City of Meriden, Connecticut

Purchasing Department

Invitation to Bid

For

COE AVENUE TRAIL

Meriden, CT

B020-23

Proposals Due: April 16, 2020 @ 11:00 AM

Purchasing Department

142 East Main St. Room 210

Meriden, CT 06450

(203) 630-4115

LEGAL NOTICE

INVITATION TO BID

The City of Meriden is accepting sealed bids for:

For: **B020-23 COE AVENUE TRAIL**
ENGINEERING DEPARTMENT

The City of Meriden, Engineering Department is looking to continue The Meriden Linear Trail from its current terminus at Platt High School along Coe Avenue to the Bradley Avenue Bridge over Harbor Brook. The Contractor will reuse the existing bituminous driveway adjacent to Platt H.S., and construct approximately 7,000 sf. of 8-foot wide concrete sidewalk/trail along Coe Avenue. At the conclusion of the project, the contractor will mill and repave Coe Avenue within the project limits, and install all required signage and pavement markings.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, form of Bid Bond, Performance Bond, and Labor & Material Payment Bond may be examined on or after March 16, 2020 between the hours of 8:00 A.M. and 5:00 P.M. daily, except Saturdays, Sundays and Holidays.

A **Non Mandatory** Pre-Bid Conference will be held on March 31, 2020 at 8:30 AM in the Engineering Conference Room, 142 East Main Street, Ground Floor, Room 19, Meriden, CT 06450.

Bids shall be submitted on forms and in the manner specified. Forms and specifications may be obtained from the Purchasing Department or on the City of Meriden website (www.meridenct.gov/business/bids-rfps/) or on the State of Connecticut Department of Administrative Services website (www.biznet.ct.gov). Bids will be accepted at the Purchasing Department, 142 East Main St, Room 210, Meriden, Connecticut 06450 until **11:00 AM local time on April 16, 2020** at which time they will be publicly opened and read. Any bid received after the time and date specified shall not be considered.

Each bid shall be accompanied by a certified check or Bid Bond in the amount of ten (10%) percent of the amount bid.

The right is reserved to reject any or all bids, in whole or in part, to award any item, group of items, or total bid, and to waive informality or technical defects, if it is deemed to be in the best interest of the City of Meriden. No bidder may withdraw their bid within sixty (60) days of the date of the bid opening.

Please Note: No firm may bid unless they are a State of Connecticut DOT pre-qualified contractor.

This contract is subject to State set aside and contract compliance requirements.

Labor and Material Payment Bond and a Performance Bond for One Hundred Percent (100%) of the contract price, with a corporate surety approved by the City of Meriden, will be required of the lowest responsible bidder.

The City of Meriden is an Affirmative Action/Equal Opportunity Employers. Small, Minority, Women and Disadvantaged Business Enterprises are encouraged to respond.

Adam B Tulin
Purchasing Officer
City of Meriden, CT 06450-8022

Dated: March 16, 2020

INFORMATION TO BIDDERS

B020-23 Coe Avenue Trail

1. BIDDING PROCEDURES

   Sealed Bids shall be submitted on the forms designated by the attached Proposal Bid Form. Bids will be received by the Purchasing Department, Room 210, City Hall, 142 East Main Street, Meriden, Connecticut, 06450-8022, until **11:00 AM** on **April 16, 2020**, and thereafter immediately read in public.

2. BIDS

   Bids are to be submitted on the attached proposal forms. Please submit two copies of Proposal forms and Bidder's Qualifications. One shall be an original and one can be a copy.

Surety will be in the amount of ten (10%) percent of the amount bid. They must be submitted in a sealed envelope with a Bid Bond, Certified Check, Money Order, Cashiers Check, Treasurer's Check, or Official Check. If a paper bond is used it must be listed with Department of the Treasury's Listing of Approved Sureties (Department Circular 570).

BID WILL BE AUTOMATICALLY REJECTED FOR ANYONE SUBMITTING A SURETY OTHER THAN THOSE SPECIFIED

a. Bids must be made out and signed in the Corporate, or other, name of Bidder, and must be fully and properly executed by an authorized person.

b. The sealed envelope must have the Bidder's name and address in the upper left hand corner and the words "BID DOCUMENT - B020-23 Coe Avenue Trail to be opened at 11:00 AM." in the lower left hand corner.

c. Bids received later than the time and date specified will not be considered.

d. Amendments to or withdrawal of Bids received later than the time and date set for the Bid Opening will not be considered.

e. All prices must be in ink or typewritten.

3. BIDDER QUALIFICATIONS

   Bidders will be required to fill out, and include as part of their bid any attached Bidder's Qualification Statement.

   In determining the qualifications of a bidder, the Owner will consider his record in the performance of any contracts for construction work into which he may have previously entered; and the Owner expressly reserves the right to reject the bid of such bidder, if such record discloses that such bidder, in the opinion of the Owner has not properly performed such Contracts or has habitually and without just cause, neglected the payment of bills or has otherwise disregarded his obligations to subcontractors, suppliers or employees.

4. EXAMINATION OF BIDDING DOCUMENTS

Bidders are to examine all documents and visit the site and shall make a thorough examination of the conditions so that he may familiarize himself with all of the existing conditions and difficulties that will attend the execution of the work, and so that he may determine the amount of work necessary to carry out the true intent of the specifications and work shown on the drawings.

Neither Owner nor Engineer (if applicable) has any responsibility for the accuracy, completeness or sufficiency of any bid document obtained from any other source other than from the Owner. Obtaining these documents from any other source(s) may result in obtaining incomplete and inaccurate information. Obtaining these documents from any other source may also result in failure to receive any addenda, corrections or other revisions to these documents that may be issued.

A **Non-Mandatory Pre-Bid Conference** will be held on **March 31, 2020 @ 8:30 AM** in the Engineering Conference room, 142 East Main St, Ground Floor-Rm 19, Meriden, CT 06450.

No request shall be honored **if less than seven (7) calendar days prior to the date fixed for the opening of bids.** Any and all such interpretations, and any supplementary instructions, will be in the form of a written Addenda to the specifications which, if issued, will be made available on the City of Meriden website (www.meridenct.gov) unless it is to change the date fixed for the opening of proposals, not later than three (3) days prior to the date fixed for the opening of proposals. Bidders are encouraged to check the website regularly for addenda. Failure of any bidder to receive any such Addenda shall not relieve any bidder from any obligations under their bid as submitted.

5. BIDS TO REMAIN OPEN

No bidder may withdraw their bid within sixty (60) days of the date of the bid opening. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the City of Meriden and the bidder.

6. AWARD OF CONTRACT

The Purchasing Officer reserves the right to make an award on the Bid which, by the Purchasing Officer's judgment and recommendation from the User Department following Bid evaluations, best meets the specifications and is deemed to be in the best interest of the City of Meriden.

A Contract will not be awarded to any corporation, firm or individual who is in arrears to the City of Meriden, Connecticut by debt or contract, or who is in default as security or otherwise by any obligation to the City of Meriden, Connecticut.

Award of Contract is typically awarded to the lowest responsible bidder.

The right is reserved to reject any or all bids, to award any item, group of items, or total bid, and to waive informality or technical defects, if it is deemed to be in the best interest of the City of Meriden.

7. ~~CITY OF MERIDEN, LOCAL PREFERENCE~~ - **N/A**

~~In determining the lowest responsible bidder, the Purchasing Department shall also consider Local Preference.~~

~~This section shall not apply in those instances where the bid requested involves a cooperative purchasing arrangement between the City of Meriden and other municipalities or the State of Connecticut.~~

~~Bidders are specifically advised that the City of Meriden has adopted Code 3-13A which requires, but is not limited to, a local preference requiring, in part, that a "City based business" shall mean a business with its principal place of business located within the boundaries of the City of Meriden. A business shall not be considered a "City based business" unless evidence satisfactory to the Purchasing Department has been submitted with each bid (forms included in bidding documents) by said business to establish that it has a bona fide principal place of business is operated, or payment of property taxes on the personal property of the business.~~

~~Any City based business bidder which has submitted a bid not more than ten (10) percent higher than the low bid provided such City based business bidder agrees to accept the award of the bid at the amount of the low bid. The acceptance shall be submitted in writing to the Purchasing Department no later than next business day following the opening of the bid) for example, a bid opened at 11:00 AM Monday must be accepted by the City based bidder no later than 11 AM Tuesday). If more than one City based business bidder have submitted bids not more than ten (10) percent higher than the low bid and have agreed to accept the award of the bid at the amount of the low bid, the lowest responsible bidder shall be the one of the City based business bidders which has submitted the lowest bid.~~

~~Bidders claiming status under Local Preference are hereby required to submit with their bid an additional form, titled "Request for Status as a Meriden Based Business".~~

8. ~~EXTENSION OF AGREEMENT~~ - **N/A**

~~Thirty (30) days prior to the expiration of the resulting agreement, the parties may, by mutual agreement, extend it for up to two (2) years.~~

9. TIME

Inasmuch as the Contract concerns a needed public improvement, the provisions of the Contract relating to the time of performance and completion of the work are of the essence of this Contract. Accordingly, the Contractor shall begin work on the day specified in paragraph 2.04 of the General Conditions, and shall prosecute the work diligently so as to permit full use not later than the first day following the construction period established in the Contract. See article 3.2 "Liquidated Damages" of the "Standard Form of Agreement between Owner and contractor".

10. SCHEDULE OF WORK

The Contractor shall schedule all work in a manner that will not disrupt operations. Once the work has begun, the Contractor shall work full time.

11. TAXES

a. The City of Meriden is exempt under Connecticut General Statutes Section 12-412 from the payment of the excise taxes imposed by the Federal Government and the Sales and Use Tax of the State of Connecticut; such taxes should not be included in the Bid price.

b. Upon request, exemption certificates will be furnished to the successful Bidder.

12. FAIR EMPLOYMENT PRACTICES

The successful Contractor shall agree that neither he nor his Subcontractors will refuse to hire or employ or to bar or to discharge from employment an individual or to discriminate against him in compensation or ill terms, conditions or privileges of employment because of race, color, religious creed, age, sex, national origin or ancestry, except in the case of a bona fide occupational qualification or need. The terms stated above are taken from Connecticut General Statues Section 31-126 "Unfair Employment Practices".

13. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

The Agreement for the work will be written on the "Standard Form of Agreement between Owner and Contractor", where the basis of payment is a stipulated sum.

14. CERTIFICATE OF SURETY

Each Bidder will be required to furnish a Certificate of Surety with his proposal evidencing that he can obtain the required Performance and Labor and Material Bond, in the event he is awarded the contract. In the event a bid is received with a Certified Check, in lieu of a Bid Bond, and said Certificate does not accompany the bid, the bid shall be rejected.

15. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the Contract, 100 percent Performance Bond, Labor and Material Payment Bond and Certificate of Insurance naming the City of Meriden Additional Insured, as required within ten (10) working days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

16. LOCAL SUBCONTRACTORS, SUPPLIERS, etc.

Local subcontractors, material suppliers, and labor in the City of Meriden should be considered and sought insofar, as is practical in the performance of this project.

17. CITY OF MERIDEN CODE OF ETHICS

The City of Meriden Code of Ethics, sections 21-1 through 21-15 of the City Code, are incorporated herein by reference and the terms of the Code of Ethics shall constitute a part of any contract or agreement entered into by the City as a result of this bid as if those terms were set forth in such contract or agreement.

Bidders are specifically advised that the Code of Ethics prohibits public officers or employees, their immediate families and business with which they are associated from participating in any transaction which is incompatible with the proper discharge of official duties or responsibilities. Bidders are also Advised that the Code of Ethics contain provisions with respect to paid contractors and former employees and officials.

BIDDERS SHOULD NOTE THAT CONTRACTS, AGREEMENTS AND BIDS ENTERED INTO OR AWARDED IN VIOLATION OF THE CODE OF ETHICS ARE VOIDABLE BY RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERIDEN.

Copies of the Code of Ethics may be obtained from the office of the City Clerk.

18. NON-COLLUSION AFFIDAVIT

Each bidder submitting a bid to the City of Meriden for any portion of the work contemplated by the documents on which bidding is based shall execute and attach thereto an affidavit substantially in the form provided, to the effect that he has not colluded with any other person, firm or corporation in regard to any bid submitted.

Before execution of any subcontract, the successful bidder shall submit the name of any proposed subcontractor for prior approval and an affidavit substantially in the form provided in the Section entitled "Subcontract" under the General Conditions.

19. SOIL CONDITIONS

The Owner does not guarantee the accuracy of any information which it may have obtained as to the kind or condition of the soil that may be encountered in the prosecution of the proposed work, neither does the Owner represent that the Plans and Specifications drawn are based upon any soil data so obtained. The Owner does not make any representations as to the soil data so obtained. The Owner does not make any representations as to the soil conditions to be encountered or as to foundation materials.

20. AWARD IN CASE OF A TIE

In the event there are two or more responsible bidders the decision to award will be based by the following and in the following order:

1. ~~The incumbent will be awarded the bid over that of another bidder~~.
2. In the case of a multi-item bid, if one bidder has been awarded other items from the same bid, and the other bidder has not, the bidder with the multiple awards will be awarded the bid over that of another bidder.
3. The bidder located in the State of Connecticut will be awarded the bid over that of another bidder.
4. By coin toss, the winner of the coin toss will be awarded the bid over that of another bidder.

21. ASSIGNMENT OF CONTRACT

No contract may be assigned without the written consent of the Purchasing Officer or his designee.

22. PERMIT FEES:

The Contractor shall be responsible for obtaining all necessary permits required by the City of Meriden prior to commencement of work. Contact the Building Department for building permit information at (203) 630-4091. For all other required permits contact Engineering Department at 203-630-4018.

23. CITY HALL CLOSING

If Meriden City Hall is closed for inclement weather, or any other unforeseen event, bids will be due at the same time on the next business day that City Hall is open.

City of Meriden, CT

B020-23 Coe Avenue Trail

Project Overview

OVERVIEW

The City of Meriden, Engineering Department is looking to continue The Meriden Linear Trail from its current terminus at Platt High School along Coe Avenue to the Bradley Avenue Bridge over Harbor Brook. The Contractor will reuse the existing bituminous driveway adjacent to Platt H.S., and construct approximately 7,000 sf. of 8-foot wide concrete sidewalk/trail along Coe Avenue. At the conclusion of the project, the contractor will mill and repave Coe Avenue within the project limits, and install all required signage and pavement markings.

A Non-Mandatory pre-bid meeting is scheduled for March 31, 2020 @ 8:30 am.

Proposals must be received by **11:00 AM** on **April 16, 2020. Responses received after this date and time will not be accepted.**

We are anticipating having the project started by June 29, 2020 with substantial completion on/about September 30, 2020 (90 days). However, final milling and paving on Coe Avenue can be extended but MUST be completed within 120 days.

The bids should include sufficient information and detail to address scope of work, plan of services/timeline and fee schedule (roles, hourly rates and anticipated hours).

PURCHASING DEPARTMENT
ROOM 210 CITY HALL
142 EAST MAIN STREET
MERIDEN, CONNECTICUT 06450-8022

ADAM B TULIN, MPA **PHONE: 203-630-4115**
PURCHASING OFFICER

Shall Be Submitted With Bid

NON-COLLUSIVE BID STATEMENT

B020-23 Coe Avenue Trail

The undersigned bidder, having fully informed it regarding the accuracy of the statements made herein certifies that,

1. The bid has been arrived at by the bidder independently and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition, and;

2. The contents of the bid have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicated to any such person prior to the official opening of the bid.

The undersigned bidder further certifies that this statement is executed for the purposes of inducing the City of Meriden to consider the bid and make an award in accordance therewith.

_____
Legal Name of Bidder

_____
Business Address

_____
Please print: Name and Title of Person Authorized to Sign

_____ _____
Signature Date

_____ _____ _____
Phone Number & Ext. Fax Number E-mail address

B020-23 COE AVENUE TRAIL

BIDDER'S QUALIFICATION STATEMENT

This Statement of Bidder's Qualifications is to be submitted by the bidder at the time of the bid opening. All questions must be answered and the data given must be clear and comprehensive. If necessary, questions must be answered on attached sheets. The bidder may submit any additional information they desire. It is understood that when the City has executed an Agreement, to which these General Conditions are a part, it is, in part, done upon the reliance of the answers provided herein by the bidder or the agent of the bidder.

Firm Name _____

Address _____
_____
_____

Telephone _____ Fax_____

Officers: _____ President
_____ Vice President
_____ Secretary
_____ Treasurer

Bank References: _____
_____
_____
_____

Bond surety Company: _____
_____

If a partnership, give names of partners. If a sole proprietorship, give name and title of a least one responsible employee.
_____
_____
_____

Experience: The Bidder shall be qualified by experience to perform work of this nature and shall list five (5) examples of similar projects completed within the past five (5) years, with the names of responsible parties as references.

PROJECT	OWNER	TELEPHONE NUMBER CONTACT NAME	COST

1. Minority owned business? _____ yes _____ no

2. Years organized. _____

3. Is your company a corporation _____yes _____ no
If yes where incorporated? _____

4. How many years have you been engaged in business under your present firm name? _____

5. Former Firm Name (if any)_____

6. List total number of Personnel _____

7. List Vehicles and Equipment that you will use to perform this work: (show age of vehicles and equipment, sizes, capacities, etc.

_____
_____
_____
_____
_____
_____

8. List the work to be performed by Subcontractors and summarize the dollar value of each subcontract.

_____
_____
_____
_____
_____

9. List the name and address of the more important contracts recently completed by you, starting the approximate gross cost for each, and the month and year completed:

_____
_____
_____
_____
_____
_____

10. General character of work performed by you_____

_____
_____

11. Have you ever failed to complete any contract awarded to you? If so, where and why?

_____
_____
_____
_____

12. Have you ever defaulted on a contract? If so where and why?
_____
_____
_

13. Have you ever filed bankruptcy: _____Please explain:_____
_____
_____
_____

14. Will you, upon request, furnish any information that may be required by the City of Meriden?_____

15. The undersigned hereby authorizes and request any person, firm or cooperation to furnish any information requested by the City of Meriden, in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated this _____day of _____, 20_____
day month year

_____
Name of Bidder

_____
Title

State of _____
County of _____

_____ being duly sworn deposes and says that they are
Name
_____ of _____
title name of organization
and that the answers to the forgoing question and all statement therein contained are true and correct

Subscribed and sworn to before me
this _____ day of _____ 20_____
day month year

_____
Notary Public signature

My commission expires _____

FORM OF SURETY GUARANTY

(Shall accompany proposal)

KNOW ALL MEN BY THESE PRESENTS, that for and in consideration of the sum of $1.00, lawful money of the United States, the receipt whereof is hereby acknowledged, paid the under said corporation, and for other valuable consideration the

_____

(Name of Surety Company).

A corporation organized and existing under the laws of the State of _____

And licensed to do business in the State of _____ certifies and agrees

That if Contract _____

Is awarded to - _____
(Name of Bidder)

Corporation will execute the bond or bonds as required by the Contract Documents and will become surety in the full amount of the Contract price for the faithful performance of the Contract and for payment of all persons supplying labor or furnishing or furnishing materials in connection thence with.

_____
(Surety)

The language of this form shall generally be given on the official form normally provided by the Surety Company complete with the usual proof of Authority of Officers of the Surety Company to execute said official form.

Should a bid be offered with a check as surety without said official form, such bid shall be rejected.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
(Name of Principal)
As Principal, and _____as Surety are held and
(Name of Surety)
Firmly bound unto the CITY OF MERIDEN, CONNECTICUT hereinafter called the "Owner", in

The penal sum of _____ DOLLARS, ($ _____)

Lawful money of the United States, for the payment of which sum 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 Principal has submitted the Accompanying Bid dated _____ 20_____

For _____
_____

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the Period specified therein after the opening of the same, or, if no period be specified, within thirty (30) days after the said opening, and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Owner in accordance with the Bid, as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract; or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid and the Amount for which the Owner may procure the required work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____ (L.S)
Principal

_____
Surety

SEAL

By: _____

In presence of:

_____ _____ (Seal)
(Individual Principal)

_____
(Business Address)

_____ (Seal)
(Partnership)

By _____

_____

_____
(Business Address)

Attest:

_____ _____
(Corporate Principal)

_____

_____
(Business Address)

Affix Corporate Seal

By: _____

_____ _____

Attest:

_____ _____
(Corporate Surety)

_____ _____
(Business Address)

Countersigned

Affix Corporate Seal _____

By: _____ _____
Attorney-in-Fact, State of _____

_____
(Power of Attorney for person signing for Surety Company must be attached to bond)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____

_____ Secretary of the Corporation named as Principal in the within bond,

That _____ who signed the said bond on

behalf of the Principal was then _____ of said Corporation; that I know his signature thereto is genuine, and that said bond was duly signed, sealed, and attested to for and in behalf of said corporation by authority of its governing body.

(Corporate Seal}

_____

_____
(Title)

(The Surety Company must append statement of its financial condition and a copy of the resolution authorizing the execution of bonds by officers of the company, and the power-of-attorney for the surety company's attorney-in-fact, authorized to act within the State of Connecticut.)

END OF BID BOND

PROPOSAL PAGE FOR B020-23

For: COE AVENUE TRAIL
For: ENGINEERING DIVISION, DPW

Date of Opening: APRIL 16, 2020
11:00 AM, Prevailing Local Time

To: Adam B Tulin, MPA
Purchasing Officer
142 East Main Street, Room 210
Meriden, CT 06450-8022

The undersigned, _____doing business in the City/Town of

_____ in the State of _____, submits herewith, in conformity with the general instructions, conditions and specifications for the following:

Coe Ave Trail Meriden, CT

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
201001	1 Lump Sum	CLEARING AND GRUBBING Price per Lump Sum: _____ _____		
202000	50 Cubic Yards	EARTH EXCAVATION Price per Cubic Yard: _____ _____		
202529	1,965 Linear Feet	CUT BITUMINOUS CONCRETE PAVEMENT Price per Linear Foot: _____ _____		
209001	50 Square Yards	FORMATION OF SUBGRADE Price per Square Yard: _____ _____		
211000	11 Square Yards	ANTI-TRACKING PAD Price per Square Yard: _____ _____		

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
219001	830 Linear Feet	SEDIMENTATION CONTROL SYSTEM Price per Linear Foot: _____ _____		
219011A	3 Each	SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN Per Each _____ _____		
304002	10 Cubic Yards	PROCESSED AGGREGATE BASE Price per Cubic Yard: _____ _____		
406171	525 Tons	HMA S0.50 Per Ton _____ _____		
406172	100 Tons	HMA S0.375 Per Ton _____ _____		
406200A	750 Linear Feet	CLEANING AND SEALING CRACKS Price per Linear Foot: _____ _____		
406236	380 Gallons	MATERIAL FOR TACK COAT Price per Gallon: _____ _____		
406270	4,500 Square Yards	MILLING OF BITUMNOUS CONCRETE 0-6" Price per Square Yard: _____ _____		

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
586750	2 Each	TYPE C CATCH BASIN TOP Per Each _____ _____		
586760	1 Each	TYPE C-L CATCH BASIN TOP Per Each _____ _____		
653001	3 Each	CLEAN EXISTING CATCH BASIN Per Each _____ _____		
811001	30 Linear Feet	CONCRETE CURBING Price per Linear Foot: _____ _____		
901001A	3 Each	REMOVABLE BARRIER POST Price per each: _____ _____		
909501A	395 Linear Feet	TIMBER BEAM RAIL Price per Linear Foot: _____ _____		
921013A	650 Square Feet	CONCRETE DRIVEWAY APRON Price per Square Foot: _____ _____		
921001A	150 Square Feet	CONCRETE SIDEWALK Price per Square Foot: _____ _____		

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
921002A	7,000 Square Feet	MONOLITHIC CONCRETE CURB AND SIDEWALK Price per Square Foot: _____ _____		
921005A	700 Square Feet	CONCRETE SIDEWALK RAMP Price per Square Foot: _____ _____		
921039	6 Each	DETECTABLE WARNING STRIP Price per each: _____ _____		
922501	45 Square Yards	BITUMINOUS CONCRETE DRIVEWAY Price per Square Yard: _____ _____		
944000	775 Square Yards	FURNISHING AND PLACING TOPSOIL Price per Square Yard: _____ _____		
949003	1 Each	FURNISHING PLANTING AND MULCHING TREES AND SHRUBS Price per each: _____ _____		
950005A	775 Square Yards	TURF ESTABLISHMENT Price per Square Yard: _____ _____		
952002	1 Per Lump Sum	SELECTIVE CLEARING AND THINNING Per Lump Sum _____ _____		

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
970006A	22,000	TRAFFIC PERSON (MUNICIPAL POLICE OFFICER) at Twenty-two Thousand Dollars and NO Cents Estimated		$22,000.00
970007	220 Per Hour	TRAFFIC PERSON (UNIFORMED FLAGGER) Per Hour _____ _____		
971001A	1 Lump Sum	MAINTENANCE AND PROTECTION OF TRAFFIC Price per Lump Sum: _____ _____		
975004	1 Lump Sum	MOBILIZATION AND PROJECT CLOSEOUT Price per Lump Sum: _____ _____		
0980001	1 Lump Sum	CONSTRUCTION STAKING Price per Lump Sum: _____ _____		
1206023A	1 Lump Sum	REMOVAL AND RELOCATION OF EXISTING SIGNS Price per Lump Sum: _____ _____		
1208931	13 Square Feet	SIGN FACE SHEET ALUMINUM - TYPE 1X RETROREFLECTIVE SHTG Price per square foot: _____ _____		
120932	65 Square Feet	SIGN FACE SHEET ALUMINUM - TYPE IV RETROREFLECTIVE SHTG Price per square foot: _____ _____		

ITEM	Approx. Qty	Item Description With Unit of Measure, Written In Words:	Unit Price Dollars & Cents	Extended Total Dollars & Cents
1210101	2,000 Linear Feet	4" WHITE EPOXY RESIN PAVEMENT MARKINGS Price per Linear Foot: _____ _____		
1210102	1,850 Linear Feet	4" YELLOW EPOXY RESIN PAVEMENT MARKINGS Price per Linear Foot: _____ _____		
1210105	1,000 Square Feet	EPOXY RESIN PAVEMENT MARKING, SYMBOLS AND LEGENDS Price per square foot: _____ _____		
1302060A	4 Each	ADJUST GATE BOX (WATER) Per Each _____ _____		
1403501A	4	RESET MANHOLE (SANITARY) Per Each _____ _____		
		TOTAL BASE BID OF: _____ _____	**N/A**	**Total of Items** **$_____**

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 20-11085

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: B020-23 Coe
Project Town: Meriden
State#: Coe Avenue Trail
FAP#: Coe Avenue Trail
Project: Coe Avenue Trail Extension

CLASSIFICATION	Hourly Rate	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

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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)	38.5	28.61+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----		

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

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.77	24.52 + a
----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
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
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
Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	39.48	24.80 + a
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
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	38.87	24.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	38.55	24.80 + a
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
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
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
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	35.24	24.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	35.24	24.80 + a
Group 12: Wellpoint Operator.	35.18	24.80 + a

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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
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20

As of: March 12, 2020

28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

As of: March 12, 2020

Project: Coe Avenue Trail Extension

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing

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: March 12, 2020

Project: Coe Avenue Trail Extension

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: March 12, 2020

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.

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.

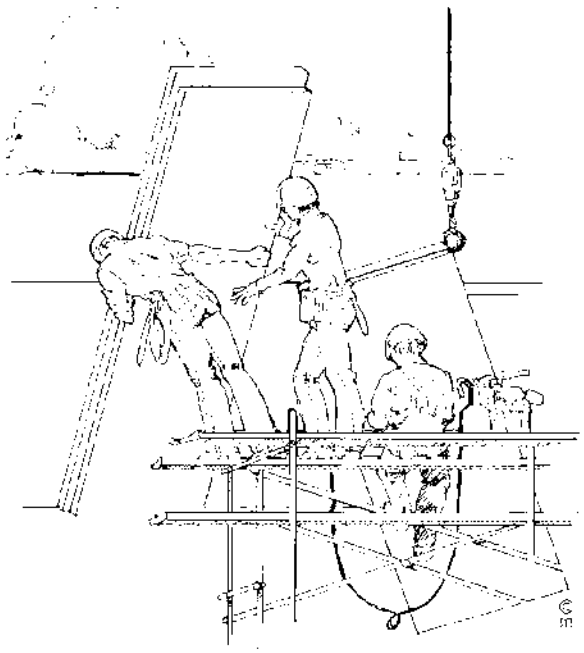
~NOTICE~

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): _____

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 ULTMATELY ARISE CONCERNIG 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.

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, facia, 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.

STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE
B020-23 COE AVENUE TRAIL

THIS AGREEMENT is dated as of the _____ day of _____ 2020 by and between the City of Meriden, 142 East Main Street Meriden, CT 06450 hereinafter called OWNER and _____ hereinafter called CONTRACTOR.

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

B020-23 Coe Avenue Trail

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

B020-23 Coe Avenue Trail

Article 2. ENGINEER.

The Project has been designed by Vanesse Hangen Brustlin (VHB) who is hereinafter called ENGINEER and who is to act as Owner's representative, assume all duties and responsibilities and has the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the contract Documents.

Article 3. CONTRACT TIMES.

3.1 The Work will be substantially completed within Ninety days (90) after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07B of the General Conditions within ninety (90) days after the date when the Contract Times commence to run. Final milling and paving on Coe Avenue can be extended but MUST be completed within 120 days.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving 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) CONTRACTOR shall pay OWNER One Thousand One Hundred Dollars ($1,100.00) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER One Thousand One Hundred Dollars ($1,100.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1 and 4.2 below:

4.1. For all Work, other than Unit Price Work, a Lump Sum of: $_____
Figures

$_____
Written

All specific cash allowances are included in the above price and have been computed in accordance with 11.02 of the General Conditions;

Plus

4.2. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 4.2:

UNIT PRICE WORK

NO.	ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL ESTIMATED

TOTAL OF ALL UNIT PRICES:

_____ $_____
Written Figures

Bid Attached.

As provided in paragraph 11.03 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in paragraph 11.03C of the General Conditions.

(The Bid may be attached. Any attachments and/or exhibits attached should be listed in Article 8).

If adjustment prices for variations from stipulated Base Bid quantities have been agreed to, insert appropriate provisions.

Article 5. PROGRESS PAYMENTS.

5.1 Based upon applications for Payment submitted to the Engineer by the Contractor and Certificates for Payment issued by the Engineer, the Owner shall make progress payments on account to the Contractor as provided below and elsewhere in the Contract Documents.

5.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

~~5.3 Provided an Application for Payment is received by the Engineer after the last day of a month, the Owner shall make payment to the Contractor after the twenty-third day of the next month. If an Application for Payment is received by the Engineer after the application date fixed above, payment shall be made by the Owner after twenty-three days after the Engineer approves the Application for Payment.~~

5.4 Each Application for Payment shall be based upon the Schedule of Values submitted by the Contractor in accordance with the Contract Documents. The Schedule of Values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Engineer may require. This Schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

5.5 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

5.6 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

5.6.1 Take that portion of the Contract sum properly allocable to completed work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the work in the Schedule of Values, <u>less retainage of five percent (5 percent)</u>. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included as provided in appropriate sections of the General Conditions even though the Contract Sum has not yet been adjusted by Change Order.

5.6.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing) <u>less retainage of five percent (5 percent)</u>.

5.6.3 Subtract the aggregate of previous payments made by the Owner; and

5.6.4 Subtract amounts, if any, for which the Engineer has withheld or nullified a Certificate for Payment as provided in Paragraph 14.02.B.5 of the General Conditions.

5.7 The progress payment amount determined in accordance with Paragraph 5.6 shall be further modified under the following circumstances;

(Not applicable)

5.7.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to <u>ninety-five percent (95) of the Contract Sum</u>, less such amounts as the Engineer shall determine for incomplete Work and unsettled claims; and

5.7.2 Add, if final completion of the Work is thereafter materially delayed, through no fault of the Contractor, additional amounts payable in accordance with Paragraph 14.08 of the General Conditions.

5.8 Reduction or limitation of retainage, if any shall be as follows:

(Not applicable)

Article 6. INTEREST.
No interest shall be due or paid on any monies not paid when due.

Article 7. CONTRACTOR'S REPRESENTATIONS.
In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents including the Addenda listed in paragraph 8 and the other related data identified in the Bidding Documents including "technical data."

7.2. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4. CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions. CONTRACTOR accepts the determination of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for Contractor's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the contract Documents.

7.5. 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.

7.6. CONTRACTOR has correlated the information known to CONTRACTOR, information and observation obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7. 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, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

7.8. The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals. For municipal public works contracts and quasi-public agency projects, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at: http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806

Article 8. CONTRACT DOCUMENTS.
The Contract Documents, which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work, consist of the following:

8.1. This Agreement.

8.2. General Conditions and Supplemental General Conditions.

8.3. Notice of Award – **Attachment A**

8.4. Performance, Payment, and other Bonds – **Attachment B**.

8.5. Insurance certificate – **Attachment C**

8.6. Contractor's Bid Proposal, Non-Collusive Bid Statement, Bidder's Qualification Stmt – **Attachment D**

8.7. Connecticut Department of Labor – Wage and Workplace Standards Division.

8.8. Davis-Bacon Act which requires payment of prevailing wages to laborers and mechanics employed on federal and federally assisted construction projects

8.9. **"By Reference":** The complete Specifications as included in the bidding documents bearing the title,

8.10. **"By Reference":** List of Drawings: Sheet No's. ___through_____ included in the bidding

The above documents are on file in the City of Meriden's Purchasing Department.

8.11. Addenda numbers __ and __.
(Those addenda which pertain exclusively to the bidding process need not be listed.)

8.12. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All-Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.04 and 3.05 of the General Conditions.

There are no Contract Documents other than those listed above. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.04 and 3.05 of the General Conditions.

Article 9. MISCELLANEOUS.

9.1. Terms used in this Agreement which are defined in Article I of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are 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.

9.3. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4. 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.

9.5 OTHER PROVISIONS.

[Insert other provisions here if applicable.]

WITNESS WHEREOF, the parties hereto have affixed their names and seals.

THE CITY OF MERIDEN	CONTRACTOR:
_____	_____
Timothy Coon, City Manager Duly Authorized	Duly Authorized
Date: _____	Date: _____

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.

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. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *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.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *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 at the Site.

44. *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.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *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 Subcontractor.

48. *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 those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 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 14.04 or 14.05).

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. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

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. 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 Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *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 Agreement 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 Agreement. 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 Agreement, whichever date is earlier.

2.04 *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 the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;

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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *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 2.05.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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, 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, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, 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 Contract Documents. 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier 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

2. 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.

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.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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 the Work is to be performed 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.

4.02 *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 contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed 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 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and

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 Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final 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

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous 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 shall not be responsible for 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 such information and data;

b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *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.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, either party may make a Claim therefor as provided in Paragraph 10.05.

F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, 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 Documents. 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 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, 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 requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which 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:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. 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; and

6. 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.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and 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;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, 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.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full 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 interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies 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 of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.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, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *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. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

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.

6.02 *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. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, 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.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "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 specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion 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, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, 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; and

3) it has a proven record of performance and availability of responsive service.

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.

2. *Substitute Items:*

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. 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:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) 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

c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. 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 any right of Owner or Engineer to reject defective Work.

C. 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. 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 moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. 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.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *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.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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 knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *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.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. 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 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 by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other 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 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 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 property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *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, 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 owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

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 6.13.A.2 or 6.13.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 (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 for protection of the Work 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 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *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.

6.15 *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.

6.16 *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.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

a. Submit number of copies specified in the General Requirements.

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 6.17.D.

2. *Samples:*

a. Submit number of Samples specified in the Specifications.

b. 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 6.17.D.

B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated each 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 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 and approval of that 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 both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval 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 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

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.

6.18 *Continuing the Work*

A. 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, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *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 representation of 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 or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. 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 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 6.20.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 6.20.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.

6.21 *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 law.

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, Shop Drawings 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 6.21, 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 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

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

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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.

8.12 *Compliance with Safety Program*

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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 *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 9.09. 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.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. 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.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with 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, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. 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 Paragraph 10.05.

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

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. 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; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs 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 11.01.B, 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, 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 11.01.

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 5.06.D), 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

B. *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, expediters, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which 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 Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work 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 or when a Claim for an 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 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, 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.

11.02 *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:*

1. Contractor agrees that:

a. 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

b. 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:*

1. 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.

11.03 *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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 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; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor 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 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

   b. for costs incurred under Paragraph 11.01.A.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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

   d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

   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 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 Price or the Contract Times, or both. 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.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is 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 described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests 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.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. 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.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *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, 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.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. 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 removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *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 land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

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 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. 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) will be paid by Contractor.

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 13.07, 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 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *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 in accordance with Paragraph 13.06.A, 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, 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 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A 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.

14.02 *Progress Payments*

A. *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 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.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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 moneys 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

   d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

   a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

   b. 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;

   c. there are other items entitling Owner to a set-off against the amount recommended; or

   d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.

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 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. 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 tentative list.

14.05 *Partial Utilization*

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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. 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 14.09. 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. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. 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

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *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;

3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) 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 15.03.

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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *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 to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents 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.

17.03 *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 Documents. 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.

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

SUPPLEMENTAL GENERAL CONDITIONS

GENERAL CONDITIONS

The General Conditions of the Contract for Construction, EJCDC Document C-700, 2007 Edition, as bound herewith, shall be the General conditions of the Contract, except as amended by these Supplemental General Conditions

CHANGES AND ADDITIONS TO VARIOUS ARTICLES OF THE GENERAL CONDITIONS

Article 1 Definitions

Article 1 is hereby modified as follows:

Delete the definition "Notice to Proceed"

Article 2 Preliminary Matters

Article 2.02 is modified as follows:

"Ten" is changed to one (1) - Owner shall furnish one printed or hard copy of Drawings & Project Manual.

Article 2.03 is modified as follows:

30th day is changed to 10th day, and delete "A Notice to Proceed earlier"

Article 3 Reporting and Resolving Discrepancies

Article 3.03A.# - change "unless" to "that" and add knowledge thereof, or should have had knowledge of….

Article 4 Availability of lands

Article 4.01B – delete "as necessary for giving notice of or filing a mechanics or construction lien against such lands in accordance with applicable Laws & Regulations."

Article 4.06G – Hazardous Environmental Conditions at Site - Delete in its entirety

Article 5 Bonds and Insurance

Delete Article 5 in its entirety and substitute the following:

PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

The Contractor shall, within ten (10) days from the date of the Notice of Award, furnish the City of Meriden with a PERFORMANCE BOND and a LABOR AND MATERIAL PAYMENT BOND, both in the amount of 100% of the amount bid, conditioned upon the performance of the Contractor on all undertaking, covenants, terms, and conditions and agreements of the contract. The bond shall be in the form of the specimen bonds annexed hereto, such bonds shall be executed by the contractor and a corporate bonding company licensed, authorized, and admitted to transact such business in the State of Connecticut and named on the current list of "Surety Companies acceptable on Federal Bonds", as published in the "Treasury Department" listed for an amount equal to the amount of the reinsurance. Written evidence of how any excess suretyship has been placed by the surety signing the bonds shall accompany the bonds. The expense of the bonds shall be borne by the Contractor. If at anytime a surety on any such bond is declared bankrupt or loses its right to do business in the State of Connecticut, or is removed from the list of Surety Companies acceptable on Federal Bonds, or for any other justifiable cause, the Contractor shall, within ten (10) days after notice from the City of Meriden to do so. substitute an acceptable bond(s) in such form and sum and signed by such other surety or sureties as may be

paid by the Contractor. No payments shall be deemed due nor shall be made until the new surety or sureties have furnished an acceptable bond to the City.

If the Contractor is a partnership, the bonds shall be signed by each of the individuals who are partners; if a corporation, the bonds shall be signed in the correct corporation name by a duly authorized office, agent, or attorney-in-fact. There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the contract. Each executed bond shall be accompanied by 1) appropriate acknowledgements of the respective parties; 2) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer, or other representative of Contractor or surety; 3) a duly certified extract from by-laws or resolutions or surety under which Power of Attorney or other certificates of authority of its agent, officer, or representative was issued.

The Contractor hereby agrees and understands that a Notice of Award is expressly conditional upon the receipt of these bonds and a Certificate of Insurance naming the City of Meriden (and others as appropriate) as ADDITIONAL INSURED. If said documents are not received by the City of Meriden within ten (10) days from the date of Notice of Award, the City of Meriden reserves the right to withdraw its conditional acceptance of the bid and cancel the Notice of Award.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that
(here insert full name and address or legal title of Contractor)

as Principal herinafter called contractor and
(here insert full name and address or legal title of Surety

As Surety, hereinafter called Surety, are held and firmly bound unto
(here insert full name and address or legal title of Owner)

As Obligee, hereinafter called Owner, in the amount of

Dollars $_____

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated 20 , entered into a contract with Owner for
(here insert full name, address and description of project)

In accordance with Drawings and Specifications prepared by (here insert full name and address or legal title of Engineer/Architect)

Which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

PERFORMANCE BOND

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor, shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives, notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's 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 completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as Work progresses (even though there should be a default of 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 Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

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

Signed and sealed this day of 20

_____
(Principal)

_____
(Witness)

_____
(Title)

_____
(Surety)

_____
(Witness)

_____
(Title)

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that
(here insert full name and address or legal title of Contractor)

as Principal, herinafter called Principal, and
(here insert full name and address or legal title of Surety

As Surety, hereinafter called Surety, are held and firmly bound unto
(here insert full name and address or legal title of Owner)

As Obligee, hereinafter called Owner, for the use and benefit of claimants as hereinbelow defined, 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 agreement dated 20 , entered into a contract with Owner for
(here insert full name, address and description of project)

In accordance with Drawings and Specifications prepared by

(here insert full name and address or legal title of Engineer/Architect)

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

LABOR AND MATERIAL PAYMENT BOND

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

a) Unless claimant, other than one having a direct contact with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelop addressed to the Principal Owner or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the Project or any part thereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this day of 20

_____
(Principal)

_____
(Witness)

_____
(Title)

_____
(Surety)

_____
(Witness)

_____
(Title)

INSURANCE REQUIREMENTS *

All insurance coverage shall be provided by the Contractor and by or for any of their Subcontractors at no additional expense to the City. The scope and limits of insurance coverages specified are the minimum requirements and shall in no way limit or exclude the City from requesting additional limits and coverage provided under the Contractor's policies and/or their Subcontractors' policies. The Contractor shall either require each of their Subcontractors to produce identical insurance coverage requirements as detailed hereinafter or the Contractor shall secure the coverage for all Subcontractors under the Contractor's own policies.

The Contractor and/or Subcontractors shall be responsible for maintaining the stated insurance coverage in force for the life of the Contract with insurance carriers licensed and authorized to underwrite such insurance in the State of Connecticut. (Insurance carriers shall be rated A or higher by AM Best Co.)

The type and limits of insurance coverage shall not be less than the type and limits designated herein, and the Contractor and/or Subcontractors agree that the coverage or the acceptance by the City of Certificates of Insurance indicating the type and limits of insurance shall in no way limit the liability of the Contractor and/or subcontractor to any such type and limits of insurance coverage.

The insurance coverage hereinafter afforded by the Contractor and/or subcontractor shall be primary insurance, except when stated to apply in excess of or contingent upon the absence of other insurance. The amount and type of insurance shall not be reduced by the existence of other insurance's held by the City.

The Contractor and/or Subcontractor shall provide coverage's that are not impaired or the aggregate is not to impaired by any other risk, past or present, and the limits required, shall be fully available to the City of Meriden of restored if depleted below the required levels during the course of the contract and/or any extensions thereto.

The Contractor and/or Subcontractor shall not commence work under the terms of this contract until they have obtained the liability insurance coverage required by this article and has filed Certificates of Insurance on same with the City, and the City has approved the Certificates of Insurance and the represented coverage.

Each Certificate of Insurance shall include the following pertinent information:

- Name of Insurance Carrier writing policy
- Name Insured
- Address of Named Insured
- Description of coverage (Workers' Compensation certificates should evidence the state(s)of operation including Connecticut)
- Policy Periods (effective and expiration dates)
- Limits of liability and terms
- Brief description of operations performed and property covered
- Name and address of certificate holder
- Authorized agent's name and address
- Date and signature of the issuing agent (original only)
- All additional named insured endorsement
- All cross liability endorsements
- All indemnification and hold harmless agreements (must be supported by Contractual Liability Insurance)

Each insurance policy (with the exception of OCP shall contain an endorsement naming the City as an Additional Insured, evidence of a Cross Liability endorsement so that each insureds interests are considered and treated separately in the case of claims between the insureds. The Contractor shall provide 60 Day advance Notification** to the City in the event of any material change, modification, cancellation, or non-renewal of insurance coverage.** **Amended 01/13/14

The Contractor and/or Subcontractors shall include a waiver of subrogation rights, on all insurance policies, so that the City of Meriden cannot be sued by the Contractor's insurer to recover any payments made on behalf of the Contractor and/or Subcontractor.

