inspector, fire chief, or state marshal are notified.
 4. Any time the recommended CNG policy limit is planned to be exceeded, the Manager, Engineering Services shall be contacted. The Manager, Engineering Services or his designee shall consult a Connecticut certified blasting consultant to review and approve the proposed blasting plan. The expense for this shall be borne by the contractor responsible for the project.

Date: 3/22/07

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

- C. After each detonation, the Distribution Supervisor or their designee:
1. Conducts a leak survey after each detonation and records the results on Part T of the Blasting Investigation Report. In the event a gas leak is detected, the Distribution Supervisor or his designee shall ensure that no further blasting occurs until the leak is repaired and all residual gas is cleared.
 2. Returns the completed Blasting Investigation Report to Distribution for filing.

APPROVED: _____

TITLE: Regional Director- CNG Field Operations

CTM
3/22/07

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Exhibit I

**PUBLIC SERVICE COMPANIES
CHAPTER 293
SECTION 16-345
EXCAVATION, DEMOLITION, OR DISCHARGE OF EXPLOSIVES**

Section

- | | |
|--------|---|
| 16-345 | Definitions |
| 16-346 | Compliance with chapter required prior to excavation or discharge of explosives. |
| 16-347 | Public utilities to file with Department of Public Utility Control |
| 16-348 | Central clearinghouse. Apportionment of costs |
| 16-349 | Notice of proposed excavation, discharge of explosives or demolition |
| 16-350 | Permits to require compliance with chapter |
| 16-351 | Information and assistance relocation of underground facilities |
| 16-352 | Emergency excavation, demolition, or discharge of explosives |
| 16-353 | Relation of chapter to permits and other laws |
| 16-354 | Care to be exercised near underground facilities |
| 16-355 | Procedure when contact is made with or damage is suspected or done to underground |

Law Review Commentaries

Regulated Industries. James E. Rice (1980) 54 Connecticut Bar J. 514

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Section 16-345: Definitions.

- (a) "Person" means an individual, partnership, corporation, or association, including a person engaged as a contractor by a public agency but excluding a public agency.
- (b) "Public Agency" means the state or any political subdivision thereof, including any governmental agency.
- (c) "Public Utility" means the owner or operator of underground facilities for furnishing electric, gas, telephone, telegraph, pipeline, sewage, water, community television antenna, steam or traffic signal service, including a municipal or other public owner or operator.
- (d) "Central Clearinghouse" means the group of public utilities formed pursuant to Section 16-348 for the purposes of receiving and giving notice of excavation activity within the state.
- (e) "Excavation" means an operation for the purposes of movement or removal of earth, rock, or other materials in or on the ground, or otherwise disturbing the subsurface of the earth, by the use of powered or mechanized equipment, including but not limited to digging, blasting, auguring, back filling, test boring, drilling, pile driving, grading, plowing-in, hammering, pulling-in, trenching and tunneling; excluding the movement of earth by tools manipulated only by human or animal power and the tilling of soil for agricultural purposes.
- (f) "Demolition" means the wrecking, razing, rending, moving, or removing of any structure.
- (g) "Damage" includes but is not limited to substantial weakening of structural or lateral support of a utility line, penetration or destruction of any utility line protective coating, housing or other protective device or the severance, partial or complete, of any utility line.
- (h) "Approximate location of underground facilities" means a strip of land not more than three feet wide or a strip of land extending not more than one and one-half feet on either side of the underground facilities.

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Section 16-346: Compliance with chapter required prior to excavation or discharge of explosives.

No person, public agency, or public utility shall engage in excavation or discharge explosives at or near the location of a public utility underground facility or demolish a structure located at or near or containing a public utility facility without having first ascertained the location of all underground facilities of public utilities in the area of such excavation, discharge, or demolition in the manner prescribed in this chapter and in such regulations as the department shall adopt pursuant to Section 16-357.

Section 16-347: Public utilities to file with Department of Public Utility Control.

A public utility shall file with the Department of Public Utility Control the location of its underground facilities, except facilities for storm sewers, by reference to a standard grid system, to be established by the department, and the title, address, and telephone number of its representative designated to receive the notice required by Section 16-349.

Section 16-348: Central clearinghouse. Apportionment of costs.

The public utilities of the state shall, under the direction of the Department of Public Utility Control, organize and operate a central clearinghouse within the state for receiving and giving the notices required by Section 16-349. The department shall apportion the cost of this service equitably among the public utilities for those underground facilities registered with the department, as provided in Section 16-347, except sanitary sewer or water facilities owned or operated by a city, town, or borough.

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Section 16-349: Notice of proposed excavation, discharge of explosives or demolition.

Except as provided in Section 16-352, a person, public agency, or public utility responsible for excavating or discharging explosives at or near the location of public utility facilities or demolishing a structure containing a public utility facility shall notify the central clearinghouse of such proposed excavation, discharge, or demolition, orally or in writing, at least two full days, excluding Saturdays, Sundays, and holidays, but not more than thirty days before commencing such excavation, demolition, or discharge of explosives. The central clearinghouse shall immediately transmit such information to the public utilities whose facilities may be affected. In the event the proposed excavation, demolition, or discharge of explosives has not commenced within thirty days of such notification, or the excavation, demolition, or discharge of explosives will be expanded outside of the location originally specified in such notification, the person, public agency or public utility responsible for such excavation, demolition or discharge of explosives shall again notify the central clearinghouse at least two full days, excluding Saturdays, Sundays, and holidays, but not more than thirty days before commencing or expanding such excavation, demolition, or discharge of explosives.

Section 16-350: Permits to require compliance with chapter.

Any permit issued by a public agency for excavation, demolition, or discharge of explosives shall require compliance with this chapter. No such permit shall be issued by any public agency unless such public agency receives satisfactory evidence from the person, public agency, or public utility seeking such permit that the requirements of this chapter have been met. Such evidence shall be obtained from the central clearinghouse and shall be in such form as the department may prescribe by regulations pursuant to Section 16-357.

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Section 16-351: Information and assistance relocation of underground facilities.

A public utility receiving notice pursuant to Section 16-349 shall inform the person, public agency, or public utility proposing to excavate, discharge explosives, or demolish a structure, of the approximate location of its underground facilities in the area in such manner as will enable such person, public agency, or public utility to establish the precise location of the underground facilities, and shall provide such other assistance in establishing the precise location of the underground facilities as the department may require by regulation pursuant to Section 16-357. Such person, public agency, or public utility shall designate the area of the proposed excavation, demolition, or discharge of explosives as the department may prescribe by regulation. The public utility receiving notice shall mark the approximate location of its underground facilities in such manner and using such methods, including color coding, as the department may prescribe by regulation. If the precise location of the underground facilities cannot be established, the person, public agency, or public utility shall so notify the public utility whose facilities may be affected, which shall provide such further assistance as may be needed to determine the precise location of the underground facilities in advance of the proposed excavation or discharge of explosives or demolition.

Section 16-352: Emergency excavation, demolition, or discharge of explosives.

- (a) In case of emergency involving danger to life, health, or property or which requires immediate correction to continue the operation of a major industrial plant, or to assure the continuity of public utility service, excavation, or demolition without explosives may be made without the two-day notice required to Section 16-349 provided notice thereof by telephone is given as soon as reasonably possible.
- (b) In case of an emergency involving an immediate and substantial danger of death or serious personal injury, explosives may be discharged if notice thereof is given at any time before discharge.

CONNECTICUT NATURAL GAS CORPORATION

DEPARTMENTAL PROCEDURE 482.01

BLASTING NEAR PIPES CONVEYING COMBUSTIBLE GAS

Section 16-353: Relocation of chapter to permits and other laws.

Except as provided in Section 16-350, this chapter shall not be construed to affect or impair local ordinances, charters, or other provisions of law requiring permits to be obtained before excavating in a public highway or to demolish structures on private property, nor shall it be construed to grant to any person or public agency any rights not specifically provided by this chapter. A permit from a public agency shall not relieve any person from responsibility for complying with the provisions of this chapter. The failure of any person who has been granted a permit to comply with the provisions of this chapter shall not be deemed to impose any liability upon the public agency issuing the permit.

Section 16-354: Care to be exercised near underground facilities.