All insurance policies provided by the Contractor and/or Subcontractors shall include an endorsement indicating that any breach of warranty, by the named insured, will not be imputed to another insured.

During the course of execution of the work, whenever there is a lapse in the insurance requirements as stated herein, through cancellation, expiration, failure to renew , or any other cause, the City shall order the cessation of all activities** until such time as the insurance requirements are complied with. The Contractor shall have no claim or claims whatever against the City, or other parties to the contract. **Amended 01/13/14

The Contractor and their Subcontractors shall indemnify and save harmless the City of Meriden, and all additional named insured and all appointed or elected officers, officials, directors, committee members, employees, volunteer workers, commissioners, and any affiliated, associated, or allied entities and/or bodies of, or as may be participated in by the City of Meriden, or as may now or hereinafter be constituted or established from and against all claims, damages, and losses and expenses including attorney's fees arising out of or resulting from the performance of the work under this contract, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to, or destruction of tangible property, including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and their Subcontractors, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

The Contractor and their Subcontractors shall, during the execution of the work, take necessary precautions and place proper guards for the prevention of accidents; shall set up all night suitable and sufficient lights and barricades; shall fully comply with the latest revisions of the Occupational Safety and Health Act of 1970 and all other Federal, State and Local Regulations, including any all amendments, revisions, and additions thereto, and shall indemnify and save harmless the City of Meriden and their additional named insured and their employees, officers, agents from any and all claims, suits, actions, fines, fees, damages, and costs to which they may incur by reason of death or injury to all persons and/or for all property damage of another resulting from non-compliance, unskillfulness, willfulness. negligence, or carelessness in the execution of the work, or in guarding or protecting the same, or from any improper methods, materials, implements or appliances used in execution of the work, or by or on account of any direct or indirect act or omission of the Contractor of their Subcontractors or their employees or agents.

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the execution of the contract.

The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to; 1) all employees on the work and all other persons who may be affected thereby; 2) all the work and all the materials and equipment to be incorporated therein, whether in storage in or on the site, under the care, custody, or control of the Contractor or any of their Subcontractors; and 3) other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designed for removal, relocation, or replacement in the course of construction.

The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent utilities.

The Contractor and/or subcontractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, and lawful orders for any public authority bearing on the safety of persons or property or their protection from damage, injury, or loss.

When The use or storage of explosives or other hazardous materials or equipment is necessary for the execution of work, the Contractor and/or their Subcontractors shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

The contractor shall designate a responsible member of their organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the City.

In any emergency affecting the safety of persons or property, the Contractor shall act to prevent threatened damage, injury, or loss.

The Contractor, Subcontractor, and their insurer(s) shall waive governmental immunity as a defense and shall not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit, action or claim brought against the City. Nothing shall limit the City of Meriden from utilizing the defense of governmental immunity.

Contractor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City Meriden as an Additional Insured on a primary and non-contributory basis to all policies except Workers Compensation. All policies should also include a Waiver of Subrogation. Umbrella/Excess shall state that it follows form over General Liability, Auto Liability and Workers Compensation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's Rating of "A-" VIII. In addition, all Carriers are subject to approval by the City of Meriden.

		(Minimum Limits)
General Liability	Each Occurrence	$1,000,000
	General Aggregate	$2,000,000
	Products/Completed Operations Aggregate	$2,000,000
Auto Liability	Combined Single Limit Each Accident	$1,000,000
Umbrella (Excess Liability)	Each Occurrence Aggregate	$1,000,000 $1,000,000
Workers' Compensation and Employers' Liability	WC Statutory Limits EL Each Accident EL Disease Each Employee EL Disease Policy Limit	 $500,000 $500,000 $500,000

Original, completed Certificates of Insurance must be presented to the City of Meriden prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least 60 days prior to the expiration date of the policies.

Article 6 Substitutes and "or equals"

Article 6.05.2.A – After Contractor add "or Owner"

Article 6.05.2.2E – Substitute Items - Add the words "If, in the owner's opinion, the number of substitutions is excessive" after "reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitutes".

Add the following paragraph 6.09D:

The requirements of subparagraph 6.09 do not waive the Contractor's responsibility of complying with the requirement of the Contract Documents when such regulations and requirements exceed those of any laws, ordinances, rules, regulations and orders of any public authority bearing the work.

Delete Article 6.10 in its entirety and substitute the following:

Under the terms of Regulation 16, referring to Contractors and Subcontractors issued by the State Tax Commission in administration of the State Sales and Use Tax, the Contractor may purchase materials or supplies to be consumed in the performance of this Contract without payment of Tax and shall not include in his Bid nor charge any Sales or Use Tax on any materials or labor provided.

Amend Article 6.12 to read:

"Contractor shall maintain in a safe place at the Site two (2) record copies…"

Add the following to article 6.13:

6.13.A.4 Protection in general shall consist of the following:

6.13.A.5 The Contractor shall furnish approved hard hats, other personal, protective equipment as required, approved first aid supplies, name of first aid attendant, and a posted list of emergency facilities.

6.13.A.6 The Contractor shall take prompt action to correct any hazardous conditions reported.

6.13.A.7 The Contractor shall be responsible for the adequate strength and safety of all scaffolding, staging and hoisting equipment, and for temporary shoring, bracing and tying.

The Contractor shall comply with the requirements of the Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, including all Standards and Regulations which have been promulgated by the Governmental Authorities which administer such acts; and said Requirements, Standards and Regulations are incorporated herein by reference.

The Contractor shall be directly responsible for compliance therewith on the part of its agents employees, material men and Subcontractors, and shall directly receive and be responsible for all citations, assessments, fines or penalties which may be incurred by reason of its agents, employees, material men or Subcontractors, to so comply.

The Contractor shall indemnify the Owner and the Engineer and save them harmless from any and all losses, costs and expenses, including fines and reasonable attorney's fees incurred by the Owner and the Engineer by reason of the real or alleged violation of such laws, ordinances, regulations and directives, Federal, State and local, which are currently in effect or which become effective in the future, by the Contractor, his Subcontractors or material men.

6.16 Emergencies

Add 6.16.B – The Contractor shall provide the Owner with at least two (2) phone numbers in case of emergency.

Artice 8 – Replacement of Engineer

Delete 8.02 in its entirety

8.06 – Insurance

8.06A – Delete Article 5, Add Supplemental General Conditions

Article 9 - Engineer's Status During Construction

Revise 9.03.B to read:

In addition to the Engineer, The Owner may employ a Clerk-of- the Works shall be authorized to observe all material, workmanship and equipment for compliance with the Contract Documents' requirements of tests and safety provisions, and report any variance to the Engineer. He shall have no authority to interpret, vary or suspend the requirements of the Contract.

The Clerk-of-the-Works will keep records of material deliveries, weather conditions and manpower; he will monitor compliance with the approved Construction Schedule and the Equal Employment Provisions.

The Contractor shall cooperate with the Clerk-of-the-Works in the performance of his duties, and shall provide access to all portions of the work and information required for his records. Any requests for modification of the Contract provisions or working procedures shall be reviewed with the project representative prior to making submittal(s) to the Engineer.

Cost of Work, Allowances; Unit Price Work

Article 11 is hereby modified as follows:

Add the following Articles:

11.03D Delete the entire paragraph and substitute the following:

It is understood and agreed that the prices bid for the various units of construction shall control in any Contract awarded hereafter. The City of Meriden reserves the right to revise the estimated quantities with no fixed limits set nor extra compensation allowed other than the above stated unit prices.

Article 12 – Change of Contract Price and Change of Contract Time

Add the following:

12.01.B.4 - The Contractor, when performing work under article 11.3.3 shall, upon request, promptly furnish in a form satisfactory to the Owner, itemized statements of the cost of the work so ordered, including, but not limited to, certified payrolls, and copies of accounts, bills and vouchers to substantiate the above estimates.

Add 12.04.1 -The Contractor guarantees that he can and will complete the work within the time specified or within the time as extended as provided elsewhere in the Contract Documents. Inasmuch as the damage and loss to the City of Meriden which will result from the failure of the Contractor to complete the work within the stipulated time will be most difficult or impossible of accurate assessment, the damages to the City for such delay and failure on the part of the Contractor shall be liquidated in the sum of $1,100.00 each calendar day (Sundays and Holidays included) by which the Contractor shall fail to complete the work or any part thereof in accordance with the provisions hereof and such liquidated damages shall not be considered as a penalty. The City will deduct and retain out of any money due to become due hereunder, the amount of liquidated damages, and in case those amounts are less than the amount of liquidated damages, the Contractor shall be liable to pay the difference upon demand by the City.

Article 13 - Warranty and Guarantee; Tests and Inspections; Correction, Removal or Acceptance of Defective Work

Article 13.02 is modified to include the following:

The Contractor shall make every effort to minimize damage to all access routes, and he shall acquire all necessary permits for working in, on or from public streets or rights or way and for securing access rights of their own.

All costs of the removal and restoration to original condition of walls, fences and structures, utility lines, poles, guy wires or anchors, and other improvements required for passage of the Contractor's equipment shall be borne by the Contractor. The Contractor shall notify the proper authorities of the City and all utilities of any intended modifications or disruption to their property prior to the start of construction, and shall cooperate with them in the scheduling and performance of this operation.

Article 14 Payments to Contractor and Completion

Modify 14.02.D.4 to read:
Payments may be withheld to Contractors who are in default through debt or contract to the City.

14.07C – Change "thirty days" to "forty five (45) days"

Delete 14.09A in its entirety.

Article 15 Suspension of work and termination

Delete 15.03.3 in its entirety.

15.04B – Change 30 to 45 and change "30 days to pay" to 60.

SPECIAL PROVISIONS

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March 3, 2019

Coe Avenue Pedestrian and Bicycle Improvements

City of Meriden

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016, as revised by the Supplemental Specifications dated July 2018 (otherwise referred to collectively as "ConnDOT Form 817") is hereby made part of this contract, as modified by the Special Provisions contained herein. Form 817 is available at the following DOT website link http://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362. The Special Provisions relate in particular to the Coe Avenue Pedestrian and Bicycle Improvements in the City of Meriden.

CONTRACT TIME AND LIQUIDATED DAMAGES

Ninety (90) calendar days will be allowed for substantial completion of the work on this project and the liquidated damages charge to apply will be one thousand one hundred dollars ($1,100.00) per calendar day. Final milling and paving on Coe Avenue can be extended but MUST be completed within 120 days.

NOTICE TO CONTRACTOR - PROCUREMENT OF MATERIALS

Upon award, the Contractor shall proceed with shop drawings, working drawings, procurement of materials, and all other submittals required to complete the work in accordance with the contract documents.

NOTICE TO CONTRACTOR – DEFINITION OF OWNER

Whenever the terms Owner, Department, State of Connecticut Department of Transportation, Commissioner, Engineer and/or State appear in the Contract Documents, it shall be understood to mean the City of Meriden acting directly or through a construction manager, inspector, engineer and/or other duly authorized representatives.

NOTICE TO CONTRACTOR - GENERAL CONDITIONS OF BIDDING, EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS & SITE OF WORK

The bidder is required to examine carefully the site of work and the Contract documents including proposal form, plans, special provisions, specifications, supplemental specifications, Contract forms and other Contract documents for the work contemplated and shall request in writing prior to the bid any clarifications that it deems necessary to prepare its bid. It will be assumed that the bidder has judged for and satisfied itself as to the conditions to be encountered at the site, as to the completeness and requirements of the contract plans and specifications, as to the character, quality and quantities of the work to be performed and materials to be furnished for said work, and as to the requirements of the above contract documents, and in particular, but not limited to, what is required under each Contract item, or under the general cost of the work, or under another or more general Contract item in the absence of particular items. Therefore, while clarifications regarding the Contract documents should be expected from time to time during prosecution of the work and unless these clarifications substantially change the scope of the work, in submitting its bid the bidder shall relinquish any claim to additional compensation or time based upon these clarifications of the Contract documents or a misunderstanding or lack of knowledge of the site conditions, the work required or the method of work required.

ESTIMATED QUANTITIES

The quantities shown on the proposal form or in the contract documents are approximate only and are given as a basis of evaluation for award of the contract. Provision of these quantities provides no implied guarantee that these quantities shall remain unchanged in the actual construction, and the contractor shall not plead misunderstanding or deception because of any variation (large or small) between estimated and final quantities. The City reserves the right to increase or decrease any or all of the quantities, or completely delete contract items, as shown on the proposal form or in the contract documents as it deems necessary to complete the contract project.

BIDDER'S OBLIGATIONS REGARDING DISCOVERY OF AN ERROR IN THE CONTRACT DOCUMENTS

Any bidder that discovers an error in the bid proposal or contract documents, including but not limited to the plans, must report that error in writing prior to the bid and within two (2) business days of discovering the error. A failure to do so may result in finding the contractor to be non-responsible as the low bidder.

NOTICE TO CONTRACTOR - VEHICLE EMISSIONS

All motor vehicles and/or construction equipment (both on-highway and non-road) shall comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety.

The contractor shall establish staging zones for vehicles that are waiting to load or unload at the contract area. Such zones shall be located where the emissions from the vehicles will have minimum impact on abutters and the general public.

Idling of delivery and/or dump trucks, or other equipment shall not be permitted during periods of non-active use, and it should be limited to three minutes in accordance with the Regulations of Connecticut State Agencies Section 22a-174-18(b)(3)(c):

> No mobile source engine shall be allowed "to operate for more than three (3) consecutive minutes when the mobile source is not in motion, except as follows:
>
> (i) When a mobile source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control,
>
> (ii) When it is necessary to operate defrosting, heating or cooling equipment to ensure the safety or health of the driver or passengers,
>
> (iii) When it is necessary to operate auxiliary equipment that is located in or on the mobile source to accomplish the intended use of the mobile source,
>
> (iv) To bring the mobile source to the manufacturer's recommended operating temperature,
>
> (v) When the outdoor temperature is below twenty degrees Fahrenheit (20 degrees F),
>
> (vi) When the mobile source is undergoing maintenance that requires such mobile source be operated for more than three (3) consecutive minutes, or
>
> (vii) When a mobile source is in queue to be inspected by U.S. military personnel prior to gaining access to a U.S. military installation."

All work shall be conducted to ensure that no harmful effects are caused to adjacent sensitive receptors. Sensitive receptors include but are not limited to hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Engine exhaust shall be located away from fresh air intakes, air conditioners, and windows.

A Vehicle Emissions Mitigation plan will be required for areas where extensive work will be performed in close proximity (less than 50 feet (15 meters)) to sensitive receptors. No work will proceed until a sequence of construction and a Vehicle Emissions Mitigation plan is submitted in writing to the Engineer for review and all comments are addressed prior to the commencement of any extensive construction work in close proximity (less than 50 feet (15 meters)) to sensitive receptors. The mitigation plan must address the control of vehicle emissions from all vehicles and construction equipment.

If any equipment is found to be in non-compliance with this specification, the contractor will be issued a Notice of Non-Compliance and given a 24 hour period in which to bring the equipment into compliance or remove it from the project. If the contractor then does not comply, the Engineer shall withhold all payments for the work performed on any item(s) on which the non-conforming equipment was utilized for the time period in which the equipment was out of compliance.

Any costs associated with this "Vehicle Emissions" notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

The Contractor is responsible for verifying all dimensions before any work is begun. Dimensions of the existing structures shown on the plans are for general reference only; they are not guaranteed. The Contractor shall take all field measurements necessary to assure proper fit of the finished work and shall assume full responsibility for their accuracy. When shop drawings and/or working drawings based on field measurements are submitted for approval and/or review, the field measurements shall also be submitted for reference by the reviewer.

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions and dimensions differ from those shown on the plans, the Contractor shall use the field conditions and dimensions and make the appropriate changes to those shown on the plans as approved by the Engineer. All field conditions and dimensions shall be so noted on the drawings submitted for approval.

There shall be no claim made against the City by the Contractor for work pertaining to modifications required by any difference between actual field conditions and those shown by the details and dimensions on the contract plans. The Contractor will be paid at the unit price bid for the actual quantities of materials used or for the work performed, as indicated by the various items in the contract.

NOTICE TO CONTRACTOR - ALL-INCLUSIVE DRAINAGE

ADDED SECTIONS:

2.86 – DRAINAGE TRENCH EXCAVATION

ROCK IN DRAINAGE TRENCH EXCAVATION

5.86 – CATCH BASINS, MANHOLES AND DROP INLETS

6.86 – DRAINAGE PIPES

DRAINAGE PIPE ENDS

This Contract contains the above-noted Special Provisions for all-inclusive drainage, developed to replace the following Sections in their entireties:

- Section 5.07 – *Catch Basins, Manholes and Drop Inlets*
- Section 6.51 – *Culverts*
- Section 6.52 – *Culvert Ends*

The Section 5.86 and 6.86 items include excavation and bedding material in the drainage structure, pipe and pipe end unit prices.

Section 2.05 *Trench Excavation* may be included for miscellaneous trenching, where necessary, but will not be used with all-inclusive drainage items.

Other Standard Specifications, Supplemental Specifications or Special Provisions may contain references to Articles or Subarticles from previous versions of Sections 5.07, 6.51 and 6.52 which are no longer valid.

The following Standard Specifications Sections or Supplements contain references to Articles or Subarticles from Section 2.05 which shall remain in effect:

- Section 2.06 – *Ditch Excavation*
- Section 5.06 – *Retaining Walls, Endwalls and Steps*
- Section 7.51 – *Underdrains and Outlets*
- Section 10.01 – *Trenching and Backfilling*

'Rock in Drainage Trench Excavation' is now defined in Section 2.86. 'Rock in Trench Excavation' will remain in Section 2.05 and may be used with trenching not associated with all-inclusive drainage items.

Any references to Articles beginning with "5.07," "6.51," or "6.52" shall refer to the pertinent topic or materials in the new Special Provisions contained herein.

NOTICE TO CONTRACTOR – BEST MANAGEMENT PRACTICES FOR THE PROTECTION OF THE ENVIRONMENT

The Contractor's operations must be performed in a manner such that impacts to the environment, particularly wetland areas, are limited in accordance with the State of Connecticut Department of Energy and Environmental Protection and local regulatory agencies. The following must be adhered to:

1. No construction shall proceed until proper sedimentation and erosion control methods have been installed as the sequence of construction necessitates.

2. No equipment, materials, or machinery shall be stored, cleaned, or repaired within fifty (50) feet of any wetland or watercourse.

3. No objectionable materials resulting from any clearing activity shall be disposed of in any wetland or watercourse. This includes but is not limited to: stumps, tree roots, matted roots, wood chips, and other debris.

4. Fording of streams with equipment shall be prohibited unless specified elsewhere. DEP approval will be required for any haul road or temporary structure placed in wetlands or watercourses other than those shown on the plans.

5. No fill or material shall be deposited in surrounding wetlands or watercourses unless shown on the plans.

6. Where dewatering is necessary, the pump shall not discharge directly into the wetland or watercourse. Proper methods and devices shall be utilized, such as pumping the water into a temporary sedimentation basin or sediment chamber, providing surge protection at the inlet and the outlet of pumps, or floating the intake of the pump, or other method to minimize and retain the suspended solids. If the pumping operation is causing turbidity problems, said operation shall cease until such time as feasible means of controlling turbidity are determined and implemented.

7. Cofferdams, and other measures such as bank stabilization, shall be of minimal size. In all cases, such installations shall not cause flooding or increase scouring potential.

8. Work within and adjacent to watercourses shall be conducted during periods of low flow (or low tide), whenever possible. The applicant shall remain aware of flow conditions during the conduct of such work, and shall cause such activity to cease should flow conditions threaten to cause excessive erosion, siltation, or turbidity. During storms, every effort shall be taken to secure the work site.

9. All temporary fill, such as that used for permitted access roads and/or cofferdams, shall be properly stabilized during use to prevent erosion, and, when no longer needed, must be

disposed of at an upland site, and suitably contained to prevent turbid runoff from reentering
a wetland or watercourse. All areas affected by temporary fills must be restored to their original contours, and revegetated with suitable vegetation. The area/extent of temporary fill or excavation shall be minimized to that area necessary to perform the required work.

10. Dumping of oil or other deleterious materials on the ground is forbidden. The applicant shall provide a means of catching, retaining, and properly disposing of drained oil, removed oil filters, or other deleterious material. Hazardous Materials absorbent pads shall be stored on-site throughout the duration of the project. All oil spills shall be reported immediately to the DEP/Hazardous Materials office at 860-424-3338. Failure to do so may result in the imposition of a fine under Section 22a-450 of the Connecticut General Statutes.

11. Every precaution shall be used while working in the vicinity of a waterway to prevent and minimize degradations of the existing water quality. All activities shall conform and be at all times consistent with applicable water quality standards and management practices of the Federal Clean Water Act (1972), Connecticut's Water Quality Standards and other applicable State Laws, and as defined in Form 814A, Section 2.10.01, entitled "Water Pollution Control."

12. All work shall be performed in accordance with local inland wetland and watercourses regulations suggested under the permit granted.

NOTICE TO CONTRACTOR – PROTECTIONS OF EXISTING UTILITY

Existing utilities shall be maintained during construction. The Contractor shall verify the location of underground and overhead utilities. Construction work within the vicinity of utilities shall be performed in accordance with current safety regulations.

Representatives of the various utility companies shall be allowed access to the work, by the Contractor.

The Contractor shall be liable for all damages or claims received or sustained by any persons, corporations or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

In order to notify utility companies, the number 1-800-922-4455 (Call Before You Dig), in accordance with Section 16-345 of the Regulations of the Department of Utility Control, must be called at least two (2) full working days prior to the start of excavation. This notification will enable the utility companies to mark out their facilities in the field.

Contractors are cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features, as actual conditions may differ from the information shown on the plans or contained elsewhere in the specifications.

The Contractor shall notify the Engineer prior to the start of work and shall be responsible for all coordination with the Department. The Contractor shall allow the Engineer complete access to the work.

Any damage to any existing private and public utility, as a result of the Contractors operations, be repaired to the utility and Engineer's satisfaction at no cost to the State, the City or the Utilities, including all materials, labor, etc., required to complete the repairs.

During the excavation for the proposed improvements, the cover over the existing underground Utilities will be reduced. Therefore, the Contractor shall have the location of the underground Utilities marked out prior to and following the excavation. The Contractor's attention is directed to the requirements of Article 1.07.13-Contractor's Responsibility for Adjacent Property and Services.

Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., sewer, fuel, electric line, etc., will be encountered and, if so, where such underground installations are located. When the excavation approaches the estimated location of such 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.

The Contractor shall perform all work in such a manner that will protect each Utility Company's facilities from damage. This may include excavation by hand methods as well as modified compaction methods when working close to underground Utilities. The Contractor is responsible for coordinating their work with each utility sufficiently in advance of the work so that the utility can schedule their work crews.

NOTICE TO CONTRACTOR – DUST CONTROL

The Contractor is responsible for controlling air pollution at all times during work of this contract, 24 hours a day, 7 days per week, including non-working hours, weekends and holidays. The Contractor shall comply with all State and Federal regulations pertaining to dust control. Particular attention shall be made to the Regulations of Connecticut State Agencies Section 22a174-18a, b "Control of Particulate Emissions".

The contractor shall submit a dust control plan to the Engineer within 30 days after the Award of the Contract. The dust control plan shall include contact information for the responsible individual(s) from the contractor (24-hour availability) who have authority to implement necessary controls. The plan should detail dust control procedures for anticipated activities that may typically generate dust (ex. Jack hammering, saw-cutting pavement, haul roads, material storage sites, etc.)

The cost for the dust control submittal associated with this "Dust Control" notice shall be included in the general cost of the contract. Payment for the application of dust control items included in the Contract will be under those respective items.

NOTICE TO CONTRACTOR – CONTRACTOR TRAINING REQUIREMENTS FOR 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

In accordance with Connecticut General Statue 31-53b and Public Act 08-83,the Contractor is required to furnish proof that any person performing the work of a mechanic, laborer, or worker pursuant to the classifications of labor under section 31-53, has completed a course of at least 10 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 in accordance with 29 CFR 1910.368.

Proof of compliance with the provisions of the statute shall consist of a student course completion card issued by the Federal Occupational Safety and Health Administration, or other such proof as deemed appropriate by the Commissioner of the Connecticut Department of Labor, dated no earlier than five years prior to commencement of the project. Each employer shall affix a copy of the construction safety course completion card for each applicable employee to the first certified payroll submitted to the City on which the employee's name first appears.

Any employee required to complete construction safety and health as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance that shall be removed from the project until such time as they have completed the required training.

This section does not apply to employees of public service companies, as defined in section 16-1 of the 2008 supplement to the General Statues, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from the public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

The internet website for the federal Occupational Safety and Health Training Institute is http://www.osha.gov/fso/ote/training/edcenters.

Additional information regarding this statute can be found at the Connecticut Department of Labor website, http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be not time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

The Contractor is responsible for verifying all dimensions before any work is begun. Dimensions of the existing structures shown on the plans are for general reference only; they are not guaranteed. The Contractor shall take all field measurements necessary to assure proper fit of the finished work and shall assume full responsibility for their accuracy. When shop drawings and/or working drawings based on field measurements are submitted for approval and/or review, the field measurements shall also be submitted for reference by the reviewer.

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions and dimensions differ from those shown on the plans, the Contractor shall use the field conditions and make the appropriate changes to those shown on the plans as approved by the Engineer. All field conditions and dimensions shall be so noted on the drawings submitted for approval.

There shall be no claim made against the City by the Contractor for work pertaining to modifications required by any difference between actual field conditions and those shown by the details and dimensions on the contract plans. The Contractor will be paid at the unit price bid for the actual quantities of materials used or for the work performed, as indicated by the various items in the contract.

NOTICE TO CONTRACTOR – UTILITY COMPANIES

It is understood that any references in the contract documents to Northeast Utilities, CL&P and/or Yankee Gas are meant to refer to Eversource.

It is understood that any references in the contract documents to AT&T is meant to refer to Frontier Communications.

NOTICE TO CONTRACTOR – TURF ESTABLISHMENT - LAWN

The Contractor shall use turf seed mix that conforms to Article M.13.04. Refer to the special provisions contained elsewhere in this Contract.

NOTICE TO CONTRACTOR – PROTECTION OF UNDERGROUND UTILITIES

The Contractor shall notify "Call Before You Dig" (telephone: 1-800-922-4455) for the location of underground utilities, in accordance with Section 16-345 of the Regulations of the Connecticut Department of Utility Control.

Contractors are cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features, as actual conditions may differ from information shown on the plans or contained elsewhere in the specifications.

The Contractor is hereby advised that placement of heavy equipment and materials or the traversing of heavy construction equipment over underground utilities, which might damage said utilities, shall be reviewed and approved by the Engineer.

The Contractor shall consider in his bid any inconvenience and work required for this condition. The work to repair or replace any damage caused by the Contractor's operations will be made solely at the Contractor's expense.

NOTICE TO CONTRACTOR – PERMITS

Since this project requires work within the City right-of-way, the Contractor shall obtain a license and permit from the City of Meriden Department of Public Works. The licensing documents and permit application must be submitted to the Engineering Division Office at City Hall, 740 Main Street. The license requires submission of an insurance certificate (separate from the certificate that accompanies the contract), 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 obtained, the Contractor shall apply for a permit for this project. The $50.00 permit fee will be waived for this project. Licensing and permit requirements are included in Appendix B.

SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

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

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

Ms. Denise Mazzoli
CoxCom, Inc.
170 Utopiaa Road2
Manchester, CT 06045

Ms. Lynne DeLucia
Frontier Communications
1441 North Colony Road
Meriden, CT 06450-4101

Mr. Thomas Woronik
Eversourse Energy – Electric Distribution
22 East High Street
East Hampton, CT 06424

Mr. Mike Weaver
WilTel Communications, LLC dba,
Century Link Communications of Connecticut
1025 El Dorado Boulevard – 43C-317
Broomfield, CO 80021

Mr. Dennis Waz, City of Meriden
Department of Public Utilities
117 Parker Avenue
Meriden, CT 06450

Mr. James Shea
Yankee Gas Service Company dba
Eversource Energy – Gas Distribution
56 Cooper Street
Meriden, CT 06451

Mr. Bradley E. Franzese
Lightower Fiber Networks I, LLC dba
Crown Castle Fiber
252 Shunpike Road
Cromwell, CT 06416

Mr. Keith Ruel
Algonquin Gas Transmission Company dba
Enbridge
252 Shunpike Road
Cromwell, CT 06416

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.04 - Limitation of Operations - Add the following:

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

Coe Avenue

When any of the three project area schools (Platt High School, Wilcox Technical School, Lincoln Middle School) are in session, work that will interfere with existing traffic operations is permitted only between 8:00 a.m. and 2:00 p.m. & between 3:00 p.m. and 6:00 p.m. Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

On the following State observed Legal Holidays:

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

Night Work Restrictions

The Contractor will not be allowed to perform any work between 6:00 p.m. and 7:00 a.m. on all days and must maintain normal traffic operations during this period.

Halting Traffic

The Contractor will be allowed to halt traffic to perform necessary work, as approved by the Engineer, for a period of time not to exceed 10 minutes to perform necessary work, between the hours of 9:00 a.m. and 3:00 p.m.

Other Limitations

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

No roadway shall be open to traffic unless the appropriate pavement markings, signage, traffic cones and/or drums have been installed.

All protective systems and traffic control devices as called for by the contract or ordered by the Engineer must be on-hand and available in sufficient quantity for immediate installation prior to any stage change.

Construction barricades must be used to close sidewalks and crosswalks within or directly adjacent to the project area prior to the start of construction.

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

SECTION 4.06 – HOT MIX ASPHALT PAVEMENTS

DESCRIPTION

The work under this item shall consist of furnishing hot mix asphalt (HMA) composed of mineral aggregate and asphalt binder, mixed in a central mixing plant and placed on a prepared course in accordance with the Standard Specification Sections 4.06 Revised January 1, 2011 and M.04 Revised October 1, 2012, or as amended herein.

Each course shall be constructed to the depth, typical section, or elevation required by the contract and/or plans and shall be rolled, finished, and approved before the placement of the next course.

QUALITY CONTROL

Refer to Standard Section 04.06.03-9 "Contractor Quality Control of HMA Pavement" except as amended herein.

04.06.03-9

Contractor Quality Control (QC) Requirements for HMA Placement: *A Quality Control Plan (QCP) shall be required for any project that has a total of 2500 tons or more of HMA. Quality Control is defined as all those planned and specified actions or operations necessary to produce bituminous concrete that will meet contract specification requirements. The Contractor shall be responsible for quality control 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.*

Quality Control Plan: Prior to placement and production, the Contractor shall submit a QCP to the Engineer for approval. The QCP shall include separate sections; HMA Plant Production and HMA Placement. The sections 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 HMA production and placement process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must address the actions, inspection, 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 and bring it back into control.

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 Quality Control Manager shall be directly responsible to the Contractor and shall have the authority to make decisions where the quality of the work or product is concerned. All sampling, inspection and test reports shall be reviewed and signed by the Quality Control Manager prior to submittal to the Engineer.

The Contractor assumes the responsibility of the quality for all materials and construction incorporated into the work and will control all the processes leading to the final result through this function. Quality Control activities should include:

Maintain a Contractor Quality Control System;

Quality Control Plan when the total project tonnage is 5000 tons or more;

Proficiency testing prior to production with Engineer;

Inspection and Testing of Hot Mix Asphalt Production;

Inspection and Testing of Hot Mix Asphalt Placement.

QUALITY ACCEPTANCE

The City of Meriden, or their authorized agent, will perform the Quality Acceptance function for this work. All material will be considered for acceptance through a sampling and testing program performed by the Engineer or their agent. Quality Acceptance activities include:

Proficiency testing prior to production with Contractor;

Inspection of HMA Production Plant and Testing Laboratory;

Production Trials of HMA Products Intended For Use in Meriden;

Inspection/Testing for Acceptance of Hot Mix Asphalt Production;

Inspection/Testing for Acceptance of Hot Mix Asphalt Placement;

HMA Quality Acceptance Daily Report of Activities;

MATERIALS

Aggregate

Refer to Standard Section M.04.01 and as noted herein.

M.04.01

Bituminous Concrete Materials and Facilities: *Each source of material, and facility or plant used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. Test Procedures and Specifications referenced herein are in accordance with the latest AASHTO and ASTM Standard Test Procedures and Specifications. Such references when noted with an (M) have been modified by the Engineer and are detailed in Table M.04.03-6.*

The Contractor shall submit to the Engineer all sources of coarse aggregate, fine aggregate, mineral filler, PG binder, and if applicable any additives such as but not limited to anti-strip, warm mix, and polymer modifiers. The Contractor shall submit a Material Safety Data Sheet (MSDS) for each grade of binder, and additive to be used on the Project. The Contractor shall not change any material sources without prior approval of the Engineer.

An adequate quantity of each size aggregate, mineral filler, bitumen, and additives, shall be maintained at the bituminous concrete plant site at all times while the plant is in operation to ensure that the plant can consistently produce bituminous concrete mixtures that meet the job mix formula (JMF) as specified in Article M.04.02. The quantity of such material shall be reviewed by the Engineer on an individual plant basis and is dependent upon the plant's daily production capacity. A total quantity of any material on site that amounts to less than one day's production capacity may be cause for the job mix formula to be rejected.

Aggregate shall consist of crushed stone, or crushed gravel, with or without sand or other inert finely divided mineral aggregate. The portion of the materials retained on the #4 sieve (4.75mm) shall be known as coarse aggregate, the portion passing the #4 sieve (4.75mm) and being retained by the #200 sieve (0.075mm) as fine aggregate, and the portion passing the #200 sieve (0.075mm) as mineral filler when tested in accordance with AASHTO T27 and AASHTO T11.

Coarse Aggregate

Refer to Standard Section M.04.01-1.

M.04.01-1

Coarse Aggregate:

a. Requirements: The coarse aggregate shall consist of clean, hard, tough, durable fragments of crushed stone or crushed gravel of uniform quality. Aggregates from multiple sources of supply must not be mixed or stored in the same stockpile.

b. Basis of Approval: The request for approval of the source of supply shall include a washed sieve analysis in accordance with AASHTO T 27. The Gsa, Gsb, and Pw_a shall be determined in accordance with AASHTO T 85. The coarse aggregate must not contain more than 1% crusher dust, sand, soft disintegrated pieces, mud, dirt, organic and other injurious materials. When tested for abrasion using AASHTO T 96, the aggregate loss must not exceed 40%. When tested for soundness using AASHTO T 104 with a magnesium sulfate solution, the coarse aggregate must not have a loss exceeding 10% at the end of 5 cycles.

For all bituminous mixtures, materials shall also meet the coarse aggregate angularity criteria as specified in Tables M.04.02-2 thru M.04.02-4 for blended aggregates retained on the #4 sieve when tested according to ASTM D 5821. The amount of aggregate particles of the coarse aggregate blend retained on the #4 sieve that are flat or elongated shall be determined in accordance with ASTM D 4791 and shall not exceed 10% by weight when tested to a 3:1 ratio, as shown in Tables M.04.02-2 thru M.04.02-4.

TABLE M.04.02–3

SUPERPAVE MASTER RANGE FOR CONSENSUS PROPERTIES OF COMBINED AGGREGATE STRUCTURES

Notes: (1) If less than 25 % of a given layer is within 4 inches of the anticipated top surface, the layer may be considered to be below 4 inches for mixture design purposes.					
Traffic Level	**Design ESALs (80 kN)**	**Coarse Aggregate Angularity (1) ASTM D 5821**	**Fine Aggregate Angularity (7) AASHTO T 304**	**Flat or Elongated Particles ASTM D 4791**	**Sand Equivalent AASHTO T 176**
-----	(million)			> # 4	-----
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
	Design ESALs are the anticipated project traffic level expected on the design lane, projected over a 20 year period, regardless of the actual expected design life of the roadway.	Criteria presented as minimum values. 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.	Criteria presented as minimum percent air voids in loosely compacted fine aggregate passing the #8 sieve.	Criteria presented as maximum Percent by mass of flat or elongated particles of materials retained on the #4 sieve, determined at 3:1 ratio.	Criteria presented as minimum values for fine aggregate passing the #8 sieve.

**** NOTE: Level 1 for use by Towns and Municipalities ONLY.***

Fine Aggregate

Refer to Standard Section M.04.01-2 except that Marshall Mixtures shall have the combined aggregate structure conforming to TABLE M.04.02-3 "Superpave Master Range for Consensus Properties of Combined Aggregate Structures" Traffic Level 2, not Level 1 as indicated.

M.04.01-2

Fine Aggregate:

Requirements: The fine aggregate from each source quarry/pit deposit shall consist of clean, hard, tough, rough-surfaced and angular grains of natural sand; manufactured sand prepared from washed stone screenings; stone screenings, slag or gravel; or combinations thereof, after mechanical screening or manufactured by a process approved by the Engineer. The Contractor is prohibited from mixing two or more sources of fine aggregate on the ground for the purpose of feeding into a plant.

a. All fine aggregate shall meet the listed criteria shown in items #1 thru #7 of Table M.04.01-1. Table M.04.01-1 indicates the quality tests and criteria required for all fine aggregate sources. Individually approved sources of supply shall not be mixed or stored in the same stockpile. The fine aggregates must be free from injurious amounts of clay, loam, and other deleterious materials.

For Superpave mixtures, in addition to the above requirements, the fine aggregate angularity shall be determined by testing the materials passing the #8 sieve in accordance with AASHTO T 304, Method A. Qualification shall be based on the criteria listed in Tables M.04.02-2 thru M.04.02-4. The fine aggregate shall also be tested for clay content as a percentage contained in materials finer than the #8 sieve in accordance with AASHTO T 176.

Table M.04.01-1: Fine Aggregate Criteria by Pit/Quarry Source

Item	***Title***	***AASHTO Protocol(s)***	***Criteria***
1	*Grading*	*T 27 & T 11*	*100% Passing 3/8 inch 95% Passing the #4 min.*
2	*Absorption*	*T 84*	*3% maximum*
3	*Plasticity limits*	*T 90*	*0 or not detectable*
4	*L.A. Wear*	*T 96*	*50% maximum (fine agg. particle size # 8 and above)*
5	*Soundness by Magnesium Sulfate*	*T 104*	*20% maximum @ 5 cycles*
6	*Clay Lumps and Friable Particles*	*T 112*	*3% maximum*
7	*Deleterious Material*	*As determined by the Engineer*	*Organic or inorganic calcite, hematite, shale, clay or clay lumps, friable materials, coal-lignite, shells, loam, mica, clinkers, or organic matter (wood, etc).* *-Shall not contain more than 3% by mass of any individual listed constituent and not more than 5% by mass in total of all listed constituents.*
8	*Petrographic Analysis*	*ASTM C 295*	*Terms defined in Section M.04.01-2c.*

a. Basis of Approval: A Quality Control Plan for Fine Aggregate (QCPFA) provided by the Contractor shall be submitted for review and approval for each new source documenting how conformance to Items 1 through 7 as shown in Table M.04.01-1 is monitored. The QCPFA must be resubmitted any time the process, location or manner of how the fine aggregate (FA) is manufactured changes, or as requested by the Engineer. The QCPFA must include the locations and

manufacturing processing methods. The QCPFA for any source may be suspended by the Engineer due to the production of inconsistent mixtures.

The Contractor shall submit all test results to the Engineer for review. The Contractor shall also include a washed sieve analysis in accordance with AASHTO T 27/T 11. Any fine aggregate component or final combined product shall have 100% passing the 3/8 inch sieve and a minimum of 95% passing the # 4. The Gsa, Gsb, and Pw_a shall be determined in accordance with AASHTO T 84.

The Contractor will be notified by the Engineer if any qualified source of supply fails any portion of Table M.04.01-1. One retest will be allowed for the Contractor to make corrections and/or changes to the process. If, upon retest, the material does not meet the requirements of items 1-7, additional testing will be required in accordance with item 8.

b. The Contractor may provide a Petrographic analysis of the material performed by a third party acceptable to the Engineer at its' own expense. The Contractor shall submit the results of the analysis with recommended changes to the manufacturing process to the Engineer. The Contractor shall submit fine aggregate samples for testing by the Engineer after the recommended changes have been made.

The Contractor may request the use of such fine aggregate on select project(s) for certain applications of bituminous concrete pavement. Such material will be monitored for a period no less than 48 months, at no cost to the State. Terms of any evaluation and suitable application will be determined by the Engineer.

Mineral Filler

Refer to Standard Section M.04.01-3

M.04.01-3

Mineral Filler:

a. Requirements: Mineral filler shall consist of finely divided mineral matter such as rock dust, including limestone dust, slag dust, hydrated lime, hydraulic cement, or other accepted mineral matter. At the time of use it shall be freely flowing and devoid of agglomerations. Mineral filler shall be introduced and controlled at all times during production in a manner acceptable to the Engineer.

b. Basis of Approval: The request for approval of the source of supply shall include the location, manufacturing process, handling and storage methods for the material. Mineral filler shall conform to the requirements of AASHTO M-17

Recycled Asphalt Pavement (RAP)

Refer to Standard Sections M.04.01-5 and M.04.02-3(a) except as amended herein.

Standard Section M.04.02-1(d) Marshall Mixtures with RAP shall be deleted.

M.04.01-5

Reclaimed Asphalt Pavement (RAP):

a. Requirements: RAP shall consist of asphalt pavement constructed with asphalt and aggregate reclaimed by cold milling or other removal techniques approved by the Engineer. For bituminous mixtures containing RAP, the Contractor shall submit a JMF in accordance with Article M.04.02 to the Engineer for review.

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 test the material and provide the following information along with a request for approval to the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a material certificate stating that the RAP consists of aggregates that meet the specification requirements of subarticles M.04.01-1 through 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-pound sample of the RAP to be incorporated into the recycled mixture.*
2. *A 25-pound sample of the extracted aggregate from the RAP.*
3. *After recovery of binder from the RAP by AASHTO T 170(M), the viscosity test results shall be reported when tested at 140°F by AASHTO T 202 or T 316.*
4. *A statement that RAP material has been crushed to 100% passing the ½ inch sieve and remains free from contaminants such as joint compound, wood, plastic, and metals.*

M.04.02-3(a)

Superpave Design Method – S0.25, S0.375, S0.5, and S1

a. Requirements: The Contractor or its representative shall design and submit Superpave mix designs annually for approval. The design laboratory developing the mixes shall be approved by the Engineer. The mix design shall be based on the specified Equivalent Single-Axle Loads (ESAL). Each bituminous concrete mix type must meet the requirements shown in Tables M.04.02-2 thru Table M.04.02-5 and in accordance with AASHTO M 323(M) and AASHTO R 35(M). The mix design shall include the nominal maximum aggregate size and a JMF consisting of target values for gradation and bitumen content for each bituminous concrete mix type designated for the project.

The contractor shall provide test results with supporting documentation from an AASHTO Materials Reference Laboratory (AMRL) with the use of NETTCP Certified Technicians for the following tests;

1. *Aggregate consensus properties for each type & level, as specified in Table M.04.02-3. In addition the Gsa, Gsb, Pw_a shall also be provided for each component aggregate.*

2. *New mixes shall be tested in accordance with AASHTO T 283(M) Standard Method of Test for Resistance of Compacted Hot-Mix Asphalt (HMA) to Moisture-Induced Damage, (TSR). The compacted specimens may be fabricated at a bituminous concrete facility and then tested at an AMRL accredited facility.*

   The AASHTO T 283(M) test results, specimens, and corresponding JMF sheet (Form MAT-429s) shall be submitted by the Contractor for review.

The Contractor shall supply the Engineer with 1 gallon of the specified PG binder and 1 gallon of the same PG binder with the warm mix additive blended into it. The MSDS for the WMA additive shall be included with every submittal.

In addition, minimum binder content values apply to all types of bituminous concrete mixtures, as stated in Table M.04.02-5. For mixtures containing RAP, the virgin production and the anticipated proportion of binder contributed by the RAP cannot be less than the total permitted binder content value for that type nor the JMF minimum binder content.

i. Superpave Mixture (virgin): For bituminous concrete mixtures that contain no recycled material, the limits prescribed in Tables M.04.02-2 thru Table M.04.02-5 apply. The Contractor shall submit a JMF, on a form provided by the Engineer, with the individual fractions of the aggregate expressed as percentages of the total weight of the mix and the source(s) of all materials to the Engineer for approval. The JMF shall indicate the corrected target binder content and applicable binder correction factor (ignition oven or extractor) for each mix type by total weight of mix. The mineral filler (dust) shall be defined as that portion of blended mix that passes the #200 sieve by weight when tested in accordance with AASHTO T 30(M). The dust-to-effective asphalt (D/Pbe) ratio shall be between 0.6 and 1.2 by weight. The dry/wet mix times and hot bin proportions (batch plants only) for each type shall be included in the JMF.

The percentage of aggregate passing each sieve shall be plotted on a 0.45 power gradation chart and shall be submitted for all bituminous concrete mixtures. This chart shall delineate the percentage of material passing each test sieve size as defined by the JMF. The percentage of aggregate passing each standard sieve shall fall within the specified control points, but outside the restricted zone limits as shown in Tables M.04.02-2 thru Table M.04.02-5. Mixes with documented performance history which pass through the restricted zone may be permitted for use as long as all other physical and volumetric criteria meets specifications as specified in Tables M.04.02-2 thru Table M.04.02-5 and with prior approval from the Engineer. A change in the JMF requires that a new chart be submitted.

ii. Superpave Mixtures with RAP: Use of approved RAP may be allowed 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 and test results that show the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions and warm mix asphalt additive if used) meets the requirements of the specified binder grade.*

Unless approved by the Engineer, RAP material shall not be used with any other recycling option.

The laboratory RAP-virgin binder blend viscosity value established from the RTFO residue at 140°F (60°C) shall establish the maximum viscosity allowed for the binder after discharge from the HMA plant and/or silo storage, if applicable, when recovered by AASHTO T170 and tested in accordance with AASHTO T202 and AASHTO TP48.

For design purposes, the specific gravity of the combined aggregate blend with RAP used in a HMA mixture shall be determined in accordance with AASHTO R35.

Sampling and Testing

All aggregates samples required for testing shall be furnished by the Contractor when requested. AASHTO T2 shall be used in sampling coarse aggregate and fine aggregate, and AASHTO T127 shall be used in sampling mineral filler.

Asphalt Binder Material

The types, grades, and controlling specifications, the maximum mixing temperatures and compaction temperatures for the asphalt binder materials shall conform to the following:

Refer to Standard Section M.04.01-4 except as amended herein.

M.04.01-4

Liquid Bituminous Materials:

a. General:

i Liquid PG binders shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binders shall be properly heated and stored to prevent damage or separation.

i. The blending at mixing plants of PG binder from different suppliers is strictly prohibited. Contractors who blend PG binders will be classified as a supplier and will be required to certify the binder in accordance with AASHTO R-26(M). The binder shall meet the requirements of AASHTO M-320(M) and AASHTO R-29(M). 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.

ii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder materials. 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 (tanker truck) is accompanied by a statement certifying that the transport vehicle was inspected before loading and was found acceptable for the material shipped and that the binder will be free of contamination from any residual material, along with two (2) copies of the bill of lading.

iii. 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) will be allowed to supply PG binders to Department projects.

b. Neat Performance Grade (PG) Binder:

i. PG binder shall be classified by the supplier as a "Neat" binder for each lot and be so labeled on each bill of lading. Neat PG binders shall be free from modification with: fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives, and shall indicate such information on each bill of lading and certified test report.

ii. The asphalt binder shall be Performance Grade PG 64-22.

c. Modified Performance Grade (PG) Binder

Unless otherwise noted, the asphalt binder shall be Performance Grade PG 76-22 asphalt modified 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(δ) 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-320(M) and AASHTO R-29(M).*

d. Warm Mix Additive or Technology:

1. The warm mix additive or technology must be listed on the NEAUPG Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at http://www.neaupg.uconn.edu/wma_info.html.

2. The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer's recommendations.

3. The blended binder shall meet the requirements of AASHTO M-320(M) and AASHTO R-29(M) 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.

4. Cut-backs (medium cure type);

i. Requirements: The liquid petroleum materials shall be produced by fluxing an asphalt base with appropriate petroleum distillates to produce the grade specified.

ii. Basis of Approval: The request for approval of the source of supply shall be submitted at least seven days prior to its use listing the location where the materials will be produced, and manufacturing, processing, handling and storage methods. The Contractor shall submit a Certified Test Report in accordance with Section 1.06 and a Material Safety Data Sheet (MSDS) for the grade to be used on the Project. The liquid asphalt shall be MC-250 conforming to AASHTO M-82.

e. Emulsions

i. Requirements: The emulsified asphalt shall be homogeneous and not be used if exposed to freezing temperatures.

ii. Basis of Approval: The request for approval of the source of supply must include the location where the materials will be produced, and manufacturing, processing, handling and storage methods.

1. Emulsified asphalts shall conform to the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1. When ambient temperatures are 80˚F and rising, grade SS-1 or SS-lh may be substituted if accepted by the Engineer. Each shipment shall be accompanied with a Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon.

2. Cationic emulsified asphalt shall conform to the requirements of AASHTO M-208(M). 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-lh may be substituted if accepted by the Engineer. Each shipment shall be accompanied with a Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon.

The City may specify that a modified binder be used under certain traffic conditions as noted below:

TABLE 2. SUPERPAVE PGAB Adjustment for Design Traffic Conditions

Traffic Loading	**Adjustment to PGAB Grade**
Standing <12mph (<20 km/h)	Increase high temperature grade by 2 grades (12° C), or 76-XX. Use low temperature grade as determined by LTTP BIND software.
Slow Transient 12 to 44mph (20 to 70 km/h)	Increase high temperature grade by 1 grade (6° C), or 70-XX. Use low temperature grade as determined by LTTP BIND software.
Traffic Level (ESALs)	**Adjustment to PGAB Grade**
1×10^7 to 3×10^7	Consideration should be given to increasing high temperature grade by 1 grade (6° C), or 70-XX. Use low temperature grade as determined by LTPP BIND software
$>3 \times 10^7$	Increase high temperature grade by 1 grade (6° C), or 70-XX. Use low temperature grade as determined by LTTP BIND software.

Asphalt Binder Anti-Stripping Additive

This specification provides for an additive to asphalt to assist in the coating of wet aggregate and to increase the resistance of the binder coating to stripping in the presence of water. The additive shall be chemically inert to asphalt (heat stable) and when blended with asphalt shall withstand storage at a temperature of 400°F (204°C) for extended periods without loss-of effectiveness.

Composition: Anti-stripping compound shall be an organic chemical compound, free from inorganic mineral salts or inorganic mineral soaps. It shall contain no ingredient harmful to the binder material or to the operator, and shall not appreciably alter the specified characteristics of the binder material.

Anti-stripping additive shall be incorporated and thoroughly dispersed in the asphalt binder material in an amount equal to the percent by weight established by the job mix formula. This percent is based on the efficiency of the additive as determined by laboratory tests.

The treated composite mixture shall have a minimum tensile strength ratio (TSR) of not less than 80, when tested in accordance with AASHTO T283 with the freeze/thaw cycle. The specimens for the AASHTO procedure shall be 4" (100mm) in diameter, compacted with the Marshall hammer or 6" diameter molds by the Superpave gyratory compactor to the desired air void level of 7.0 $\pm$ .5%.

If the TSR ratio is less than 80, the aggregates shall be treated with an approved antistrip in sufficient quantity to produce acceptable results. The hot mix asphalt materials and asphalt binder material that require antistrip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and HMA. The anti-strip agent shall be included in the bid price.

The contractor shall submit the results of the TSR testing prior to production as part of the JMF submittal.

COMPOSITION OF HMA MIXTURES

Hot Mix Asphalt

HMA plant mix may be composed of a homogeneous mixture of aggregate, filler if required, bitumen, and/or additives, combined to meet the composition limits by weight and other characteristics as specified. The several aggregate fractions shall be sized, uniformly graded and combined in such proportions that the resulting mixture meets the grading requirements of these specifications.

Hot Mix Asphalt Mix Design

Delete Standard Sections M.04.02-1 and M.04.02-2 Marshall Method and Cold Patch Method and refer to Standard Section M.04.02-3.

M.04.02-3

Superpave Design Method – S0.25, S0.375, S0.5, and S1

b. Requirements: The Contractor or its representative shall design and submit Superpave mix designs annually for approval. The design laboratory developing the mixes shall be approved by the Engineer. The mix design shall be based on the specified Equivalent Single-Axle Loads (ESAL). Each bituminous concrete mix type must meet the requirements shown in Tables M.04.02-2 thru Table M.04.02-5 and in accordance with AASHTO M 323(M) and AASHTO R 35(M). The mix design shall include the nominal maximum aggregate size and a JMF consisting of target values for gradation and bitumen content for each bituminous concrete mix type designated for the project.

The contractor shall provide test results with supporting documentation from an AASHTO Materials Reference Laboratory (AMRL) with the use of NETTCP Certified Technicians for the following tests;

3. Aggregate consensus properties for each type & level, as specified in Table M.04.02-3. In addition the Gsa, Gsb, Pw_a shall also be provided for each component aggregate.

4. New mixes shall be tested in accordance with AASHTO T 283(M) Standard Method of Test for Resistance of Compacted Hot-Mix Asphalt (HMA) to Moisture-Induced Damage, (TSR). The compacted specimens may be fabricated at a bituminous concrete facility and then tested at an AMRL accredited facility.

The AASHTO T 283(M) test results, specimens, and corresponding JMF sheet (Form MAT-429s) shall be submitted by the Contractor for review.

The Contractor shall supply the Engineer with 1 gallon of the specified PG binder and 1 gallon of the same PG binder with the warm mix additive blended into it. The MSDS for the WMA additive shall be included with every submittal.

In addition, minimum binder content values apply to all types of bituminous concrete mixtures, as stated in Table M.04.02-5. For mixtures containing RAP, the virgin production and the anticipated proportion of binder contributed by the RAP cannot be less than the total permitted binder content value for that type nor the JMF minimum binder content.

iii. *Superpave Mixture (virgin): For bituminous concrete mixtures that contain no recycled material, the limits prescribed in Tables M.04.02-2 thru Table M.04.02-5 apply. The Contractor shall submit a JMF, on a form provided by the Engineer, with the individual fractions of the aggregate expressed as percentages of the total weight of the mix and the source(s) of all materials to the Engineer for approval. The JMF shall indicate the corrected target binder content and applicable binder correction factor (ignition oven or extractor) for each mix type by total weight of mix. The mineral filler (dust) shall be defined as that portion of blended mix that passes the #200 sieve by weight when tested in accordance with AASHTO T 30(M). The dust-to-effective asphalt (D/Pbe) ratio shall be between 0.6 and 1.2 by weight. The dry/wet mix times and hot bin proportions (batch plants only) for each type shall be included in the JMF.*

The percentage of aggregate passing each sieve shall be plotted on a 0.45 power gradation chart and shall be submitted for all bituminous concrete mixtures. This chart shall delineate the percentage of material passing each test sieve size as defined by the JMF. The percentage of aggregate passing each standard sieve shall fall within the specified control points, but outside the restricted zone limits as shown in Tables M.04.02-2 thru Table M.04.02-5. Mixes with documented performance history which pass through the restricted zone may be permitted for use as long as all other physical and volumetric criteria meets specifications as specified in Tables M.04.02-2 thru Table M.04.02-5 and with prior approval from the Engineer. A change in the JMF requires that a new chart be submitted.

iv. *Superpave Mixtures with RAP: Use of approved RAP may be allowed 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 and test results that show the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions and warm mix asphalt additive if used) meets the requirements of the specified binder grade.*

Unless approved by the Engineer, RAP material shall not be used with any other recycling option.

c. *Basis of Approval: On an annual basis, the Contractor shall submit to the Engineer any bituminous concrete mix design, and JMF anticipated for use on Department projects. Prior to the start of any paving operations, the mix design and JMF must be approved by the Engineer. Bituminous concrete mixture supplied to the project without an approved mix design and JMF will be rejected. The following information must be included in the mix design submittal:*

a. Gradation, specific gravities and asphalt content of the RAP,
b. Source of RAP and percentage to be used.
c. Warm mix Technology and manufacturer's recommended additive rate and tolerances, mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
d. Result of TSR testing, and if applicable Anti-strip manufacturer, and dosage rate.
e. Target Temperature at plant discharge.

Note – Testing to be performed shall be done in accordance with section M.04.03.

The JMF shall be accepted if the Plant mixture and materials meet all criteria as specified in Tables M.04.02-2 thru Table M.04.02-5. If the mixture does not meet the requirements, the contractor shall adjust the JMF within the ranges shown in Tables M.04.02-2 thru Table M.04.02-5 until an acceptable mixture is produced. All equipment, tests, and computations shall conform to the latest AASHTO R-35(M) and AASHTO M-323(M).

Any JMF, once approved, shall only be acceptable for use when it is produced by the designated plant, it utilizes the same component aggregates and binder source, and it continues to meet all criteria as specified herein, and component aggregates are maintained within the tolerances shown in Table M.04.02-2.

The Contractor shall not change any component source of supply including consensus properties after a JMF has been accepted. Before a new source of materials is used, a revised JMF shall be submitted to the Engineer for approval. Any approved JMF applies only to the plant for which it was submitted. Only one mix with one JMF will be approved for production at any one time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

Superpave mixture with CRCG: In addition to subarticles M.04.02 – 3 a through c, for bituminous concrete mixtures that contain CRCG, the Contractor shall submit a materials certificate to the Engineer stating that the CRCG complies with requirements stated in Article M.04.01, as applicable. Additionally, 1% 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.

The Contractor shall submit the JMF to the City on the latest forms provided by ConnDOT along with all certifications required by this specification.

JOB MIX FORMULA (JMF)

Work shall not begin nor shall any mixture be accepted until the Engineer has reviewed and approved a job mix formula (JMF) submitted by the Contractor for each mixture.

The Engineer may approve the JMF if the production plant's current Mix Status report provided by ConnDOT, as outlined in the Standard Section M.04.02-3(c), is "A" Approved.

Delete M.04.02-3(c) "Ratings are defined as:" PPT (Pre-Production Trial) and U (No Acceptable Mix Design on File)

M.04.02-3(c)

c. Mix Status: Each facility will have each type of bituminous concrete mixture evaluated based on the previous year of production, for the next construction paving season, as determined by the Engineer. Based on the rating a type of mixture receives it will determine whether the mixture can be produced without the completion of a PPT. Ratings will be provided to each bituminous concrete producer annually 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.04.03-3: Superpave Master Range for Bituminous Concrete Mixture Production, and are as follows:

Criteria A: Based on Air Voids. Percentage of acceptance results with passing air voids.

Criteria B: Based on Air Voids and VMA. The percentage of acceptance results with passing VMA, and the percentage of acceptance results with passing air voids, will be averaged.

The final rating assigned will be the lower of the rating obtained with Criteria A or Criteria B.

Ratings are defined as:

"A" – Approved:

A rating of "A" is assigned to each mixture type from a production facility with a current rating of 70% passing or greater.

JMF Tolerances

The job mix formula, operating with the allowable action limits for individual measurements as specified in Table 10 herein, shall be set within the design master limits specified for each mixture, as per TABLE M.04.02-2 of the Standard Specifications except that the Engineer may modify the design limits if they determine this to be necessary and in the best interest of the Engineer.

TABLE M.04.02– 2: SUPERPAVE MASTER RANGE FOR BITUMINOUS CONCRETE MIXTURE DESIGN CRITERIA

Notes: (1) Minimum Pb as specified in Table M.04.02-5. (2) Voids in Mineral Aggregates shall be computed as specified herein. (3) Control point range is also defined as the master range for that mix. (4) Dust is considered to be the percent of materials passing the #200 sieve. (5) For WMA, lower minimum aggregate temperature will require Engineer's approval. (6) For WMA and PMA, the mix temperature shall meet manufacturer's recommendations.

	S0.25				S0.375				S0.5				S1			
Sieve	CONTROL POINTS (3)		RESTRICTED ZONE		CONTROL POINTS(3)		RESTRICTED ZONE		CONTROL POINTS(3)		RESTRICTED ZONE		CONTROL POINTS(3)		RESTRICTED ZONE	
inches	Min (%)	Max (%)	Max (%)	Min (%)	Min (%)	Max (%)	Min (%)	Max (%)	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	-	-	-	-	-	-
#4	-	90	-	-	-	90	-	-	-	-	-	-	-	-	39.5	39.5
#8	32	67	47.2	47.2	32	67	47.2	47.2	28	58	39.1	39.1	19	45	26.8	30.8
#16	-	-	31.6	37.6	-	-	31.6	37.6	-	-	25.6	31.6	-	-	18.1	24.1
#30	-	-	23.5	27.5	-	-	23.5	27.5	-	-	19.1	23.1	-	-	13.6	17.6
#50	-	-	18.7	18.7	-	-	18.7	18.7	-	-	15.5	15.5	-	-	11.4	11.4
#100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
#200	2.0	10.0	-	-	2.0	10.0	-	-	2.0	10.0	-	-	1.0	7.0	-	-
Pb (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VMA (2) (%)	16.0 ± 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/Pbe(4)	0.6 – 1.2				0.6 – 1.2				0.6 – 1.2				0.6 – 1.2			
Agg. Temp(5)	280 – 350F				280 – 350F				280 – 350F				280 – 350F			
Mix Temp(6)	265 – 325 F				265 – 325 F				265 – 325 F				265 – 325 F			
Design TSR	≥ 80%				≥ 80%				≥ 80%				≥ 80%			

T-283 Stripping	*Minimal, as determined by the Engineer*

EQUIPMENT

Hot Mix Asphalt Mixing Plant

Refer to Standard Sections M.04.01-8 and as noted herein.

M.04.01-8

Plant Requirements:

a. Mixing Plant and Machinery:

The mixing plant used in the preparation of the bituminous concrete shall comply with AASHTO M-156(M)/ASTM D 995 for a Batch Plant or a Drum Dryer Mixer Plant, and be approved by the Engineer.

b. Storage Silos:

For all mixes, the Contractor may use silos for short-term storage of Superpave mixtures with prior notification and approval of the Engineer. A silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. Prior approval must be obtained for storage times greater than those indicated. When multiple silos are filled, the Contractor shall discharge one silo at a time. Simultaneous discharge of multiple silos is not permitted.

Type of silo cylinder	*Maximum storage time for all classes (hr)*	
	HMA	*WMA/PMA*
Open Surge	*4*	*Mfg Recommendations*
Unheated – Non-insulated	*8*	*Mfg Recommendations*
Unheated – Insulated	*18*	*Mfg Recommendations*
Heated – No inert gas	*TBD by the Engineer*	

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 delivery ticket, as specified herein. Material feed controls shall be automatically or manually adjustable to provide proportions within the tolerances listed below for any batch size.

An asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the tolerances in ASTM D 995 section 8.7.3. 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.

There must be provisions so that scales are not 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. For each day's production, each project shall be provided a clear, legible copy of these recordings on each delivery ticket.

d. *Aggregates: The Contractor shall ensure that aggregate stockpiles are managed to provide uniform gradation and particle shape, prevent segregation and cross contamination in a manner acceptable to the Engineer. For drum plants only, the Contractor shall determine the percent moisture content at a minimum, prior to production and half way through production.*

e. *Mixture: The dry and wet mix times shall be sufficient to provide proper coating (minimum 95% as determined by AASHTO T 195(M)) of all particles with bitumen and produce a uniform mixture.*

The Contractor shall make necessary adjustments to ensure all types of bituminous concrete mixtures contain no more than 0.5% moisture throughout when tested in accordance with AASHTO T 329.

f. *RAP: The Contractor shall indicate the percent of RAP, the moisture content (as a minimum determined twice daily – prior to production and halfway through production), and the net dry weight of RAP added to the mixture on each truck ticket. For each day of production, the production shall conform to the job mix formula and RAP percentage and no change shall be made without the prior approval of the Engineer.*

g. *Asphalt Binder: The last day of every month, a binder log shall be submitted when the monthly production for the Department exceeds 5000 tons. Blending of PG binders from different suppliers or grades at the bituminous concrete production facility is strictly prohibited.*

h. *Warm mix additive: For mechanically foamed WMA, the maximum water injection rate shall not exceed 2.0% water by total weight of binder and the water injection rate shall be constantly monitored during production.*

i. *Field Laboratory: The Contractor shall furnish the Engineer an acceptable field laboratory at the production facility to test bituminous concrete mixtures during production. The field laboratory shall have a minimum of 300 square feet, have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, 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 with a minimum upstream of 384 Kbps and a functioning web browser with unrestricted access to https://ctmail.ct.gov. This equipment shall be maintained in clean and good working order at all times and be made available for use by the Engineer.*

The laboratory shall be equipped with a suitable 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. Windows shall be installed to provide sufficient light and ventilation. During summer months adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature. Light fixtures and outlets shall be installed at convenient locations, and a telephone shall be within audible range of the testing area. The laboratory shall be equipped with an adequate workbench that has a suitable length, width, and sampling tables, and be approved by the Engineer.

The field laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all tests in their entirety that are referenced in AASHTO R 35(M), Standard Practice for Superpave Volumetric Design for Hot-Mix Asphalt (HMA) and AASHTO M 323, Standard Specification for Superpave Volumetric Mix Design. In addition, the quantity of all equipment and supplies necessary to perform the tests must be sufficient to initiate and complete the number of tests identified in Table M.04.03-2 for the quantity of mixture produced at the facility on a daily basis. 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, 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 field laboratory. The Contractor shall take immediate action to replace, repair, and/or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

Hauling Equipment

Refer to Standard Section 4.06.03-2.

4.06.03-2

Transportation of Mixture: *Trucks 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 of all vehicles and allowable weights transporting mixture.*

The State reserves the right to check the gross and tare weight of any delivery truck. A variation of 0.4 percent or less in the gross or tare weight shown on the delivery ticket and the certified scale weight shall be considered evidence that the weight shown on the delivery ticket is correct. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4 percent, the Engineer will recalculate the net weight. The Contractor shall take action to correct discrepancy to the satisfaction of the Engineer.

If a truck delivers mixture to the project and the ticket indicates that the truck is overweight, the load will not be rejected but a "Measured Weight Adjustment" will be taken in accordance with Article 4.06.04.

The mixture shall be transported from the mixing plant in trucks that have previously been cleaned of all foreign material and that have no gaps through which mixture might inadvertently escape. The Contractor shall take care in loading trucks uniformly so that segregation is minimized. Loaded trucks shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The front and rear of the cover must be fastened to minimize air infiltration. The Contractor shall assure that all trucks are in conformance with this specification. Trucks found not to be in conformance shall not be allowed to be loaded until re-inspected to the satisfaction of the Engineer.

Truck body coating and cleaning agents must not have a deleterious effect on the transported mixture. The use of solvents or fuel oil, in any concentration, is strictly prohibited for the coating of the inside of truck bodies. When acceptable coating or agents are applied, truck bodies shall be raised immediately prior to loading to remove any excess agent in an environmentally acceptable manner.

Pavers, Rollers, Lighting and Material Transfer Vehicle

Refer to Standard Section 4.06.03-3.

4.06.03-3

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 of equipment is prohibited in any location on the paving project where fuel might come in contact with bituminous concrete mixtures already placed or to be placed. Solvents for use 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 the paved or to be paved area; and they shall not be returned for use until after they have been allowed to dry.

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.

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Rollers types shall include steel-wheeled, pneumatic or a combination there of and may be capable of operating in a static or dynamic mode. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination of. The vibratory system achieves compaction through vertical amplitude forces. Rollers with this system shall be equipped with indicators that provide the operator with amplitude, frequency and speed settings/readouts to measure the impacts per foot during the compaction process. The oscillatory system achieves compaction through horizontal shear forces. Rollers with this system 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 self-propelled and equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 pounds per square inch uniformly over the surface, adjusting ballast and tire inflation pressure as required. The Contractor shall furnish evidence 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 approved lighting fixtures of equivalent light output characteristics. A sufficient number of spare lamps shall be available on site as replacements in the event of failures. The Contractor shall provide brackets and hardware for mounting light fixtures and generators to suit the configuration of the rollers and pavers. Mounting brackets and hardware shall provide for secure connection of the fixtures, minimize vibration, and allow for adjustable positioning and aiming of the light fixtures. Lighting shall be aimed to maximize the illumination on each task and minimize glare to passing traffic. The Contractor shall provide generators on rollers and pavers of the type, size, and wattage, to adequately furnish 120 V AC of electric power to operate the specified lighting equipment. A sufficient amount of fuel shall be available on site. There shall be switches to control the lights. Wiring shall be weatherproof and installed to all applicable codes. The minimum lighting requirements are found in tables 4.06-1 and 4.06-2:

Table 4.06-1: Paver Lighting

Fixture	*Quantity*	*Remarks*
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*

Table 4.06-2: Roller Lighting

Fixture*	***Quantity***	***Remarks***
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*
OR		
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*

**All fixtures shall be mounted above the roller.*

Type A: Fluorescent fixture shall be heavy-duty industrial type. It shall be enclosed and sealed to keep out dirt and dampness. It shall be UL listed as suitable for wet locations. The fixture shall contain two 4-foot long lamps - Type "F48T12CWHO". The integral ballast shall be a high power factor, cold weather ballast, and 120 volts for 800 MA HO lamps. The housing shall be aluminum, and the lens shall be acrylic with the lens frame secured to the housing by hinging latches. The fixture shall be horizontal surface mounting, and be made for continuous row installation.

Type B: The floodlight fixture shall be heavy-duty cast aluminum housing, full swivel and tilt mounting, tempered-glass lens, sealed door, reflector to provide a wide distribution or narrow distribution as required, mogul lamp socket for 250 watt Metal Halide lamp, 120 volt integral ballast, and be UL listed as suitable for wet locations.

Type C: The power beam holder shall have ribbed die cast aluminum housing and a clear tempered-glass lens to enclose the fixture. There shall be an arm fully adjustable for aiming, with a male-threaded mount with serrated teeth and lock nuts. There shall be a 120-volt heatproof socket with extended fixture wiring for an "Extended Mogul End Prong" lamp base. The fixture shall have gaskets, and shall be UL listed as suitable for wet locations. The lamps shall be 1000-watt quartz PAR64, both Q1000PAR64MFL (flood) and Q1000PARNSP (spot) will be required.

Material Transfer Vehicle (MTV): A MTV shall be used when placing a HMA surface course that is a minimum of 5,000 feet in length and on a roadway that has an overall width of 28 feet or more. A surface course is defined as the total thickness of the same HMA mix that extends up to and includes the final wearing surface whether it is placed in a single or multiple lifts, and regardless of any time delays between lifts.

The MTV must be a self-propelled vehicle specifically designed for the purpose of delivering the HMA mixture from the delivery truck to the paver. The MTV must have the capability to remix the bituminous concrete mixture.

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:

- *The make and model of the MTV to be used.*

- *The individual axle weights and axle spacing for each separate piece of paving equipment (haul vehicle, MTV and paver).*
- *A working drawing showing the axle spacing in combination with all three pieces of equipment that will comprise the paving echelon.*

HMA CONSTRUCTION

Refer to Standard Section 4.06.03 except as noted herein.

Weather Limitations

Refer to Standard Section 4.06.04 and as noted herein.

4.06.04

Seasonal Requirements: *Paving, including placement of temporary pavements, shall be divided into two seasons; In-Season and Extended Season. In-Season shall be from May 1 – September 30 and Extended Season shall be from October 1- April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:*

- *The final lift of HMA shall not be placed during the Extended Season.*
- *HMA mixes shall not be placed when the air or base temperature is below 40°F.*

Additional Requirements for Extended Season:

- *The minimum mixture temperature for all HMA mixtures when discharged into the paver or transfer vehicle hopper shall be 290°F. The temperature will be taken from the initial discharge of mixture from the truck. If found to be below the minimum requirement, the truck will not be allowed to unload remaining mixture.*
- *The Contractor shall use a minimum of 3 rollers with operators for paving lengths greater than 1000 feet. Two rollers must be capable of operating in the dynamic mode.*
- *The Contractor's Quality Control Plan shall include a section on Extended Season paving and address paver speed, roller patterns and balancing mixture delivery and placement operations to meet specification requirements.*

The hot mix asphalt shall not be placed when weather conditions of fog or rain prevail or when the pavement surface or base shows signs of free moisture (film of water).

The Engineer will not permit work to continue when overtaken by sudden storms until the pavement surface shows no signs of free moisture. The material in transit at the time of shutdown will not be placed until the pavement surface shows no signs of free moisture, provided the mixture is within temperature limits as specified.

Tack Coat

Refer to Standard Section 4.06.03-7 except as amended herein.

4.06.03-7

Tack Coat Application: A thin uniform coating of tack coat shall be applied to the pavement immediately before overlaying and be allowed sufficient time to break (set). All surfaces in contact with the HMA that have been in place longer than 3 calendar days shall have an application of tack coat. The tack coat shall be applied by a non-gravity pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and an 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 an application rate of 0.03 to 0.05 gallons per square yard. 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.

Contact surfaces of manholes, structures, longitudinal joints, vertical pavement edges, etc. shall be painted with a thin, uniform tack coat just before the material is placed against them.

All surfaces in contact with the HMA that have been in place over night shall have an application of tack coat.

Paving courses will be evaluated for bond after 15 days have elapsed since the date of placement. Two (2) core samples shall be randomly taken by the Engineer using a 6 inch diameter wet-core bit specifically designed for cutting pavement. These cores may also be used for density gauge correlation, density verification, thickness determinations, and for density adjustment at the option of the Engineer.

If it is determined that there is poor or no bond between paving layers then the Engineer may require that an increase in tack coat be applied.

HMA Production

The aggregates and the asphalt binder material shall be weighed or metered and introduced into the mixer in the amount specified by the JMF and within the allowable action limits as stated in Table 10 HMA PRODUCTION LIMITS. These limits shall be applied to the target values established in the JMF. Corrective action shall be taken by the Contractor when the calculated individual result for gradation or asphalt content falls outside the target JMF value beyond the action limits listed in Table 10. The Contractor shall take the appropriate action when results indicate the material is out of tolerance. The Contractor shall be required to suspend production when the calculated individual results fall outside the target JMF values beyond the limits allowed in the CORRECTIVE ACTION section of the specification.

Plant Trials

If production is suspended, the Contractor shall be required to produce material on a trial basis for testing purposes without shipment to the project. No payment will be made for material and labor employed for nonconforming plant trials. The Contractor shall pay for any acceptance sampling and testing for the trials necessary to determine conformance with the specification requirements during

production suspension. When trials have been approved, the plant will return to its normal operation.

Failure to stop production and make adjustments when required due to an individual test not meeting the specified requirements shall subject all mix from the stop point to the point when the next individual test is back on or within the action limits, or to the point when production is actually stopped, whichever occurs first, to be considered unacceptable. This material shall be removed and replaced with materials that comply with the specifications at the Contractor's expense. Any sampling, testing, or evaluation services required during the Contractor's failure to stop production shall be paid for by the Contractor.

Placing and Finishing

Refer to Standard Section 4.06.03-6 and 4.06.03-7 and as noted herein.

4.06.03-6

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 conform to the criteria below unless otherwise specified.*

Permanent Transitions: A permanent transition is defined as any transition that remains as a permanent part of the work. All permanent transitions, leading and trailing ends shall meet the following length requirements:

a) Posted speed limit is greater than 35 MPH: 30 feet per inch of vertical change (thickness)

b) Posted speed limit is 35 MPH or less: 15 feet per inch of vertical change (thickness).

c) Bridge Overpass and underpass transition length will be 75 feet either

(1) Before and after the bridge expansion joint, or

(2) Before or after the parapet face of the overpass.

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: A temporary transition is defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

a) Posted speed limit is greater than 35 MPH

(1) Leading Transitions = 15 feet per inch of vertical change (thickness)

(2) Trailing Transitions = 6 feet per inch of vertical change (thickness)

b) Posted speed limit is 35 MPH or less

(1) Leading and Trailing = 4 feet per inch of vertical change (thickness)

Note: *Any temporary transition to be in-place over the winter shutdown period, holidays, or during extended periods of inactivity (more than 7 calendar days) shall conform to the "Permanent Transition" requirements shown above.*

4.06.03-7

Spreading and Finishing of Mixture: *Prior to the placement of the bituminous concrete, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance. Immediately before placing the mixture, the area to be surfaced shall be cleaned by sweeping or by other means acceptable to the Engineer. The HMA mixture shall not be placed whenever the surface is wet or frozen. The temperature of the mix at time of placement must be between 265°F and 325°F. The Engineer will verify the mix temperature by means of a probe or infrared type of thermometer. Rejection of mixture based on temperature will only be allowed if verified by means of a probe type thermometer.*

Placement: The HMA 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. The maximum paver speed during placement shall not exceed 40 ft/min unless authorized by the Engineer.

When unforeseen weather conditions prevent further placement of the mix, 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 daily, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The Contractor shall inspect the newly placed pavement for defects in the mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impractical 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 HMA placed at a uniform specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an HMA 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 total thickness of the lift of mixture exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating a HMA adjustment in Article 4.06.04.*

TABLE 4.06-3 Thickness Tolerances

Mixture Designation	***Lift Tolerance***
Class 4 and HMA S1	*+/- ⅜ inch*
Class 1, 2 and 12 and HMA S0.25, S0.375, S0.5	*+/- ¼ 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 specification.

b) Area- Where the width of the lift exceeds that shown on the plans by more than the specified thickness of each lift, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating a HMA 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 quantity of tons representing the overweight amount will be documented by the Engineer for use in calculating a HMA adjustment in Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting a sufficient distance back from the previous run, existing bituminous concrete pavement or bituminous concrete driveways to expose the full thickness of the lift. A brush of tack coat shall be used on any cold joint immediately prior to additional bituminous concrete mixture being placed.

Tack Coat Application: A thin uniform coating of tack coat shall be applied to the pavement immediately before overlaying and be allowed sufficient time to break (set). All surfaces in contact with the HMA that have been in place longer than 3 calendar days shall have an application of tack coat. The tack coat shall be applied by a non-gravity pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and an 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 an application rate of 0.03 to 0.05 gallons per square yard. 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.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.03 and eliminate all roller marks without displacement, shoving, cracking, or aggregate breakage.

The Contractor shall only operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting on concrete structures such as bridges and catch basins. The use of the vibratory system on concrete structures is prohibited.

Rollers operating in the dynamic mode shall be shut off when reversing directions.

If the Engineer determines that the use of compaction equipment in the dynamic vibratory mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Engineer may allow the Contractor to operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements: The pavement surface of any lift shall meet the following requirements for smoothness and uniformity. Any irregularity of the surface exceeding these requirements shall be corrected by the Contractor.

a) Smoothness- Each lift of the surface course shall not vary more than ¼ inch from a Contractor-supplied 10 foot straightedge. For all other lifts of HMA, the tolerance shall be ⅜ inch. Such tolerance will apply to all paved areas.

b) Uniformity- The paved surface shall not exhibit segregation, rutting, cracking, disintegration, flushing or vary in composition as determined by the Engineer.

No traffic of any kind shall be permitted on binder or base when dirt or any other foreign substance may be tracked thereon.

Suspension Control Test Section

Refer to Standard Section 4.06.03-5 except as amended herein.

4.06.03-5

Superpave 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 acceptance by the Engineer. The 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.

If it is determined by the Engineer during the performance of the contract, that the Marshall or Superpave pavement does not conform to the specifications, tolerance, density and/or uniformity requirements, the Engineer may order the Contractor to cease all operations and construct an HMA SUSPENSION CONTROL TEST SECTION.

The amount of mixture should be sufficient, at a minimum, to construct a test section 300 feet long and 20 to 30 feet wide placed in two lanes, with a longitudinal joint, and shall be of the same depth specified for the construction of the course which it represents. A control section may be required each time a change is made in the Job Mix Formula, sources of supply or paving and rolling equipment. A suspension control test section will be required when either of the following conditions exist:

1. Two consecutive streets or two consecutive 1,000 ton lots of material tested for mat density or longitudinal joint density falls below the minimum threshold density for 100% adjustment, as noted in Table 11 and Table 12.

2. When the average of the last five streets or five 1,000 ton lots of material tested for mat density or longitudinal joint density falls below the threshold density for 100% adjustment, as noted in Table 11 and Table 12.

The mixture shall be prepared, placed, and compacted in accordance with this specification. When the control section pavement has cooled sufficiently, a total of six (6) samples of the finished pavement including three (3) samples from the longitudinal joint, shall be taken and tested for conformance to density requirements.

If the suspension control section tests conducted by the Engineer, and paid for by the Contractor, indicate that pavement does not conform to specification requirements, necessary adjustment to plant operation and placement/rolling procedures shall be made and another control section constructed.

The Contractor shall not be permitted to re-core a control section or place HMA courses until a control section is approved by the Engineer.

Transverse Joints

Refer to Standard Section 4.06.03-7.

4.06.03-7

Transverse Joints: *All transverse joints shall be formed by saw-cutting a sufficient distance back from the previous run, existing bituminous concrete pavement or bituminous concrete driveways to expose the full thickness of the lift. A brush of tack coat shall be used on any cold joint immediately prior to additional bituminous concrete mixture being placed.*

Longitudinal Joints

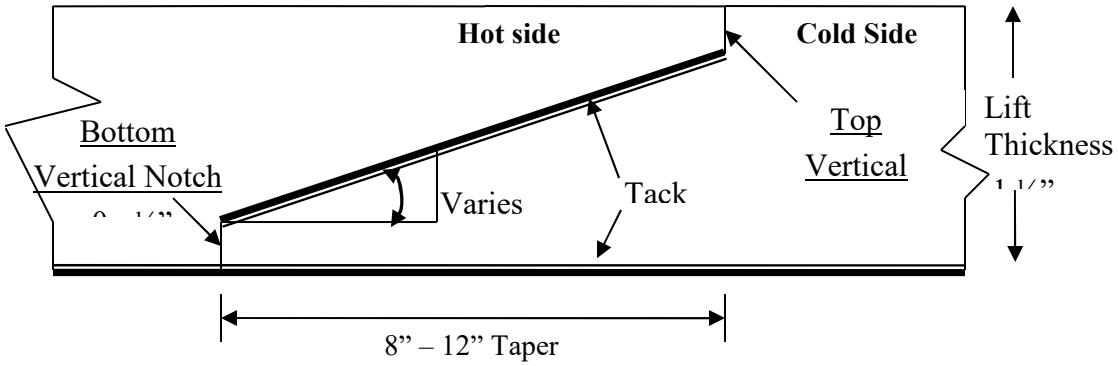
Refer to Standard Section 4.06.03-8.

4.06.03-8

HMA Longitudinal Joint Construction Methods: *Unless noted on the plans or the contract documents or directed by the Engineer, the Contractor shall use Method I- Notched Wedge Joint (see figure 4.06-1) when constructing longitudinal joints where lift thicknesses are between 1½ and 3 inches, except for HMA S1 and Class 4 mixes. Method II Butt Joint (see figure 4.06-2) shall be used for lifts less than 1½ inches or greater than 3 inches and HMA S1 and Class 4 mixes. During placement of multiple lifts of HMA, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inches from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines.*

Method I - Notched Wedge Joint*:*

Figure 4.06-1



A notched wedge joint shall be constructed, as shown in the figure using a device that is capable of adjusting the top and bottom vertical notches independently and is attached to the paver screed.

The taper portion of the joint must be placed over the longitudinal joint in the lift immediately below. 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 will be waived in those areas where the notched wedge joint is utilized.

The taper portion of the wedge joint shall be compacted and not be exposed to traffic for more than 5 calendar days.

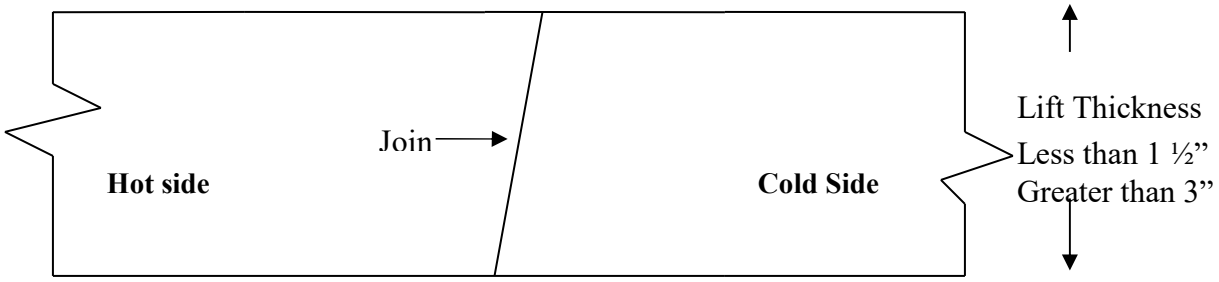
The existing pavement surface under the wedge joint must have an application of tack coat material. Prior to placing completing pass (hot side), an application of tack coat must be applied to the tapered section.

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.

***Method II - Butt Joint**:*

Figure 4.06-2

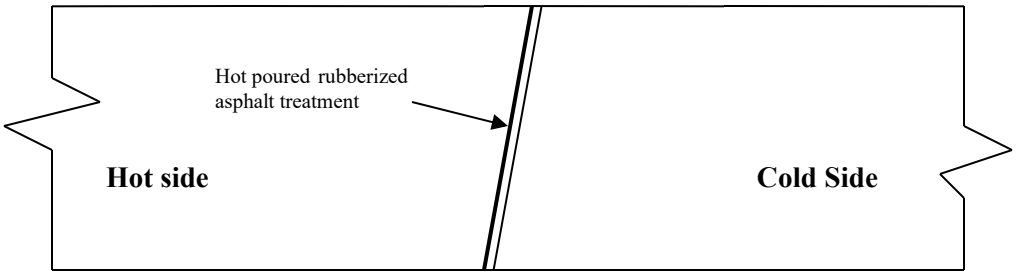


When adjoining HMA passes are placed, the Contractor shall utilize equipment that creates a near vertical edge (refer to figure). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). The end gate on the paver should 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**: When required by the contract or allowed by the Engineer, Method III (see figure 4.06-3) may be used.*

Figure 4.06-3



All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a joint seal material meeting the requirements of Section M.04 prior to placing a completing pass. 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.

Method III – Butt Joint with Hot Poured Rubberized Asphalt Treatment will be at the contractor's expense.

For Methods II and III, the top of the longitudinal joint in one course shall offset the top of the longitudinal joint in the course immediately below by at least 1 foot, however, the joint in the top layer shall be at the centerline for two lane roadways. Longitudinal paving joints shall not fall within the travel lanes but be located on the solid, skip, or edge lines established for that roadway. Longitudinal joint(s) of the top layer shall be marked prior to paving so as to create a neat, straight line at the lane breaks where necessary. First paver pass shall use the marked joint as the guide to develop the longitudinal joint of the top layer; using the curb edge or edge of pavement as a guide is unacceptable. The goal is to end up with a true straight longitudinal joint at centerline or at lane breaks. The Contractor shall inform the Engineer of the proposed paving joint locations for the entire pavement structure prior to placing the first intermediate course.

Compaction of HMA Mixture after Placing

Refer to Standard Section 4.06.03-7 and as amended herein.

4.06.03-7

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.03 and eliminate all roller marks without displacement, shoving, cracking, or aggregate breakage.

The Contractor shall only operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting on concrete structures such as bridges and catch basins. The use of the vibratory system on concrete structures is prohibited.

Rollers operating in the dynamic mode shall be shut off when reversing directions.

If the Engineer determines that the use of compaction equipment in the dynamic vibratory mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Engineer may allow the Contractor to operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

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The speed of the roller shall, at all times, be sufficiently slow and of uniform speed to avoid displacement of the hot mixture and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once.

Pneumatic rollers may be used in the intermediate mode.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers and vibratory plate compactors.

Any mixture that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

Shaping Edges

While the surface is being compacted and finished, the Contractor shall carefully trim the outside edges of the pavement to the proper alignment. Edges so formed shall be beveled while still hot with the back of a lute or smoothing iron and thoroughly compacted by tampers or by other satisfactory methods.

Surface Smoothness

Refer to Standard Section 4.06.03-7.

04.06.03-7

Surface Requirements: *The pavement surface of any lift shall meet the following requirements for smoothness and uniformity. Any irregularity of the surface exceeding these requirements shall be corrected by the Contractor.*

a) Smoothness- Each lift of the surface course shall not vary more than ¼ inch from a Contractor-supplied 10 foot straightedge. For all other lifts of HMA, the tolerance shall be ⅜ inch. Such tolerance will apply to all paved areas.

Corrective Work

Refer to Standard Section 4.06.03-13 and as noted herein.

04.06.03-13

Corrective Work Procedures: *Any portion of the completed pavement that does not meet the requirements of the specification shall be corrected at the expense of the Contractor. Any corrective courses placed as the final wearing surface shall not be less than 1½ inches in thickness after compaction.*

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) Perform all corrective work in accordance with the Contract and the approved corrective procedure.

The corrective method(s) chosen by the Contractor shall be approved for use by the Engineer and shall be performed at the Contractor's expense, including all necessary equipment and traffic control. Areas of removal and replacement shall be removed the full width of the lane. The removal areas shall begin and end with a transverse butt joint which shall be constructed with a transverse saw cut perpendicular to the centerline. Replacement materials shall be paver placed in sufficient quantity so the finished surface will conform to grade, smoothness and cross-section requirements.

The Engineer shall retest any sections where corrections were made to verify that the corrections produced a surface that conforms to the grade and smoothness requirements.

Uniformity

Refer to Standard Section 4.06.03-7 and as amended herein.