A person, public agency, or public utility responsible for excavating, discharging explosives, or demolition shall exercise reasonable care when working in proximity to the underground facilities of any public utility and shall comply with such safety standards and other requirements as the department shall prescribe by regulation pursuant to Section 16-357. If the facilities are likely to be exposed, such support shall be provided as may be reasonably necessary for protection of the facilities. If gas facilities are likely to be exposed, only hand digging shall be employed.

Section 16-355: Procedure when contact is made with or damage is suspected or done to underground.

When any contact is made with or any damage is suspected or done to any underground facility of a public utility, the person, public agency, or public utility responsible for the operations causing the contact, suspected damage or damage shall immediately notify the public utility whose facilities have been affected, which shall dispatch its own personnel as soon as reasonably possible to inspect the underground facility and, if necessary, effect temporary or permanent repairs. If a serious electrical short is occurring or if dangerous fluids or gas are escaping from a broken line, the person, public agency, or public utility responsible for the operations causing the damage shall alert all persons within the danger area and take all feasible steps to insure the public safety pending the arrival of repair personnel. As used in this section, "contact" includes, without limitation, the striking, scraping, or denting, however slight, of any underground utility facility, the structural or lateral support of an underground utility line and any underground utility line protective coating, housing, or other protective device.



CONSTRUCTION SITE INSPECTION

PAGE ___ OF ___

STREET: _____ TOWN: _____ INSPECTOR: _____
EXCAVATOR: _____ CBYD #: _____ DATE: _____
EXCAVATOR CONTACT PERSON: _____ TIME ARRIVED: _____
EXCAVATOR PHONE #: _____ TIME DEPARTED: _____
EXCAVATOR ADDRESS: _____

TYPE OF EXCAVATION INSTALLATION REPAIR
San Sewer Foundations Cable TV Road Reconstruction
Storm Drain Telephone Manhole Blasting (Form 815.65 Required)
Water Electric Gas Other

EXCAVATION CLASSIFICATION

Excavation Classification Grade A B C Criteria No(s)
(See Reverse Side)

Limit of Proposed Excavation: From: _____ To: _____ Length: _____ Ft.
Limit of Actual Excavation: From: _____ To: _____ Length: _____ Ft.
Average Depth of Excavation: _____ Ft. _____ In.
Average Width of Excavation: _____ Ft. _____ In.
Distance from C/L of Excavation to Gas Facility: _____ Ft. _____ In.

Existing Gas Facilities Within Scope of Inspection/Proposed work area: MAINS
Material _____ Size _____ Pressure Class _____ Cover _____
Material _____ Size _____ Pressure Class _____ Cover _____

Existing Gas Facilities Within Scope of Inspection/Proposed work area: SERVICES
Material _____ Size _____ Pressure Class _____ Cover _____
Material _____ Size _____ Pressure Class _____ Cover _____

Other Gas Facilities:
Gas Facility Exposed? Yes No If Yes, Complete 'Existing Pipe Inspection' Section
Critical Valve Located? Yes No If Yes, Attach Copy of Valve Record Cards

EXISTING PIPE INSPECTION

MATERIAL: Steel MD Plastic HD Plastic C. Iron Copper Other
COATING: None X-Tru Coal Tar Thin Film Other COATING CONDITION: Good Fair Poor
TYPE CORROSION: None Rust/Scale Shallow Pits Deep Pits Leak Graphitization (Cast Iron)

LEAKAGE SURVEY

Pre-Construction Survey: Date of Previous Annual Leakage Survey:
Existing Leakage: Yes No
Location: Order No: Date:
Location: Order No: Date:
Inspection Leakage Survey:
From: To: Length: Ft.
F.I. ID No. CGI ID No. Date:
Leakage Detected: Yes No If Yes, Attach Copy of 'Leak Survey Field Report'

CONTACT WITH EXCAVATOR/COMMENTS:

SEE BACK SIDE:

ATTACHMENTS

CBYD Ticket Inspection Sketch Blasting Investigation Report (815.65)
CNG Prints Construction Drawing Leak Survey Field Report (C-LEAK (1-92))
Photograph Valve Record Cards Hand Written Work Order (P-30)
F.I. Survey Other

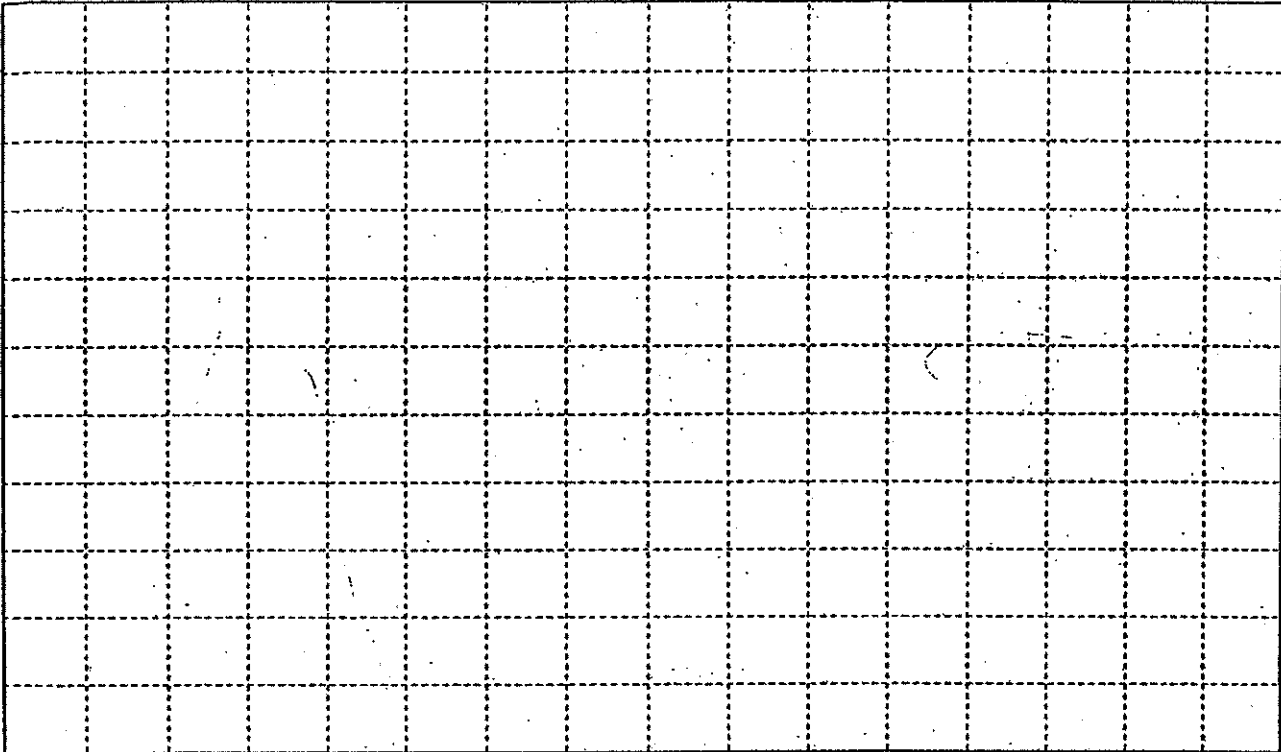
BLASTING INVESTIGATION REPORT

- A. Prepared by _____
- B. Date: _____
- C. CBYD Ticket No. _____
- D. Time of Arrival at Job Site _____
- E. Location _____ Town _____
- F. Contractor _____ Subcontractor _____
- G. Contractor's Insurer _____
- H. Blasting Contractor _____ Blaster's Name _____
- I. Blasting Company's Insurer _____
- J. Material to be Blasted _____ Pipe Material _____
- K. Time of Blast _____
- L. Horizontal Distance to Nearest Gas Line (ft), R _____
- M. Amount of Explosive per Delay (lbs./delay), W _____
- N. Number of Delays _____
- O. Time per Delay (Milliseconds) _____
- P. Depth of Blast Hole (Feet) _____
- Q. Depth of Gas Pipeline (Feet) _____
- R. Diameter of Pipeline (Inches) _____
- S. CGI Reading Before Detonation _____
- U. CGI Reading After Detonation _____
- U. CGI Serial Number _____