4.06.03-7

Surface Requirements: *The pavement surface of any lift shall meet the following requirements for smoothness and uniformity. Any irregularity of the surface exceeding these requirements shall be corrected by the Contractor.*

a) Uniformity- The paved surface shall not exhibit segregation, rutting, cracking, disintegration, flushing or vary in composition as determined by the Engineer

The Contractor shall review all potential causes of segregation as it relates to its operation, including but not limited to HMA plant production and storage, loading and transportation, paver/equipment, placement and/or handwork. The Contractor shall employ additional investigation methods and make the necessary changes in their operation such that segregation is eliminated and mat uniformity is acceptable.

At the Engineer's discretion, the Engineer shall obtain two (2) six inch diameter cores from the identified (segregated) area and two (2) six inch diameter cores from the non-segregated area. The cores may be evaluated for resilient modulus, dry tensile strength, change in air voids, maximum in place air voids, aggregate gradation and binder content. The results of the data obtained on the cores from the segregated area will be compared to the results of tests performed on the cores from the non-segregated area.

If any mix property is beyond the tolerance limits stated in the table below, that area shall be considered segregated and shall be repaired by the Contractor.

SEGREGATION LIMITS

Change in Mix Properties Expressed as a Percentage of the Properties in the Non-Segregated Areas	
Property	**Limits**
Resilient Modulus, psi @ 77ºF	<80%
Dry Tensile Strength, psi @ 77ºF	<90%
Aggregate Gradation and Binder Content	Refer to Table 10 (Action Limits)
Change in Air Voids	>2.5%

The samples for the segregation analysis will be considered separately from the mat and joint cores tested for acceptance.

Segregated areas not meeting the requirements stated above or areas having more than 11% air voids shall be removed and replaced for the entire pavement thickness and lane width, and be paver-

machine placed, or as directed by the Engineer. All corrective methods shall be performed at the Contractor's expense. The removal areas shall begin and end with a transverse butt joint which shall be constructed with a transverse saw cut perpendicular to the centerline. The corrective area shall conform to all grades, smoothness, material, and density specification requirements. The Engineer may retest any areas where corrections were made to verify that the material meets specification requirements.

Thickness

Refer to Standard Section 4.06.03-7 and 4.06.04-2 and as noted herein.

4.06.03-7

Placement Tolerances: *Each lift of HMA placed at a uniform specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an HMA 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 total thickness of the lift of mixture exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating a HMA adjustment in Article 4.06.04.

TABLE 4.06-3 Thickness Tolerances

Mixture Designation	***Lift Tolerance***
Class 4 and HMA S1	*+/- ⅜ inch*
Class 1, 2 and 12 and HMA S0.25, S0.375, S0.5	*+/- ¼ 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 specification.

b) Area- Where the width of the lift exceeds that shown on the plans by more than the specified thickness of each lift, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating a HMA 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 quantity of tons representing the overweight amount will be documented by the Engineer for use in calculating a HMA adjustment in Article 4.06.04.

04.06.04-2

HMA Adjustments: *Adjustments may be applied to bituminous concrete quantities and will be measured for payment using the following formulas:*

Yield Factor *for Adjustment Calculation = 0.0575 Tons/SY/inch*

Actual Area *= [(Measured Length (ft)) x (Avg. of width measurements (ft))]*

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 (in.) of the lift being placed.*

Tons Adjusted for Area (T_A) $= [(L \times W_{adj})/9] \times (t) \times 0.0575$ *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 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:*

Tons Adjusted for Thickness (T_T) $= A \times t_{adj} \times 0.0575 =$ *(-) Tons*

Where: A *= Area =* $\{[L \times$ *(Designed width + tolerance (lift thickness)/12)] / 9*$\}$
t_{adj} *= Adjusted thickness = [(Dt + tolerance) - Actual thickness]*
Dt *= Designed thickness (inches)*

The thickness requirements contained herein shall apply only when each pavement layer is specified to be a uniform compacted thickness of 1 inch (25mm) or greater. Measurements of thickness for acceptance shall be made by the Engineer using six-inch minimum diameter pavement cores (removed also for subsequent density measurement), and then verified according to Section 4.06.04-2.

CONTRACTOR QUALITY CONTROL OF HMA PAVEMENT

Standard Section 4.06.03-9 is deleted and replaced as amended herein.

General

The Contractor is encouraged to establish, provide, and maintain a Quality Control System (QCS) that will detail the methods and procedures that will be taken to assure that all materials and completed construction conform to project specifications, plans, technical specifications and other requirements, whether manufactured or processed by the Contractor or procured from subcontractors or vendors.

If the project data during production indicates a problem and the Contractor is not taking satisfactory corrective action as is their responsibility under quality control, then the Engineer may suspend production or acceptance of the material, in accordance with these specifications.

TABLE 10 HMA Production Limits for Individual Measurements

Sieve Size	Action	Suspension
1-1/2" (37.5mm)	0%	0%
1" (25.0 mm)	±6%	±9%
3/4" (19.0 mm)	±6%	±9%
1/2" (12.5 mm)	±6%	±9%
3/8" (9.5 mm)	±6%	±9%
#4 (4.75 mm)	±6%	±9%
#8 (2.36 mm)	±5%	±7.5%
#16 (1.18 mm)	±5%	±7.5%
#30 (0.600 mm)	±4%	±5.5%
#50 (0.300 mm)	±3%	±4.5%
#100 (0.150 mm)	±3%	±4.5%
#200 (0.075 mm)	±2%	±3%
Asphalt Binder Content	±0.4%	±0.70%
Design Air Voids (4.0%)	±1.0%	±1.7%

When evaluating the production limits, the sieve sizes above the maximum size aggregate should be deleted from the Individual Measurements Chart and the maximum aggregate sieve size Action and Suspension Limits should be changed to 0%.

CORRECTIVE ACTION

The Contractor's Quality Control system shall include an appropriate action to be taken when the process is believed to be out of tolerance. The Contractor should review the control charts on a continuous basis making adjustments to the process when necessary to keep the product consistent.

As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

One point falls outside the Suspension Limit line for individual measurements; or

Design Air Voids falls outside the Suspension Limit line for its individual measurement or range as indicated in Table 10; or

Design Air Voids and two or more points fall outside the Action Limit line for individual measurements as indicated in Table 10; or

Design Air Voids fall outside the Action Limit and one point falls outside the Suspension Limit for individual measurements or range as indicated in Table 10; or

Three points in a row fall outside the Action Limit line for individual measurements as indicated in Table 10.

Three nonconsecutive samples out of five samples fall outside the Action Limit line for individual measurements as indicated in Table 10.

The dust to effective binder ratio on two consecutive samples fall outside the Control Point limits for individual measurements as indicated in Table 6.

Dust to effective binder ratio of three (3) nonconsecutive samples out of five (5) samples fall outside the Control Point limits for individual measurements as indicated in Table 6.

Two consecutive streets or two consecutive 1,000 ton lots of material tested for mat density or longitudinal joint density falls below the threshold density for 100% adjustment, as noted in Table 11 and Table 12.

The average of the last five streets or five 1,000 ton lots of material tested for mat density or longitudinal joint density falls below the threshold density for 100% adjustment, as noted in Table 12 and Table 13.

Acceptance testing requirements are the responsibility of the Engineer.

QUALITY ACCEPTANCE OF HMA

Standard Section M.04.03-1 and M.04.03-2 are deleted and replaced as amended herein.

All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the Engineer at no cost to the Contractor, unless otherwise stated herein. Testing organizations performing these tests shall meet the requirements of ASTM D 3666. All equipment in Contractor furnished laboratories shall be calibrated and verified by a testing organization prior to the start of operations. Such verification/certification shall be furnished to the Engineer prior to production. Engineer's testing personnel shall be certified by the Northeast Transportation Training and Certification Program (NETTCP). This function does not relieve the Contractor from performing their daily quality control tasks as part of their normal operating business.

The Engineer or their agent shall have access at any time to all parts of the producing plant for:

Inspection of the condition and operations of the yard, plant and laboratory.

Confirmation of the adequacy of equipment in use.

Verification of the character and proportions of the mixture.

Determination of temperatures being maintained in the preparation of the mixtures.

Inspection of incidental related procedures.

Samples of all material including compacted specimens and certified copies of all reports and printouts shall be made available to the Engineer or its agent as often as requested including: asphalt binder; recycling agents; virgin aggregates; reclaimed pavement materials; modifiers, loose and compacted mixture specimens; and combined aggregate samples.

Plant-Produced Material

Plant-produced material shall be sampled and tested for VMA, gradation, asphalt binder content, and air voids (Marshall or Superpave) at N_{design} (Superpave only) on a lot basis. The Engineer's testing personnel shall be certified by the Northeast Transportation Training and Certification Program (NETTCP), as HMA Plant Technicians. Sampling shall be from material deposited into trucks at the plant or from trucks at the job site. A lot will consist of:

- one day's production

Where more than one plant is simultaneously producing material for, the job, the lot sizes shall apply separately for each plant.

Sampling

Each lot will be divided into 300 ton sublots. Sufficient material for analysis and preparation of test specimens will be sampled by the Engineer on a random basis, in accordance with the procedures contained in ASTM D 3665. One set of laboratory compacted specimens will be prepared for each sublot in accordance with AASHTO T312, at the number of gyrations at N_{design} required by Table 5 herein for Superpave, or in accordance with AASHTO T245, at the number of blows required by Table M.04.02-1. Each set of laboratory compacted specimens will consist of two test portions prepared from the same field sample, with the volumetric analysis based on the average of the two specimens and a minimum of one theoretical maximum specific gravity sample.

The sample of hot mix asphalt may be put in a covered metal tin and placed in an oven for not more than 30 minutes to regulate or adjust the temperature. The compaction temperature of the specimens should be as specified in the JMF.

In addition to the hot mix asphalt samples, the Contractor shall take one, one-quart sample of the PG binder used to produce the hot mix asphalt at the start of the work. The PG sample shall be turned over to the Engineer on the first day of project production.

Testing

Bulk Specific Gravity - Sample specimens shall be tested for bulk specific gravity in accordance with AASHTO T166 or T275, whichever is applicable, for use in computing air voids and density. Air voids will be determined in accordance with AASHTO T269.

Stability and Flow (Marshall specimens) – Sample specimens shall be tested for stability and flow in accordance with AASHTO T245, paragraph 4.

Gradation and Asphalt Binder Content - The gradation and asphalt binder content of the mixture shall be measured for each sublot in accordance with the following:

Asphalt Binder Content - Extraction tests shall be performed once per sublot in accordance with AASHTO T164 or AASHTO T308 for determination of asphalt content. The weight of ash portion of the extraction test, as described in AASHTO T164, shall be determined as part of the first extraction test performed at the beginning of plant production; and as part of every twentieth extraction test performed thereafter, for the duration of plant production. The last weight of ash value obtained shall be used in the calculation of the asphalt content for the mixture. If utilizing AASHTO T308 for asphalt content determination, the calibration process and calibration factor, as described in AASHTO T308, shall be determined as stated, prior to acceptance testing. A verification shall be performed as part of every twentieth test performed thereafter or when changes in the mix are apparent.

Gradation - Aggregate gradations shall be determined once for each sublot from mechanical analysis of extracted aggregate in accordance with AASHTO T30 and AASHTO T27 (Dry Sieve).

The Dust-to-Effective Asphalt ratio shall be determined once for each sublot from the mechanical analysis of extracted aggregate and the effective asphalt binder content. The Dust-to-Effective Asphalt ratio shall be determined by the Engineer in accordance with AASHTO R35.

HMA mixtures shall contain a dust to effective asphalt ratio by mass between 0.6 and 1.2 utilizing AASHTO T30 and a washed sieve, the #4 mixture shall have a dust to effective asphalt ratio between 0.9 and 2.0, utilizing AASHTO T30 and a washed sieve. If the gradation of the mixture passes beneath the Primary Control Sieve (PCS), the Engineer may increase the dust to effective asphalt from 0.6 – 1.2 to 0.8 – 1.6, utilizing AASHTO T30 and a washed sieve.

When tested in accordance with AASHTO T30 utilizing a dry sieve analysis the dust to effective asphalt ratio shall be 0.3 to 0.9, the #4 mixture shall have a dust to effective asphalt ratio between 0.6 to 1.2. If the gradation of the mixture passes beneath the PCS the Engineer may increase the dust to effective asphalt ratio from 0.3 –0.9 to 0.5-1.3, the #4 mixture may be increased from 0.6-1.2 to 0.8-1.6 based on a dry gradation. The Primary Control Sieve (PCS) shall be as determined in accordance with AASHTO M323 for both the Marshall mixes and Superpave mixes.

The Theoretical Maximum Specific Gravity of the mixture shall be measured for each sublot in accordance with AASHTO T209, Type C, D, or E container. Samples shall be taken on a random basis in accordance with ASTM D 3665. The value used in the field placed density computations shall be the average of the most recent maximum specific gravity lot measurements.

Temperatures. Temperatures shall be checked, at least three times per lot, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the mixture at the plant, and the mixture at the job site.

Voids in Mineral Aggregate (VMA), for each plant sample, will be determined by the Engineer in accordance with the procedures contained in Chapter 4, VOLUMETRIC PROPERTIES OF COMPACTED PAVING MIXTURES, of the Asphalt Institute's Manual Series No. 6 (MS-2), Mix Design Methods for Asphalt Concrete. The VMA, and air voids for each sublot shall be computed by averaging the results of the two test specimens representing that sublot.

Acceptance of Plant Produced HMA

Acceptance of plant produced HMA material will be based upon plant air voids, Marshall stability and flow (if applicable), VMA, gradation, asphalt binder content, dust to effective binder ratio, mix temperature, and shall be determined by the Engineer in accordance with these specifications.

Field Placed HMA Material

HMA material placed in the field shall be tested for mat and longitudinal joint density on a completed street or public facility basis. The Engineer's testing personnel shall be certified by the Northeast Transportation Training and Certification Program (NETTCP), as HMA Paving Technicians or HMA Plant Technicians. The Engineer may conduct any necessary testing to monitor the specified density, uniformity and smoothness. A properly correlated density gauge may be used to monitor the pavement density in accordance with ASTM D2950 or ASTM 7113 and these specifications. Monitoring density with density gauges by the Engineer does not imply acceptance or rejection; the Contractor is ultimately responsible to meet the requirements of the specification.

Sampling for Density Adjustment

Density gauges may be used by the Engineer to determine density of the surface course mat and/or surface course longitudinal joints in accordance with the correlation procedures outlined in this

specification. Cores of surface course material shall be minimized and only taken at the direction of the Engineer and approval of the City.

Mat and longitudinal joint acceptance density tests will be located by the Engineer on a stratified random sampling basis for each street or facility paved within three days of construction. The length of the longitudinal paving joint will be divided into sub-lots for sampling and testing purposes. If more than one longitudinal joint is formed on a street, then the random sample length will be the total lineal feet of longitudinal joint placed. A mat and longitudinal joint test will be taken by the Engineer randomly from each of these sub-lot intervals. Sub-lots will be determined on the basis of five (5) sub-lots per one thousand (1,000) tons of material placed or a minimum of five (5) sub-lots from each street or facility paved. Sampling and testing for density will be conducted in the following manner:

Intermediate paving courses will be tested with the density gauge (for correlation), then sampled by coring the mat and the longitudinal joint using a 6 inch diameter wet-core bit specifically designed for cutting pavement. The cores will be tested for density and thickness.

Surface courses will be tested for density with a density gauge that has been correlated as described in this section.

When sampling of the longitudinal joint for density determinations by coring, the center of the core will be taken on the hot side of the joint and 6-inches from the top of the wedge joint, or directly over the vertical edge of an existing longitudinal joint.

A core sample for intermediate course density and a density sample for surface course density will be tested from each sub-lot segment. The total width of the paved surface (curb to curb) will be determined at the longitudinal sub-lot location to sample and test for mat density. A transverse off-set distance from the centerline of the roadway will be established for mat density sampling and testing. The location, either right or left of centerline, will be based on whether a random number is "odd or even" (odd=left; even=right). When the off-set location is within 2 foot of the pavement edge, curb, catch basin or structure, or 1 foot off a longitudinal joint, or 10 foot off a transverse joint, the sample shall be relocated.

For nuclear gauge test locations, two 60 second increments will be taken with the gauge turned 180 degrees for each reading. The average of the two surface course mat density values will be reported for each location. For non-nuclear density tests, five (5) increments will be used, moving the gauge six inches after each reading in a square pattern, taking one reading in each corner and one in the center using the manufacturers operating procedures. The average of the five density values will be reported for each location.

If the results of the average density gauge readings for a street or pavement facility are below the threshold for 100% adjustment as indicated in Table 12 and Table 13, pavement cores will be removed as per this specification, and used for determining the actual pavement density.

In-Place Density Gauge Correlation to Pavement Cores

This procedure covers the determination of the in-place density of HMA by using an approved density gauge correlated to HMA cores from the project on a periodic basis. The correlation (bias) value for each density gauge shall be mix, plant and project specific. A bias for a density gauge cannot be carried over from one project to another using the same mix from the same plant. A new correlation may also be required when a different paver is used, the paver screed is repaired or replaced, a mix design change occurs, conditions otherwise change and at the start of the construction season.

a) The location selected for the correlation shall be on the project site on the street but in a location that is safely accessible for the duration of the project (such as a driveway apron area or non-parking pavement toward the curbline).
b) Five gauge (5) readings and three (3) cores will be used to establish the correct bias and correlation. These readings must be taken four (4) feet from an unconfined edge and a minimum of 50 feet beyond the beginning of a paver pass or as directed by the Engineer. No reading shall be taken in the vicinity of a vertical object or other interferences according to manufacturers' instructions.
c) The five gauge readings will be spaced 4 feet apart for a total distance of sixteen feet thereby taking a reading at 0 foot, 4 foot, 8 foot, 12 foot and 16 foot location. The three (3) cores for the correlation will be taken in the same line and offset and location of the density gauge readings specifically at the 0 foot, 8 foot and 16 foot location. The cores must be taken from within the center of each of the density gauge footprints. Ice should be used to minimize any distortion or damage to the cores.
d) Each density gauge shall be operated using the number of test increments and locations of test increments as given under Sampling for Density Adjustment.
e) The gauge readings must be taken parallel to the direction of paving for nuclear density gauges and on the same longitudinal tangent line for any density gauge.
f) The density difference from the high-low reading of the 5 locations must be $\leq$ 1.0 percent of the mean of the determined density or a new location will be selected.
g) Core thicknesses must match the project plans for the street or a new location must be selected.
h) The final core average of percent maximum density from the three cores must be determined and written on the project pavement near the correlation site to serve as a correlation reference site. The core density average must meet specifications or a new location must be established.
i) The density gauge correlation (bias) will be determined as the difference from the known average core density to the known average gauge density value, as determined above.

j) If the density gauge cannot meet the accuracy requirements of less than or equal to 1.0 percent of know density, the gauge must be repaired.
k) The bias must be utilized by the density gauge user and recorded on the daily test reports.

All core samples shall be neatly cut with a core drill and water cooled bit where the cutting edge of the core drill bit shall be of hardened steel or other suitable material with diamond chips embedded in the metal cutting edge. The minimum diameter of the sample shall be 6 inches. Samples that are clearly defective, as a result of sampling, shall be documented and retained, then another sample taken for testing. The Engineer or the Owner's agent shall furnish all tools, labor, and materials for cutting samples and filling the cored pavement. Cored holes shall be filled by the Engineer and within one day after sampling.

Pavement cores will be used to determine the average percent density and thickness of intermediate courses and correlated density gauge readings may be used for density testing of surface courses. The average density will be used to determine the percent payment. Resampling of the pavement shall be in accordance with applicable provisions of the NETTCP Quality Assurance Technologist Manual, latest edition and these specifications.

With the exception of any Control Strips, if the Contractor is concerned about the test results obtained by the Engineer, the Contractor may request up to one time, that an equal number of random core samples be obtained and tested to supplement (not replace) the original core or density gauge samples. The coring, patching and testing of the additional samples will be the responsibility of the Contractor. Cores for the mat and/or longitudinal joint density tests will be located by the Engineer and witnessed by the Contractor. Cores locations will be based on a new stratified random sampling plan for each street or facility paved in accordance with the procedures stated above. Upon approval of the coring operation, the Contractor will notify the Engineer 48 hours in advance of the cores being taken such that the Engineer can witness the sampling. The additional cores must be tested by a certified HMA plant technician or HMA paving technician in the presence of the Engineer or his designated representative.

Only one (1) set of additional mat and/or longitudinal joint cores will be allowed on a street or lot.

Testing

The bulk specific gravity of each cored sample will be measured by the Engineer's NETTCP certified technician in accordance with AASHTO T166 or T275, whichever is applicable. The theoretical maximum specific gravity shall be measured once for each HMA sub-lot in accordance with the plant-produced material section. The theoretical value used for the percent density determinations of the random samples shall be the average of the daily sub-lot measurements for maximum specific gravity. When daily sub-lot measurements are not available, the average of the previous five (5) laboratory measurements for that mix, or a representative test sample from the lift cored shall be used. The percent density of each test sample will be determined in accordance with AASHTO T269, using the bulk specific gravity obtained by cores or density gauge readings and the

average theoretical maximum specific gravity. Retesting of pavement shall be in accordance with applicable provisions of the NETTCP Quality Assurance Technologist Manual, latest edition and these specifications.

Adjustment Pay Schedule for Density

The total HMA Adjustment (%) will be determined as described below based on the density adjustment schedule (Table 12) for Mat and (Table 13) for Longitudinal Joint (LJ). The total HMA Adjustment (%) shall be applied to the bid price per ton for compacted mixtures greater than or equal to 1 1/2 inches (37.5mm) in thickness as shown in the contract award to arrive at the total Asphalt Adjustment Cost based on density. Any incentive adjustments (greater than 100) will first be applied to offset penalty adjustments (less than 100).

Adjustment Pay Schedule for Mat Density - The pay factor based on the density adjustment schedule will be applied to the bid price per ton for compacted mixtures greater than or equal to 1-1/2 inches thickness as shown in the contract award.

Table 12.
HOT MIX ASPHALT MAT DENSITY
Adjustment Schedule

Average Percent of Maximum Density (minimum 5 samples)	Percent Payment
100.0 - 98.1	98
98.0 - 95.0	102
94.9 - 92.0	100
91.9 – 89.0	90
88.9 – 87.0	75
86.9 or less	rejection

Adjustment Pay Schedule for Longitudinal Joint Density - The pay factor based on the joint density adjustment schedule will be applied to the bid price per ton for compacted mixtures greater than or equal to 1 1/2 inches thickness as shown in the contract award.

Table 13.
HOT MIX ASPHALT LONGITUDINAL-JOINT DENSITY
Adjustment Schedule

Average Percent of Maximum Density (minimum 5 samples)	Percent Payment

100.0 - 98.1	98
98.0 - 95.0	102
94.9 - 90.0	100
89.9 - 89.0	90
88.9 - 88.0	80
87.9 - 87.0	70
86.9 or less	50% or rejection

The total hot mix asphalt adjustment will be based on the weighted sum as follows:

.60 Mat Adjustment + .40 LJ Adjustment = Total HMA Adjustment

When the construction of the pavement does not include the construction of a longitudinal joint, the payment adjustment will be based on Table 12 only, no weighted sum will be calculated. Any bonus will be credited against any payment adjustment in the contract for HMA, but in no case will the payment for HMA exceed 100%.

Rejection of Inferior HMA

The Engineer may at any time, not withstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of hot mix asphalt which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or improper mix temperature. Such rejection may be based on only visual inspection or temperature measurements. Similarly, the Engineer may at any time, not withstanding field acceptance for mat density, reject and require the Contractor to correct any HMA pavement that was placed with unacceptable mat uniformity or paving joints, due to low density, lack of bond, segregation, improper elevation, or tearing. In the event of such rejection, the Contractor and Engineer may take random split samples of the area(s) in question in the presence of the Engineer, and if it can be demonstrated in the laboratory, in the presence of the Engineer, that such material/pavement was erroneously rejected, payment will be made for the material at the contract unit price.

MEASUREMENT

The quantity of hot mix asphalt to be paid for shall be measured by the number of tons of hot mix asphalt 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.

PAYMENT

Payment shall be made at the contract unit prices per ton complete in place with any applicable adjustments. This payment shall be full compensation for furnishing and placing all quality hot mix asphalt materials, including tack coat where specified, cutting of keyways or milling/stripping of pavement to produce neat joints, mechanical sweeping of streets, costs for Engineer testing due to inferior production or placement, and for all labor, tools, equipment, materials, and all incidentals necessary to complete the work. The payment for individual pavement lifts will be based on the tolerances identified in Table 4.06-3 of the Standard Specifications. An adjustment to the overall tonnage for the roadway will be made prior to paying for the surface course based on the overall tolerance as identified in the table. The Contractor will not be paid for any quantity over these tolerances.

The cost for tack coat and saw cutting of pavement limits where specified on the plans will be paid for under their respective items in the contract.

Adjustment for Density

A payment adjustment for density shall be made when the HMA material varies from the specification target limits, but is within the tolerances stated in Section "Adjustment Pay Schedule for Density". The 'Total HMA Adjustment' for that street or facility shall be applied to the actual tonnage accepted for that street or facility. Incentives will be applied to offset any penalties. Penalties resulting from the "Adjustment Pay Schedule for Density" shall be incorporated into the "Asphalt Adjustment Cost" (AAC) pay item as follows:

AAC = (Total HMA Adjustment (%) – 100) x Contract Price/Ton x Accepted Tonnage

The "Asphalt Adjustment Cost" will be calculated using the formulas indicated above for the Adjustment for Density. An increase in contract payment will NOT be made for incentive density results, any incentive densities payments will be applied to off-set penalty adjustments. A deduction from monies due the contractor will be made for any penalty densities remaining after deducting for incentive densities.

The sum of money shown on the estimate for Asphalt Adjustment Cost, and in the itemized proposal as "Estimated Cost", for this item will be considered the bid price although payment will be made as described above but in no case will the payment for HMA exceed 100%.

PAY ITEM	DESCRIPTION	PAY UNIT
ITEM #406171	SUPERPAVE S0.375 LEVEL 2	TON
ITEM #406172	SUPERPAVE S0.5 LEVEL 2	TON

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.

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.

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.

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.

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.

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.

ITEM #0219011A – SEDIMENTATION CONTROL AT CATCH BASIN

DESCRIPTION

Work under this item shall conform to Section 2.19 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 817, except as supplemented below.

MATERIALS

Geotextile for this work shall conform to Section 7.55 and M.08. Haybales shall not be used.

CONSTRUCTION METHODS

The contractor shall install the geotextile within the catch basin and the grate shall be placed over the geotextile. The geotextile shall be inspected periodically and after all storm events and cleaning or replacement shall be performed promptly as needed.

METHOD OF MEASUREMENT

This work shall be measured for payment by the number of locations where sedimentation control at catch basins is installed and accepted.

BASIS OF PAYMENT

Payment for this item will be at the contract unit price bid each for "Sedimentation Control at Catch Basin", complete, 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 clean out of accumulated sediment.

ITEM NO.	DESCRIPTION	UNIT
ITEM #0219011A	SEDIMENTATION CONTROL AT CATCH BASIN	EACH

ITEM #0406200A – 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 City 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 City 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*/sinδ and phase angle at test temperature
5) RTFO percent mass loss
6) RTFO - G*/sinδ and phase angle at test temperature

7) PAV Residue - G*(sinδ) 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)

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% ± 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.

4. 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 City 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 City):

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 City or designated agent, by the test strip, that the desired configuration is achieved with the finishing tool.

SAMPLING AND TESTING

The City 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 City 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 City 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 City 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 replace 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 City 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 greater than or equal to a 1-1/2"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 City 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 City 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 City 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 City 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 City 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 total linear feet of roadway, as measured along the centerline, acceptably applied to the pavement. On divided roadways the total linear feet shall be measured for each direction.

The City 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 proposal per linear feet of roadway, complete and accepted, including all materials, labor, equipment, all cleaning, drying, sealing and incidentals necessary to complete the work as specified.

ITEM NO.	DESCRIPTION	UNIT
ITEM #0406200A	CLEANING AND SEALING CRACKS	LF

ITEM #0901004A – REMOVABLE BARRIER POST

DESCRIPTION

Work under this item shall include furnishing and installation of removable barrier posts, which shall include all labor and materials necessary for the construction of the barrier posts at the locations shown on the contract plans. Removable barrier posts shall be prefabricated, welded, heavy duty steel construction, painted, with reflectorized tape at the upper end of the removable section. Also included in this item is the concrete footing, as shown in the detail in the construction drawings.

MATERIALS

Structural Steel: Shall be ASTM A500, Grade B structural steel, complying with Section M06.02.1 of the Standard Specifications.

Reflectorized tape shall comply with Reflective Sheeting per Article 12.08.02 and Material Section M.18.09.2.(1)

Locking mechanism shall be stainless, heavy duty padlock with matching keys. The keys shall be given to the City.

Concrete: concrete for footing shall be Portland cement concrete, Class "C", complying with Section M.03.01 of the Standard Specifications

CONSTRUCTION METHODS

Install barrier posts in the locations shown on the Drawings. The steel pipe shall be securely set plumb in concrete. The steel post shall have an exposed length as indicated on plans. The post shall be installed to the depth indicated on the plans, and set in a concrete footing with dimensions as indicated on the plans.

METHOD OF MEASUREMENT

This work will be measured for payment by the number of Removable Barrier Posts completed, operating and accepting in place.

BASIS OF PAYMENT

Payment for this will be paid for at a contract unit price each for "Removable Barrier Posts", which price shall include all material, fabrication, shipping to the site, excavation, unsuitable material disposal, concrete, installation, equipment, labor, paint, painting tools, and work incidental thereto.

ITEM NO.	DESCRIPTION	UNIT
ITEM#. 0901004A	REMOVABLE BARRIER POST	EACH

ITEM #0909501A – TIMBER BEAM RAIL

DESCRIPTION

The work under this item shall consist of furnishing and installing wood posts and rail at the locations given on the plans and in accordance with the dimensions and details shown on the plans, or as ordered by the Engineer.

MATERIALS

A. All lumber shall conform to Voluntary Product Standard PS-70 and be certified according to applicable standard grading and dressing rules and shall bear the official grade and or/or trademark of the association under whose rules it is produced.

B. Wood: See details for post and rail nominal dimensions. All wood shall be #1 Southern Yellow Pine (Southern Pine Inspection Bureau Grading), or equal. All wood to be new, solid, sound, and surface dry with a maximum moisture content of 19%. All wood shall be clearly marked with the official grading information.

C. Gravel: Compacted granular fill bedding shall comply with the quality and gradation requirements Of Material Section M.02.07 of the Standard Specifications, Form 817.

D. Treatment: Pressure treatment shall be ACQ-D in accordance with AWPA, 0.40 pounds per cubic foot. Wood shall be of the sizes shown on the drawings. All wood to be dressed four sides (S4S). Edges on the exposed decking shall be eased. Ends of all members shall be pressure treated.

CONSTRUCTION METHODS

The posts shall be set in holes dug in thoroughly compacted soil and the gravel in the bottom of the hole shall be thoroughly compacted so that the posts will have a stable foundation. Holes shall be hand dug when within (5) feet any utilities.

Should rock or boulders be encountered in making the excavation, this material shall be removed so as to make a hole of sufficient size to set the posts to the normal depth as called for on the plan.

The posts shall be spaced as shown on the plans, set plumb, and normally with the front face at a uniform distance from the edge of the travel way.

The holes shall be backfilled with an approved material which shall be thoroughly compacted. The railing shall be mounted on the post as shown on the plans. The rail members shall be accurately cut so as to provide even bearing over entire surface of joints. No shimming of any kind will be allowed in making joints nor will open joints be accepted. All exposed edges of member shall be chamfered.

METHOD OF MEASUREMENT

This work shall be measured for payment by the number of linear feet of timber beam rail measured along the top rail from end to end.

BASIS OF PAYMENT

Payment for this item will be at the contract unit price bid per linear foot for "Timber Beam Rail", complete in place, which price shall include all materials, equipment tools, and labor incidental to the installation of the completed and accepted fence, including hand dug holes, excavation and backfill.

ITEM NO.	DESCRIPTION	UNIT
ITEM# 0909501A	TIMBER BEAM RAIL	LF

ITEM #0912013A – CONCRETE DRIVEWAY APRON
ITEM# 0921001A – CONCRETE SIDEWALK
ITEM #0921002A – MONOLITHIC CONCRETE CURB AND SIDEWALK
ITEM 0921005A – CONCRETE SIDEWALK RAMP

DESCRIPTION

This item shall consist of Portland cement Concrete sidewalks, monolithic concrete curb and sidewalk, driveway ramps and pedestrian ramps constructed on a processed aggregate base course in the locations and to the dimensions and details shown on the plans or as ordered and in accordance with these specifications.

This item shall include furnishing and installing Detectable Warning Strips in the locations and to the dimensions and details shown on the plans or as ordered by the Engineer.

MATERIALS

Materials for this work shall conform to the requirements of Article M.03.01 of ConnDOT Form 817 for Class "C" Concrete.

a. Portland Cement Concrete

The concrete mix shall conform to Class "C" concrete and shall be proportioned in accordance with the following requirements:

Approximate Proportions by Weight: 1-2-3
Water/Cement Ratio: 0.53
Cement Factor (pounds/cubic yard) 658
Max. Aggregate size: No. 6

b. Air-Entraining Admixtures

Air entraining admixtures conform to the requirements of Article M.03.01 of ConnDOT Form 817.

c. Coarse Aggregate

Coarse aggregate shall be broken stone or gravel consisting of clean, hard, tough, durable fragments of uniform quality throughout; free from soft pieces, mud, dirt, organic or other injurious material and shall contain not more than 1% dust by weight. When tested with magnesium sulphate solution for soundness using AASHTO Method T-104, coarse aggregate shall not have lost more than 10% after 5 cycles; when tested by the Los Angeles machine using AASHTO Method T-96, coarse

aggregate shall not have a loss of more than 40%. The required grading shall be obtained by using 100 percent of ¾ inch coarse aggregate.

d. Fine Aggregate

Fine aggregate shall be sand consisting of clean, hard, durable, uncoated particles of quartz or other rock, free from lumps of clay, soft or flaky material, loam, organic or other injurious material. In no case shall sand containing frozen lumps be used. Fine aggregate shall contain not more than 3% of material finer than the #200 sieve, using AASHTO method T-11. When subjected to colorimetric test shall not produce a color darker than Gardner Color Standard No. 11, using AASHTO Method T-21. If the fine aggregate fails to meet this requirement, the provisions of AASHTO M6 Section 5.2 will govern. Fine aggregate shall be uniformly graded from coarse to fine and shall meet the following gradation:

Square Mesh Sieve	3/8”	#4	#8	#16	#30	#50	#100
Percent Passing By Weight	100	95-100	80-100	50-85	25-60	10-30	2-10

e. Portland Cement

Portland cement shall be Type IIA and shall conform to the requirements of AASHTO M-134. Cement having a temperature exceeding 160 degrees F at the time of delivery to the mixer shall not be used.

f. Water

Water shall be reasonably clean, shall not be salty or brackish and shall be free from oil, acid, and injurious alkali or vegetable matter and shall be tested as prescribed by AASHTO T-26.

g. Processed Gravel Base

Coarse and fine aggregates shall be combined and mixed by approved methods so that the resulting material shall conform to the following gradation requirements:

Square Mesh Sieve	2-1/2”	1-3/4”	¾”	¼”	#40	#100
Percent Passing By Weight	100	95-100	50-75	25-45	10-25	3-12

h. Welded Wire Mesh Reinforcement

Welded wire mesh reinforcement shall be cold drawn steel wire conforming to the requirements of AASHTO M-55. The type of mesh shall be approved by the Engineer.

i. Preformed Expansion Joint Filler

Preformed expansion joint filler shall be the bituminous cellular type and shall conform to the requirements of AASHTO M-213.

j. Detectable Warning Strip

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 approved equal from ADA Solutions, Inc., P.O. Box 179 North Billerica, MA 01862 telephone number (978) 262-9900. 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.

CONSTRUCTION METHODS

a. Excavation: Excavation, including removal of any existing sidewalk, shall be made to the required depths below the finished grade, as shown on the plans or as directed. All soft and yielding material shall be removed and replaced with suitable material.

b. Processed Aggregate Base: The processed aggregate base shall be placed in layers not over 6 inches in depth and to such a depth that after compaction it shall be at the specified depth (eight inches or as directed by the Engineer) below the finished grade of the walk. The base shall be wetted and rolled or tamped after the spreading of each layer. The base shall be placed full depth six (6”) inches wider on each side than the neat lines of the concrete.

   The finished surface of the base shall be fine graded after compaction to within 3/8” plus or minus of subgrade. The finished base course shall be maintained true to line and grade in a compact condition until placement of the concrete. The completed base must be approved by the Engineer prior to setting of forms.

c. Forms: Forms shall be standard metal forms or 2” surfaced plank, straight, free from warp and of sufficient strength to prevent springing. At corner radii, thinner material may be used but the material and installation must be approved by the Engineer prior to use. Forms shall be of approved cross-section, have a flat surface on top and shall be of depth equal to the concrete being placed. Forms shall be securely staked, braced and held firmly

to the required line and grade and shall be of sufficient strength and tightness to retain plastic concrete. All forms shall be cleaned of mortar and dirt and shall be coated with suitable form oil prior to each use.

Preformed expansion joints shall be held securely in place by means of a steel template or steel pins to true line and grade and shall be 1/4 inch minimum deeper than the concrete trimmed flush with the concrete walk after the curing cycle. Dummy joints or planes of weakness shall be hand formed, straight and true, and shall consist of grooves formed in the top surface of the concrete at a depth of ¼ of the depth of the concrete. Dummy joints shall be located transversely every five (5) feet and as detailed on the plans or as ordered.

d. Mixing and Placing Concrete:

1. Concrete shall be mixed in approved transit mixers (concrete mixed in truck mixer en route to or at point of placement). Transit mixers shall be loaded in approved batching plants. Batching and mixing on job site will not be allowed. Truck mixing shall not be less than four (4) revolutions at mixing speed. Concrete shall be incorporated into the work within 45 minutes after the water was added to the mix. Concrete shall be discharged within 1-1/2 hours from the time the dry aggregates are loaded into the mixture. Truck mixers shall be equipped with accurate gauges to measure the quantity of water incorporated into the mix and with an accurate drum revolution counter.

2. Slump of the concrete, as determined by AASHTO method T-119, shall be not less than two (2) inches nor more than four (4) inches. Concrete shall contain not less than 4 nor more than 6 percent entrained air at the time the concrete is deposited in the forms, as determined by AASHTO Methods T-152 or T-121.

3. Immediately before concrete is placed, the base course shall be moistened. It shall be compact and smooth. The entire base course under the walk to be constructed in that pour shall be complete and accepted prior to beginning or placing of concrete. At no time shall concrete be placed on soft, muddy, frozen, porous or rutted base.

4. Concrete shall be placed only in the presence of an inspector. It shall be deposited in a plastic condition and shall be a homogeneous mass without segregation of aggregates during depositing and spreading. All chutes used to deposit concrete shall be metal or metal lined. Depositing and spreading concrete shall be continuous between transverse joints. Workmen shall not walk in concrete during placing and spreading. Concrete alongside forms and each side of transverse joints shall be thoroughly consolidated. Concrete shall be placed only when the temperature is 40 degrees F and rising, and when it can be expected that the placing and finishing can be accomplished at that temperature of above.

5. Reinforcement shall be placed in the sidewalk at driveway crossings two (2) inches above the bottom surface of the concrete and parallel to the finished grade of the walk. Care shall be taken to hold the reinforcing mesh to the proper line and grade. Successive and adjacent pieces of reinforcing mesh shall be lapped six (6) inches. Reinforcing mesh shall be one (1) inch clear from the side of forms and expansion joints.

6. A 1/4 inch thick preformed expansion joint shall be installed at transverse locations not to exceed twenty longitudinal feet, between curbs and walks, at structures projecting into and adjacent to the walk and concrete ramps as shown on the plans and details, or as directed by the Engineer.

7. Formed surfaces shall be kept continuously wet for the duration of the curing period (prior to, during, and after form removal) or until curing compound is applied.

8. If moist curing is discontinued before the end of the curing period, white pigmented curing compound shall be applied immediately, following the procedures specified under "Curing."

e. Consolidation and Finishing: Consolidation and finishing shall be by hand or mechanical equipment. Experienced concrete finishers shall be used at all times in the finishing of the surface. Concrete shall be struck off by means of a hand screed resting on the side form and weighing not less than 10 pounds per linear foot or by portable non-vibrating screed. Strike off shall bring the concrete to the required grade and contour. Screeding shall be a transverse, sawing motion carrying a roll or mortar in front of it. As soon as possible after screeding, the surface shall be longitudinally floated with a sawing motion commencing at one side and wasting excess material over the other side. Movement ahead in a longitudinal direction shall be one-half the length of the float. The surface irregularities shall be removed by use of a finishing lute. The initial edging shall be performed, then the surface shall be dragged with a clean, wet, stiff bristle broom. Before initial set, the final edging against forms and expansion joints and of dummy joints shall be made. All edging shall be true to line and grade and shall not create depressions in the surface.

f. Curing: Liquid curing compound shall be applied immediately following the disappearance of the water sheen following the final finishing and before any marked dehydration of the concrete or surface checking occurs. The compound shall be applied in two even coats of one gallon per 200 square feet, with a continuous even film at right angles to each other and with not more than 30 minutes between coats. Application shall be by pressure sprayer giving a fine uniform spray. Should rain fall on the newly coated surface before it dries, a new application shall be maintained to protect the concrete surface from rain during finishing operations and until the curing compound dries. The walk shall be barricaded and all traffic shall be restricted for at least seven (7) days.

g. Removal of Forms and Backfilling: Forms shall not be removed until the concrete has set at least 12 hours unless approved by the Engineer. Care shall be taken in removal so that no damage is done to the edges of the walk and to the surface membrane curing. All honeycomb shall be pointed and the sides sprayed with liquid curing compound if not immediately backfilled.

The sides of the walk and/or ramp shall be backfilled with a suitable material as directed by the Engineer and shall be graded and thoroughly compacted flush with the top of the walk and to meet the existing adjacent grade with no pockets or depressions to trap water. All surplus material shall be removed, the concrete surface swept clean and the site left in a neat and presentable condition to the satisfaction of the Engineer.

h. Cold Weather: When, in the opinion of the Engineer, the weather is such that that any concrete work which has not completely cured is liable to be frozen, such concrete shall be protected by covering as soon as it has hardened sufficiently. On top of the curing compound shall be placed 6-8 inches of hay or straw, or an approved thermal blanket. A cover sheet of width sufficient to overlap the edges of the walk or ramp shall then be placed and securely fastened down. The protective material shall remain in place until ordered removed by the Engineer and all material promptly removed from the site. Any concrete placed during cold weather and not properly protected will not be accepted.

i. Concrete in Hot Weather: When climatic or other conditions are such that the temperature of the concrete may reasonably be expected to exceed 90 degrees F at the time of delivery at the work site, during placement, or during the first 25 hours after placement, the following provisions also apply:

1. The contractor shall maintain the temperature of the concrete below 90 degrees F during mixing, conveying, and placing. Methods used shall conform to "Recommended Practice for Hot Weather Concreting", ACI Standard 305.

2. The concrete shall be placed in the work immediately after mixing. Truck mixing shall be delayed until only time enough remains to accomplish it before the concrete is placed.

3. Exposed concrete surfaces which tend to dry or set too rapidly shall be continuously moistened by means of fog sprays or otherwise protected from drying during the time between placement and finishing and after finishing.

4. Finishing of exposed surfaces shall be started as soon as the condition of the concrete allows and shall be completed without delay.

5. Concrete surfaces exposed to the air shall be covered as soon as the concrete has hardened sufficiently and shall be kept continuously wet for at least the first 24 hours of the curing period and for the entire curing period unless curing compound is applied as specified under "Curing."

j. Water Gates and Gas Gates: All of the water gates and gas gates which are encountered within the limits of the work shall be aligned properly over shutoff and shall be adjusted to meet the grade of the proposed surface. All boxes shall be free of all dirt, rocks, etc. The Contractor shall be responsible for replacing any broken gate boxes. Materials shall be provided by the Meriden Water Department if gate boxes were damaged prior to construction. All labor costs are the Contractor's responsibility. The Contractor will coordinate with Yankee Gas and Meriden Water Department to obtain replacement boxes.

k. Detectable Warning Strip: The Detectable Warning Strip 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. 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. The protective film on the detectable warning strip shall be removed as soon as the concrete has cured.

METHOD OF MEASUREMENT

Concrete sidewalk, monolithic concrete curb and sidewalk, and concrete ramps shall be measured for payment by the total square feet of the top surfaces of the sidewalk, driveway ramps, and pedestrian ramps, excluding the exposed top surface of the concrete curbing.

The Detectable Warning strip will be paid separately.

BASIS OF PAYMENT

Payment for concrete sidewalks, driveway ramps, and pedestrian ramps shall be at the contract unit price per square foot of "Concrete Sidewalk", "Monolithic Concrete Curb and Sidewalk", Concrete Driveway Ramp", or "Concrete Pedestrian Ramp" complete in place and accepted.

Price and payment for Concrete Sidewalk", " Monolithic Concrete Curb and Sidewalk", "Concrete Driveway Ramp", and "Concrete Pedestrian Ramp" in place shall include sawcutting of pavement, the removal of all existing sidewalks and curbing, the removal and replacement of all bituminous concrete pavement and subbase, all forms necessary for tree pits, grass and brush and all equipment and labor, excavation, backfill (except rock excavation), bedding, and all other miscellaneous items necessary to complete the work, and not listed for separate payment in the bid

ITEM NO.	DESCRIPTION	UNIT
ITEM #0912013A	CONCRETE DRIVEWAY APRON	SF
ITEM #0921001A	CONCRETE SIDEWALK	SF
ITEM #0921002A	MONOLITHIC CONCRETE CURB AND SIDEWALK	SF
ITEM #0921005A	CONCRETE SIDEWALK RAMP	SF

ITEM #0970006A – TRAFFICPERSON (MUNICIPAL OFFICER)

Shall conform to Form 817 Section 9.70 with the following modifications:

9.70.01 - Description

Add the following sentence after the second paragraph:

Uniformed Municipal Police Officers for the City of Meriden are to be used unless unavailable.

The Contractor shall make all arrangements with the Chief of Police, or his designated representative, for police services authorized by the Owner no less than 18 hours prior to the start of work.

9.70.05 – Basis of Payment

Add the following sentence before the first sentence of the second paragraph:

Invoices for Uniformed Municipal Police Officers will be sent directly to the City of Meriden Engineering Division by the Police Department.

ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

DESCRIPTION

This work shall consist of the maintenance and protection of vehicular and pedestrian traffic on public streets and sidewalks in conformity with the requirements of this specification and other Contract Documents. The Contractor assumes full liability for the maintenance and protection of vehicular and pedestrian traffic.

MATERIALS

All signs, barricades, lights, flashers, traffic cones, trafficmen, and other items necessary to forewarn and guide vehicular and pedestrian traffic shall be of a number and quality satisfactory to the Engineer and governmental agencies having jurisdiction. The Contractor shall provide all signs, barricades, lights, flashers, traffic cones and other items necessary to forewarn and guide vehicular and pedestrian traffic.

CONSTRUCTION METHODS

a. GENERAL: The Contractor shall obey all applicable state and local regulations regarding maintenance and protection of traffic.

b. MEETING AND PROPOSAL: Prior to the commencement of any construction whatsoever, the Contractor shall meet with the Engineer or his representative and representatives from the Public Works and Police Department and shall present a detailed written plan showing the sequence of construction and the method of protecting vehicular and pedestrian traffic during each sequence. The plan shall show the location, width and construction details of travel lanes and the number and location of all proposed signs, barricades, flashers, traffic cones or other appurtenances to forewarn and guide traffic. Approval of the schedule of operations and plan by the Engineer shall in no way relieve the Contractor from his full responsibility for the maintenance and protection of traffic.

c. EXISTING STREETS OPEN: Except as otherwise provided in this section, or permitted by the Engineer, the Contractor shall keep all existing streets open to traffic for the full length of the project and shall provide a sufficient number of travel lanes to move that traffic ordinarily using the roadway. The travel lanes shall be drained and kept reasonably smooth and in suitable condition at all times in order to provide minimum interference to traffic consistent with the proper prosecution of the work.

d. LANES OF TRAVEL: Travel lanes shall be maintained by the Contractor in a suitable manner at all times. The Contractor will be responsible for removal of snow and ice on all

streets and detours within the Area of Work while he is actively prosecuting the completion of the Contract. If there is a temporary shutdown approved by the Engineer, the Contractor will not normally be responsible for snow and ice removal. The Contractor will maintain the trench in good repair during these periods.

e. STREET CLOSINGS: The closing of any street for any purpose whatsoever shall be for the length of time and subject to the restrictions the Engineer may impose. No street will be closed without the Contractor having received prior approval of the Police Department and the Department of Public Works of the City of Meriden. The Contractor will make sure that the Fire Department and any other agencies which may be affected by the closing are notified.

f. PEDESTRIAN TRAFFIC: ALL SIDEWALKS OPEN: Except as provided in this Section, or as permitted by the Engineer, the Contractor shall keep all public sidewalks open. On sidewalks open to the public the Contractor shall be responsible for removal of snow and ice and for repairs necessary to obtain safe pedestrian conditions. Sidewalks broken up during construction shall be removed and replaced and/or patched temporarily with bituminous concrete.

During temporary shutdowns approved by the Engineer, snow and ice removal will normally be performed by others. The Contractor will maintain the sidewalks and other pedestrian walkways in good repair during these periods.

g. SIGNS FOR CLOSING: In those instances where the Contractor is permitted to eliminate pedestrian access, the Contractor shall erect signs to warn pedestrians of the closing. Such signs shall be erected at the nearest street intersection at either end of the sidewalk on which pedestrian access is to be eliminated. Signs shall warn pedestrians of the closing and shall indicate the nearest alternate route of pedestrian passage. In addition, barricades shall be placed to separate areas in which pedestrian access is permitted.

h. ENGINEER'S RESTRICTIONS: Elimination of pedestrian access at any area shall be for the length of time and subject to restrictions the Engineer may impose.

i. PEDESTRIAN DETOURS: When work is to be done which will not necessitate eliminating pedestrian access but which will temporarily interfere with pedestrian access, adequate signs, barricades and other devices shall be employed to warn pedestrians. During non-working hours pedestrian detours shall be provided such that pedestrians will not be required to travel in the street or on private property. Work temporarily interfering with pedestrian movement shall be completed and the site cleaned up as quickly as is reasonably possible.

j. PROVISION FOR PRIVATE ACCESS: The Contractor shall schedule his operations to cause a minimum of inconvenience to occupants of existing properties within the area of

work. Prior to restricting or eliminating vehicular access to any property the Contractor shall give the occupants of the property twenty-four hours notice. Thereafter, the Contractor shall complete the items of work and restore access as rapidly as reasonably possible. Restrictions of access shall at all times be subject to the approval of the Engineer. At no time shall the Contractor prevent pedestrian access to any existing building. Where existing access is eliminated and other access substituted therefor, the substituted access shall be maintained by the Contractor to a quality equal to or better than the eliminated access.

k. SIGNS AND OTHER WARNING DEVICES: ILLUMINATION OF WARNING DEVICES: All signs and barricades or other appurtenances for the protection of the public shall be illuminated by lanterns, flashers, flares or other acceptable means during the hours of darkness or low visibility. The Contractor shall keep all signs in proper position, clean and legible at all times. Care shall be taken that weeds, shrubbery, construction materials or equipment and soil are not allowed to obscure any sign, light or barricade. Signs that do not apply to existing conditions shall be removed or adjusted so that the legend is not visible to approaching traffic.

l. MATERIALS FOR PROTECTION OF TRAFFIC: At any time, the Engineer may order materials furnished or work performed by the Contractor as the Engineer deems necessary for the maintenance and protection of traffic. The Contractor shall comply with such orders at no additional cost to the City. The omission of the Engineer to so order shall not relieve the Contractor of his full responsibility for the maintenance and protection of traffic. If the Contractor fails to respond to the Engineer's order for work or material within the shortest reasonable time possible, the Engineer shall have the right to have the work done by other City or private forces and shall deduct the cost thereof from monies due the Contractor.

METHOD OF MEASUREMENT:

The costs for construction, maintenance and removal of detours, signs, barricades, flashers and all else necessary to maintain and protect traffic all in accordance with the provisions of the Contract Document will be measured for payment on a lump sum basis.

BASIS OF PAYMENT:

Maintenance and Protection of Vehicular and Pedestrian Traffic required for or forming a part of the work called for by the Drawings, these Specifications or other Contract Documents will be paid for at the lump sum price when the item appears in the Schedule of Prices in the Proposal. The price shall include construction, maintenance and removal of detours, signs, barricades, flashers, cones, and all else necessary to maintain and protect traffic all in accordance with the provisions of the Contract Documents

ITEM NO.	DESCRIPTION	UNIT
ITEM #0971001A	MAINTENANCE AND PROTECTION OF TRAFFIC	LS

ITEM #1206023A - REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – Description is supplemented with the following:

Work under this item shall consist of the removal and/or relocation of designated side-mounted extruded aluminum and sheet aluminum signs, sign posts, sign supports, and foundations where indicated on the plans or as directed by the Engineer. Work under this item shall also include furnishing and installing new sign posts and associated hardware for signs designated for relocation.

Article 12.06.03 – Construction Methods is supplemented with the following:

The Contractor shall take care during the removal and relocation of existing signs, sign posts, and sign supports that are to be relocated so that they are not damaged. Any material that is damaged shall be replaced by the Contractor at no cost to the State.

Foundations and other materials designated for removal shall be removed and disposed of by the Contractor as directed by the Engineer and in accordance with existing standards for Removal of Existing Signing.

Sheet aluminum signs designated for relocation are to be re-installed on new sign posts.

Article 12.06.04 – Method of Measurement is supplemented with the following:

Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all extruded aluminum and sheet aluminum signs, sign posts, and sign supports designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all extruded aluminum signs, sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Article 12.06.05 – Basis of Payment is supplemented with the following:

This work will be paid for at the contract lump sum price for "Removal and Relocation of Existing Signs" which price shall include relocating designated extruded aluminum and sheet aluminum signs, sign posts, and sign supports, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of extruded aluminum signs, sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

ITEM NO.	DESCRIPTION	UNIT
ITEM #1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	LS

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

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

All required materials shall be in conformance to City of Meriden standards, 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 with City of Meriden standards and details.

Any damage done to City 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.

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.

ITEM NO.	DESCRIPTION	UNIT
ITEM #1302060A	ADJUST GATE BOX (WATER)	EA

ITEM #1403001A - MANHOLE
ITEM #1403501A - RESET MANHOLE
ITEM #1403010A - MANHOLE FRAME AND COVER

DESCRIPTION

A. The work covered by this section includes the furnishing of all plant, labor, equipment, appliances and materials and performing all operations in connection with the satisfactory installation of precast reinforced concrete manholes and all incidental work, complete, in strict accordance with the specifications and applicable drawings and conditions of the contract.

B. The Contractor shall provide the Engineer with shop drawings for all precast materials with a description of all methods of jointing. In addition, shop drawings for manhole steps, manhole frames and manhole covers shall be submitted to the Engineer for approval prior to installation.

C. It is the intention of these specifications and the desire of the Engineer that the manholes, including all component parts, have adequate space, strength and leak proof qualities considered necessary by the Engineer for the intended service. Space requirements and configurations, shall be as shown on the drawings. Manholes shall be an assembly of precast sections with steel reinforcement, with approved jointing or concrete cast monolithically in place with reinforcement. In any approved manhole, the complete structure shall be of such material and quality as to withstand loads of 8 tons (H-2O loading) without failure and excess leakage for the life of the structure. A period generally in excess of 25 years is to be understood as the life of the structure. Manholes shall be constructed at the locations, to the elevations, and in accordance with notes and details shown on the drawings.

D. “Reset” shall mean the minor adjustment of frames and covers of existing units to the proposed grade NOT involving major reconstruction of the unit. Examples of resetting: are adding several courses of brick/block or use of an approved manhole extension ring to bring frame to required grade; removing some masonry courses for lowering a frame without reconstruction below required elevation of bottom of frame; providing that the frame is properly seated.

MATERIALS

A. Precast reinforced concrete units:
   1. Precast reinforced concrete manhole bases, risers, tops and grade rings shall be of the types indicated or as directed.
   2. Precast reinforced concrete manhole bases, risers, transition sections and tops shall conform to the requirements of ASTM C478, latest revision except as modified herein and/or on the drawings.

3. The height and diameter of manhole bases shall be as required to accommodate the size of sewer pipe used.
4. The manhole risers shall be available in 2, 3, or 4-foot lengths. Manhole tops of the eccentric cone type shall be 3 or 4 feet high with a 36-inch inside diameter opening at the top. Wall thickness of manhole risers shall not be less than 5 inches. Manholes over 8 feet deep shall have 5-foot inside diameter.
5. When shallow installations do not permit the use of a cone type top or where directed, flat slab tops shall be used. Flat slab tops shall not be less than 6 inches thick, and shall have an opening with an inside diameter of 36 inches.
6. Transition sections shall be similar to the tops and used as reducers to join the larger bases with the four-foot diameter risers. The transition sections shall be of the length required and have a four-foot opening at the top. Wall thickness of transition sections and cone type tops shall not be less than 5 inches at the base and shall taper to a thickness not less than 8 inches at the top.
7. Manhole steps shall be provided in each manhole. Manhole steps shall be arranged in the manhole bases, transition sections, risers and cones so as to provide a manhole step ladder approximately 12 inches on center for the full height of installation. Manhole steps shall be copolymer polypropylene plastic coated ½" grade 60 steel reinforced step Model No. PS2-PFSL in conformance with ASTM C478 paragraph 11 as revised, as manufactured by M.A. Industries, Peachtree City, Ga. or approved equal.
8. All manhole bases, transition sections, risers and tops shall be joined using Butyl Rubber Section Joints conforming to Federal Specification SS-S-210.
9. The exterior surfaces of all manholes shall be shop coated with two coats of Super Service Black as manufactured by Koppers Company Inc., or Heavy Duty Black 46-449 as manufactured by Tnemec or equal.

B. Openings In Manhole Bases And Risers

1. Openings for pipes entering manhole bases and risers shall be provided at the locations and to the arrangements and dimensions shown on the approved shop drawings.
2. Openings in manhole bases and risers shall be provided with a prefabricated mechanical type joint seal between manhole walls and entering pipes. Joint seal shall be of a type to insure water tight jointing between manhole and pipes under all conditions of installation. The type of joint seals to be used shall be subject to approval and shall be as shown on the approved shop drawings.

C. Mortar Grout

Non-shrink type mortar or grout shall be a factory-mixed ready-to-use product containing an especially prepared metallic aggregate, cement and sand and other components which shall produce a mortar or grout with properties to counteract shrinkage, increase density, withstand impact, improve workability and produce watertight joints.

D. Concrete

1. The concrete used for precast manhole bases, transition sections, risers and tops shall have an average strength of 5,000 psi at 28 days.
2. Strength shall be determined by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the manhole bases, transition sections, risers and tops or by any other approved method.
3. Not less than two concrete strength tests shall be made for each 100 vertical linear feet of manhole bases, transition sections, risers and tops.
4. Testing may be conducted at the manufacturer's plant or at an approved testing laboratory and shall be the responsibility of the Contractor, at no additional expense to the Owner.

E. Reinforcing Steel

1. Reinforcing steel used for precast manhole bases, transition sections, risers, and tops shall conform to ASTM A185, latest revision.

F. Cement

Cement shall be moderate heat-of-hardening portland cement conforming to ASTM Designation C 150, latest revision, Type I for Brick work and Type II for precast units.

G. Absorption

Absorption is to be determined by absorption test described in ASTM Designation C478, latest revision, and shall not exceed 8 percent of dry weight.

H. Brick

1. Brick for manholes shall conform in all respects to ASTM Designation C 32, Grade SM, latest revision, size 2-1/2 inches by 3-3/4 inches by 8 inches.
2. Bricks that are broken, warped, cracked or of improper size or quality or unduly chipped or otherwise defective shall not be used in the work and shall be removed from the site.

I. Mortar Plaster

1. Mortar and plaster for brick work shall be composed of one part Portland cement and two parts sand with only sufficient water added to make a stiff plastic mortar of a consistency and texture satisfactory to the Owner.
2. Mortar shall be used so that it will be in place before the initial setting of cement has taken place; retempering of mortar in which the cement has started to set will not be permitted.

J. Sand

1. Sand for mortar shall be graded uniformly from fine to coarse and when dry shall pass a screen having 8 meshes to the inch.
2. Sand shall consist of an aggregate having clean, hard, durable, strong, uncoated grains and free from deleterious amounts of dust, lumps, soft or flaky particles, shale, alkali, organic matter, loam or other deleterious substances.
3. The sand shall be washed clean before loading on delivery trucks. Natural sand which shows a color darker than the standard color when tested in accordance with the Standard Method of Test for Organic Impurities of ASTM Designation C 40, latest revision, will be cause for rejection.

K. Water

Mixing water for concrete and mortar shall be clean and fit to drink and obtained preferably from the municipal supply.

L. Bedding Materials

1. Gravel bedding shall consist of hard durable material free from roots, sod, rubbish, organic material, clay or loam and meeting ASTM C33 stone size No. 67 as follows:

   100% passing 1" screen
   90 - 100% passing 3/4" screen
   20 - 55% passing 3/8" screen
   0 - 10% passing #4 sieve
   0 - 5% passing #8 sieve
2. Where ordered by the Engineer to stabilize the base, screened gravel or crushed stone ½ inch to 1-1/2 inches shall be used.

M. Manhole Frames And Covers

Due to the lead time required to manufacture sewer frames and covers, the Water Pollution Control Facility (WPCF) will provide the required frames and covers with the stipulation that they be replaced prior to payment for same. Please contact WPCF at 203-630-4261 to coordinate.

1. Cast-iron manhole covers and cast-iron watertight frames and covers shall conform to the details, types and styles as specified and as shown on the drawings. Shop drawings shall be submitted to the WPCF for approval before fabrication.
2. Gray iron castings shall conform to the requirements of AASHTO Designation: AASHTO M 105 (ASTM A48), Class 35B. For castings subject to traffic loads furnish gray iron castings conforming to AASHTO M 105 (ASTM A48), Class 35B and AASHTO M306, latest edition, and shall be rated H20 per AASHTO M306, "PROOF-LOAD TESTING."
3. Iron castings shall be true to pattern in form and dimensions, free from pouring faults, sponginess, cracks, blow-holes and other defects in positions effecting the strength and value for the service intended.
4. The surface of the manhole covers shall have a diamond pattern with the words "MERIDEN" and "SEWER" or "STORM" as required, cast in raised letters.
5. Covers shall have two non-penetrating ergonomic pick slots, for ease of cover removal.
6. The cast-iron manhole covers and cast-iron watertight manhole frame and covers for manhole structures shall be as manufactured by EJ USA, INC., Campbell Foundry Company, or approved equal.

N. Sealant Materials

Sealant materials for manhole frames shall be manufactured by Avanti International (AV-219 Fibrotite and Polyurethane Hydrophylic Resin), Parsons Environmental (Parson PoxyF6) or approved equal.

O. Extension / adaptor rings

Manhole Extension/Adjustment/Riser Rings shall conform to the City Standard Details

1. Above Ground:

   All material shall be domestic carbon steel conforming to ASTM A36. The bottom (inner) ring shall be rolled from ¾" thick material, and the top (outer) ring shall be rolled from ½" thick material. The top (outer) ring shall have a nominal inside

diameter equal to the existing top cover diameter plus 3/16". The inner and outer rings shall be concentric and be joined together by welding.

For non-adjustable riser rings, the inner and outer rings shall be joined together with a full circumferential weld. For adjustable riser rings, an adjustment system shall be supplied and welded in line with the bottom (inner) bearing bar. The mechanical adjustment stud shall be made of type 304 stainless steel, and have a positive lock nut. The adjustment system shall allow for the manhole riser diameter to adjust +/- 3/8" from nominal.

For cover adjustments less than the thickness of the cover, the inner and outer rings shall be joined together with 12 or 14 gage strip steel conforming to ASTM A1011.

After fabrication, risers shall be coated with either water based bituminous asphalt paint or a BASF E-coat with charcoal black topcoat.

The manhole riser ring shall be anchored to the manhole frame with three 1" cone tip set screws to prevent any movement from traffic.

All welding shall be performed by AWS D1.5 certified welders.

2. Below Ground:

All below ground frame adjustments shall be completed with the use of a rubber composite adjustment ring. The ring shall be used to minimize water infiltration between the manhole frame and concrete cone or brick layer, and to protect the substructure from traffic vibration and concentrated load stresses. The rubber composite adjustment ring shall be an appropriate size (flat or tapered) with which the adjusted manhole frame will achieve the best match to the finished road surface

Below ground adjustment rings shall be a molded rubber composite ring.

Molded rubber composite rings shall be minimum 80% by weight recycled rubber and minimum 10% by volume, recycled coated fiber for added strength and durability.

The rubber composite adjustment ring shall be installed in conjunction with a polyurethane sealant, per the manufacturer's installation instructions.

All rubber composite manhole adjustment risers Rubber composite shall be the EJ USA, INC. INFRA-RISER® as manufactured and supplied by EJ USA, INC. or approved equal.

CONSTRUCTION METHODS

A. Inspection

1. All manhole bases, transition sections, risers, tops, steps, frames and covers will be inspected upon delivery. Those, which do not conform to these specification requirements, will be rejected and shall be removed immediately from the site by the Contractor. The Contractor shall furnish all labor and facilities necessary to assist the inspector in inspecting the material.
2. All manhole bases, transition sections, risers, tops, steps, frames and covers which have been damaged after delivery or during installation shall be removed and replaced by the Contractor with new, sound and approved material, at no additional expense to the Owner. At the time of inspection, the surfaces of bases, transition sections, risers and tops shall be dense and close-textured. Cores shall serve as a basis for rejection of manhole bases, transition sections, risers and tops if poor bond with reinforcement steel exists or reinforcement is exposed.
3. The quality of all materials, process of manufacture, and the finished manhole bases, transition sections, risers, and tops shall be subject to inspection and approval by the Owner. Such inspection may be made at the place of manufacture and/or on the site, and the manhole bases, transition sections, risers, and tops shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though sample manhole bases, transition sections, risers, and tops may have been accepted as satisfactory.

B. Excavation And Backfilling

1. Excavation, backfilling and compacting shall be completed in accordance with the Specifications in this Contract.

C. Installation Of Manhole Bases And Sections

1. Precast bases shall be placed on a six-inch layer of compacted bedding material as described elsewhere in this Specification. The excavation shall be properly dewatered while placing bedding material and setting the base.
2. Each manhole base, transition section, riser, and top shall be eased into its position in the trench using materials and methods as recommended by the manufacturer of the precast units. The Contractor shall provide all necessary slings, straps and other

devices for the safe and satisfactory handling and support of manhole bases, transition sections, risers and tops during lifting, installation and final positioning. Lifting holes may be permitted provided the holes are plugged and sealed watertight with mortar, all as approved.

3. Manhole bases, transition sections, risers and tops shall be installed using approved jointing methods which are completed in accordance with the manhole manufacturer's recommendations, and as approved. Manhole bases, transition sections, risers, and tops shall be installed level and plumb. Water shall not be permitted to rise over newly made joints until after inspection and acceptance. All jointing shall be done in a manner to ensure watertight joints.
4. Openings shall be provided in the precast manhole bases and risers to receive entering pipes, and these openings shall be made at the place of manufacture. The openings for all entering pipes shall be provided with the approved type mechanical joint sealing device shown on the approved shop drawings and the installation of pipes entering the manholes and the installation of the mechanical joint sealing device made in strict conformance with the manhole manufacturer's printed recommendations and so as to obtain watertight joints between manholes and pipe and in a satisfactory manner. Five copies of the manufacturer's printed recommendations shall be furnished to the owner.
5. Care shall be taken to assure that the openings are made to permit setting of the entering pipe at its correct elevation as indicated or directed. Mortar used in sealing spaces between entering pipes and openings in manhole walls shall be of the non-shrink type. Damaged bases and risers by jointing devices will be rejected and shall be replaced by the Contractor at no additional expense to the Owner.
6. Manhole bases, transition sections, risers and tops shall be installed so that the manhole steps are in alignment.
7. Manhole steps shall be installed in accordance with the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration, CFR 29, Part 1910.27g, as amended.

D. Drop Manhole Connections

Drop manhole connections shall be constructed as shown on the drawings. The encasement for the drop pipe shall be constructed after the installation of the pipe. Special care shall be taken to provide a water tight seal between the pipe and the manhole wall.

E. Installation Of Cast Iron Frames And Covers

1. Cast iron frames and covers shall be installed where shown on the plans. Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame

shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

2. The cover shall not have vent holes, and shall fit firmly within the existing frame, with the top being flush with the existing frame. Gaskets or fillers will not be allowed. The cover shall have concealed pick holes.

F. Installation - Cast Iron Watertight Frames And Covers

1. Cast iron watertight frames and covers shall be installed where shown on the plans. Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.
2. The cover shall fit firmly within the frame with the top being flush. The entire installation shall be watertight. There shall be no vent holes.

G. Masonry Construction

1. Brick masonry shall include brick masonry walls for extending manhole walls to grade when directed; formed brick masonry for constructing manhole inverts and invert tables, mortar, building-in or manhole steps and pipes and appurtenant work.
2. Brick masonry shall be provided to the details and dimensions indicated or as directed. All exterior surfaces of brick masonry manhole walls shall be plastered with a 1:2 Portland cement and sand mortar plaster to provide a minimum thickness of ½ inch; mortar plaster shall be applied with sufficient pressure to ensure a dense plaster completely filling all voids and thoroughly bonded to the brick work.
3. Inverts shall have a cross section shaped to conform with connecting sewers; changes in size shall be made gradually and evenly. Brick masonry construction shall be done in a manner to ensure watertight construction and all leaks in brick masonry shall be sealed. Brick masonry shall be repaired or replaced so as to obtain watertight construction at no additional expense to the Owner.
4. All workmanship shall conform to the best standard practice and all brick masonry shall be laid by skilled workmen. Brick masonry walls shall be constructed to the thickness indicated. All beds on which masonry is to be laid shall be cleaned and wetted properly. Brick shall be wetted as required and shall be damp but free of any surface water when placed in the work.

5. Bed joints shall be formed of a thick layer of mortar which shall be smoothed or furrowed slightly. Head joints shall be formed by applying to the brick to be laid a full coat of mortar on the entire end or on the entire sides as the case requires, and then shoving the mortar-covered end or side of the brick tightly against the bricks laid previously; the practice of buttering at the corners of the brick and then throwing mortar or scrapings into the empty joints will not be permitted. Dry or butt joints will not be permitted. Joints shall be uniform in thickness and shall be approximately 1/4 inch thick. Joints on the inside face of walls shall be tooled slightly concave with an approved jointer when the mortar is thumb print hard, the mortar shall be compressed with complete contact along the edges to seal the surface of the joints.
6. Brickwork shall be constructed accurately to dimensions and brickwork at top of manholes shall be to the dimensions of the flange of the cast iron frames.
7. No water shall be allowed to flow against brickwork or to rise on the masonry for 60 hours after it has been laid and any brick masonry damaged in this manner shall be replaced as directed at no additional expense to the Owner.
8. Adequate precautions shall be taken in freezing weather to protect the masonry from damage by frost.
9. All pipes, or castings to be embedded in the brickwork shall be accurately set and built-in as the work progresses; pipe stubs shall be closed with suitable plugs in an approved manner.
10. The outside face of all brickwork shall be plastered to the thickness and using the mortar specified herein; plaster shall be troweled to a smooth, hard finish and no backfill shall be placed until the mortar has thoroughly hardened.

H. Leakage Tests

1. Leakage tests shall be made by the Contractor at his expense and observed by the Engineer on each manhole. The test shall be by vacuum in accordance with ASTM Specification C-828-80. Notarized records of the test results shall be submitted by the Contractor to the Owner for approval.
2. The vacuum testing system shall be as supplied by NPC Systems, Inc., or approved equal. The testing shall be done immediately after assembly of the manhole and before back-filling. A 60-inch/lb. torque wrench shall be used to tighten the external clamps that secure the test cover to the top of the manhole. All lift holes shall be plugged with a non-shrinking mortar, as specified. The Contractor shall plug the pipe openings, taking care to securely brace the plugs and the pipe to prevent the pipes from being drawn into the manhole. A vacuum of 10 inches Hg (4.9 psi) shall be drawn and the vacuum pump shut off. The test shall pass if the vacuum remains at 10-inches of Hg or drops to 9 inches Hg (4.4 psi) in a time greater than one minute.

3. If the manhole fails the initial test, the Contractor shall locate the leak and make proper repairs. Leaks may be filled with a wet slurry of accepted quick setting material. The manhole shall then be retested, repeatedly, if necessary, by the Contractor, until the required conditions are met, at no additional expense to the Owner.

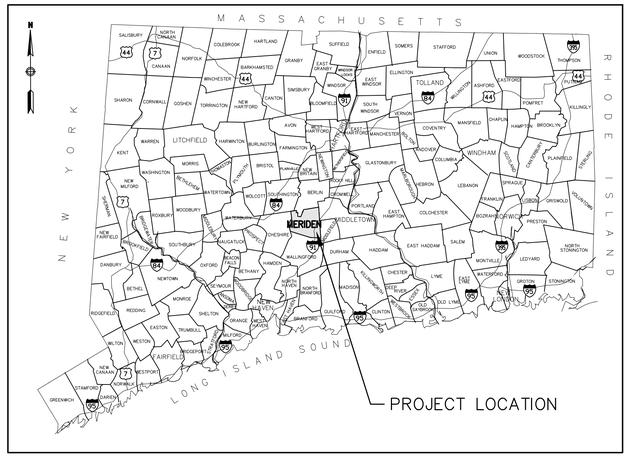
METHOD OF MEASUREMENT

A. Precast concrete manholes shall be measured for payment by the unit "each" as listed in the Bid. The depth of a unit shall be the total depth from the top of the manhole frame to the invert of the sewer at the center of the manhole.
B. Reset manholes shall be measured for payment by the unit "each" as listed in the Bid.
C. Manhole frame and cover shall be measured for payment by the unit "each" as listed in the Bid.

BASIS OF PAYMENT

A. Precast concrete manholes measured in place as provided in the preceding paragraph, will be paid for at the contract unit price bid "each", as listed in the bid.
B. The price and payments listed above shall constitute full compensation for furnishing and constructing precast manhole bases, transition sections, risers, cones, flat tops, complete with cast iron frames and covers, including watertight frames and covers if applicable, all pipe and pipe fittings and encasements for drop manholes, steps, brick masonry, for furnishing openings and connecting existing sewer pipelines, excavating and backfill and appurtenant work, for leakage tests complete in place; and for all labor, equipment, tools, materials, and all other costs and appurtenant work incidental and necessary to complete the items as specified, as indicated and as directed by the Owner.

ITEM NO.	DESCRIPTION	UNIT
ITEM #1403001A	MANHOLE	EACH
ITEM #1403501A	RESET MANHOLE	EACH
ITEM #1403010A	MANHOLE FRAME AND COVER	EACH



LOCATION MAP

PLANS FOR:

CITY OF MERIDEN
COE AVENUE SCHOOL ROUTE/URBAN TRAIL SECTION

PROJECT AREA:

COE AVENUE TO BRADLEY AVENUE

IN THE

CITY OF MERIDEN, CONNECTICUT

APRIL 2019

PROJECT AREA MAP

500 0 500 1000

APPROX. SCALE IN FEET

100 Great Meadow Rd, Suite 200
Wethersfield, Connecticut 06109
860 807 4300 ™ 860 372 4570

Stephen J. O'Neill, P.E. -VHB
Director of Transportation Engineering

Howard Weissberg, P.E.- Meriden
Director of Public Works

DEVELOPED FOR:
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PUBLIC WORKS DEPARTMENT
142 East Main Street
Meriden, CT 06450

DEVELOPED BY:
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Wethersfield, Connecticut 06901
860-807-4300 - FAX 860-372-4570

DWG. NO.	TITLE	SHEET NO.
TLS-1	TITLE SHEET	01
GNA-1	LEGEND, ABBREVIATIONS, & GENERAL NOTES	02
IND-01	INDEX PLAN	03
TYP-01	TYPICAL SECTIONS	04
MDS-01 TO MDS-13	MISCELLANEOUS DETAILS	05-13
EXT-01 TO EXT-02	EXISTING CONDITIONS PLANS	14-15
BLP-01 TO BLP-02	BASELINE LAYOUT PLANS	16-17
CTR-01	CONTROL POINT TIE PLANS	18
PLN-01 TO PLN-02	COE AVENUE - PLAN	19-20
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LIST OF CONNDOT STANDARD DRAWINGS	
DWG. NO.	TITLE
TR-1208_01	SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS
TR-1208_02	METAL SIGN POSTS AND SIGN MOUNTING DETAILS
TR-1210_04	PAVEMENT MARKING LINES AND SYMBOLS
TR-1220_01	SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS
TR-1220_02	CONSTRUCTION SIGN SUPPORTS AND CHANNELIZING DEVICES

LIST OF CITY OF MERIDEN DRAWINGS
TITLE
SIDEWALK AND DRIVEWAY STANDARDS

2016 SPECIFICATIONS, FORM 817 INCLUDING ALL SUPPLEMENTS DATED JULY 2018 THERETO GOVERN.

VHB Project No. 42128.00
Various Locations - Meriden, CT
Issued for: Not for Construction

LEGEND

- CATCH BASIN
- RD ROOF DRAIN
- DRAIN MANHOLE
- (S) SEWER MANHOLE
- (E) ELECTRIC MANHOLE
- (T) (V) TELEPHONE MANHOLE
- (W) MANHOLE
- (W) WATER MANHOLE
- GATE BOX (WATER)
- FIRE HYDRANT
- GATE BOX (GAS)
- STREET SIGN
- TEST PIT
- LIGHT POLE
- UTILITY POLE
- UTILITY POLE W/LIGHT
- GUY POLE OR WIRE
- BOLLARD/POST
- 100.0 × SPOT ELEVATION
- MB MAILBOX
- V VAULT
- TRAVERSE POINT
- SHRUBS
- DECIDUOUS TREE
- EVERGREEN TREE
- DRAINAGE EASEMENT
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- EDGE OF TRAVELED WAY
- CURB
- STEEL GUIDE RAIL
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- WOOD FENCE
- UNDERGROUND DRAINAGE LINE
- UNDERGROUND SEWER LINE
- OVERHEAD WIRE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND GAS LINE
- UNDERGROUND WATER LINE
- UNDERGROUND TELEPHONE LINE
- UD TREE LINE
- UNDERDRAIN
- LIMIT OF WORK
- PROPERTY LINE

ABBREVIATIONS

ACR	ACCESSIBLE CURB RAMP
ADBE	AS DIRECTED BY ENGINEER
AOBE	AS ORDERED BY ENGINEER
℄	BASELINE
BB	BITUMINOUS BERM
BC/BCLC	BITUMINOUS CURB
BIT	BITUMINOUS
BOC	BACK OF CURB
BOW	BACK OF WALK
BWL	BROKEN WHITE LINE
BYL	BROKEN YELLOW LINE
CB	CATCH BASIN
CC	CONCRETE CURB
CLF	CHAIN LINK FENCE
CCM	CORRUGATED METAL PIPE
COMM	COMMERCIAL
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
D	DRAIN LINE
DBL	DOUBLE
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
DWG	DRAWING
DWY	DRIVEWAY
DYL	DOUBLE YELLOW LINE
E	ELECTRIC LINE
ELEV.	ELEVATION
EMH	ELECTRIC MANHOLE
EP	EDGE OF PAVEMENT
EX\EXIST	EXISTING
FA	FIRE ALARM
FES	FLARED END SECTION
F.F.E.	FINISH FLOOR ELEVATION
FL	FLOW LINE
FOC	FACE OF CURB
G	GAS LINE
GG	GATE BOX (GAS)
GTD	GRADE TO DRAIN
HMA	HOT MIX ASPHALT
HYD	HYDRANT
INV=/I=	INVERT ELEVATION
INT	INTERMEDIATE
LT	LEFT
MH	MANHOLE
MW	MONITORING WELL
O/H	OVERHEAD
OHW	OVERHEAD LINE
ℙ	PROPERTY LINE
PED	PEDESTRIAN
PERP	PERPENDICULAR
PGL	PROFILE GRADE LINE
PIV	POST INDICATOR VALVE
PVC	POLYVINYLCHLORIDE PIPE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RES	RESIDENTIAL
RIM=/R=	RIM ELEVATION
ROW	RIGHT OF WAY
RT	RIGHT
S	SEWER LINE
SB	STREET BOUND
SCE	SLOPED CONCRETE EDGING
SCC	SLOPED CONCRETE CURB
SGE	SLOPED GRANITE EDGING
SMH	SEWER MANHOLE
STA	STATION
SWK	SIDEWALK
SWL	SINGLE WHITE LINE
SYL	SINGLE YELLOW LINE
T	TELEPHONE LINE
TMH	TELEPHONE MANHOLE
TP	TEST PIT
TYP	TYPICAL
UP	UTILITY POLE
VC	VITRIFIED CLAY PIPE
VGC	VERTICAL GRANITE CURB
W	WATER LINE
WG	GATE BOX (WATER)
WMH	WATER MANHOLE

MAINTENANCE & PROTECTION OF TRAFFIC NOTES:

1. THE CONTRACTOR SHALL MAINTAIN LOCAL ACCESS ALONG ALL PROJECT ROADWAYS ON A TRAVEL PATH NOT LESS THAN 12 FEET IN WIDTH. ALTERNATING ONE WAY TRAFFIC SHALL BE ALLOWED ON ROADWAYS WHERE TWO, OPPOSING, 11 FOOT LANES ARE NOT AVAILABLE. AT THE COMPLETION OF THE WORKDAY, THE CONTRACTOR SHALL RESTORE THE ROADWAY TO NORMAL TRAFFIC OPERATIONS.

2. 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 AT ALL INTERSECTING ROADWAYS. ON MILLED ROADWAYS, THE 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."

3. 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.

4. FOR ALL ROADWAYS THAT ARE DESIGNATED FOR MILLING, REMOVAL OF ALL HOT MIX ASPHALT, RECONSTRUCTION OR FULL DEPTH PAVEMENT RECLAMATION, 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 ALSO SUBMIT FOR APPROVAL DETOUR AND SIGNING PLANS 21 DAYS IN ADVANCE. DETOURS ARE ONLY ALLOWED ON LOCAL ROADWAYS. DETOURS ARE NOT ALLOWED ON COLLECTOR OR ARTERIAL ROADWAYS.

5. THE FOLLOWING RESTRICTIONS, IN ADDITION TO THOSE DETAILED IN THE SPECIFICATIONS, SHALL APPLY:

   THE CONTRACTOR SHALL NOT ALLOW A MILLED ROADWAY SURFACE TO REMAIN IN PLACE FOR GREATER THAN FIFTEEN (15) CALENDAR DAYS PRIOR TO INSTALLING THE FIRST COURSE OF HMA.

   THE CONTRACTOR SHALL NOT ALLOW A ROADWAY THAT HAS BEEN RECLAIMED, RECONSTRUCTED OR HAVE ALL THE HMA REMOVED, REMAIN IN PLACE FOR GREATER THAN TWENTY (20) CALENDAR DAYS PRIOR TO INSTALLING THE FIRST COURSE OF HMA. THE 20-DAY PERIOD STARTS ONCE THE BITUMINOUS CONCRETE ROADWAY SURFACE IS DISTURBED OR RECLAIMED.

   THE CONTRACTOR WILL BE ALLOWED TO CONSTRUCT TWO SECTIONS OF ROADWAY SIMULTANEOUSLY. THE SECTIONS OF ROADWAYS MAY NOT BE ADJACENT TO EACH OTHER OR CLOSE ENOUGH TO CAUSE LOCAL DELAYS IN THE ROADWAYS. ONLY TWO MAJOR WORK AREAS CAN BE CONSTRUCTED SIMULTANEOUSLY. IF THE CONTRACTOR'S PRODUCTION IS INSUFFICIENT TO PAVE THE INTERMEDIATE COURSE ON EITHER SECTION OF RECLAIMED OR RECONSTRUCTED ROADWAY WITHIN THE 20-DAY REQUIREMENT, THE CONTRACTOR WILL BE REQUIRED TO RESUBMIT A REVISED SCHEDULE TO THE CITY BASED ON A REDUCED AMOUNT OF EXPOSED BASE. THE AMOUNT OF REDUCTION WILL BE BASED ON THE LOWER OF THE TWO CONTRACTOR'S RATE OF PRODUCTIVITY FOR THE PREVIOUS RECLAMATION OR RECONSTRUCTED.

6. THE CONTRACTOR SHALL POST A SIGN AT THE BEGINNING OF CONSTRUCTION ZONE WHICH SHALL READ AS FOLLOWS: "ROAD WORK AHEAD FINES DOUBLED", AND AT THE END OF SUCH ZONE WHICH SHALL READ AS FOLLOWS: "END ROAD WORK".

UNDERGROUND UTILITY NOTES:

1. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 A MINIMUM OF 72-HOURS PRIOR TO ANY EXCAVATION BEING PERFORMED ON SITE.

2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD AND ARE AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. EXISTING UTILITIES ARE NOT GUARANTEED TO BE EXACTLY LOCATED, NOR IS IT GUARANTEED THAT ALL UNDERGROUND/OVERHEAD UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.

3. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES. THE CONTRACTOR SHALL CONFIRM THAT THERE IS NO INTERFERENCE BETWEEN EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

4. BUILDING SERVICE CONNECTIONS (ELECTRIC, GAS, TELEPHONE, WATER, AND SANITARY) ARE SHOWN WHEREVER POSSIBLE. THE CONTRACTOR IS TO ASSUME THAT SERVICES ARE PRESENT TO ALL BUILDINGS. THE LOCATIONS AND DEPTHS OF ALL BUILDING SERVICE CONNECTIONS ARE TO BE CHECKED WITH THE APPROPRIATE UTILITY COMPANIES.

5. THE UTILITY LOCATIONS AND DEPTHS SHOWN ON THE CROSS SECTIONS AND PROFILES ARE APPROXIMATE REPRESENTATIONS ONLY AND ARE NOT INTENDED TO BE A COMPLETE OR ACCURATE DEPICTION OF THE UNDERGROUND UTILITIES. THE LOCATIONS AND DEPTHS OF THE UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED BY TEST PITS.

6. PRIOR TO THE START OF CONSTRUCTION, TEST PITS SHOULD BE DUG AS NECESSARY TO DETERMINE THE SIZES, LOCATIONS, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES. ANY CONFLICTS NOTED IN PROPOSED CONSTRUCTION SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THE CONTRACTOR'S FAILURE TO NOTIFY THE ENGINEER PRIOR TO PERFORMING ADDITIONAL WORK RELEASES THE OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.

7. IN THE EVENT THE CONTRACTOR DAMAGES AN EXISTING UTILITY SERVICE CAUSING AN INTERRUPTION IN SAID SERVICE, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY, COORDINATE REPAIRS, AND PERFORM THE WORK AS DETAILED BY THE UTILITY AS NEEDED TO RESTORE SERVICE AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL NOT CONTINUE WITH OTHER WORK OPERATIONS UNTIL THE UTILITY SERVICE IS RESTORED.

GENERAL CONSTRUCTION NOTES:

1. UPON THE AWARD OF THE CONTRACT, THE CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS, APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY ALL FEES, AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. THE CONTRACTOR MUST ALSO APPLY AND OBTAIN AN ENCROACHMENT PERMIT PRIOR TO PERFORMING ANY WORK WITHIN STATE RIGHT-OF-WAY. ALL COSTS ASSOCIATED WITH OBTAINING PERMITS SHALL BE INCLUDED IN THE OVERALL COSTS OF THE PROJECT.

2. ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH THE CONDITIONS OF APPROVAL OUTLINED IN ALL STATE AND LOCAL PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THIS INFORMATION PRIOR TO CONSTRUCTION AND FOR CONFORMING TO THE CONDITIONS AS REQUIRED DURING CONSTRUCTION.

3. HANDICAP-ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS, AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).

4. ACCESS TO RESIDENCES AND BUSINESSES SHALL BE PROVIDED BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE CITY. SPECIAL ATTENTION SHALL BE PAID TO COORDINATING WITH THE POLICE DEPARTMENT, EMERGENCY RESPONSE UNITS, AND TOWN OFFICIALS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND LOCAL REQUIREMENTS.

6. IN ADDITION TO COMPLIANCE WITH CONSTRUCTION SAFETY REQUIREMENTS, THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND PROVIDE ALL NECESSARY SIGNING, WARNING LIGHTS, DRUMS, CONES, AND CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAY'S WORK.

7. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING EXISTING HORIZONTAL AND VERTICAL GEOMETRY AND PAVEMENT CROSS SLOPE ON THE MILL-AND-OVERLAY ROADWAYS UNLESS OTHERWISE NOTED.

8. AREAS ALONG AND OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS, INCLUDING ALL LANDSCAPED AREAS, DRIVEWAY CURB RETURNS, RETAINING WALLS, OR SIMILARLY IMPROVED ADJOINING AREAS, SHALL BE PROTECTED AND/OR RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

9. RESETTING OF STONE WALLS, WOOD WALLS, STONE STEPS, SLATE WALKS, AND OTHER SIMILAR ITEMS WITHIN THE LIMITS OF WORK SHALL BE PAID FOR UNDER THE GENERAL COST OF THE WORK.

10. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

11. THE CONTRACTOR SHALL PROTECT ALL STRUCTURES, EQUIPMENT, PIPING, AND VALVES FROM DAMAGE DURING CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED TO THE COMPLETE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.