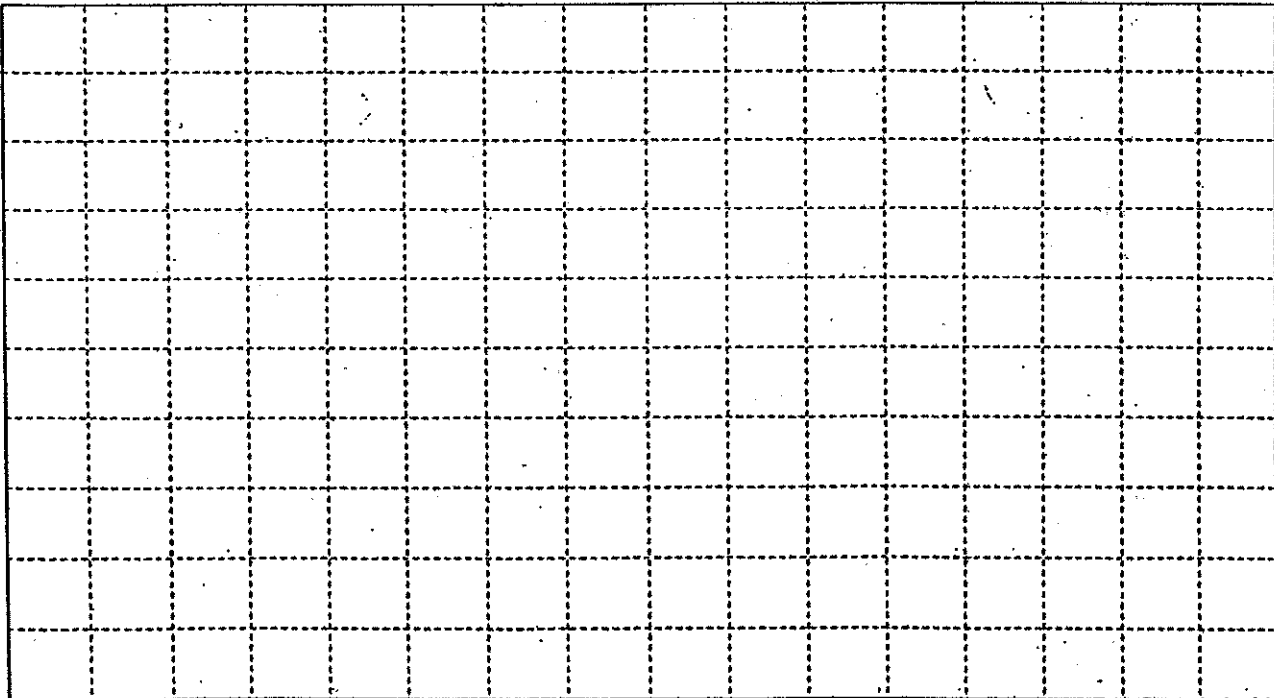
(Continued on page 2)