12. THE CONTRACTOR SHALL ENSURE THAT ALL EXISTING U.S. MAIL BOXES OR RESIDENTIAL MAIL BOXES WITHIN THE PROJECT LIMITS MEET THE STANDARDS OF THE UNITED STATES POSTAL SERVICE AFTER CONSTRUCTION IS COMPLETE. THE COST TO RESET OR REPAIR MAIL BOXES SHALL BE COVERED UNDER THE ITEM "RESET MAILBOX".

13. THE CONTRACTOR SHALL BE AWARE THAT SPRINKLER SYSTEMS MAY BE LOCATED WITHIN THE CITY'S RIGHT OF WAY. THE CONTRACTOR IS REQUIRED TO PROTECT SPRINKLER SYSTEMS WHENEVER POSSIBLE. ANY WORK REQUIRED TO REPAIR OR RESET SPRINKLER SYSTEMS DAMAGED BY THE CONTRACTOR SHALL BE PAID FOR UNDER THE GENERAL COST OF WORK.

14. THE CONTRACTOR SHALL BE AWARE THAT INVISIBLE DOG FENCES MAY BE LOCATED WITH THE CITY'S RIGHT OF WAY. THE CONTRACTOR IS REQUIRED TO PROTECT INVISIBLE DOG FENCES WHENEVER POSSIBLE. ANY WORK REQUIRED TO REPAIR INVISIBLE DOG FENCES SHALL BE PAID FOR UNDER THE GENERAL COST OF WORK.

15. ALL CURB TIES (STATIONS AND OFFSETS) ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

16. PAVEMENT MILLING, REMOVAL OF HMA SURFACE, FULL DEPTH RECONSTRUCTION AND FULL DEPTH RECLAIM OPERATIONS SHALL EXTEND TO THE OUTSIDE EDGE OF THE PAVED SURFACE, INCLUDING ANY BITUMINOUS CURBING AND PAVED SURFACE BENEATH THE BITUMINOUS CURB. ALL COSTS TO REMOVE BITUMINOUS CURBING AND TO MILL THE PAVEMENT BENEATH THE CURBING SHALL BE INCLUDED IN THE SQUARE-YARD COST FOR THE TYPE OF MILLING OR HMA REMOVAL ITEMS SPECIFIED.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND APPLYING WATER TO CONTROL DUST ON ALL ROADWAYS WHERE AGGREGATE IS EXPOSED, INCLUDING MILLED ROADWAYS ON WHICH AGGREGATE BASE IS EXPOSED. ALL COSTS FOR PROVIDING WATER FOR DUST CONTROL ON THESE ROADWAYS SHALL NOT BE MEASURED FOR PAYMENT, BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE VARIOUS MILLING AND PAVEMENT REMOVAL ITEMS.

18. UPON COMPLETION OF PAVING, ALL SAWCUT PAVING JOINTS AND CONSTRUCTION JOINTS FORMED IN THE SURFACE COURSES AT INTERSECTING STREETS SHALL BE CLEANED, HEATED, AND SEALED IN ACCORDANCE WITH THE SPECIFICATION FOR 'CLEANING AND SEALING CRACKS.' THIS WORK SHALL BE MEASURED AND PAID FOR AS 'CLEANING AND SEALING CRACKS.'

19. THE CONTRACTOR SHALL TRANSITION THE BITUMINOUS CONCRETE CURB TO MATCH THE TOP ELEVATION OF ALL TYPE "C" CATCH BASIN TOPS.

20. WHEN PLACING THE BITUMINOUS CONCRETE CURB OVER A TYPE "C-L" TOP, THE CONTRACTOR SHALL ENSURE THAT THE CURBING DOES NOT INTERFERE WITH THE REMOVAL OF THE GRATE.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL STORM, SEWER, WATER, AND GAS UTILITIES UNCOVERED OR DISTURBED DURING CONSTRUCTION OPERATIONS. THE UNCOVERED OR DISTURBED UTILITIES SHALL BE ADJUSTED TO FINISHED GRADE ELEVATIONS. THIS WORK SHALL BE MEASURED AND PAID FOR UNDER THE APPLICABLE RESET ITEM. THE CONTRACTOR SHALL COORDINATE ADJUSTMENT OF ANY ELECTRICAL, TELEPHONE, OR CABLE FACILITIES WITH THE UTILITY OWNER.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING CATCH BASIN FRAMES AND GRATES AND FOR PAVING THE ADJOINING ROADWAY TO PROVIDE POSITIVE GRADES TO DRAIN THE SURROUNDING AREA AS DIRECTED BY THE ENGINEER.

23. THE CONTRACTOR IS ADVISED THAT THERE ARE AREAS OF LIMITED COVER ON SOME STORM DRAIN PIPES. THE CONTRACTOR IS CAUTIONED TO TAKE EXTRA CARE WHILE RECLAIMING, EXCAVATING, AND/OR COMPACTING THE ROADWAY. AT THESE LOCATIONS, THE CONTRACTOR SHALL UTILIZE NON-VIBRATORY ROLLERS TO COMPACT AND PREPARE THE SUBGRADE TO SPECIFIED DENSITIES. THE USE OF NON-VIBRATORY ROLLERS SHALL NOT RELEASE THE CONTRACTOR FROM OBTAINING DENSITY REQUIREMENTS. ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED TO THE ENGINEER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.

24. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

25. STOP BARS SHALL BE PLACED IN THE TRAVEL WAY DIRECTLY ADJACENT TO STOP SIGNS.

26. THE CONTRACTOR SHALL PLACE DOUBLE YELLOW LINES AT THE CENTER OF THE ROADWAY UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER.

27. THE CONTRACTOR SHALL MATCH THE PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT ALL LIMITS OF WORK.

28. THE CITY WILL BE RESPONSIBLE FOR ESTABLISHING TEMPORARY NO-PARKING AREAS DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION WORK SCHEDULE WITH THE CITY 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. COSTS OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "MAINTENANCE AND PROTECTION OF TRAFFIC."

29. THE FINAL LOCATION, LENGTHS, AND WIDTHS OF EACH DRIVEWAY MAY BE MODIFIED AS DIRECTED BY THE ENGINEER TO MEET FIELD CONDITIONS.

30. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 4" TOPSOIL AND TURF ESTABLISHMENT.

31. ALL TYPICAL SECTIONS SHOWN ON CONSTRUCTION PLANS ARE ORIENTED LOOKING FROM THE BEGINNING OF CONSTRUCTION TO THE END OF CONSTRUCTION, UNLESS SPECIFICALLY NOTED OTHERWISE.

32. THE CONTRACTOR IS ADVISED THAT ADDITIONAL "NOTES" WILL BE FOUND ON SUBSEQUENT SHEETS OF THE CONTRACT PLANS AND SUCH "NOTES," WHILE PERTAINING TO THE SPECIFIC DRAWINGS THEY ARE PLACED ON, ALSO SUPPLEMENT THE GENERAL NOTES LISTED HEREIN.

33. REMOVAL OF CONCRETE CURBING SHALL BE PAID FOR UNDER THE ITEM "EARTH EXCAVATION".

34. THE CONTRACTOR SHALL PROTECT LANDSCAPED AREAS WITHIN THE LIMITS OF WORK WHERE POSSIBLE. LANDSCAPED AREAS THAT ARE DISTURBED DUE TO CONSTRUCTION ACTIVITIES SHALL BE RESTORED. THE COST TO RESTORE LANDSCAPED AREAS SHALL BE INCLUDED IN THE GENERAL COST OF WORK.

DRAINAGE NOTES:

1. THE CONTRACTOR SHALL FIELD-VERIFY THE LOCATION, SIZE, INVERTS, AND TYPES OF EXISTING PIPES AT ALL PROPOSED POINTS OF CONNECTION PRIOR TO ORDERING MATERIALS. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR. THE INFORMATION SHALL BE FURNISHED IN WRITING TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

2. ADJUST RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND ALL OTHER UTILITIES TO FINISHED GRADE WITHIN LIMITS OF WORK.

3. THE PROPOSED RIM ELEVATIONS FOR CATCH BASINS HAVE BEEN MEASURED AT THE PROPOSED FACE OF CURB (GUTTER LINE) FOR TYPE "C" CATCH BASINS AND AT THE CENTER OF THE GRATE FOR TYPE "C-L" CATCH BASINS. ALL PROPOSED RIM ELEVATIONS ACCOUNT FOR THE DEPRESSION SPECIFIED IN THE MISCELLANEOUS DETAILS WITH RESPECT TO PROPOSED ROADWAY GRADES AND CROSS SLOPES.

4. WHEN INSTALLING A NEW PIPE THAT REQUIRES A CONNECTION TO AN EXISTING PIPE, THE NEW PIPE CONNECTION SHALL BE MADE AT THE JOINT OF THE EXISTING PIPE NEAREST TO THE PROPOSED PIPE.

5. WHEN INSTALLING A NEW CATCH BASIN THAT REQUIRES A CONNECTION TO AN EXISTING PIPE, THE SECTION OF THE EXISTING PIPE DISTURBED BY CONSTRUCTION SHALL BE REPLACED WITH NEW PIPE OF SIMILAR SIZE AND TYPE EXTENDING FROM THE CATCH BASIN TO THE NEAREST JOINT OF EXISTING PIPE OR AS DIRECTED BY THE ENGINEER.

6. ALL CATCH BASIN GRATES ARE TO BE TYPE "A."

7. ALL PROPOSED TYPE 'C' CATCH BASIN TOPS SHALL BE 'PARK TYPE' CURB TOPS ON ALL STREETS WITH BITUMINOUS CURBING OR BERM. ON STREETS WHERE THE CURBING IS CONCRETE, THE TYPE 'C' CATCH BASIN TOPS SHALL BE 'CONCRETE FOR TYPE 'C' CB'.

8. THE CONTRACTOR SHALL SET CATCH BASIN FRAME AND GRATES TO PROVIDE POSITIVE DRAINAGE INTO THE STRUCTURE. THE CONTRACTOR IS ADVISED THAT THE CATCH BASIN FRAME ELEVATIONS PROVIDED ON THE PLANS INCLUDE ANY ADDITIONAL DEPRESSION REQUIRED PER THE CATCH BASIN DETAILS.

9. THE CONTRACTOR SHALL CLEAN ALL EXISTING PIPES, MANHOLES AND CATCH BASINS SHOWN 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 TO ALLOW ACCESS FOR INSPECTION AND CLEANING. THE EXPOSED MANHOLE SHALL BE LEFT IN A SAFE CONDITION. THE ENTIRE DRAINAGE SYSTEM SHALL BE LEFT IN A CLEAN AND OPERABLE CONDITION AT THE COMPLETION OF THE WORK.

SURVEY NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAN ARE APPROXIMATE LINES BASED ON MAPPING PROVIDED BY THE CITY OF MERIDEN. VHB HAS NOT PERFORMED A FIELD SURVEY TO VERIFY THE PROPERTY LINES.

2. THE EXISTING CONDITIONS SHOWN FOR COE AVENUE AND HANOVER STREET ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB BETWEEN JUNE 2016 AND AUGUST 2016. THE HORIZONTAL AND VERTICAL VALUES FOR THESE ROADWAYS ARE BASED ON CTNAD 1983 AND NAVD88 DATUMS.

3. THE CONTRACTOR SHALL HAVE A CONNECTICUT REGISTERED LAND SURVEYOR AVAILABLE TO RESET ANY MONUMENTS DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. A SURVEY SHALL BE PROVIDED BY THE CONTRACTOR TO ENSURE THE MONUMENTATION HAS BEEN RESET TO ITS ORIGINAL LOCATION.

4. THE CONTRACTOR IS ADVISED THAT SOME CONTROL POINTS SHOWN ON THE PLANS MAY BE LOCATED ON THE EXISTING PAVEMENT SURFACE OR WITHIN THE CONSTRUCTION LIMITS. THE CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING THOSE CONTROL POINTS AFTER CONSTRUCTION IS COMPLETED ON THAT STREET.

5. THE EXISTING CONDTIONS SHOWN FOR PLATT HIGH SCHOOL IS BASED ON PROPOSED PLANS PROVIDED BY THE CITY OF MERIDEN. VHB HAS NOT PERFORMED A FIELD SURVEY OF THIS PROPERTY.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. THE CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF-SITE AREAS AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO THE OWNER.

2. THE CONTRACTOR SHALL INSTALL 'SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN' AT CATCH BASINS PRIOR TO THE BEGINNING OF WORK AT LOCATIONS INDICATED ON THE PLANS, AS REQUIRED, OR AS ORDERED BY THE ENGINEER.

3. THE CONTRACTOR MUST INSPECT AND MAINTAIN EROSION CONTROL MEASURES AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS.

4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.

5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND SHALL CLEAN SEDIMENT AND DEBRIS FROM THE ENTIRE STORM DRAINAGE SYSTEM.

6. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.

7. THE CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.

8. PRIOR TO STARTING ANY WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY THE MERIDEN WETLAND AGENT AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED AS DIRECTED BY THE WETLAND AGENT.

9. THE CITY HAS INCORPORATED A 'GENERAL PERMIT FOR STORMWATER DISCHARGE' (GPSD) WITHIN THE CONTRACT DOCUMENTS IN ORDER TO INSURE COMPLIANCE WITH THE CONDITIONS OF THE GPSD. THE CONTRACTOR WILL BE REQUIRED TO COMPLY WITH ALL APPLICABLE CONDITIONS OF THE GPSD.

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

DESIGNER: CF
DRAFTER: EAN
CHECKED BY: BAA
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

CITY OF MERIDEN CONNECTICUT

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: GNA-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: LEGEND, ABBREVIATIONS, & GENERAL NOTES

PROJECT NO.: 42128.00
DRAWING NO.: GNA-01
SHEET NO.: 02 OF 23

Apr 10, 2019

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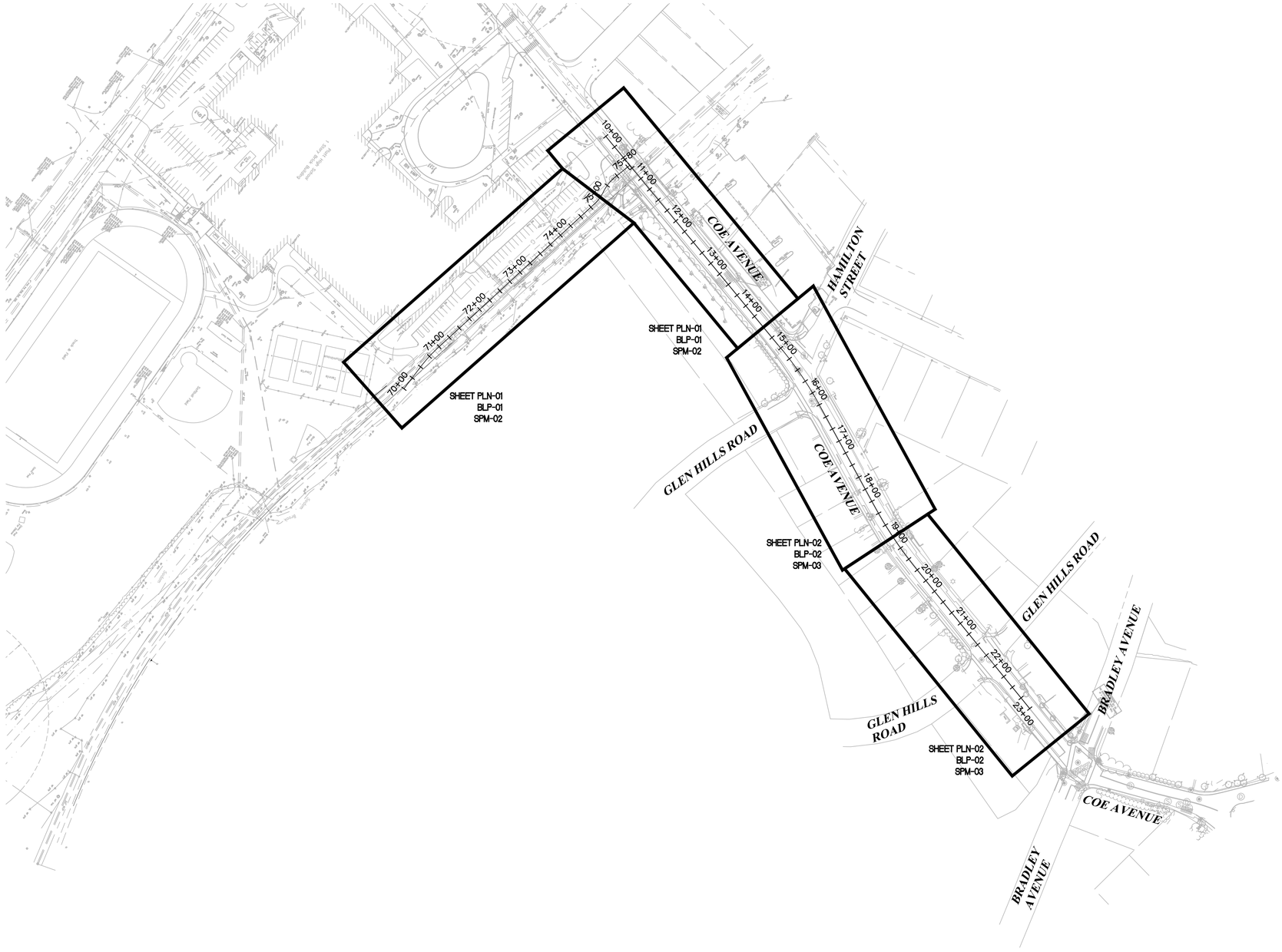


REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

100 0 100
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

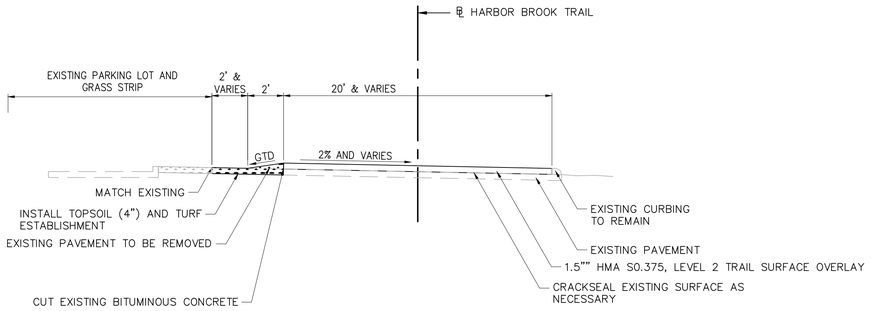
CADD FILENAME: IND-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
INDEX
PLAN

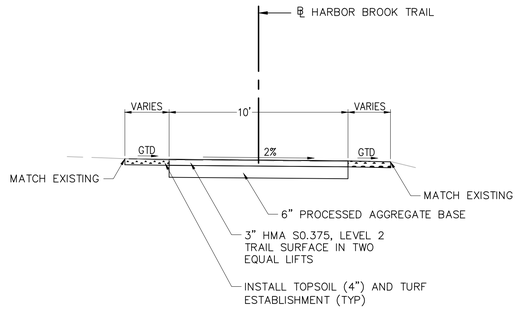
PROJECT NO.: 42128.00
DRAWING NO.: IND-01
SHEET NO.: 03 OF 23

Apr 10, 2019



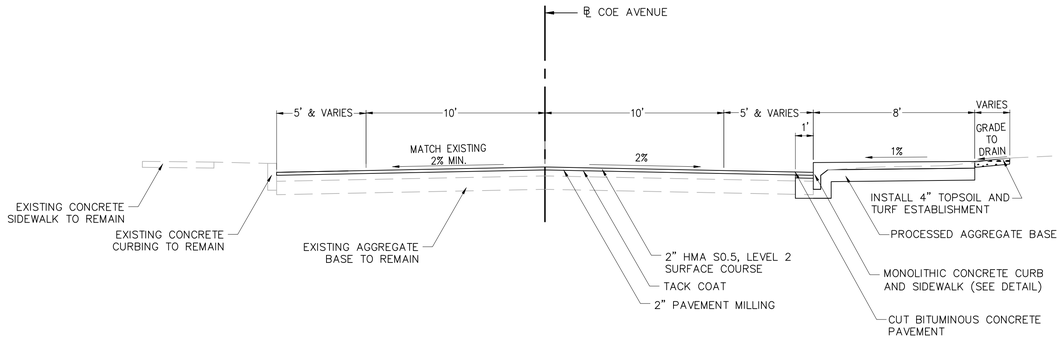
HARBOR BROOK TRAIL

PLATT HIGH SCHOOL
STA. 70+06.28 TO 75+20.17
NOT TO SCALE



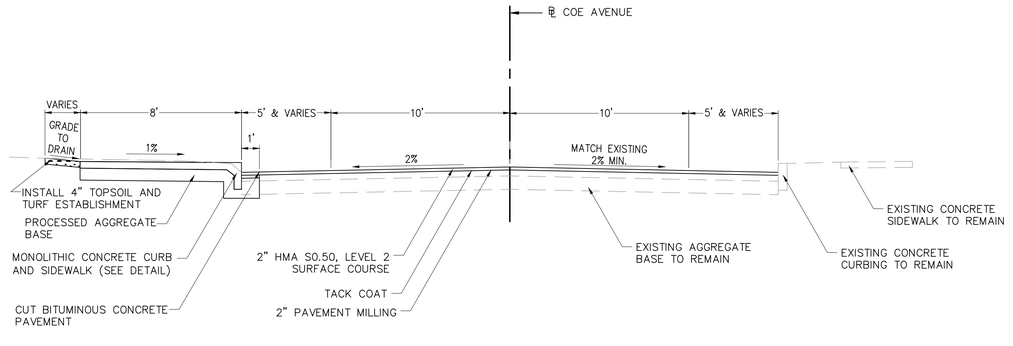
HARBOR BROOK TRAIL

PLATT HIGH SCHOOL
STA. 75+20.17 TO STA. 75+55.73
NOT TO SCALE



COE AVENUE

STA. 11+57.29 TO STA. 15+75.00
NOT TO SCALE



COE AVENUE

STA. 15+75.00 TO STA. 22+48.49
NOT TO SCALE

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

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NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

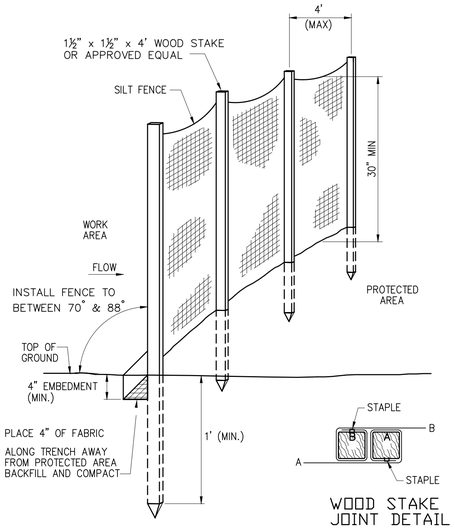
CADD FILENAME: TYP-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: TYPICAL SECTIONS

PROJECT NO.: 42128.00
DRAWING NO.: TYP-01
SHEET NO.: 04 OF 23

Apr 11, 2019

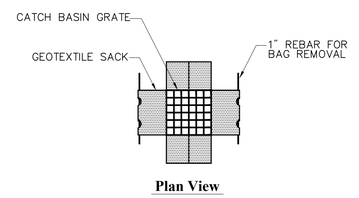


WOOD STAKE
JOINT DETAIL

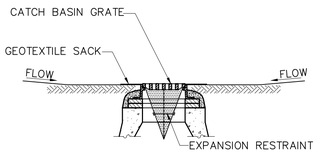
DETAIL NOTES:

1. THE CONTRACTOR SHALL MAINTAIN OR REPLACE THE SEDIMENTATION CONTROL SYSTEM THROUGHOUT THE CONSTRUCTION DURATION AND UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED.
2. THE CONTRACTOR SHALL INSPECT THE SYSTEM ONCE A WEEK AND WITHIN 12 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER.
3. THE CONTRACTOR SHALL CLEANOUT ACCUMULATED SEDIMENT WHEN ONE HALF OF THE ORIGINAL HEIGHT OF THE SYSTEM IS FILLED WITH SEDIMENT, OR AS ORDERED BY THE ENGINEER.
4. FOLLOWING CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL DRAINAGE FACILITIES OF ANY ACCUMULATED SEDIMENT AND TRANSPORT SEDIMENT OFF SITE.
5. ALL COSTS ASSOCIATED WITH INSTALLING, MAINTAINING AND THE REMOVAL OF SILT FENCE SHALL BE INCLUDED IN THE CONTRACT UNIT COST PER LINEAR FOOT FOR "SEDIMENTATION CONTROL SYSTEM."

SEDIMENTATION CONTROL SYSTEM
N.T.S.



Plan View

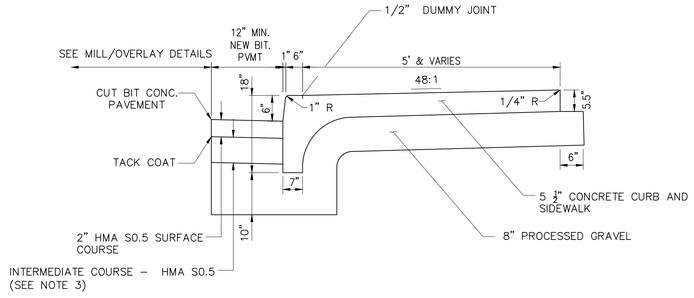


Section View

DETAIL NOTES:

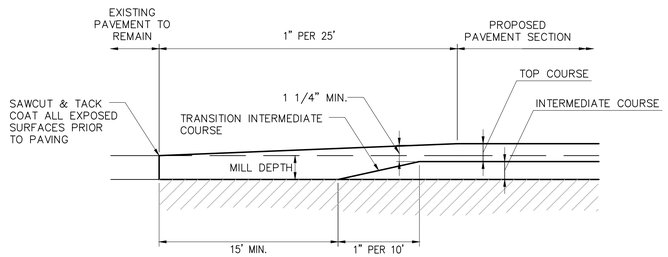
1. INSTALL GEOTEXTILE SACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN OR AS DIRECTED BY THE ENGINEER BEFORE COMMENCING WORK.
2. GRATE TO BE PLACED OVER GEOTEXTILE SACK.
3. GEOTEXTILE SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF THE GEOTEXTILE SACK, INCLUDING THE DISPOSAL OF COLLECTED MATERIALS, SHALL BE INCLUDED IN THE CONTRACT UNIT COST PER EACH "SEDIMENT CONTROL SYSTEM AT CATCH BASIN."

SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN DETAIL
N.T.S.

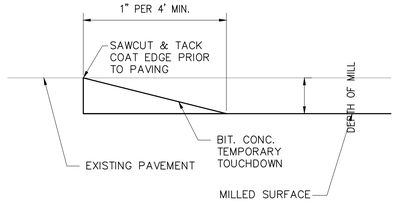


1. CONTRACTOR TO CUT BITUMINOUS CONCRETE PAVEMENT A MINIMUM OF 12" FROM THE PROPOSED FACE OF CURB. COST OF CUT BITUMINOUS CONCRETE PAVEMENT IS INCLUDED IN THE UNIT COST FOR THE MONOLITHIC CONCRETE CURB.
2. COST FOR EXCAVATION, PROCESSED GRAVEL AND 2" BIT. HMA S0.5 INTERMEDIATE COURSE IS INCLUDED IN THE UNIT COST FOR MONOLITHIC CONCRETE CURB.
3. THICKNESS OF HMA INTERMEDIATE COURSE SHALL BE MINIMUM 2" OR MATCH EXISTING, WHICHEVER IS GREATER.
4. INSTALL 2" HMA S0.5 AS A TEMPORARY MEASURE UNTIL ALL THE CURBING HAS BEEN INSTALLED. THIS MATERIAL SHALL BE MILLED OUT AS PART OF THE MILLING OPERATIONS AND SHALL BE PAVED WITH THE REST OF THE ROADWAY SURFACE AS DETAILED IN THE MILL AND OVERLAY DETAILS.

MONOLITHIC CONCRETE CURB
N.T.S.



MILL/OVERLAY TERMINATION DETAIL
N.T.S.



DETAIL NOTES:

1. TEMPORARY TOUCHDOWN SHALL BE BITUMINOUS CONCRETE AND MUST BE REMOVED PRIOR TO CONSTRUCTION OF THE HMA OVERLAY. COSTS ASSOCIATED WITH THE CONSTRUCTION AND REMOVAL OF THE TEMPORARY TOUCHDOWN ARE INCLUDED IN THE VARIOUS PAVING ITEMS.
2. THE CONTRACTOR SHALL INSTALL THE BITUMINOUS CONCRETE TEMPORARY TOUCHDOWNS ON THE DAY THE PAVEMENT IS MILLED AND SHALL REMAIN IN PLACE UNTIL THE DAY THE OVERLAYS ARE INSTALLED.

BITUMINOUS CONCRETE TEMPORARY TOUCHDOWN
N.T.S.

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

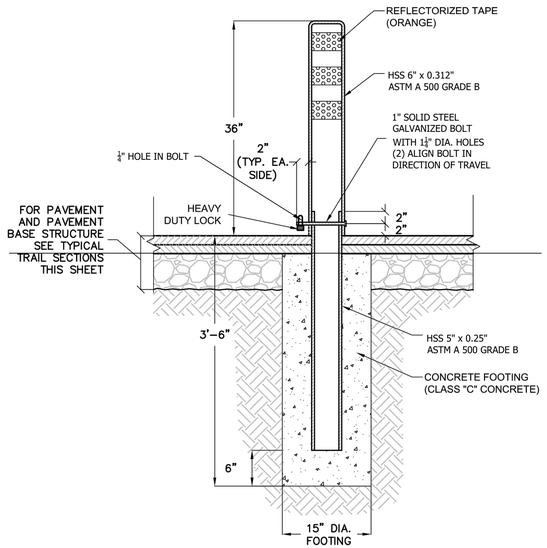
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: MISCELLANEOUS DETAILS

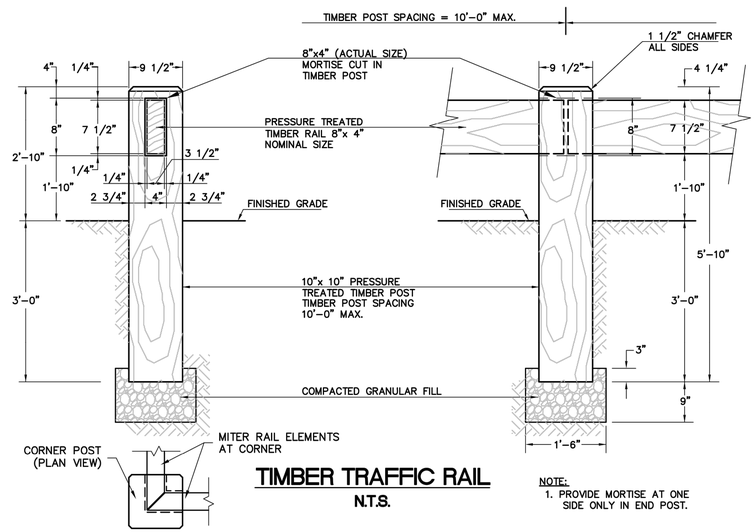
PROJECT NO.: 42128.00
DRAWING NO.: MDS-01
SHEET NO.: 05 OF 23

May 10, 2019



NOTE: PAINT
1. PRIMER COAT–BASIC ZINC SILICO CHROMATE PAINT
2. FINAL COAT–BRIGHT YELLOW ENAMEL FOR VISIBILITY
3. FURNISH WITH REFLECTORIZED TAPE TO ENHANCE VISIBILITY
4. BOLT TO BE ALIGNED TO THE DIRECTION OF TRAVEL

REMOVABLE BARRIER POST
N.T.S



TIMBER TRAFFIC RAIL
N.T.S.

NOTE:
1. PROVIDE MORTISE AT ONE SIDE ONLY IN END POST.

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

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NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

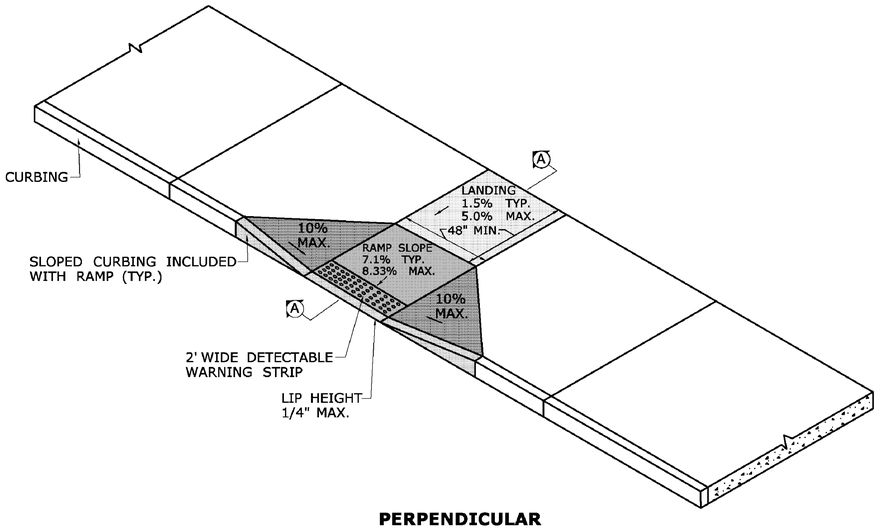
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

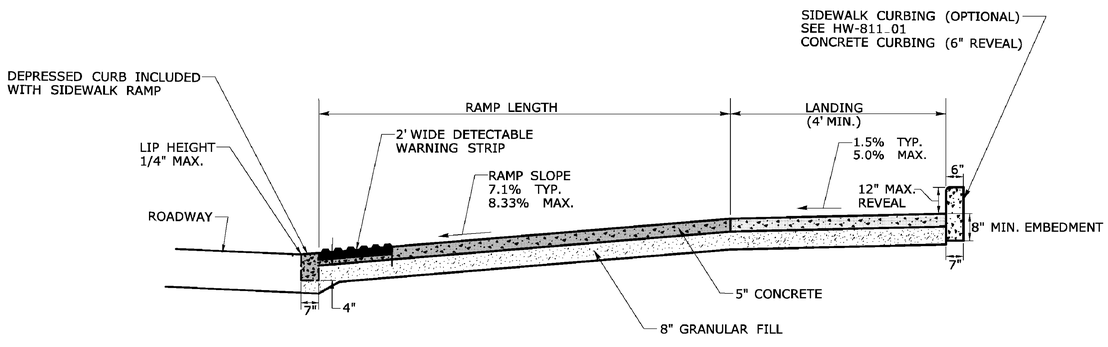
DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00
DRAWING NO.: MDS-02
SHEET NO.: 06 OF 23

Apr 10, 2019



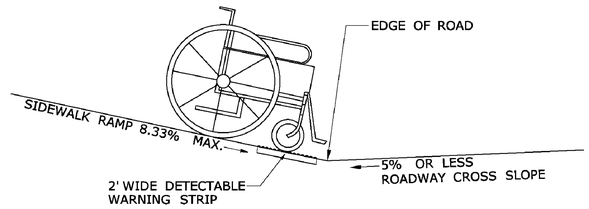
PERPENDICULAR SIDEWALK RAMP



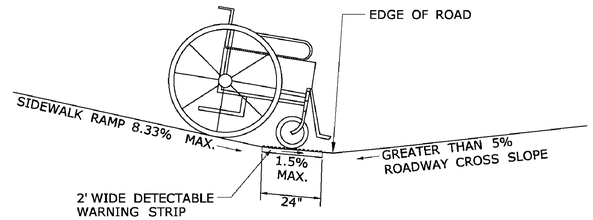
SECTION AA

GENERAL NOTES:

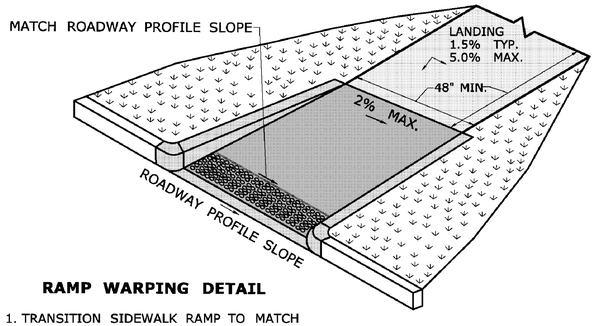
1. SIDEWALK RAMPS SHALL HAVE A COARSE BROOM FINISH TRAVERSE TO THE SLOPE OF THE RAMP.
2. VERTICAL SURFACE DISCONTINUITIES AT JOINTS SHALL NOT EXCEED $\frac{1}{4}$ INCH.
3. REMOVAL OF EXISTING SIDEWALK FOR NEW RAMP INSTALLATIONS SHALL BE TO THE NEAREST EXPANSION OR CONTRACTION JOINT.
4. THE RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.3 PERCENT MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET.
5. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT PROPER GRADES CAN BE ACHIEVED PRIOR TO PLACEMENT OF CONCRETE



SIDEWALK RAMP GRADE AT ROADWAY CROSS SLOPE OF 5% OR LESS



SIDEWALK RAMP GRADE AT ROADWAY CROSS SLOPE OF GREATER THAN 5%



RAMP WARPING DETAIL

1. TRANSITION SIDEWALK RAMP TO MATCH ROADWAY PROFILE AS GRADUALLY AS POSSIBLE. DO NOT EXCEED 3 % PER FOOT CROSS SLOPE RATE OF CHANGE WHEN TRANSITIONING TO ROADWAY PROFILE.
2. COMPLETE TRANSITION TO ROADWAY PROFILE BEHIND DETECTABLE WARNING SURFACE.

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

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NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

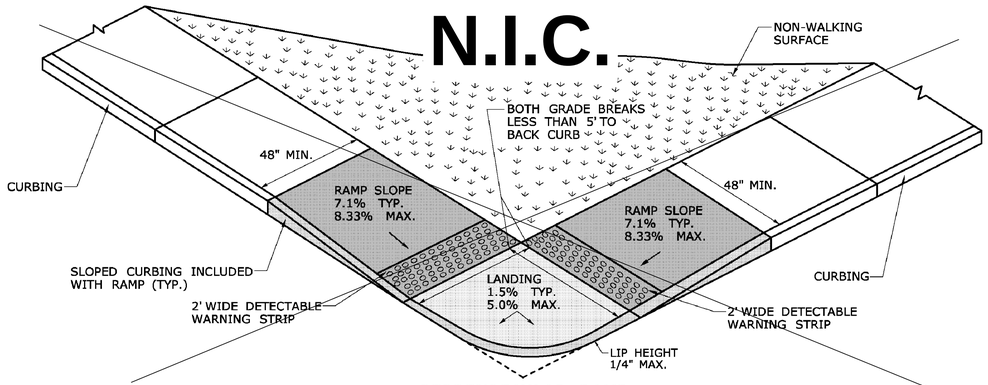
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

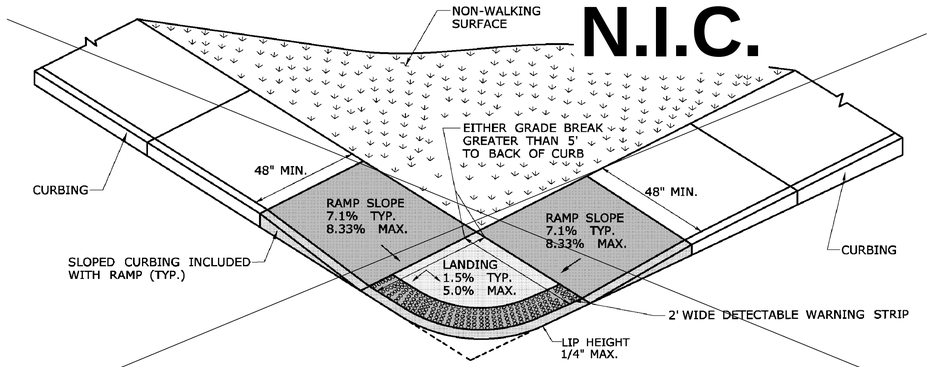
DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00
DRAWING NO.: MDS-03
SHEET NO.: 07 OF 23

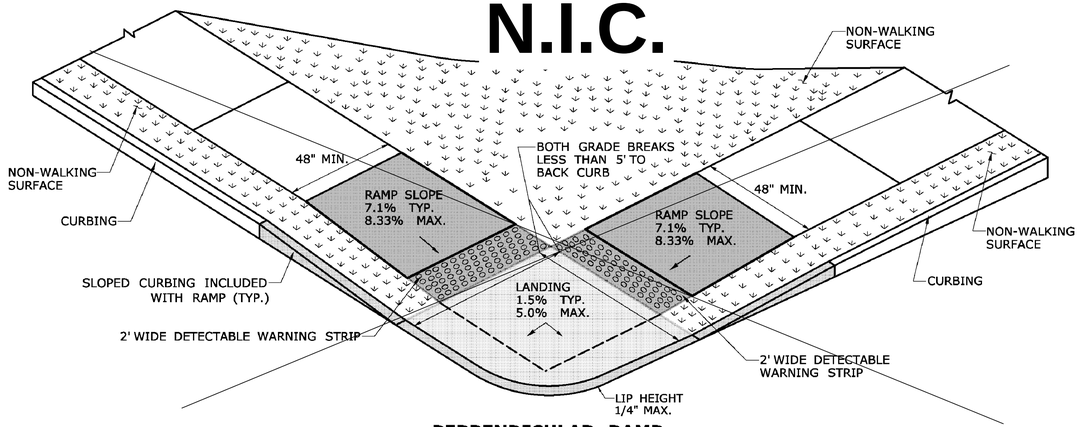
May 10, 2019



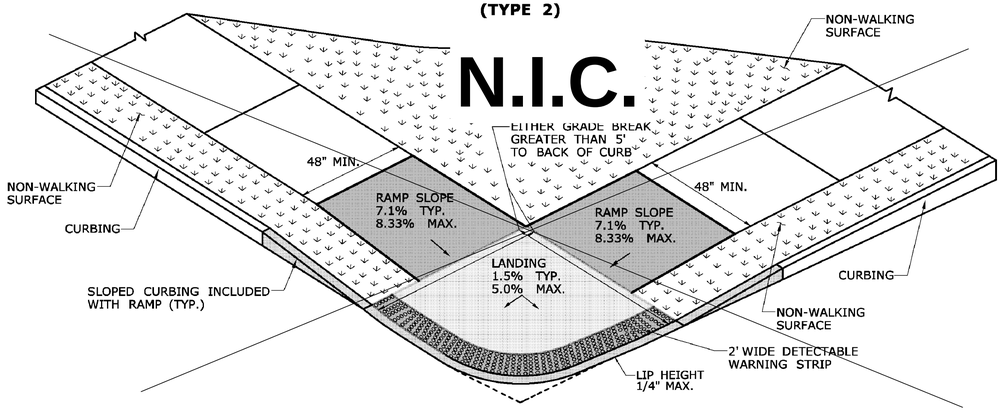
PERPENDICULAR RAMP
WITH A GRADE BREAK OF 5' OR LESS
(TYPE 1)



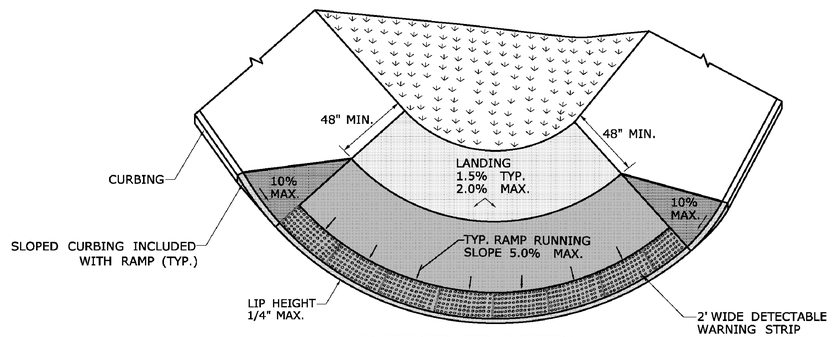
BLENDED TRANSITION
WITH GRADE BREAK GREATER THAN 5'
(TYPE 2)



PERPENDICULAR RAMP
WITH A GRADE BREAK
TO BACK OF CURB OF 5' OR LESS
(TYPE 3)



BLENDED TRANSITION
WITH A GRADE BREAK
TO BACK OF CURB GREATER THAN 5'
(TYPE 4)



BLENDED TRANSITION
WITH LANDING AT TOP
(TYPE 5)

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: MDS-4212800.DWG

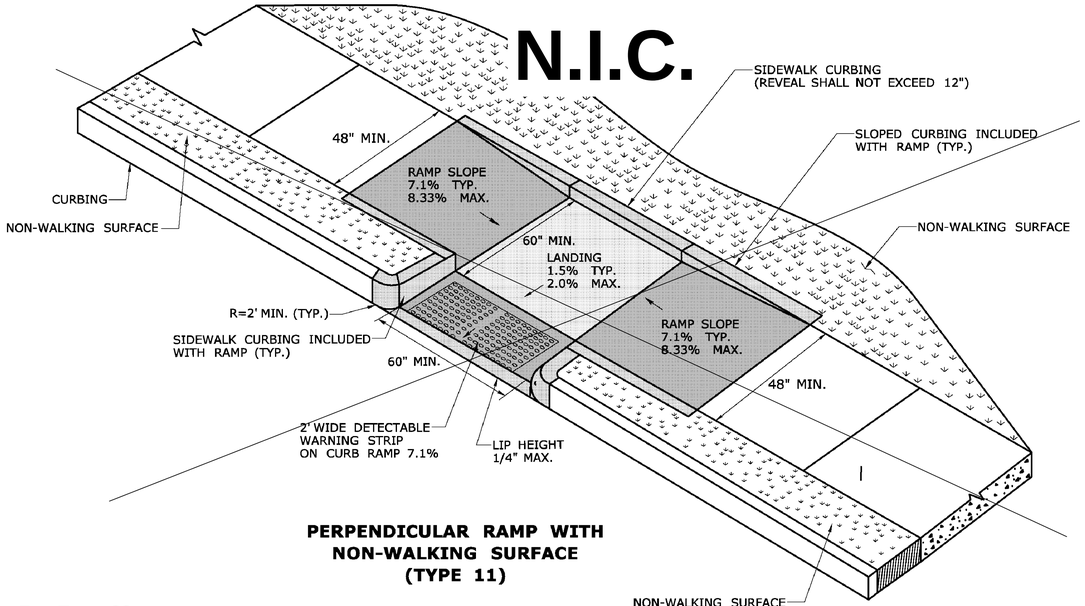
TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00
DRAWING NO.: MDS-04
SHEET NO.: 08 OF 23

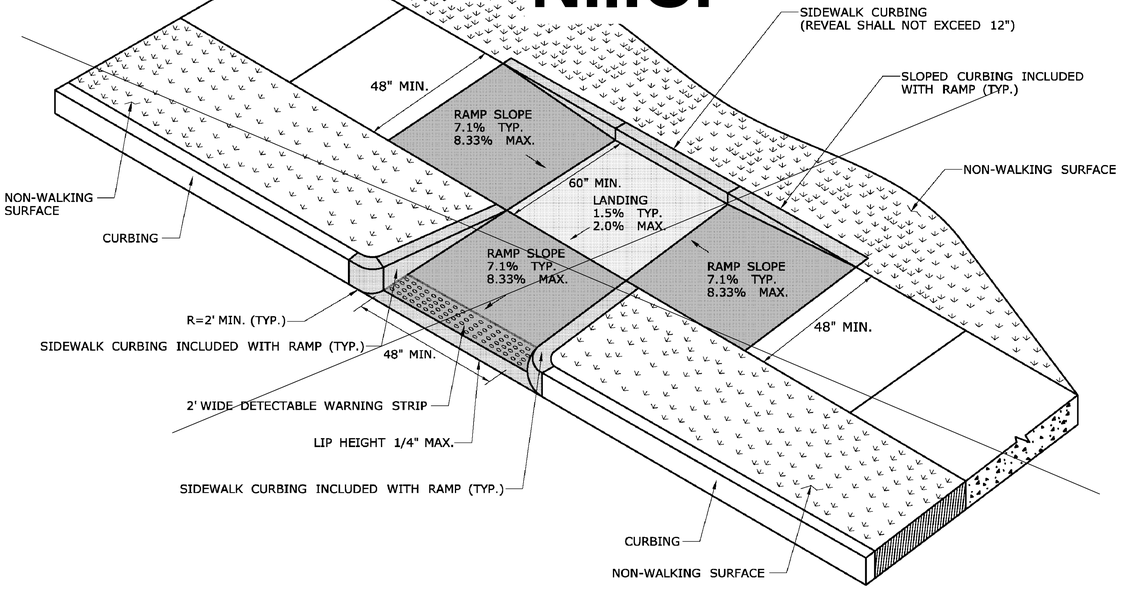
May 10, 2019

N.I.C.

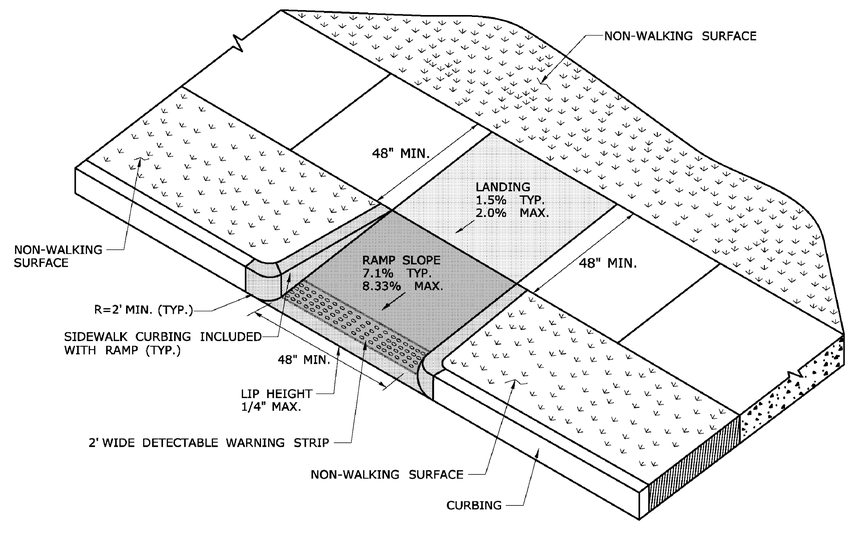


PERPENDICULAR RAMP WITH NON-WALKING SURFACE (TYPE 11)

N.I.C.



PERPENDICULAR RAMP WITH SIDEWALK CURB AND NON-WALKING SURFACE (TYPE 12)



PERPENDICULAR RAMP WITH NON-WALKING SURFACE (TYPE 13)

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

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NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

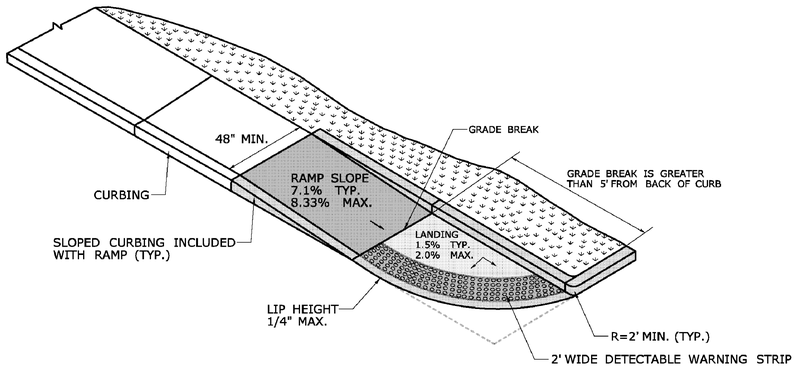
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: MISCELLANEOUS DETAILS

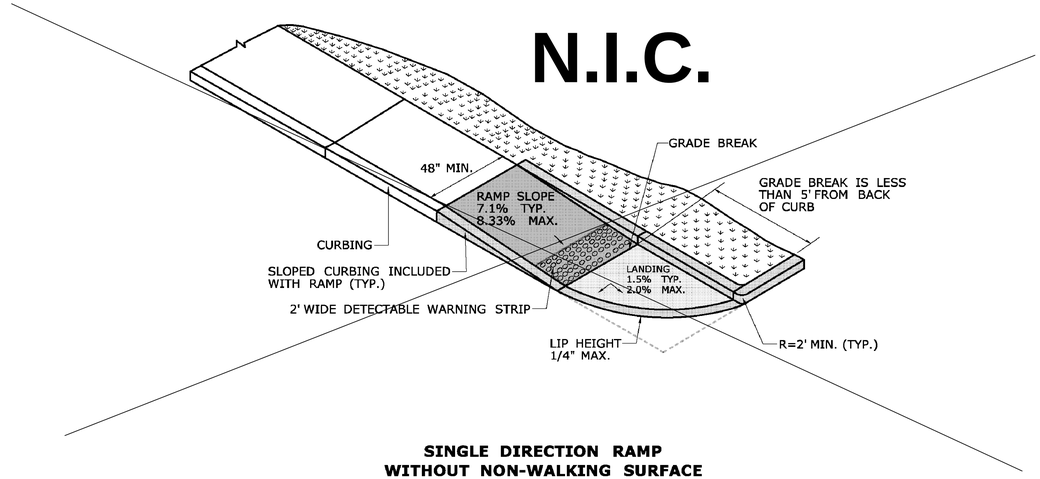
PROJECT NO.: 42128.00
DRAWING NO.: MDS-05
SHEET NO.: 09 OF 23

May 10, 2019

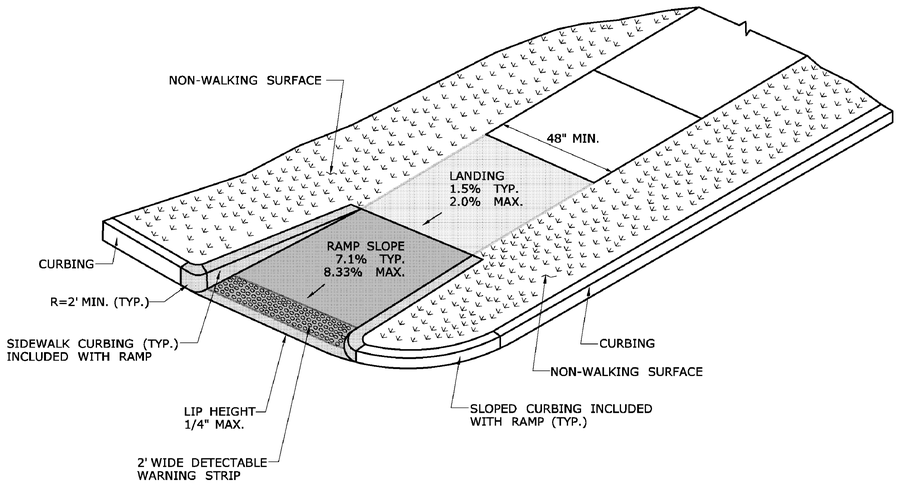


SINGLE DIRECTION RAMP
WITHOUT NON-WALKING SURFACE
GRADE BREAK GREATER THAN 5'
(TYPE 14)

N.I.C.

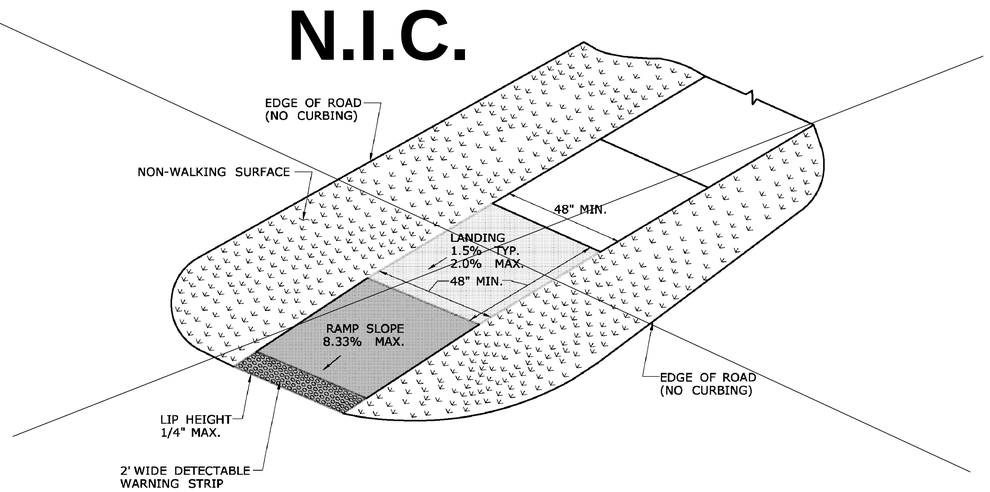


SINGLE DIRECTION RAMP
WITHOUT NON-WALKING SURFACE
GRADE BREAK LESS THAN 5'
(TYPE 15)



SINGLE DIRECTION - RETURN CURB
WITH NON-WALKING SURFACE
(TYPE 16)

N.I.C.



SINGLE DIRECTION - NO CURB
WITH NON-WALKING SURFACE
(TYPE 17)

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

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NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

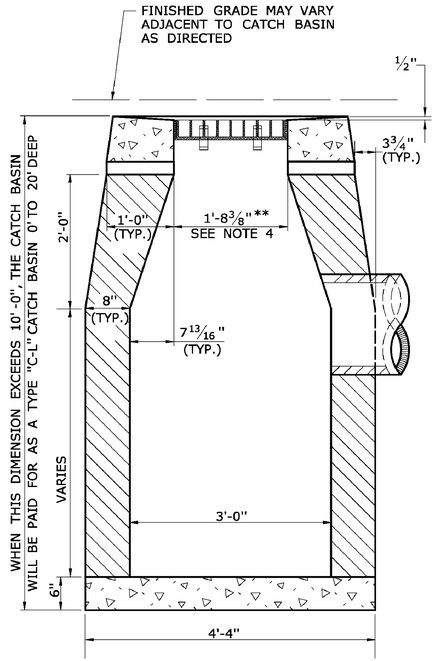
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: MISCELLANEOUS DETAILS

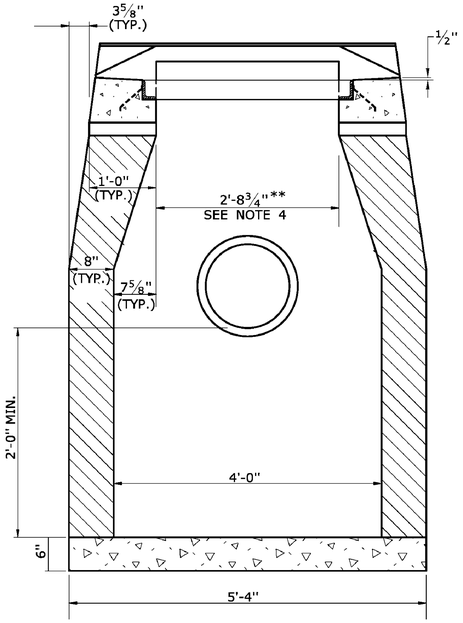
PROJECT NO.: 42128.00
DRAWING NO.: MDS-06
SHEET NO.: 10 OF 23

May 10, 2019



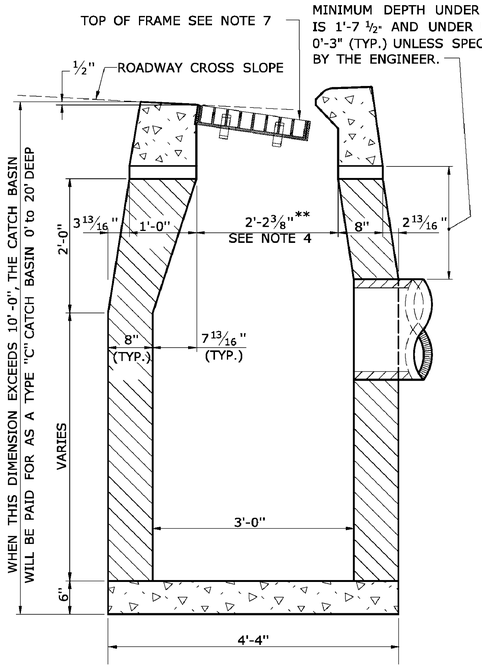
SECTION B

TYPE "C-L" CATCH BASIN



SECTION A

TYPE "C" & "C-L" CATCH BASIN (TYPE "C" TOP SHOWN)

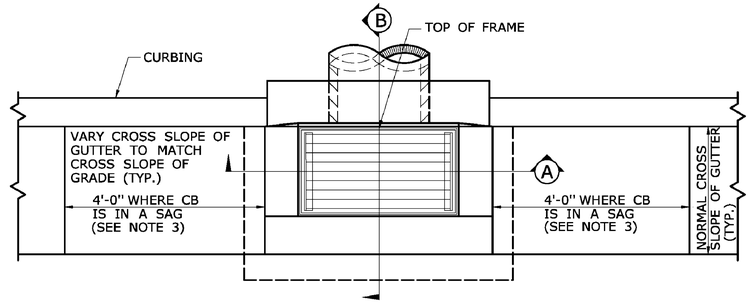


SECTION B

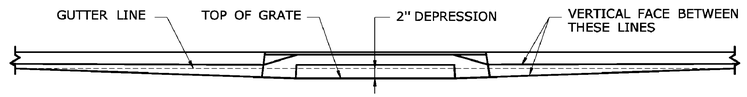
TYPE "C" CATCH BASIN

GENERAL NOTES:

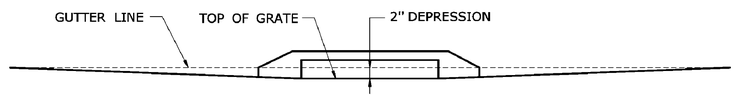
1. FOR CATCH BASIN TOPS, SEE DRAWING NO. MDS-15.
2. ALL FACES OF STRUCTURES IN CONTACT WITH CONCRETE PAVEMENT SHALL BE COVERED WITH A LAYER OF TAR PAPER OR APPROVED EQUAL.
3. USE 6'-0" ON UPGRADE SIDE (SEE PLAN VIEW) OF CONTINUOUS GRADE AND 1'-0" ON DOWNGRADE SIDE OF CONTINUOUS GRADE OR AS DIRECTED BY THE ENGINEER.
4. IF MASONRY UNITS ARE REQUIRED, THE BASIN SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE DIMENSIONS SHOWN. CORBELLING SHALL BE PERMITTED TO A MAXIMUM OF 3". NO PROJECTION SHALL EXTEND INSIDE THE LIMITS FOR THE CATCH BASIN OPENINGS SHOWN IN THE SECTION VIEWS **.
5. WALL THICKNESS OF ALL CATCH BASINS OVER 10' DEEP SHALL BE INCREASED TO 12" THICK. INSIDE DIMENSION SHALL REMAIN THE SAME. 12" THICKNESS SHALL START AFTER THE FIRST 10'.
6. SPACERS CAN BE EITHER CONCRETE MASONRY UNIT OR PRECAST WITH THE REQUIRED REINFORCING (RECOMMENDED BY THE MANUFACTURER) AS NEEDED TO PROVIDE THE PROPER GRADE SHOWN ON THE PLANS.
7. TOP OF FRAME ELEVATION SHALL BE MEASURED IN THE CENTER OF GRATE AT GUTTER LINE.



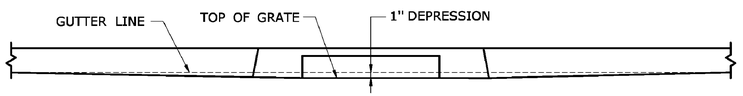
PLAN



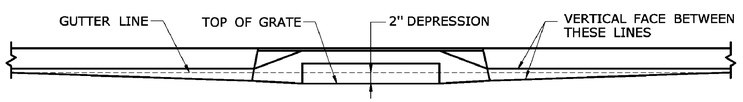
CATCH BASINS IN A LINE WITH 4" CONCRETE PARK CURBING OR 4" BITUMINOUS CONCRETE PARK CURBING



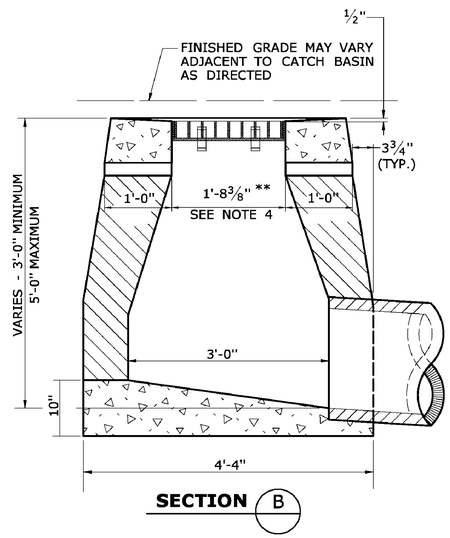
CATCH BASINS WHERE NO CURBING OF ANY TYPE EXISTS OR IS PROPOSED



CATCH BASINS IN A LINE WITH 6" CONCRETE CURBING OR 6" STONE CURBING

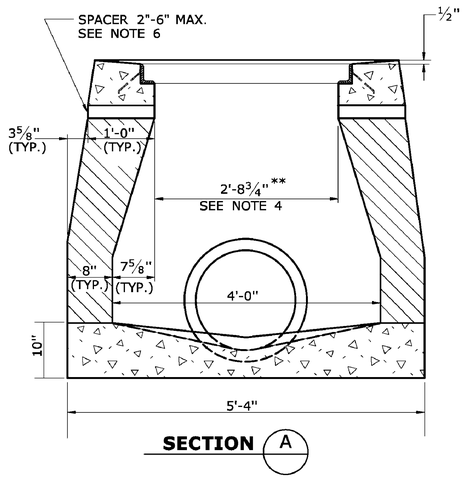


CATCH BASINS IN A LINE WITH 6" BITUMINOUS CONCRETE LIP CURBING (MACHINE FORMED)



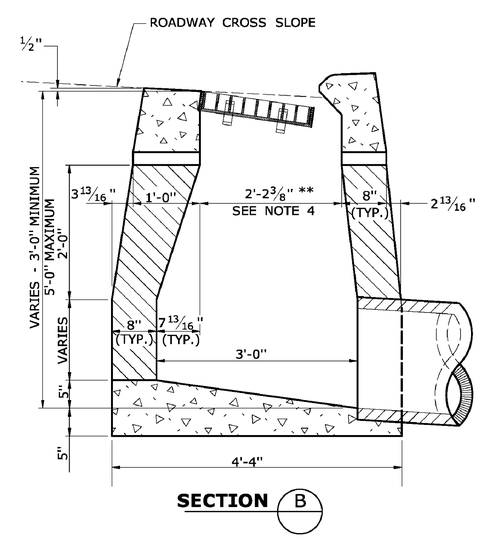
SECTION B

TYPE "C-L" DROP INLET



SECTION A

TYPE "C" & "C-L" DROP INLET (TYPE "C-L" TOP SHOWN)



SECTION B

TYPE "C" DROP INLET

DETAILS OF DEPRESSED GUTTER STRIP FOR TYPE "C" CATCH BASIN

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

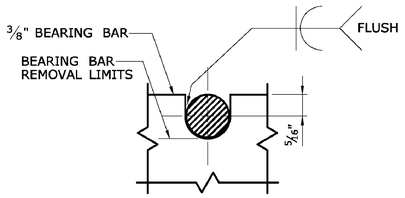
DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00

DRAWING NO.: MDS-07

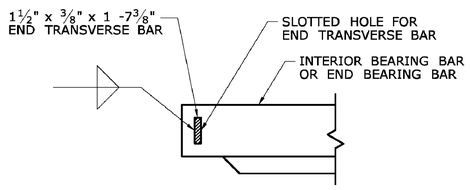
SHEET NO.: 11 OF 23

Apr 10, 2019

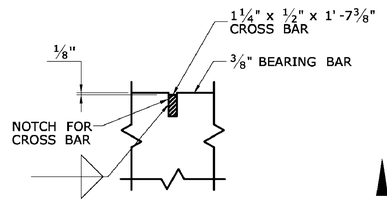


NOTE:
5/8" DIA. ROUND BAR SHALL CONTACT BEARING BAR AT BOTTOM AND BE FLUSH AT TOP.

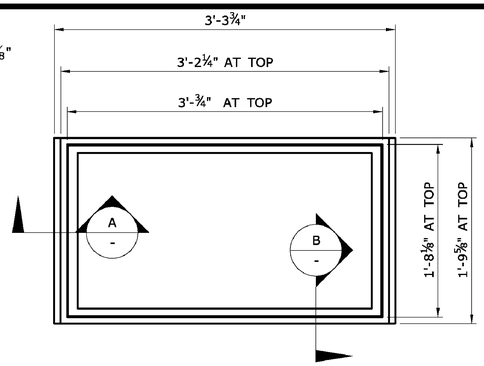
ROUND BAR ATTACHMENT
CATCH BASIN GRATE TYPE A



END TRANSVERSE BAR ATTACHMENT
CATCH BASIN GRATE TYPE A AND B



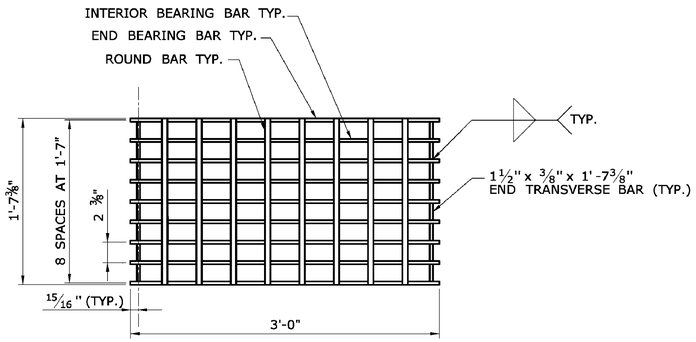
CROSS BAR ATTACHMENT
CATCH BASIN GRATE TYPE B



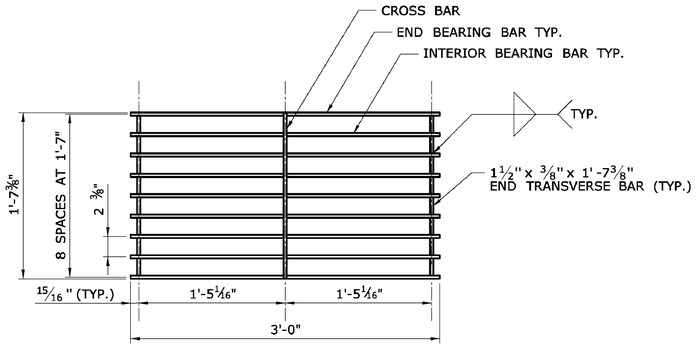
PLAN

GENERAL NOTES:

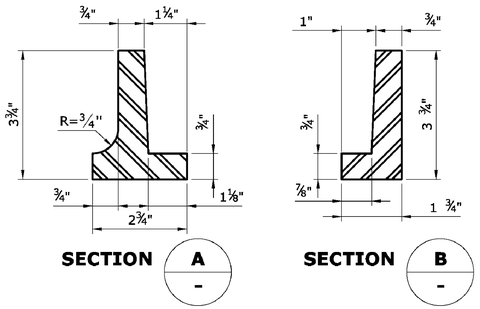
1. STEEL OR CAST IRON SHALL BE USED FOR FRAMES. STEEL SHALL BE USED FOR TYPE "A" AND "B" GRATES.
2. TYPE "A" GRATES SHALL BE USED ON ALL ROADWAYS WHERE BICYCLE TRAFFIC IS ALLOWED OR ON HEAVY DUTY LOCK DOWN TOPS AS DIRECTED BY THE ENGINEER.
3. TYPE "B" GRATES SHALL BE USED ON ALL LIMITED ACCESS HIGHWAYS, RAMPS AND WHERE BICYCLE TRAFFIC IS NOT ALLOWED OR AS DIRECTED BY THE ENGINEER.
4. DO NOT GALVANIZE CAST IRON FRAMES.
5. DIMENSIONAL TOLERANCES SHALL BE ± 1/16 INCH.
6. ALL STEEL BARS SHALL BE WELDED AT ALL INTERSECTIONS.



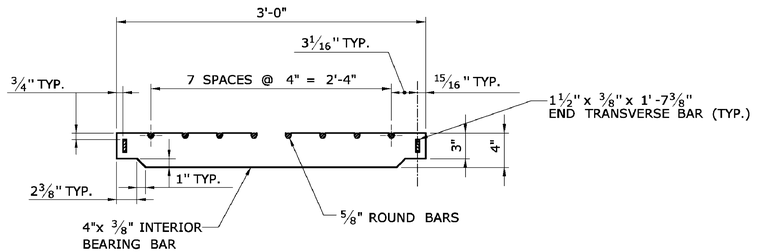
PLAN



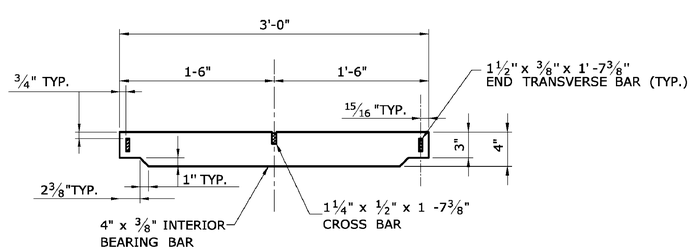
PLAN



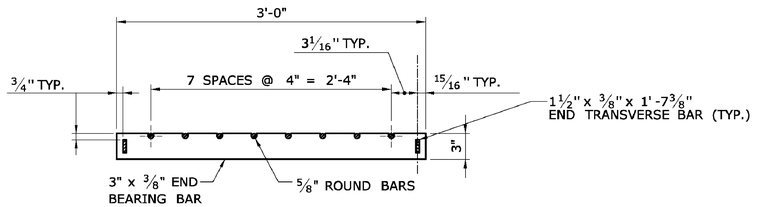
CAST IRON FRAME ALTERNATE



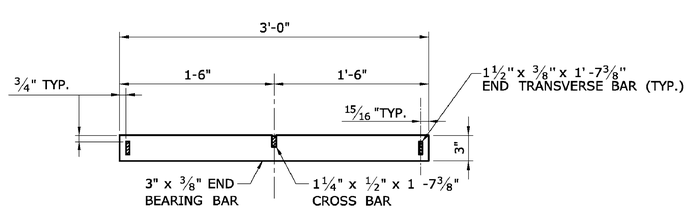
ELEVATION- INTERIOR BEARING BAR



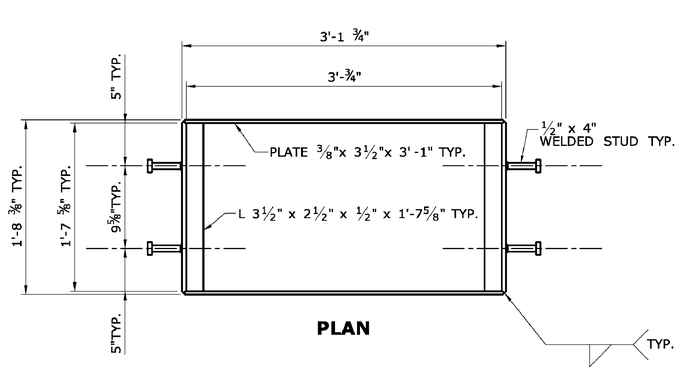
ELEVATION- INTERIOR BEARING BAR



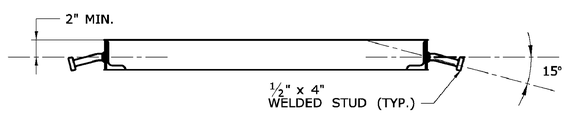
ELEVATION- END BEARING BAR
CATCH BASIN GRATE TYPE A



ELEVATION- END BEARING BAR
CATCH BASIN GRATE TYPE B



PLAN



WELDED STUD ANCHOR DETAILS
STEEL FRAME

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

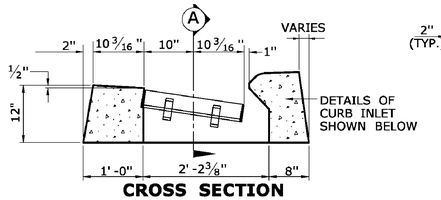
CADD FILENAME: MDS-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

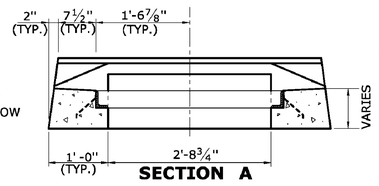
DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00
DRAWING NO.: MDS-08
SHEET NO.: 12 OF 23

Apr 10, 2019

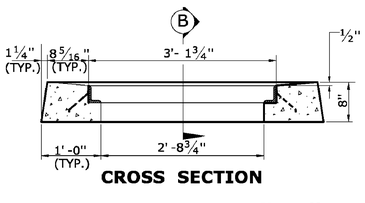


CROSS SECTION

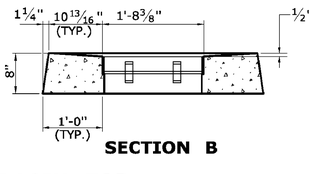


SECTION A

TYPE "C" CATCH BASIN TOP



CROSS SECTION

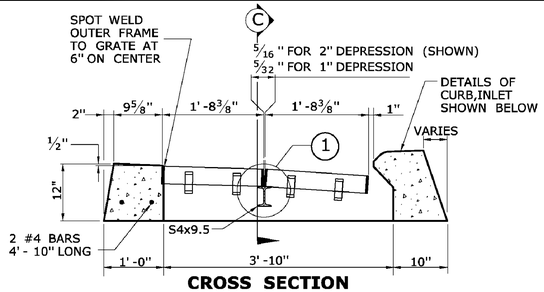


SECTION B

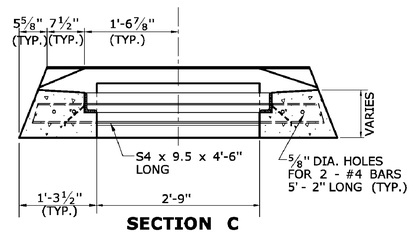
TYPE "C-L" CATCH BASIN TOP

GENERAL NOTES:

1. FOR DETAILS OF FRAMES AND GRATES, SEE DRAWING NO. MDS-13.
2. ALL BARS SHALL HAVE A MINIMUM 2" COVER.

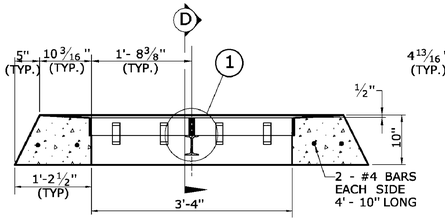


CROSS SECTION



SECTION C

TYPE "C" CATCH BASIN DOUBLE GRATE - TYPE I TOP



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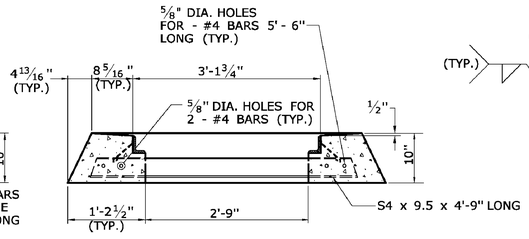
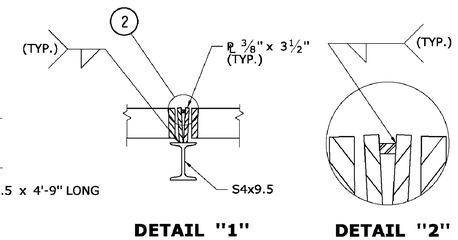


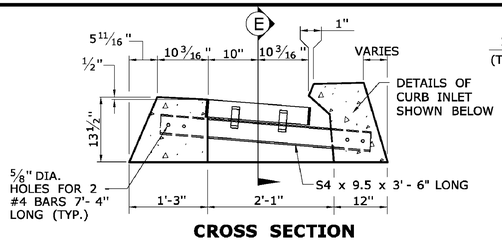
SECTION D



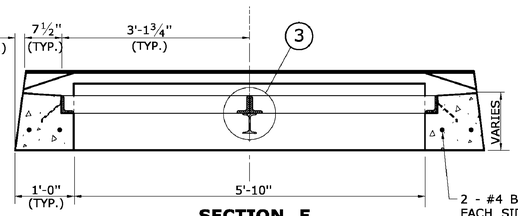
DETAIL "1"

DETAIL "2"

TYPE "C-L" CATCH BASIN DOUBLE GRATE - TYPE I TOP

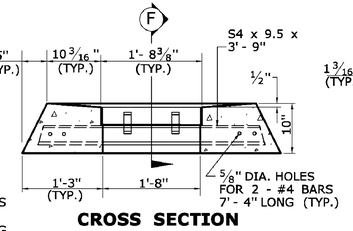


CROSS SECTION

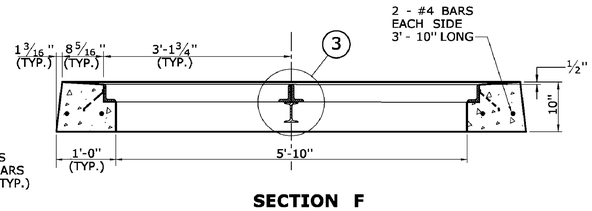


SECTION E

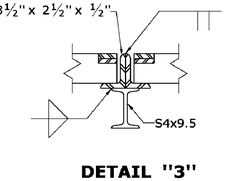
TYPE "C" CATCH BASIN DOUBLE GRATE - TYPE II TOP



CROSS SECTION

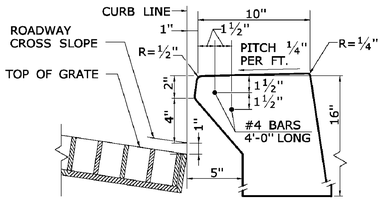


SECTION F

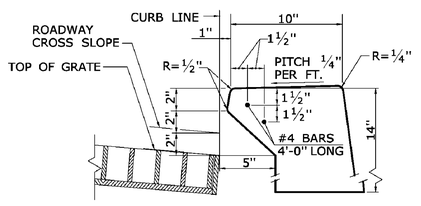


DETAIL "3"

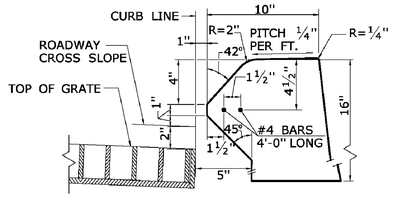
TYPE "C-L" CATCH BASIN DOUBLE GRATE - TYPE II TOP



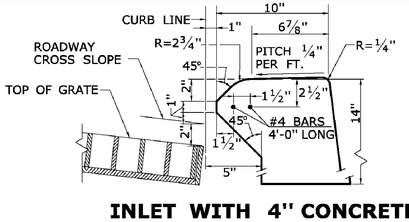
INLET WITH 6" CONCRETE OR STONE CURBING FOR TYPE "C" CB



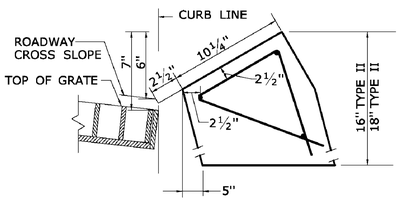
INLET WITH NO CURBING (PLAIN TYPE) FOR TYPE "C" CB



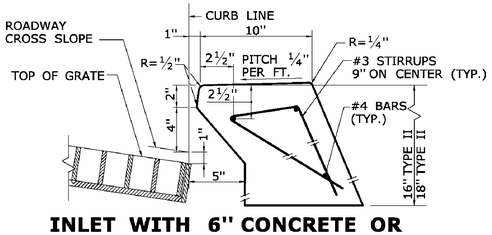
INLET WITH 6" BITUMINOUS CONCRETE LIP CURBING FOR TYPE "C" CB



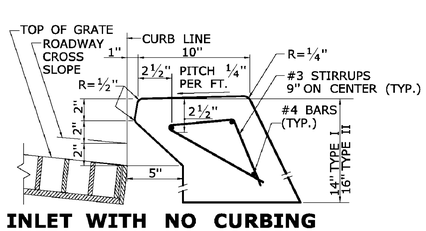
INLET WITH 4" CONCRETE PARK CURBING FOR TYPE "C" CB



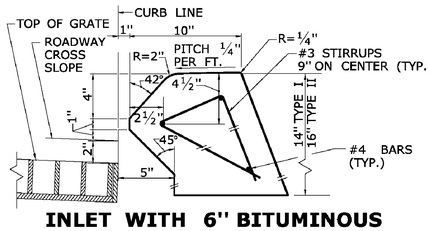
INLET WITH GRANITE SLOPE CURB FOR TYPE "C" CB



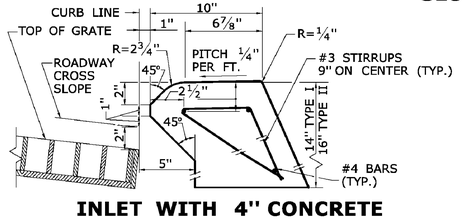
INLET WITH 6" CONCRETE OR STONE CURBING FOR TYPE "C" CB DOUBLE GRATE TYPE I & II



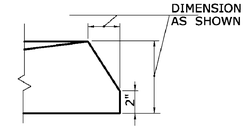
INLET WITH NO CURBING (PLAIN TYPE) FOR TYPE "C" CB DOUBLE GRATE TYPE I & II



INLET WITH 6" BITUMINOUS CONCRETE LIP CURBING FOR TYPE "C" CB DOUBLE GRATE TYPE I & II



INLET WITH 4" CONCRETE PARK CURBING FOR TYPE "C" CB DOUBLE GRATE TYPE I & II



ALTERNATE CONSTRUCTION OF TYPE II TOP

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

DESIGNER: EAN
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE: APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: MDS-4212800.DWG

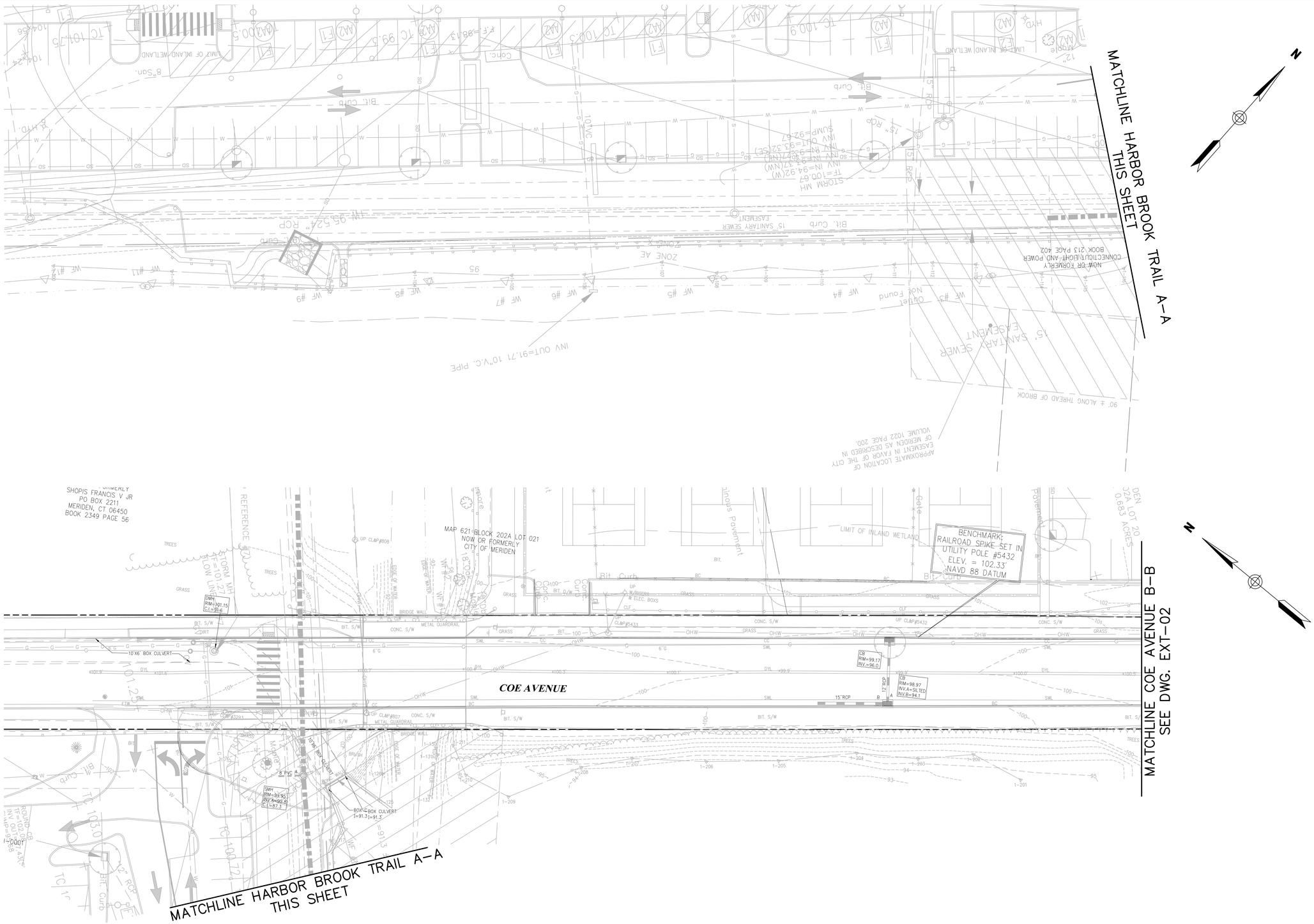
TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: MISCELLANEOUS DETAILS

PROJECT NO.: 42128.00
DRAWING NO.: MDS-09
SHEET NO.: 13 OF 23

Apr 10, 2019

\\vhb\gbl\proj\Wethersfield\42128.00\cad\te\planset\EXT-Coe-4212800.dwg



REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

20 0 20
SCALE IN FEET

DESIGNER: BM
DRAFTER: BM
CHECKED BY: JD
APPROVED BY: ----

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

CITY OF MERIDIAN INCORPORATED MDCCCLVII

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

CADD FILENAME: EXT-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
EXISTING CONDITIONS
COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: EXT-01
SHEET NO.: 14 OF 23

Apr 10, 2019

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REV.	DATE	DESCRIPTION / REVISIONS	SHEET. NO.