BLASTING INVESTIGATION REPORT

V. Sketch of Area

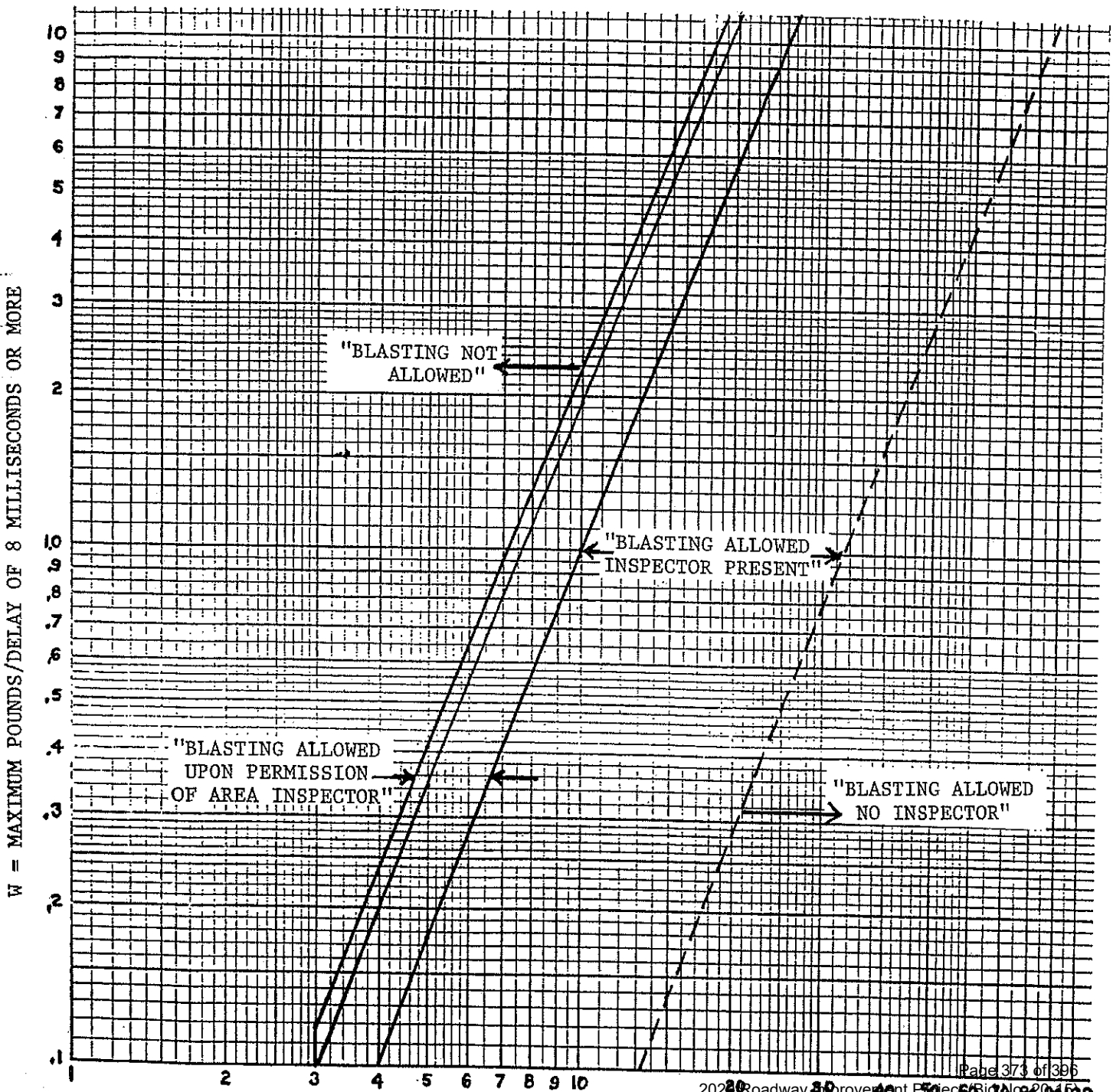


W. Sketch of Blast Hole



STEEL
CHARGE-DISTANCE LIMITS IN BLASTING
NEAR BURIED PIPELINES

REFER TO PROCEDURE MEMORANDUM #482.01

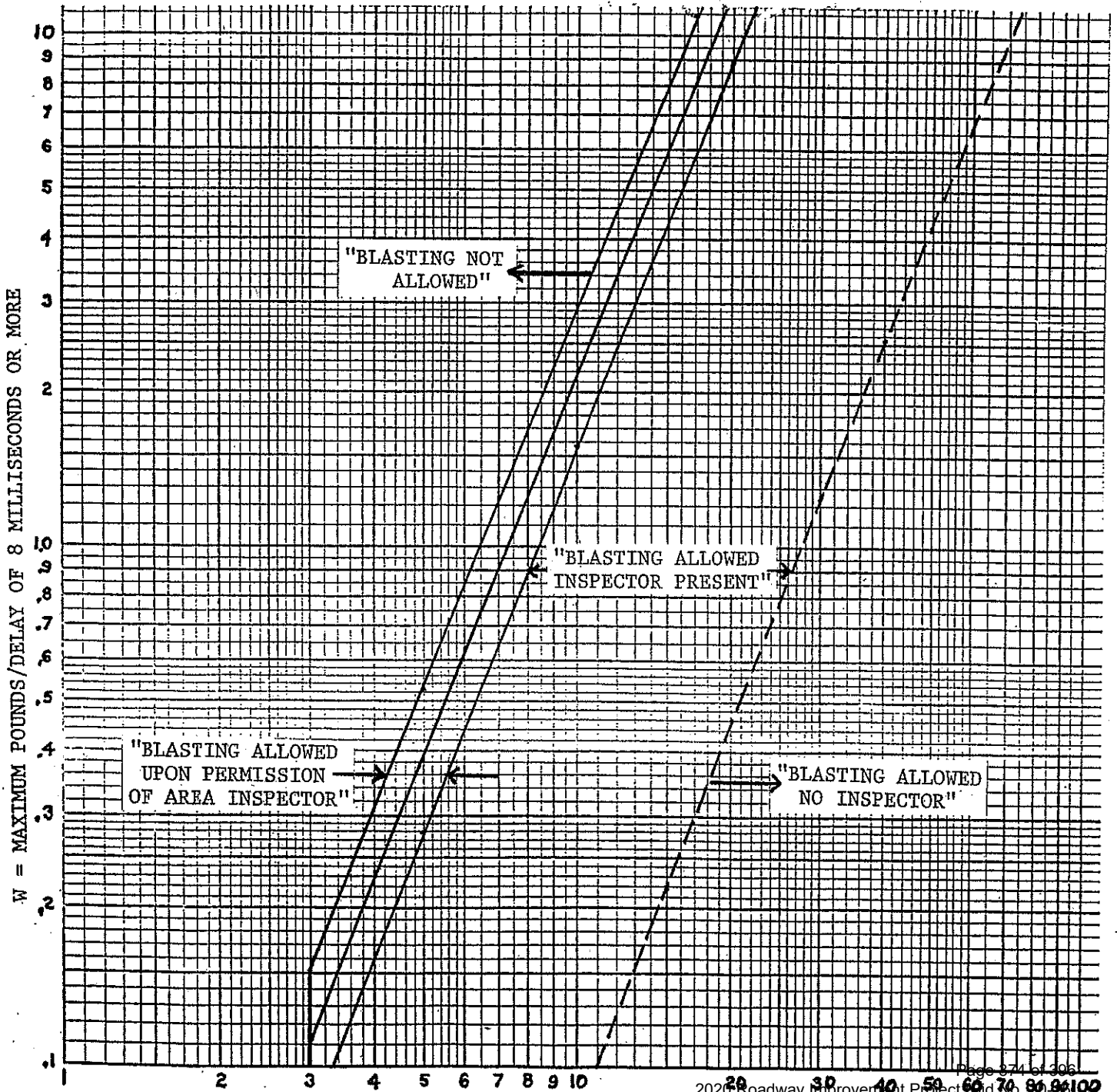


R = HORIZONTAL DISTANCE BETWEEN EXPLOSION & PIPELINE (FEET)

PLASTIC

CHARGE-DISTANCE LIMITS IN BLASTING
NEAR BURIED PIPELINES

REFER TO PROCEDURE MEMORANDUM #482.01

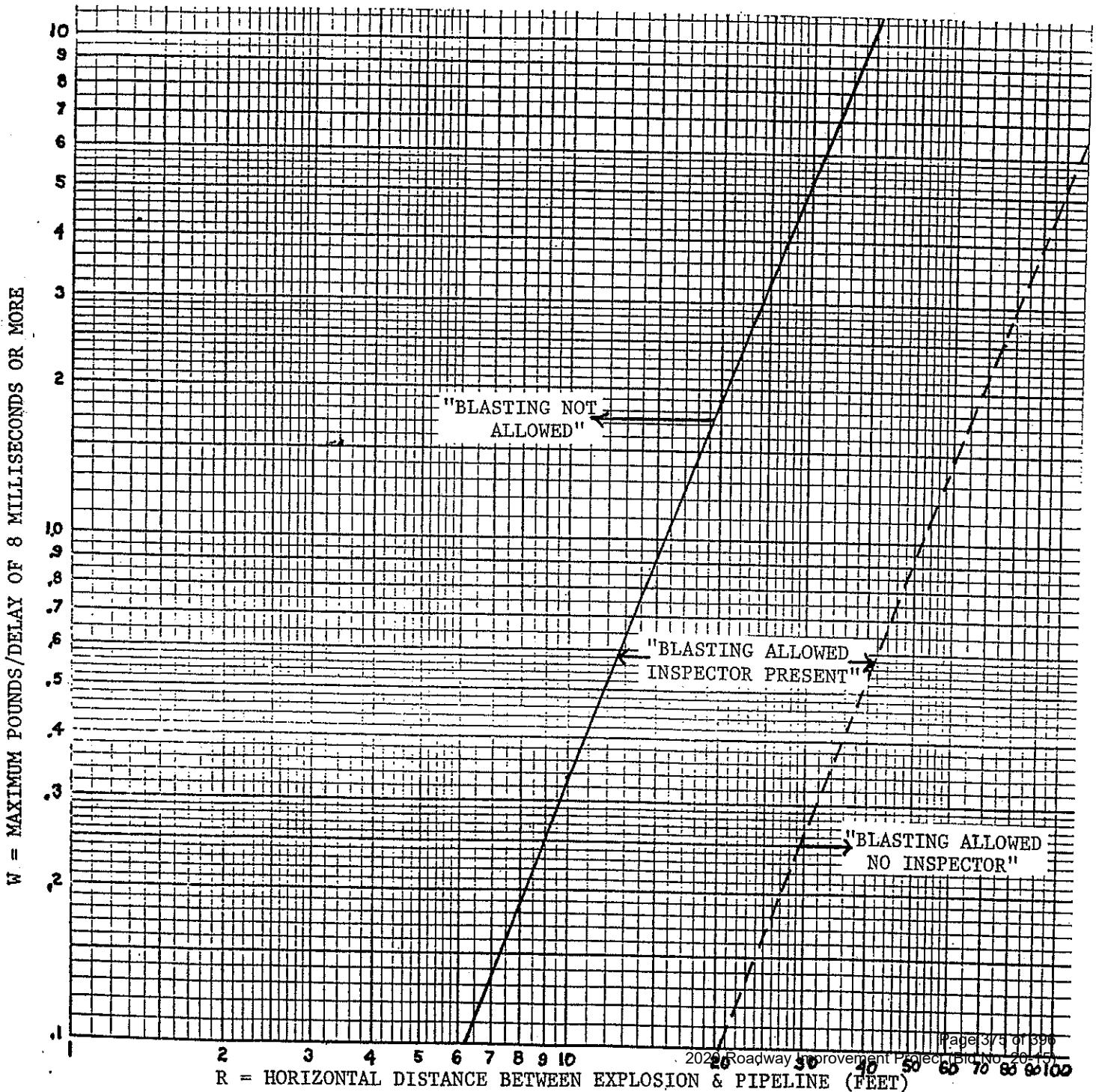


R = HORIZONTAL DISTANCE BETWEEN EXPLOSION & PIPELINE (FEET)

CAST IRON AND BARE STEEL

CHARGE-DISTANCE LIMITS IN BLASTING
NEAR BURIED PIPELINES

REFER TO PROCEDURE MEMORANDUM #482.01



CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (930.01)
REPLACEMENT OF CAST IRON PIPE

PURPOSE

The purpose of this memorandum is to outline the procedures for replacing cast iron pipe located in proximity to construction, demolition, or excavation activities performed by other parties.

The practice of the Corporation is to replace six inch (6") and smaller cast iron pipe with steel or plastic if the main lies within the following guidelines and sheeting is removed. Company records are the primary source of facility locations. When information conflicts exist, the Company digs test holes or performs field markouts to obtain more accurate data. Distribution Supervisors or their designees are responsible for the inspection of the excavation site as outlined in the Regulated Group Procedure Memorandum #929.01 – "Monitoring of CNG Gas Facilities."

PROCEDURE

I. PARALLEL

There are generally two types of excavation that are performed by excavators. A shallow excavation is considered to be a trench six feet (6') or less in depth and a deep excavation is when the trench depth exceeds six feet. This procedure memorandum describes each condition in detail.

1. Shallow Trench Excavation – Equal to or less than six feet (6') deep.

- a. Cast iron pipe is replaced if the longitudinal centerline of the cast iron pipe lies above a line at 45° to horizontal starting from the excavation bottom at the side nearest the pipe as outlined in this guideline and any one or more of the following conditions exist:
 - 1) Pipe is exposed.
 - 2) Excavation is in soft clay (soft clay is penetrated several inches by a thumb with moderate effort).
 - 3) Excavation bottom is below the water table in gravel, sand, or silt.
- b. A field inspection is necessary to determine if any of the above are encountered.
- c. Undermining due to excavation as evidenced by slumps and local runs of soil along the sides of the excavation is noted during the field inspection.
- d. Inspection frequencies shall increase during periods of heavy rain, and during other unusual conditions, which may adversely affect the integrity of the trench walls.

**CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (930.01)**

REPLACEMENT OF CAST IRON PIPE

2. Deep Trench Excavation – Greater than six feet deep to 20 feet deep

a. A cast iron main is replaced if any of the following conditions exist:

- 1) The trench sheeting is to be removed and the longitudinal centerline of the cast iron pipe falls within a distance of three feet from the edge of the trench excavation or is less than the minimum allowed distance to the trench wall for the corresponding trench depth and soil type as follows:

**Minimum Allowed Distance (Ft.) from
Longitudinal Centerline of Cast Iron Pipe
To Trench Wall**

<u>Trench Depth (Ft.)</u>	<u>Soil Type "A"</u>	<u>Soil Type "B"</u>
> 6'	3.0'	3.0'
≥ 7'	3.0'	3.0'
≥ 8'	3.0'	3.0'
≥ 9'	3.0'	3.5'
≥ 10'	3.0'	5.0'
≥ 11'	3.0'	6.0'
≥ 12'	3.0'	7.0'
≥ 13'	3.0'	8.0'
≥ 14'	3.0'	9.5'
≥ 15'	3.5'	11.0'
≥ 16'	5.0'	12.5'
≥ 17'	6.5'	13.5'
≥ 18'	8.0'	15.0'
≥ 19'	9.5'	16.5'
20'	11.0'	18.0'

Soil Type "A" - Medium to very dense sand and gravel above the water table; medium to stiff clay

Soil Type "B" - Very soft to medium clay and organics; very loose to loose sand above the water table

- 2) The trench bottom is below the water table in granular soils (i.e., gravel, sand) and the longitudinal centerline of the cast iron pipe lies above a line at 45° to horizontal starting from the excavation bottom at the side nearest the cast iron pipe.

b. Cast iron mains need not be replaced if trench wall supports are adequate to prevent ground movement and cut off above the elevation of the gas main and left in place.

c. Major Deep Trench Site Condition Considerations for Possible Replacement: An observation of any of the following conditions indicating ground movement is documented by the Distribution Supervisor. An Operations Manager is notified of the condition(s).

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (930.01)
REPLACEMENT OF CAST IRON PIPE

- 1) Noticeable infiltration of water; wet lagging and sheeting; cone shaped soil deposits next to sheeting
 - 2) Excessive excavation outside the sheeting line greater than six inches
 - 3) Noticeable inward movement of sheeting at bottom of cut visible from street surface
 - 4) Conspicuous surface depressions at distances greater than three feet (3') from edge of trench; severe cracking of street surface
 - 5) Removal of sheeting under conditions not authorized by CNG Distribution Supervisors
 - 6) Sheeting removal without immediate backfilling
- d. **Minor Deep Trench Site Conditions:** An observation of any of the following conditions indicating **potential** ground movement is documented by the Distribution Supervisor. An Operations Manager is notified if two or more conditions exist.
- 1) Excessive gaps and spaces along sheeting line
 - 2) Voids behind sheeting
 - 3) Lack of toe support for wooden sheeting
 - 4) Local distortion of sheeting, braces, or walls
 - 5) Backfilling by unconventional methods
 - 6) Inferior backfill material (i.e. rocks, clay, organics, timber, pipe fragments)

I. CROSSINGS

Crossings are outlined in the Regulated Group Procedure Memorandum #480.01 – “Protection of Exposed Gas Facilities.”

CONNECTICUT NATURAL GAS CORPORATION
DEPARTMENTAL PROCEDURE (930.01)
REPLACEMENT OF CAST IRON PIPE

II. OTHER REPLACEMENT CONSIDERATIONS

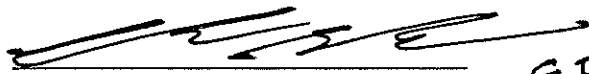
The Corporation has other programs to replace cast iron pipe that is not in the proximity of construction, demolition, or excavation activities. The following programs are designed to replace cast iron reaching the end of its serviceable life:

- A. Cast Iron Main Priority System: The Cast Iron Main Priority System evaluates each cast iron segment using the following factors:
1. Number of main breaks
 2. Pressure class
 3. Soil conditions
 4. Building density
 5. Year installed
 6. Building distance to pavement
 7. Proximity to other underground facilities
 8. Other construction

The program is evaluated by tracking certain performance factors such as leaks per mile and main breaks per mile. These prime indicators should trend downward if the rate of cast iron replacement is adequate.

- B. Graphitization: Each segment of cast iron pipe on which general graphitization is found to a degree where a fracture might result is replaced at a minimum of ten feet beyond the last known area of concentration.
- C. Blasting: The Regulated Group Procedure Memorandum #482.01 – “Blasting Near Pipes Conveying Combustible Gas” establishes the specifications for allowable blasting.
- D. Changing Field Conditions: When there is a change of scope on the construction project, the Distribution Supervisor notifies an Operations Manager to review the facility replacement plan in light of the field change. Engineering Services is notified if a facility is damaged by construction activity and the facility is reviewed for possible replacement.

APPROVED:


Regional Director- Operations

3/22/07

APPENDIX D
DRIVEWAY RECONSTRUCTION TABLES

Evans Avenue Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Evans Avenue Intersection at Sta. 10+16.43									
10+65.00	R-B	9.1%	0.59	0					
10+81.00	R-B	9.3%	0.58	0					
					11+00.00	R-B	10.6%	0.63	0
11+75.00	R-B	5.2%	0.31	0					
					12+19.00	R-B	10.0%	0.62	0
12+33.00	R-B	9.5%	0.54	0					
					12+50.00	R-B	10.1%	0.61	0
					14+22.00	R-B	9.8%	0.60	0
					14+78.00	R-B	9.1%	0.55	0
14+96.00	R-B	7.4%	0.45	0					
					15+50.00	R-B	10.3%	0.60	0
15+60.00	R-B	9.2%	0.55	0					
					16+07.00	R-B	11.3%	0.67	0
16+17.00	R-B	10.5%	0.64	0					
					16+70.00	R-B	10.1%	0.61	0
16+80.00	R-B	9.3%	0.56	0					
					17+30.00	R-B	8.1%	0.48	0
17+35.00	R-B	7.1%	0.43	0					
					17+90.00	R-B	8.8%	0.52	0
18+01.00	R-B	7.2%	0.43	0					
					18+63.00	R-B	9.4%	0.66	0
19+32.00	R-B	6.9%	0.44	0					
19+89.00	R-B	9.5%	0.58	0					
					20+22.00	R-B	7.1%	0.45	0
					20+71.00	R-B	9.4%	0.58	0
21+02.00	R-B	9.8%	0.58	0					
					21+30.00	R-B	10.1%	0.60	0
21+64.00	R-B	10.0%	0.58	0					
					21+90.00	R-B	8.9%	0.52	0
22+25.00	R-B	8.7%	0.53	0					
					22+47.00	R-B	10.0%	0.55	6
22+82.00	R-B	8.5%	0.52	0					
					23+15.00	R-B	10.0%	0.58	3
23+42.00	R-B	10.1%	0.59	0					
					23+85.00	R-B	10.0%	0.54	4
24+00.00	R-B	10.0%	0.57	3					
24+55.00	R-B	9.2%	0.52	0					
25+12.00	R-B	8.2%	0.46	0					
Evans Avenue Intersection at Sta. 25+69.72									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Handel Road Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Handel Road Intersection at Sta. 30+11.45									
					31+27.00	R-B	9.6%	0.57	0
31+45.00	R-B	9.7%	0.55	0	32+14.00	R-B	8.7%	0.52	0
32+67.00	R-B	9.0%	0.51	0	32+86.00	R-B	7.1%	0.54	0
33+00.00	R-B	10.9%	0.62	0	34+69.00	R-B	7.9%	0.54	0
					35+07.00	R-B	8.6%	0.59	0
					35+61.00	R-B	7.7%	0.46	0
36+10.00	R-B	7.5%	0.44	0	36+22.00	R-B	8.4%	0.51	0
					36+41.00	R-B	8.9%	0.54	0
36+70.00	R-B	6.8%	0.40	0	37+03.00	R-B	8.7%	0.52	0
37+25.00	R-B	6.9%	0.41	0					
37+93.00	R-B	3.3%	0.19	0					
38+50.00	R-B	5.9%	0.34	0					
					39+14.00	R-B	8.8%	0.52	0
39+50.00	R-B	6.3%	0.35	0	39+50.00	C-B	6.6%	0.39	0
39+70.00	R-B	7.4%	0.40	0					
40+32.00	R-B	7.0%	0.26	0					
40+90.00	R-B	10.2%	0.26	0					
41+52.00	R-B	7.6%	0.22	0					
42+15.00	R-B	5.7%	0.33	0					
42+75.00	R-B	5.9%	0.38	0					
					43+34.00	R-B	10.1%	0.57	0
43+47.00	R-B	7.1%	0.42	0	44+00.00	R-B	10.0%	0.57	3
					44+69.00	R-B	8.5%	0.53	0
					45+32.00	R-B	7.4%	0.45	0
					45+95.00	R-B	9.1%	0.56	0
46+27.00	R-B	6.5%	0.38	0	46+63.00	R-B	8.9%	0.54	0
47+00.00	R-B	7.9%	0.48	0	47+25.00	R-B	4.3%	0.27	0
					47+90.00	R-B	6.5%	0.39	0
48+10.00	R-B	7.9%	0.49	0	48+69.00	R-B	7.2%	0.46	0
48+77.00	R-B	5.7%	0.34	0					
49+32.00	R-B	8.4%	0.50	0	49+50.00	R-B	7.4%	0.44	0
49+90.00	R-B	9.5%	0.55	0	50+11.00	R-B	6.5%	0.40	0
					50+71.00	R-B	9.3%	0.60	0
50+91.00	R-B	8.6%	0.50	0					
51+14.00	R-B	8.2%	0.47	0	51+36.00	R-B	6.6%	0.40	0
51+50.00	R-B	9.7%	0.57	0					
51+77.00	R-B	9.4%	0.58	0	51+90.00	R-B	9.9%	0.60	0
52+45.00	R-B	10.9%	0.63	0	52+50.00	R-B	8.7%	0.50	0
					52+68.00	R-B	8.8%	0.50	0
53+20.00	R-B	9.8%	0.58	0					
53+83.00	R-B	8.0%	0.46	0	54+15.00	R-B	8.7%	0.54	0
54+44.00	R-B	6.6%	0.40	0	54+71.00	R-B	9.0%	0.55	0
55+02.00	R-B	7.0%	0.42	0	55+27.00	R-B	6.1%	0.37	0
					55+54.00	R-B	5.0%	0.30	0

Handel Road Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
55+66.00	R-B	7.9%	0.47	0					
					56+46.00	R-B	9.8%	0.58	0
					56+95.00	R-B	6.7%	0.44	0
57+38.00	R-B	3.6%	0.20	0					
					57+87.00	R-B	7.6%	0.46	0
58+06.00	R-B	4.9%	0.30	0	58+06.00	R-B	7.9%	0.49	0
					58+46.00	R-B	7.1%	0.35	0
					59+07.99	R-B	5.9%	0.33	0
					59+70.00	R-B	4.2%	0.26	0
60+30.00	R-B	7.4%	0.47	0					
					60+40.00	R-B	7.1%	0.44	0
60+84.00	R-B	6.7%	0.40	0					
61+42.00	R-B	7.2%	0.44	0					
					61+68.00	R-B	7.7%	0.55	0
61+97.00	R-B	6.1%	0.40	0					
					62+19.00	R-B	4.4%	0.39	0
Handel Road Intersection at Sta. 62+35.28									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Hollister Drive Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Hollister Drive Intersection at Sta. 70+15.05									
70+85.00	R-B	8.4%	0.49	0	70+93.00	R-B	10.8%	0.64	0
71+45.00	R-B	6.9%	0.41	0	71+54.00	R-B	10.1%	0.59	0
72+05.00	R-B	6.4%	0.39	0	72+12.00	R-B	9.0%	0.53	0
72+65.00	R-B	7.2%	0.42	0	72+75.00	R-B	6.4%	0.37	0
73+25.00	R-B	6.6%	0.39	0	73+32.00	R-B	7.8%	0.45	0
73+85.00	R-B	7.9%	0.47	0	73+92.00	R-B	8.4%	0.49	0
74+45.00	R-B	9.9%	0.58	0	74+50.00	R-B	9.0%	0.53	0
75+05.00	R-B	8.8%	0.51	0	75+09.00	R-B	9.9%	0.58	0
75+65.00	R-B	8.0%	0.47	0					
76+25.00	R-B	7.9%	0.47	0					
76+90.00	R-B	9.1%	0.52	0					
77+50.00	R-B	7.3%	0.44	0	77+57.00	R-B	8.9%	0.50	0
78+11.00	R-B	6.4%	0.39	0	78+20.00	R-B	6.8%	0.37	0
					78+75.00	R-B	6.3%	0.38	0
					79+40.00	R-B	6.6%	0.39	0
80+00.00	R-B	8.2%	0.48	0	80+00.00	R-B	6.9%	0.40	0
80+63.00	R-B	6.2%	0.36	0	80+63.00	R-B	8.4%	0.48	0
					81+22.00	R-B	7.0%	0.40	0
81+25.00	R-B	4.9%	0.29	0					
81+75.00	R-B	7.5%	0.42	0					
82+30.00	R-B	6.9%	0.39	0	82+30.00	R-B	8.0%	0.45	0
82+80.00	R-B	8.2%	0.48	0					
83+00.00	R-B	7.7%	0.47	0					
83+35.00	R-B	10.0%	0.56	0					
					83+50.00	R-B	10.0%	0.55	4
83+80.00	R-B	9.9%	0.57	0	84+16.00	R-B	10.0%	0.57	8
84+60.00	R-B	10.6%	0.63	0					
85+07.00	R-B	9.9%	0.64	0	85+38.00	R-B	10.6%	0.60	0
85+67.00	R-B	10.3%	0.58	0					
86+25.00	R-B	10.0%	0.52	0	86+33.00	R-B	7.6%	0.49	0
86+87.00	R-B	11.6%	0.63	0	87+00.00	R-B	8.5%	0.53	0
87+50.00	R-B	11.0%	0.61	0	87+56.00	R-B	9.4%	0.58	0
88+10.00	R-B	10.1%	0.56	0	88+18.00	R-B	9.0%	0.54	0
88+70.00	R-B	8.4%	0.48	0	88+75.00	R-B	7.6%	0.45	0
89+29.00	R-B	9.8%	0.56	0	89+37.00	R-B	9.6%	0.54	0
89+90.00	R-B	9.6%	0.58	0	90+00.00	R-B	9.7%	0.53	0
90+65.00	R-B	10.1%	0.60	0	90+65.00	R-B	12.8%	0.70	0
					91+40.00	R-B	10.0%	0.58	3
91+75.00	R-B	9.9%	0.58	0					
92+30.00	R-B	10.8%	0.63	0	92+39.00	R-B	10.0%	0.59	3
					92+62.00	R-B	11.7%	0.70	0

Hollister Drive Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
92+90.00	R-B	10.0%	0.57	3					
					93+19.00	R-B	10.9%	0.66	0
93+50.00	R-B	10.0%	0.56	3					
94+12.00	R-B	12.1%	0.70	0					
94+75.00	R-B	13.6%	0.77	0					
95+35.00	R-B	10.6%	0.63	0					
95+91.00	R-B	9.5%	0.56	0					
96+54.00	R-B	10.4%	0.60	0					
					96+58.00	R-B	9.5%	0.57	0
					96+82.00	R-B	10.4%	0.61	0
97+12.00	R-B	13.3%	0.76	0					
97+75.00	R-B	10.0%	0.58	6					
98+32.00	R-B	10.0%	0.58	3					
98+90.00	R-B	9.7%	0.57	0					
99+55.00	R-B	10.0%	0.58	4					
99+84.00	R-B	10.0%	0.58	6					
100+50.00	R-B	9.0%	0.53	0					
					100+60.00	R-B	9.6%	0.58	0
101+20.00	R-B	8.3%	0.49	0					
101+80.00	R-B	8.0%	0.47	0					
102+37.00	R-B	8.4%	0.50	0					
					102+50.00	R-B	7.2%	0.44	0
103+00.00	R-B	9.5%	0.52	0					
					103+14.00	R-B	6.8%	0.41	0
103+50.00	R-B	8.6%	0.50	0					
					103+75.00	R-B	5.4%	0.32	0
104+15.00	R-B	9.2%	0.56	0					
					104+32.00	R-B	9.3%	0.50	0
104+78.00	R-B	9.5%	0.58	0					
					104+87.00	R-B	8.4%	0.52	0
					105+50.00	R-B	10.3%	0.61	0
Hollister Drive Intersection at Sta. 106+24.18									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Hollister Drive #2 Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (in) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Hollister Drive #2 Intersection at Sta. 200+14.60									
					200+56.00	R-B	7.2%	0.38	0
					201+06.00	R-B	7.7%	0.40	0
					201+50.00	R-B	10.2%	0.64	0
					202+20.00	R-B	9.2%	0.53	0
					202+30.00	R-B	7.5%	0.47	0
					202+89.00	R-B	10.5%	0.56	0
Hollister Drive #2 Intersection at Sta. 203+75.35									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Hollister Drive #3 Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (in) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Hollister Drive #3 Intersection at Sta. 300+14.56									
301+00.00	R-B	10.1%	0.60	0					
301+64.00	R-B	10.3%	0.59	0					
302+08.00	R-B	10.0%	0.49	3					
302+45.00	R-B	5.2%	0.31	0					
Hollister Drive #3 Intersection at Sta. 303+65.45									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Jefferson Lane Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Jefferson Lane Intersection at Sta. 400+14.52									
400+60.00	R-B	10.0%	0.54	4					
401+30.00	R-B	10.0%	0.54	3					
401+50.00	R-B	10.0%	0.55	6	401+50.00	R-B	10.0%	0.55	6
					401+75.00	R-B	11.8%	0.64	0
402+14.00	R-B	11.6%	0.65	0					
					402+50.00	R-B	13.2%	0.69	0
403+12.00	R-B	11.7%	0.66	0	403+12.00	R-B	12.0%	0.64	0
					403+60.00	R-B	12.1%	0.62	0
					404+00.00	R-B	9.9%	0.50	0
					404+40.00	R-B	9.8%	0.53	0
404+67.00	R-B	9.6%	0.56	0					
					404+80.00	R-B	11.3%	0.62	0
					405+43.00	R-B	11.6%	0.66	0
405+63.00	R-B	13.4%	0.72	0					
					406+00.00	R-B	10.0%	0.57	3
406+16.00	R-B	14.0%	0.74	0					
					406+63.00	R-B	11.8%	0.68	0
406+75.00	R-B	12.8%	0.68	0					
					407+20.00	R-B	13.0%	0.73	0
407+40.00	R-B	12.3%	0.67	0					
					407+83.00	R-B	11.3%	0.62	0
408+00.00	R-B	10.0%	0.56	3					
					408+45.00	R-B	10.5%	0.57	0
					408+88.00	R-B	8.1%	0.44	0
					409+55.00	R-B	6.9%	0.37	0
409+80.00	R-B	7.4%	0.41	0					
					410+12.00	R-B	7.7%	0.44	0
410+75.00	R-B	10.0%	0.55	3	410+75.00	R-B	10.2%	0.59	0
					411+30.00	R-B	9.3%	0.52	0
411+50.00	R-B	10.9%	0.62	0					
					411+85.00	R-B	9.3%	0.53	0
412+36.00	R-B	11.1%	0.62	0	412+36.00	R-B	10.9%	0.60	0
					412+92.00	R-B	10.0%	0.56	3
					413+50.00	R-B	10.0%	0.53	3
413+89.00	R-B	10.0%	0.52	6					
					414+40.00	R-B	10.0%	0.52	6
414+89.00	R-B	10.2%	0.56	0					
					415+15.00	R-B	11.1%	0.58	0
					415+50.00	R-B	10.0%	0.52	5
415+66.00	R-B	10.0%	0.56	3					
417+00.00	R-B	10.0%	0.58	3					
					417+63.00	R-B	10.1%	0.52	0
417+75.00	R-B	10.0%	0.57	7					
					417+19.98	R-B	10.0%	0.51	6
418+35.00	R-B	10.0%	0.55	7					
					418+75.00	R-B	13.0%	0.67	0
419+10.00	R-B	10.0%	0.52	5					
					419+13.00	R-B	14.7%	0.75	0
420+20.00	R-B	10.0%	0.56	5					
					420+25.00	R-B	12.4%	0.63	0
421+00.00	R-B	10.0%	0.57	3	421+00.00	R-B	10.8%	0.55	0
421+35.00	R-B	10.8%	0.62	0	421+35.00	R-B	10.2%	0.52	0
422+00.00	R-B	11.4%	0.64	0					

Jefferson Lane Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
					422+50.00	R-B	7.9%	0.41	0
422+75.00	R-B	10.0%	0.57	3					
					422+80.00	R-B	8.6%	0.44	0
423+80.00	R-B	12.1%	0.70	0	423+80.00	R-B	10.0%	0.52	3
424+60.00	R-B	6.7%	0.39	0	424+60.00	R-B	10.1%	0.52	0
424+93.00	R-B	9.8%	0.56	0					
					425+30.04	R-B	10.0%	0.51	3
Jefferson Lane Intersection at Sta. 425+67.25									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Milbrook Drive Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Milbrook Drive Intersection at Sta. 500+14.51									
500+96.00	R-B	4.5%	0.26	0					
501+45.00	R-B	6.6%	0.38	0					
					501+84.00	R-B	6.1%	0.35	0
					504+58.00	R-B	3.5%	0.30	0
504+85.00	R-B	2.8%	0.26	0					
					505+12.00	C-B	2.7%	0.28	0
505+30.00	R-B	3.5%	0.29	0					
					505+50.00	R-B	6.2%	0.39	0
					506+65.00	R-B	7.4%	0.59	0
506+94.00	R-B	8.7%	0.55	0					
507+14.00	R-B	7.2%	0.46	0	507+14.00	R-B	9.4%	0.66	0
					507+32.00	R-B	8.7%	0.62	0
507+78.00	R-B	10.2%	0.67	0					
					507+92.00	R-B	8.4%	0.62	0
508+37.00	R-B	10.5%	0.74	0					
					508+54.00	R-B	6.4%	0.47	0
					509+16.00	R-B	5.5%	0.42	0
509+45.00	R-B	6.5%	0.52	0					
					509+55.00	R-B	6.2%	0.51	0
					509+75.00	R-B	5.9%	0.50	0
510+07.00	R-B	6.2%	0.50	0					
510+23.00	R-B	5.9%	0.47	0					
					510+35.00	R-B	4.4%	0.39	0
510+79.00	R-B	4.8%	0.39	0					
					510+96.00	R-B	4.1%	0.35	0
511+45.00	R-B	4.6%	0.37	0					
512+48.00	R-B	4.3%	0.36	0					
513+12.00	R-B	4.6%	0.37	0					
513+72.00	R-B	5.5%	0.42	0					
					513+79.00	R-B	3.3%	0.29	0
514+29.00	R-B	4.0%	0.31	0					
					514+37.00	R-B	2.7%	0.24	0
514+47.00	R-B	4.4%	0.34	0					
					514+58.00	R-B	3.1%	0.28	0
515+12.00	R-B	3.9%	0.31	0					
515+69.00	R-B	3.6%	0.30	0	515+69.00	R-B	2.5%	0.22	0
					516+32.00	R-B	2.7%	0.24	0
516+75.00	R-B	3.9%	0.31	0					
516+91.00	R-B	2.1%	0.17	0	516+91.00	R-B	3.9%	0.35	0
517+55.00	R-B	1.5%	0.12	0					
					517+98.00	R-B	2.6%	0.23	0
518+28.00	R-B	1.6%	0.13	0					
					518+44.00	R-B	3.0%	0.28	0
					518+90.00	R-B	0.7%	0.07	0
519+36.00	R-B	4.4%	0.35	0					
					519+50.00	R-B	5.1%	0.46	0

Milbrook Drive Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
					519+96.00	R-B	6.4%	0.56	0
520+43.00	R-B	6.7%	0.55	0					
					520+48.00	R-B	4.4%	0.38	0
					521+02.00	R-B	4.5%	0.38	0
521+20.00	R-B	5.1%	0.46	0					
Milbrook Drive Intersection at Sta. 522+11.44									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Nassau Lane Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Nassau Lane Intersection at Sta. 600+15									
600+86.00	R-B	5.8%	0.60	0					
					601+34.00	R-B	8.2%	0.83	0
					601+56.00	R-B	7.9%	0.80	0
601+67.00	R-B	6.1%	0.66	0					
					602+16.00	R-B	10.0%	0.85	3
					603+25.00	R-B	10.0%	0.55	3
					603+39.00	R-G	9.9%	0.53	0
603+60.00	R-B	9.4%	0.52	0					
					604+00.00	R-B	10.0%	0.54	3
					604+55.00	R-B	9.8%	0.51	0
604+62.00	R-B	10.0%	0.54	3					
					605+18.00	R-B	9.2%	0.50	0
605+25.00	R-B	10.0%	0.52	3					
					605+80.00	R-B	8.2%	0.44	0
606+00.00	R-B	9.5%	0.52	0					
Nassau Lane Intersection at Sta. 607+04.24									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Oxford-Cambridge Drive Street Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Oxford-Cambridge Drive Intersection at Sta. 700+14.60									
					700+97.00	R-B	6.7%	0.37	0
701+07.00	R-B	9.2%	0.50	0	701+55.00	R-B	6.4%	0.36	0
701+76.00	R-B	9.9%	0.53	0	702+21.00	R-B	6.0%	0.35	0
					702+75.00	R-B	5.6%	0.31	0
					703+38.00	R-B	7.1%	0.40	0
					704+00.00	R-B	8.5%	0.46	0
704+17.00	R-B	7.1%	0.38	0	704+60.00	R-B	4.8%	0.26	0
704+78.00	R-B	8.8%	0.47	0	705+15.00	R-B	5.0%	0.28	0
705+35.00	R-B	6.9%	0.39	0	705+75.00	R-B	6.7%	0.37	0
706+34.00	R-B	7.2%	0.39	0	706+50.00	R-B	9.7%	0.53	0
706+57.00	R-B	9.4%	0.52	0	707+10.00	R-B	10.1%	0.55	0
707+54.00	R-B	10.4%	0.56	0	707+68.00	R-B	12.4%	0.60	0
707+70.00	R-B	10.0%	0.55	3	708+20.00	R-B	11.2%	0.55	0
708+25.00	R-B	10.9%	0.58	0	708+75.00	R-B	11.1%	0.58	0
708+83.00	R-B	12.9%	0.70	0	709+35.00	R-B	9.9%	0.55	0
709+37.00	R-B	12.2%	0.65	0					
710+00.00	R-C	7.6%	0.42	0					
710+54.00	R-B	6.6%	0.34	0					
711+15.00	R-C	8.6%	0.45	0					
711+68.00	R-B	9.4%	0.49	0					
					711+82.00	R-B	7.8%	0.43	0
712+25.00	R-B	8.8%	0.46	0	712+39.00	R-B	10.0%	0.60	4
712+81.00	R-B	9.6%	0.51	0	712+95.00	R-B	10.0%	0.59	0
					713+50.00	R-B	13.2%	0.81	0
713+44.00	R-B	10.0%	0.54	3	714+08.00	R-B	9.5%	0.56	0
714+40.00	R-B	10.6%	0.57	0					
714+57.00	R-B	10.2%	0.55	0	714+66.00	R-B	11.2%	0.62	0
715+11.00	R-B	10.0%	0.54	3	715+20.00	R-B	11.6%	0.65	0
715+68.00	R-B	8.1%	0.45	0	715+75.00	R-B	8.3%	0.46	0
716+22.00	R-B	9.1%	0.49	0	716+35.00	R-B	6.4%	0.36	0
716+83.00	R-B	9.7%	0.49	0	716+83.00	R-B	7.2%	0.41	0
717+38.00	R-B	10.1%	0.52	0	717+45.00	R-B	5.8%	0.32	0
717+95.00	R-B	4.9%	0.28	0	717+95.00	R-B	7.2%	0.40	0
718+50.00	R-B	4.2%	0.24	0	718+57.00	R-B	6.6%	0.36	0
719+08.00	R-B	6.3%	0.35	0	719+12.00	R-B	6.6%	0.37	0
					721+00.00	C-B	7.7%	0.48	0
					727+90.00	R-B	10.0%	0.56	6
727+95.00	R-B	10.0%	0.52	8					
729+84.00	R-B	7.2%	0.39	0					
					730+71.00	R-B	6.6%	0.36	0

Oxford-Cambridge Drive Street Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
730+91.00	R-B	10.5%	0.52	0					
					731+38.00	R-B	6.5%	0.36	0
731+50.00	R-B	9.1%	0.47	0					
731+69.00	R-B	9.0%	0.46	0					
					732+02.00	R-B	9.9%	0.52	0
					732+18.00	R-B	9.4%	0.50	0
732+30.00	R-B	11.2%	0.58	0					
					732+80.00	R-B	10.0%	0.51	3
732+90.00	R-B	11.0%	0.54	0					
					733+87.00	R-B	9.3%	0.49	0
733+97.00	R-B	11.8%	0.60	0					
734+10.00	R-B	10.9%	0.57	0					
					734+50.00	R-B	9.6%	0.51	0
734+72.00	R-B	10.8%	0.57	0					
					735+10.00	R-B	8.4%	0.45	0
735+33.00	R-B	10.4%	0.55	0					
					735+70.00	R-B	9.4%	0.52	0
					735+70.00	R-B	9.4%	0.52	0
736+40.00	R-B	9.4%	0.49	0					
					736+46.00	R-B	7.6%	0.42	0
736+98.00	R-B	8.4%	0.44	0					
					737+06.00	R-B	7.7%	0.44	0
					738+17.00	R-B	9.1%	0.50	0
					738+78.00	R-B	9.7%	0.54	0
					738+94.00	R-B	7.6%	0.43	0
739+50.00	R-B	7.4%	0.41	0					
					739+97.00	R-B	9.1%	0.51	0
740+15.00	R-B	7.3%	0.40	0					
					740+58.00	R-B	10.0%	0.57	0
741+20.00	R-B	9.4%	0.51	0					
741+35.00	R-B	8.2%	0.45	0					
742+35.00	R-B	5.8%	0.33	0					
					742+41.17	R-B	9.5%	0.52	0
742+55.00	R-B	7.6%	0.42	0					
					743+04.00	R-B	10.4%	0.57	0
743+58.00	R-B	6.5%	0.36	0					
743+75.00	R-B	6.3%	0.35	0					
744+18.00	R-B	6.5%	0.38	0					
744+35.00	R-B	7.7%	0.43	0					
745+38.00	R-B	5.9%	0.39	0					
745+53.00	R-B	5.2%	0.32	0					
746+16.00	R-B	5.1%	0.30	0					
					746+18.00	R-B	5.6%	0.42	0
					746+63.00	R-B	7.6%	0.55	0
746+71.00	R-B	8.0%	0.51	0					
Oxford-Cambridge Drive Intersection at Sta. 747+66.60									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope
² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Princeton Lane Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Princeton Lane Intersection at Sta. 800+15.00									
801+20.00	R-B	4.2%	0.40	0					
					801+30.00	R-B	2.2%	0.19	0
801+85.00	R-B	6.8%	0.63	0	801+85.00	R-B	8.2%	0.69	0
Princeton Lane Intersection at Sta. 802+78.68									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway

Sutton Avenue Driveways									
Left					Right				
Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹	Station	Driveway Type	Proposed Apron Grade Post Reconstruction	Proposed Apron DH (ft) Post Reconstruction ²	DWY Reconstruction Offset (ft) ¹
Sutton Avenue Intersection at Sta. 900+55.00									
900+75.00	C-B	6.2%	0.45	0					
					901+00.00	C-B	10.0%	0.47	5
901+32.00	C-B	5.5%	0.38	0					
					901+75.00	C-B	10.0%	0.29	4
Sutton Avenue Intersection at Sta. 904+55.50									

¹ denotes distance behind back of sidewalk to reconstruct to meet the desired driveway slope

² denotes difference in elevation between the edge of pavement and face of sidewalk

Note: See drawing no. MDS-06 in the construction plans for driveway details

Legend:

- R-B Residential Bituminous driveway
- R-C Residential Concrete driveway
- C-C Commercial Concrete driveway
- C-B Commercial Bituminous driveway
- R-G Residential Gravel driveway