20 0 20
SCALE IN FEET

DESIGNER: BM
DRAFTER: BM
CHECKED BY: JD
APPROVED BY: ----

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

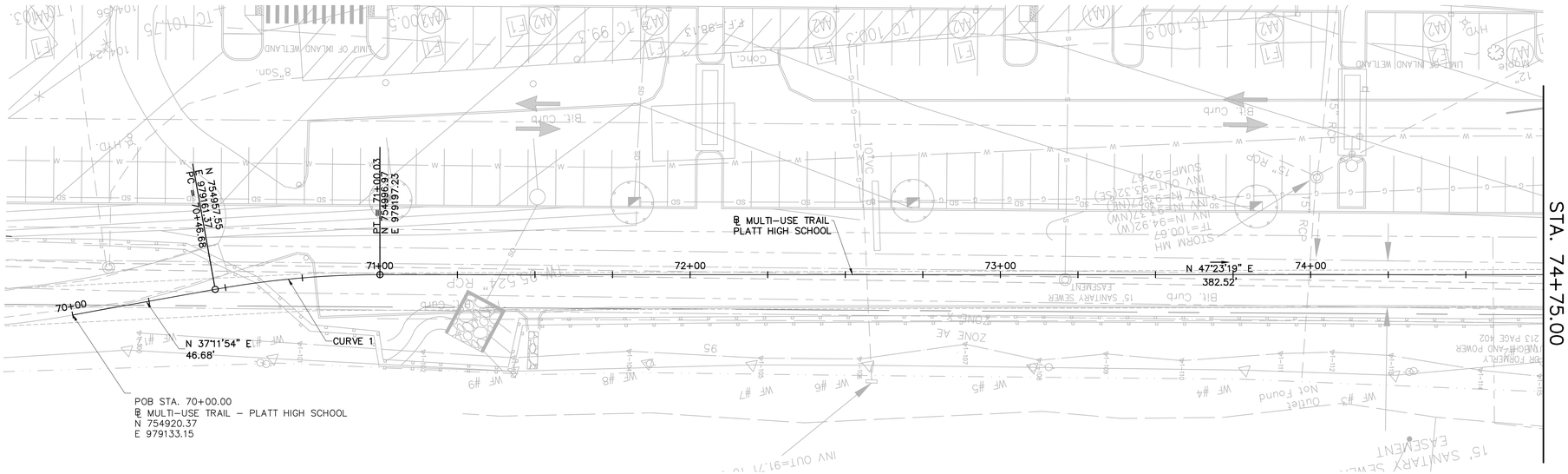
CADD FILENAME: EXT-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
EXISTING CONDITIONS
COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: EXT-02
SHEET NO.: 15 OF 23

Apr 10, 2019



BASELINE CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	PI: NORTHING	PI: EASTING
CURVE 1	300.00	53.36'	26.75	010° 11' 26"	754978.86	979177.54
CURVE 2	80.00	29.18'	14.76	020° 54' 03"	755265.93	979489.61
CURVE 3	80.00	34.23'	17.38	024° 30' 47"	755294.69	979503.94

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

20 0 20
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

CADD FILENAME: BLP-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
BASELINE LAYOUT PLAN
COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: BLP-01
SHEET NO.: 16 OF 23

Apr 10, 2019

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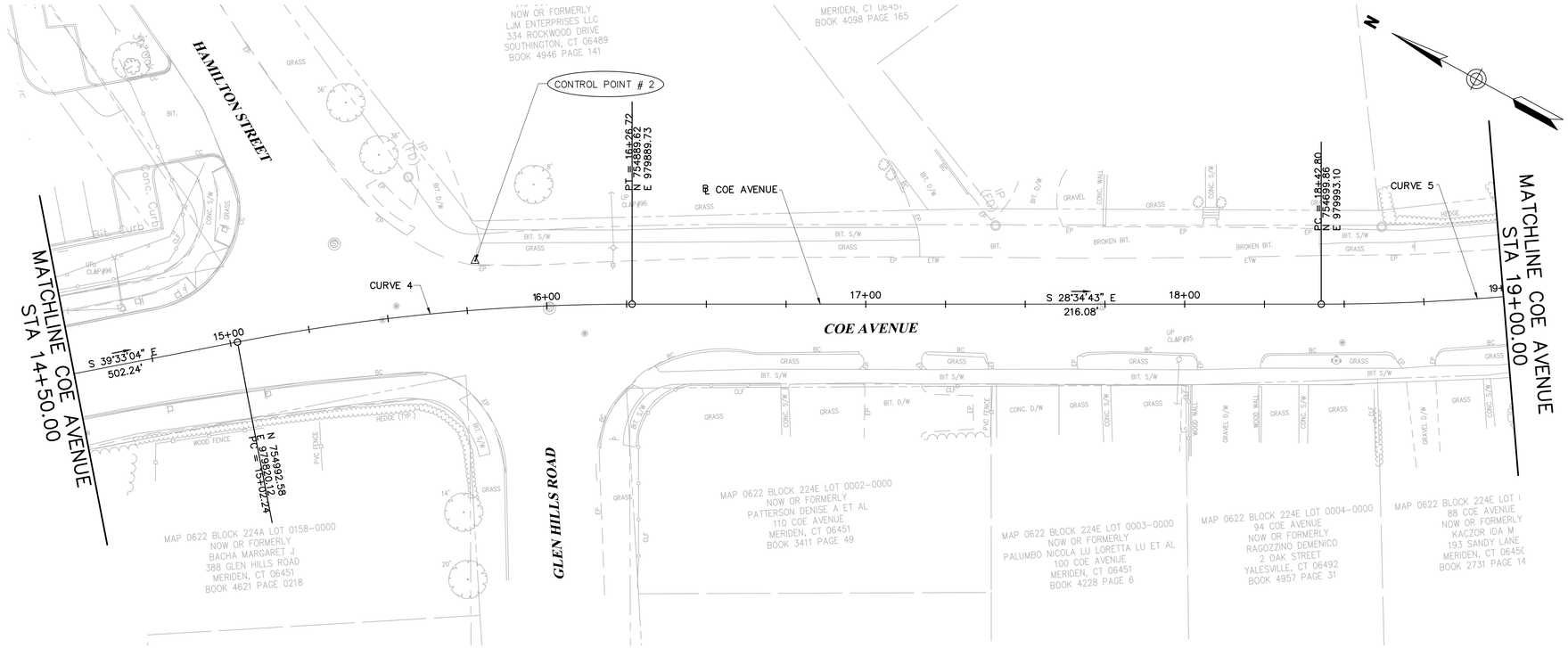
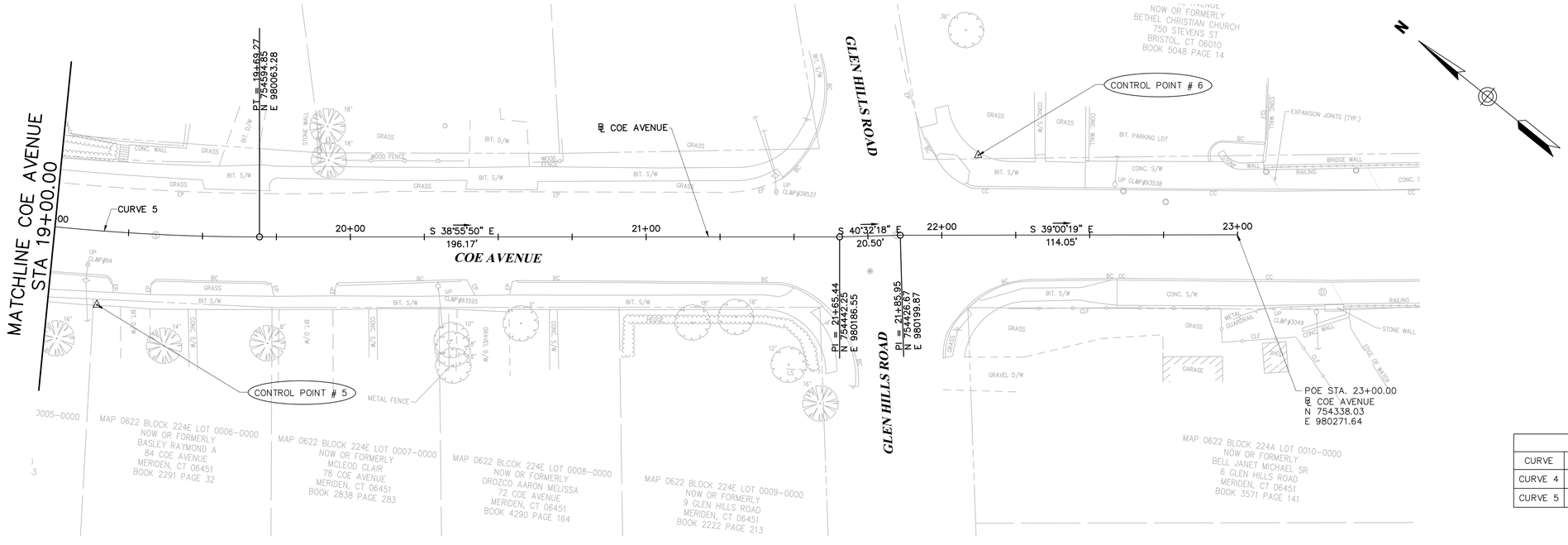




BASELINE CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	PI: NORTHING	PI: EASTING
CURVE 4	650.00	124.48'	62.43	010° 58' 21"	754944.45	979859.87
CURVE 5	700.00	126.47'	63.41	010° 21' 07"	754644.18	980023.43

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

20 0 20
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

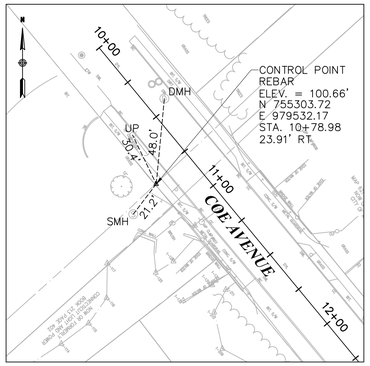
CADD FILENAME: BLP-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
BASELINE LAYOUT PLAN
COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: BLP-02
SHEET NO.: 17 OF 23

Apr 10, 2019



CONTROL POINT # 1
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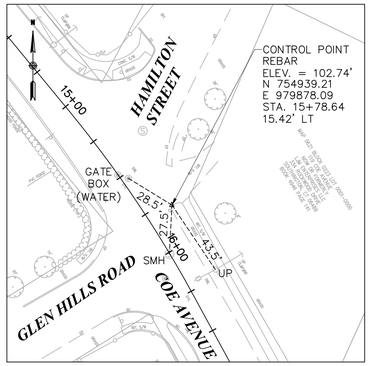

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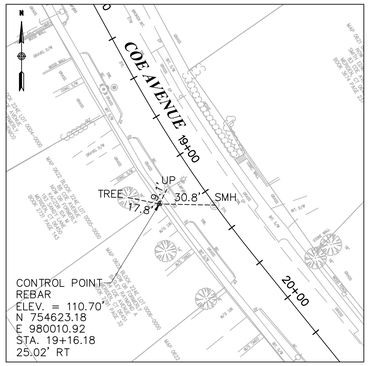

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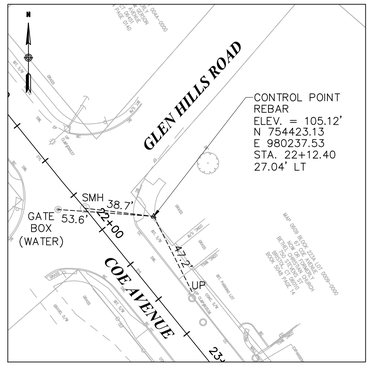


CONTROL POINT # 6
N.T.S.

REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

40 0 40
SCALE IN FEET

DESIGNER: JE
DRAFTER: EAN
CHECKED BY: BAA
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

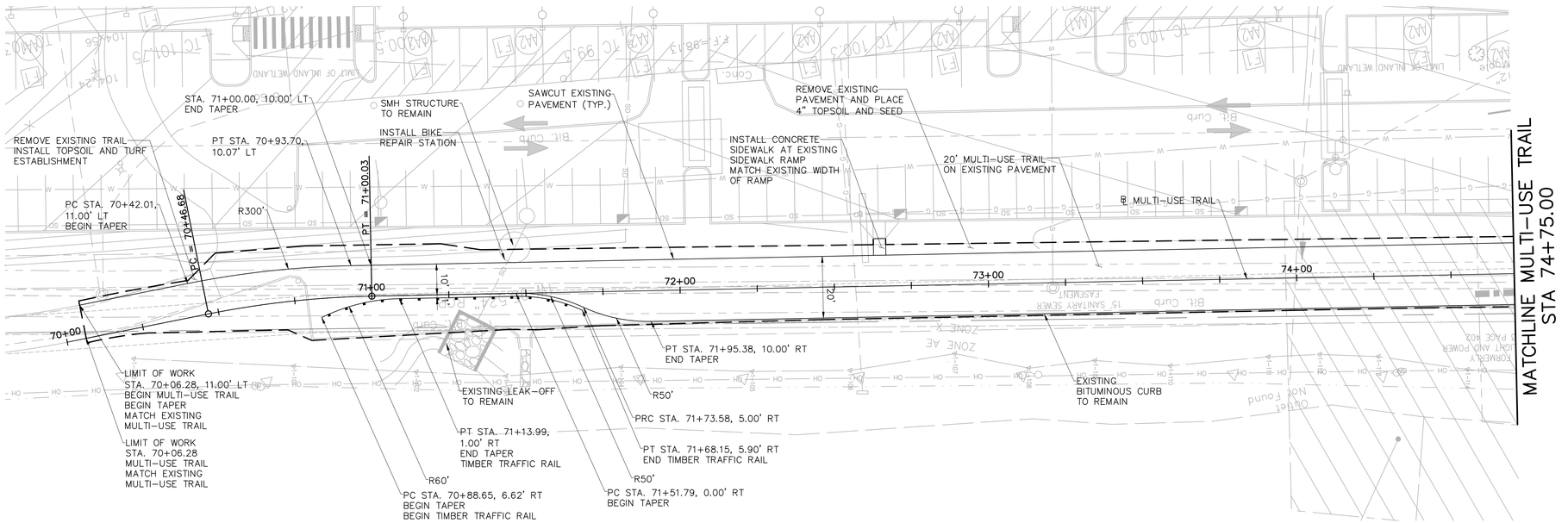
CADD FILENAME: CTR-4212800.DWG

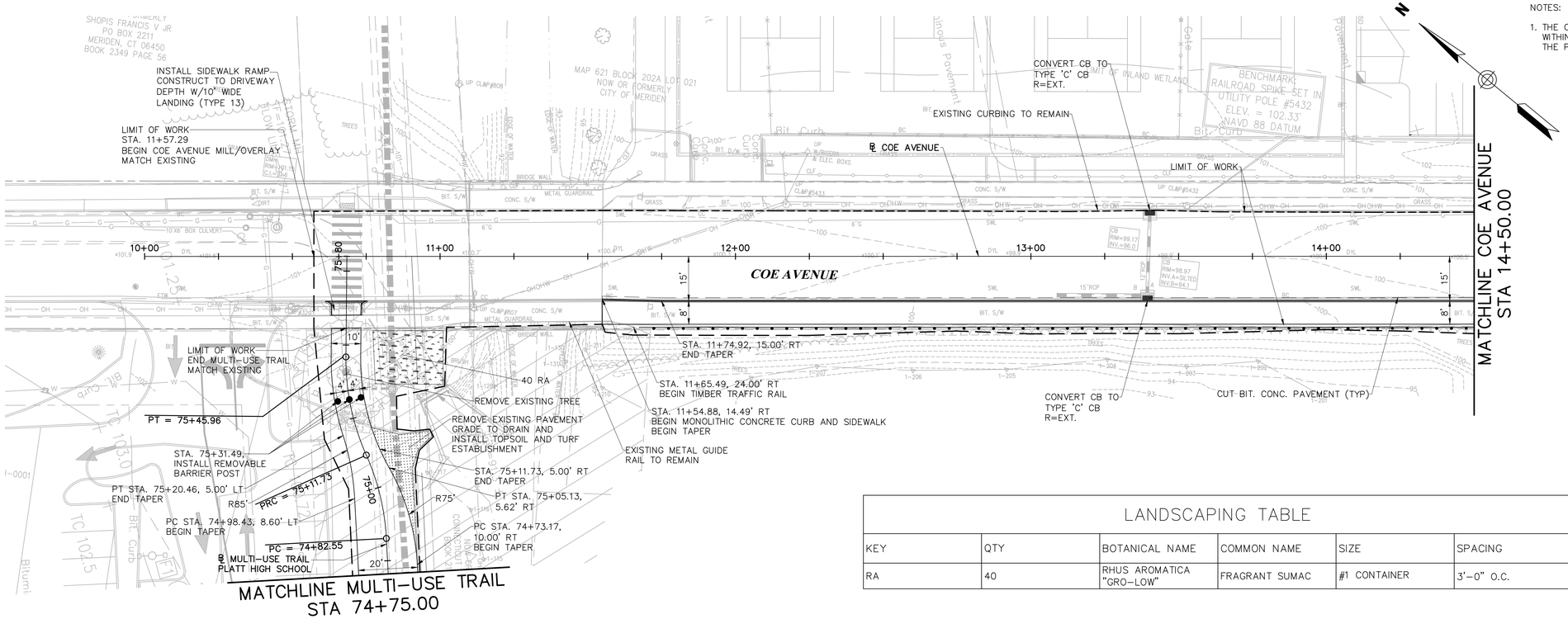
TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
CONTROL POINT
PLAN

PROJECT NO.: 42128.00
DRAWING NO.: CTR-01
SHEET NO.: 18 OF 23

Apr 10, 2019





LEGEND

- REPLACE EX RES BIT CONC DWY
- CONCRETE DRIVEWAY RAMP
- 4" TOPSOIL AND TURF ESTABLISHMENT
- INSTALL PLANTING AREA

NOTES:

1. THE CONTRACTOR SHALL RESET ALL UTILITY STRUCTURES WITHIN THE LIMIT OF WORK UNLESS INDICATED OTHERWISE ON THE PLANS.

LANDSCAPING TABLE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
RA	40	RHUS AROMATICA "GRO-LOW"	FRAGRANT SUMAC	#1 CONTAINER	3'-0" O.C.

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

SCALE IN FEET: 20 0 20

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: PLN-COE-4212800.DWG

TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: CONSTRUCTION PLAN COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: PLN-01
SHEET NO.: 19 OF 23

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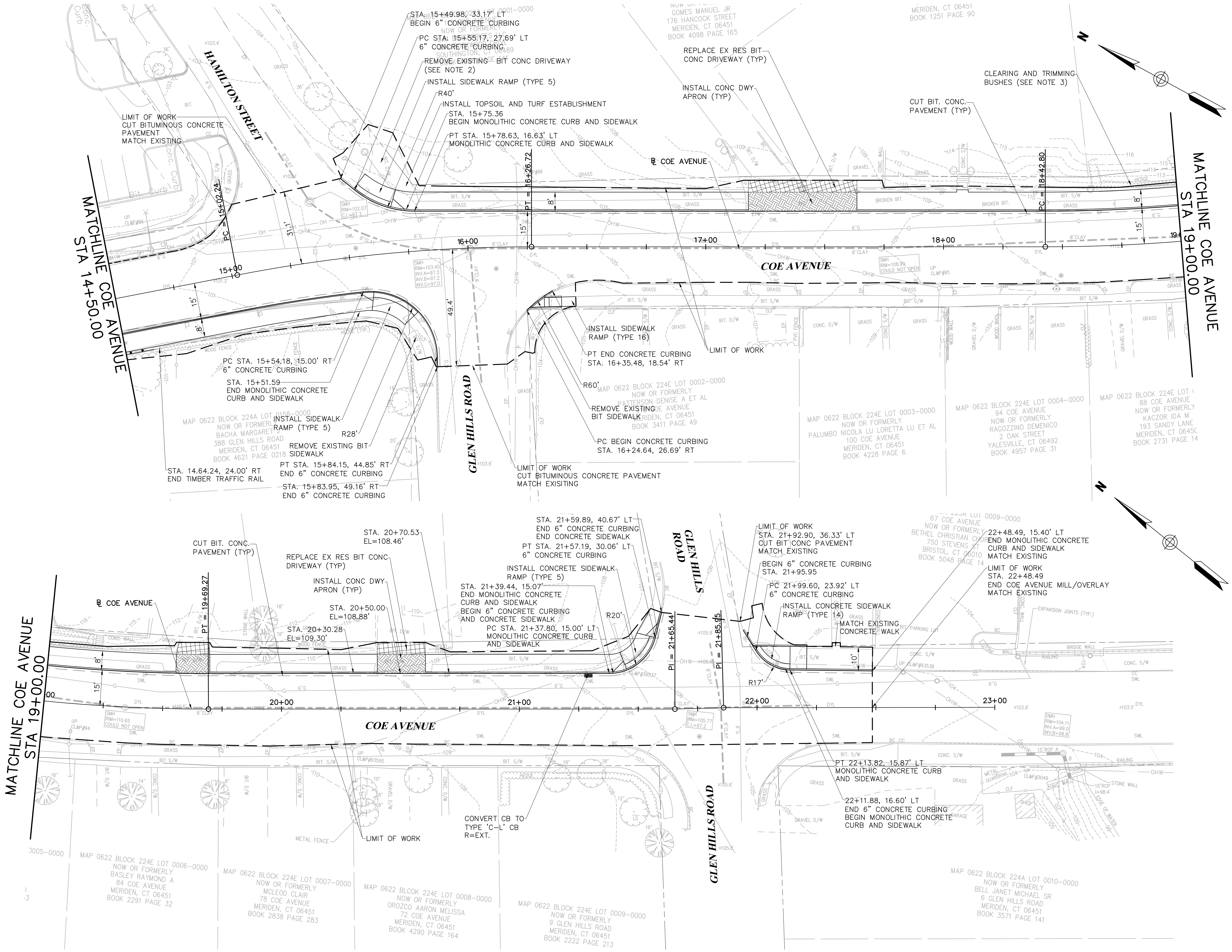


LEGEND

- REPLACE EX RES BIT CONC DWY
- CONCRETE DRIVEWAY RAMP
- 4" TOPSOIL AND TURF ESTABLISHMENT
- INSTALL PLANTING AREA

NOTES:

1. THE CONTRACTOR SHALL RESET ALL UTILITY STRUCTURES WITHIN THE LIMIT OF WORK UNLESS INDICATED OTHERWISE ON THE PLANS.
2. THE CONTRACTOR SHALL WIDEN THE DRIVEWAY TO #119 COE AVENUE ON HANCOCK STREET (NOT SHOWN ON PLANS). MAXIMUM PAVING TO BE 24 FEET WIDE AND 40 FEET DEEP. DRIVEWAY TO BE DONE IN ACCORDANCE WITH CITY OF MERIDEN DRIVEWAY REQUIREMENTS.
3. 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 TREES REQUIRING TRIMMING SHALL BE POSTED FOR A PERIOD OF TEN (10) CALENDAR DAYS AND A NOTICE IS TO BE LEFT AT EACH AFFECTED PROPERTY. THE COST OF CLEARING AND TRIMMING SHALL BE COVERED UNDER THE ITEM "CLEARING AND GRUBBING".

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

20 0 20
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

CADD FILENAME: PLN-COE-4212800.DWG

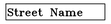
TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: CONSTRUCTION PLAN COE AVENUE

PROJECT NO.: 42128.00
DRAWING NO.: PLN-02
SHEET NO.: 20 OF 23

Apr 10, 2019

SIGN LEGEND

SIGN	MUTCD DESIGNATION	CTDOT DESIGNATION	SIZE	SHEETING TYPE
	R1-1	31-0532	18" X 18"	SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)
	R1-1	31-0552	30" X 30"	SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)
	W11-1	41-4840	30" X 30"	SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)
	W16-1P	N/A	18" x 24"	SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)
	D3-1	N/A	9" X VARIES	SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

NOTES:

1. TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION AND THE MAY 2015 CONNECTICUT STATE DEPARTMENT OF TRANSPORTATION (CTDOT) CATALOG OF SIGNS.
2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC PAVEMENT MARKINGS.
3. ANY EXISTING PAVEMENT MARKINGS AND SIGNS THAT CONFLICT WITH THE PROPOSED MARKINGS AND SIGNS SHALL BE REMOVED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER.
4. THE CONTRACTOR SHALL REMOVE EXISTING SIGNS AND POSTS AT THE LOCATIONS WHERE NEW SIGNS ARE TO BE INSTALLED.
5. A NON-DESTRUCTIVE METHOD ACCEPTABLE TO THE CITY OF MERIDEN SHALL BE USED TO REMOVE EXISTING PAVEMENT MARKINGS. NO BLACKOUT PAINT SHALL BE USED.
6. ANY DAMAGE TO THE PAVEMENT SURFACE CAUSED BY PAVEMENT MARKING REMOVAL SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE BY METHODS ACCEPTABLE TO THE TOWN.
7. ALL EXISTING PAVEMENT MARKINGS DISTURBED BY THE ROADWAY CONSTRUCTION BEYOND THE CONSTRUCTION LIMITS SHALL BE REPLACED IN KIND.
8. REFER TO MISCELLANEOUS DETAILS DRAWINGS FOR ADDITIONAL DETAILS.
9. ALL SIGNS TO BE NEW UNLESS OTHERWISE NOTED ON PLAN. ALL SIGNS THAT ARE TO BE RELOCATED SHALL BE STORED IN A MANNER ACCEPTABLE TO THE ENGINEER AND RESET BY THE CONTRACTOR.
10. CONTRACTOR SHALL MAINTAIN SIGNS DURING CONSTRUCTION ACTIVITIES.

REV.	DATE	DESCRIPTION	SHEET. NO.
		REVISIONS	

DESIGNER: JE
DRAFTER: EAN
CHECKED BY: CF
APPROVED BY: SON

vhb Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

PROJECT TITLE: COE AVENUE SCHOOL ROUTE URBAN TRAIL SECTION

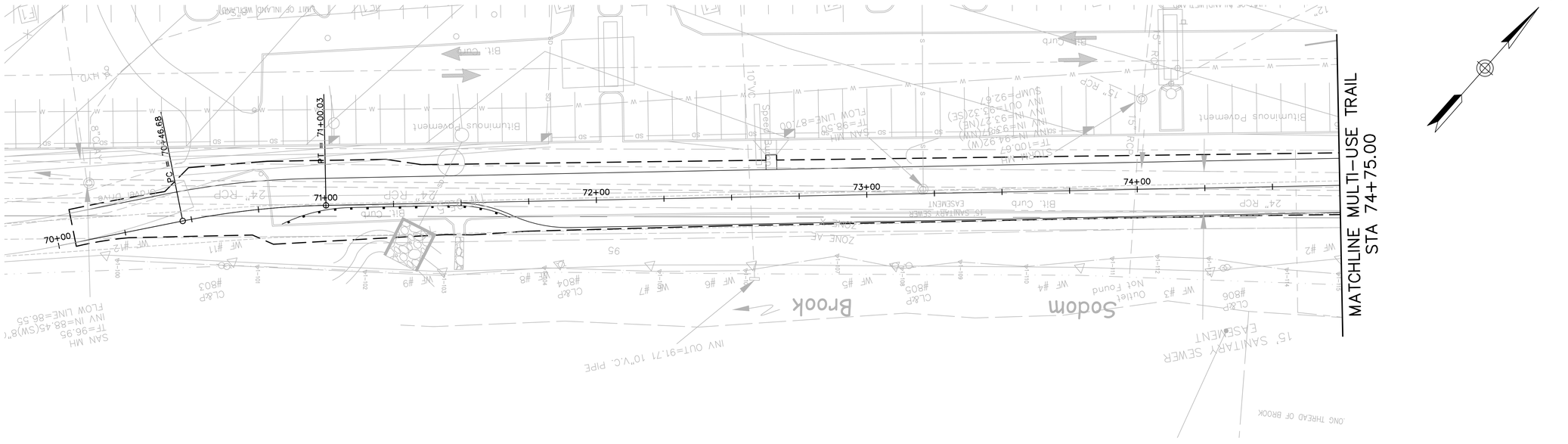
CADD FILENAME: SPM-LEGEND-4212800.DWG

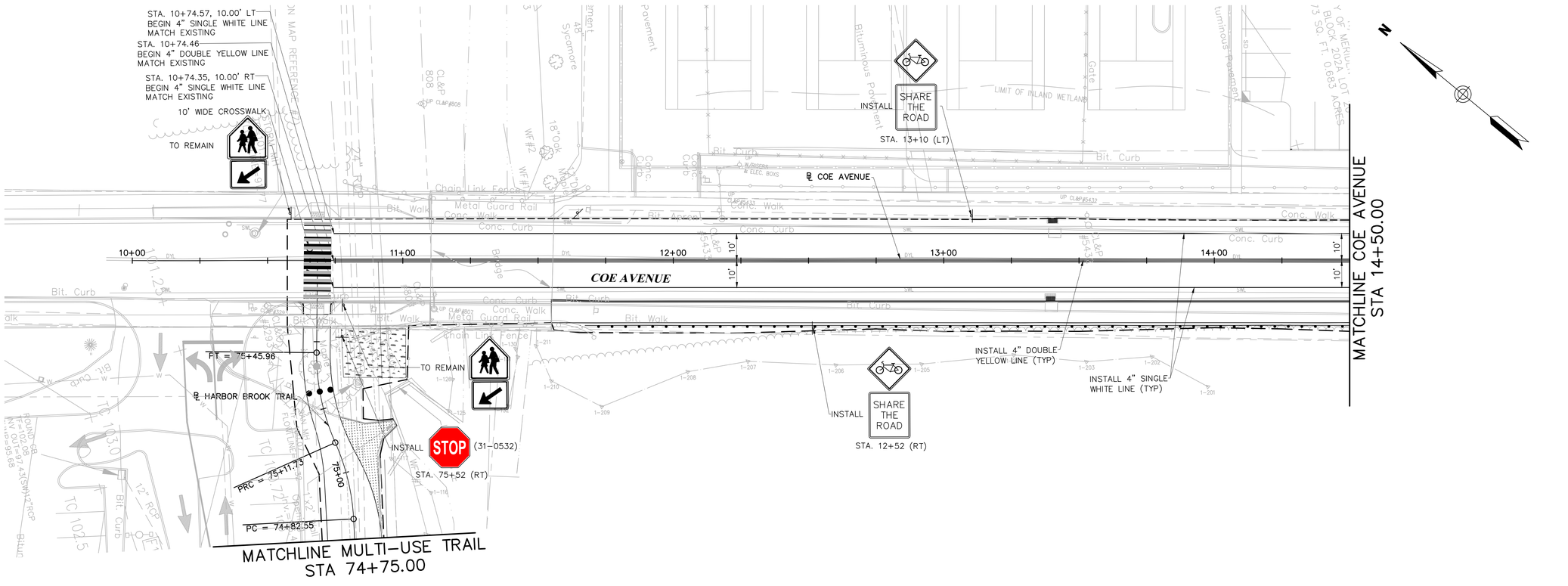
TOWN: MERIDEN, CONNECTICUT

DRAWING TITLE: SIGN AND PAVEMENT MARKING LEGEND

PROJECT NO.: 42128.00
DRAWING NO.: SPM-01
SHEET NO.: 21 OF 23

Apr 10, 2019





REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

20 0 20
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb
Engineers Scientists Planners Designers

NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

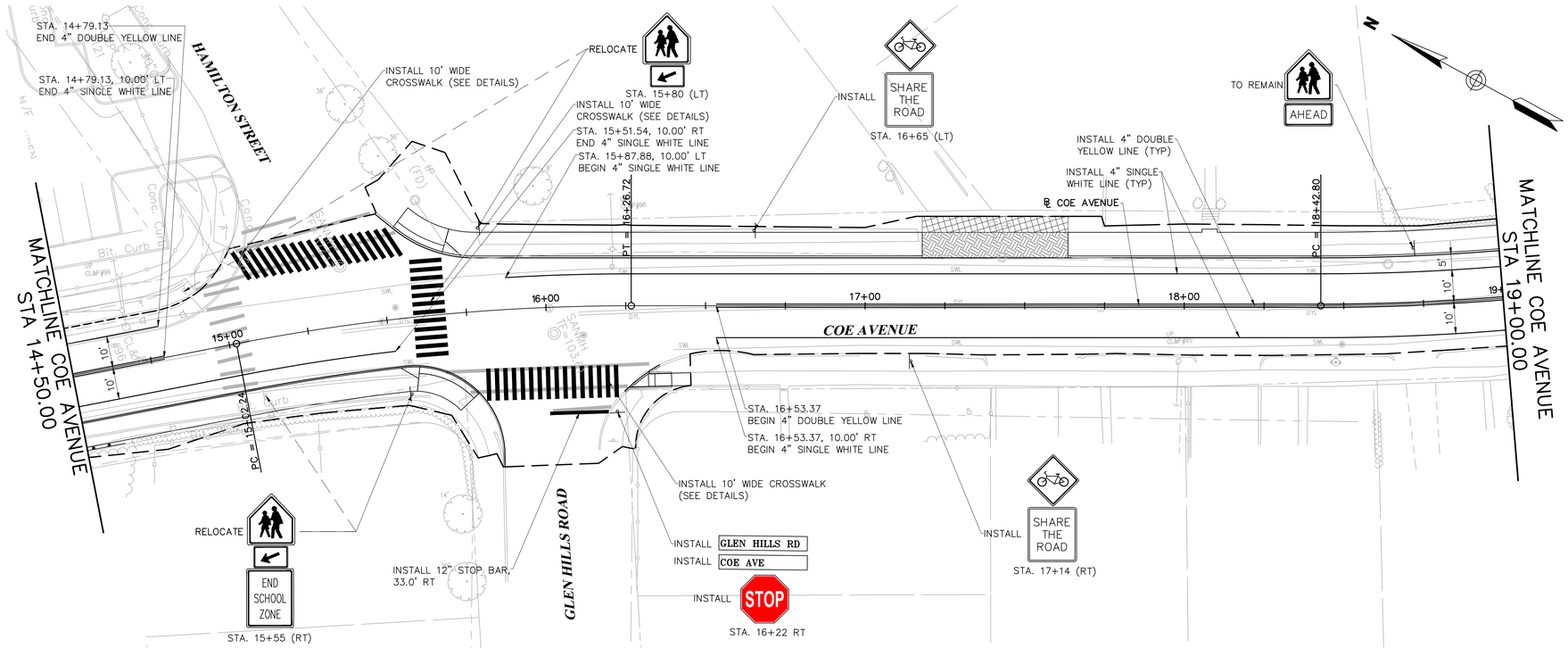
PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

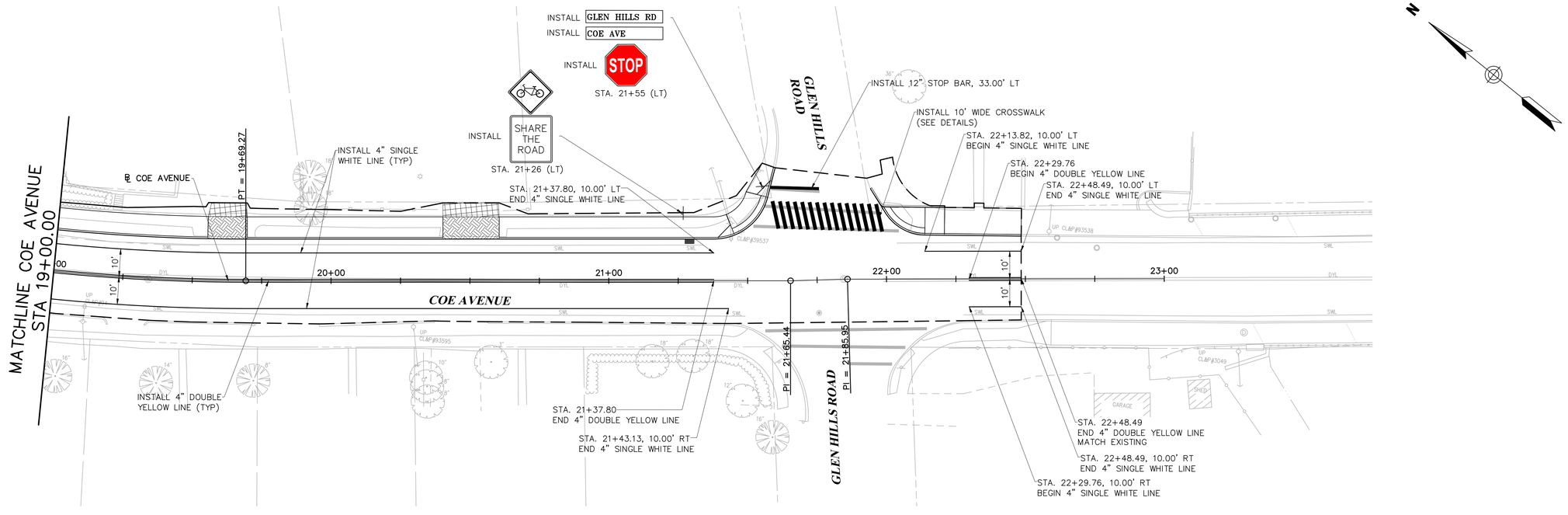
CADD FILENAME: SPM-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
SIGN & PAVEMENT MARKING PLANS

PROJECT NO.: 42128.00
DRAWING NO.: SPM-02
SHEET NO.: 22 OF 23





REV.	DATE	DESCRIPTION REVISIONS	SHEET. NO.

20 0 20
SCALE IN FEET

DESIGNER: EAN
DRAFTER: JRE
CHECKED BY: CF
APPROVED BY: SON

vhb
Engineers Scientists Planners Designers
NOT ISSUED FOR CONSTRUCTION DATE:APRIL, 2019

CITY OF MERIDEN FIDUCCLAVI

PROJECT TITLE:
COE AVENUE SCHOOL ROUTE
URBAN TRAIL SECTION

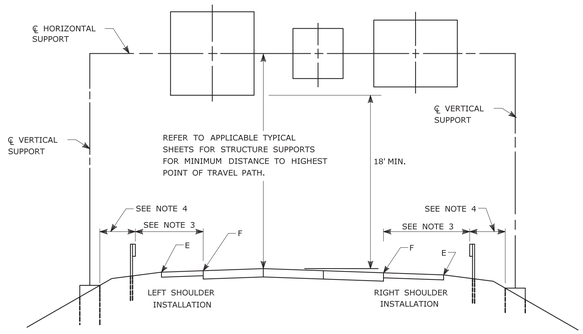
CADD FILENAME: SPM-COE-4212800.DWG

TOWN:
MERIDEN, CONNECTICUT

DRAWING TITLE:
SIGN & PAVEMENT MARKING
PLANS

PROJECT NO.: 42128.00
DRAWING NO.: SPM-03
SHEET NO.: 23 OF 23

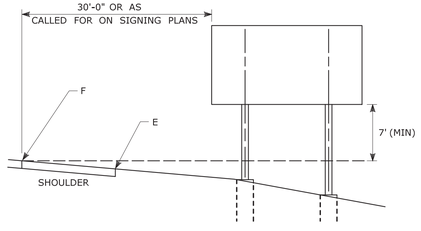
Apr 10, 2019



TYPICAL PLACEMENT OF OVERHEAD SIGNS ON SIGN SUPPORTS

NOTES:

1) FOR PLACEMENT OF CANTILEVER SIGN SUPPORT USE APPLICABLE PORTION OF ABOVE DETAIL.
2) BARRIER SYSTEMS MAY BE REQUIRED FOR BOTH SIDES OF SUPPORTS IN MEDIANS.
3) IMPACT PROTECTION SHALL BE PROVIDED FOR THE SIGN SUPPORTS LOCATED WITHIN CLEAR ZONE.
4) SIGN SUPPORT FOUNDATIONS SHALL BE LOCATED OUTSIDE OF BARRIER SYSTEMS DEFLECTION AREA.
5) ALL SIGNS ARE TO BE LEVEL, REGARDLESS OF CAMBER IN SUPPORT.



TYPICAL PLACEMENT OF SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS

NOTES:

1) MIN. VERTICAL CLEARANCE ABOVE SIDEWALKS SHALL BE 7'.
2) WHERE GUIDE RAIL IS USED, THE OFFSET TO THE NEAR EDGE OF SIGN FACE SHALL BE AS SHOWN ELSEWHERE IN THE CONTRACT PLANS.
3) ON INTERSECTING ROADS AT RAMP TERMINI, THE OFFSET TO THE NEAR EDGE OF OF SIGN FACE SHALL BE 6' MIN. FROM POINT "E".
4) IF 30'-0" MIN. CANNOT BE MET, PLEASE CONTACT THE ENGINEER.

FOR MAXIMUM EFFECTIVENESS, POSITION SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS AS FOLLOWS:

ON A TANGENT SECTION, POSITION THE SIGN SO THE VERTICAL AXIS IS PLUMB AND THE HORIZONTAL AXIS IS AT AN ANGLE OF 90° WITH THE TRAFFIC LANE WHICH THE SIGN SERVES. SIGNS LOCATED 30 FT OR MORE FROM THE EDGE OF THE ROAD SHALL BE TURNED APPROXIMATELY 3° TOWARD THE ROAD.

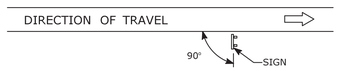


DIAGRAM "A"

ON A HORIZONTAL CURVE SECTION, POSITION THE SIGN SO THE VERTICAL AXIS IS PLUMB AND THE HORIZONTAL AXIS IS AT AN ANGLE OF 90° WITH A STRAIGHT LINE BETWEEN THE SIGN AND THE POINT AT WHICH THE SIGN SHALL BE READ.

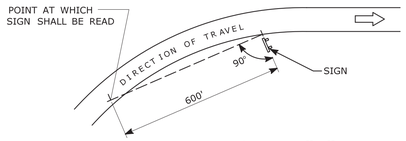
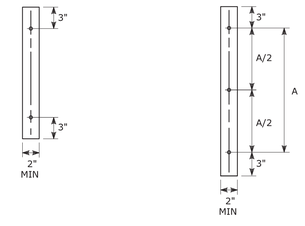


DIAGRAM "B"

SIGN ORIENTATION DETAILS FOR SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS

RETROREFLECTIVE STRIPS 48" LONG OR LESS:

RETROREFLECTIVE STRIPS OVER 48" LONG:

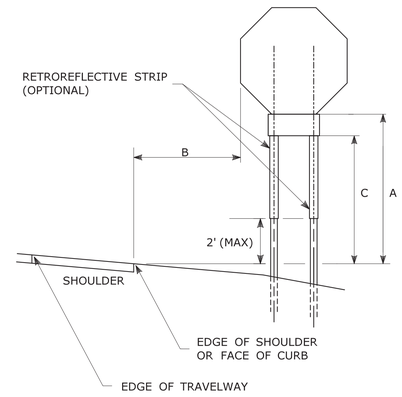


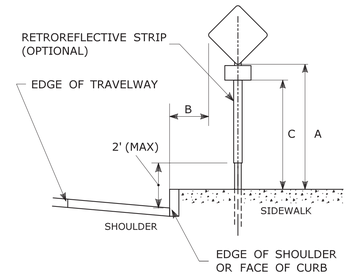
RETROREFLECTIVE STRIP DETAIL

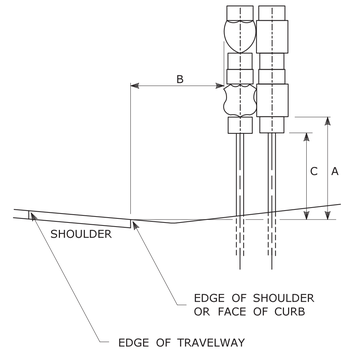
NOTES:

RETROREFLECTIVE STRIPS WHICH ARE 48 IN LONG OR LESS SHALL BE ATTACHED USING 2 BOLTS AND RETROREFLECTIVE STRIPS OVER 48 IN LONG SHALL BE ATTACHED USING 3 BOLTS AS SHOWN ON THE DETAILS ABOVE.
REFER TO STANDARD SHEET No. TR-1208_02 "METAL SIGN POSTS AND SIGN MOUNTING DETAILS" FOR MOUNTING DETAILS.

RETROREFLECTIVE STRIP COLOR SHALL MATCH THE BACKGROUND COLOR OF THE SIGN, EXCEPT THAT THE COLOR OF THE STRIP FOR "YIELD" AND "DO NOT ENTER" SIGNS SHALL BE RED.







TYPICAL SIGN PLACEMENT DETAIL

NOTES:

ALL SIGNS AND SHIELDS ON DIRECTIONAL ASSEMBLIES SHALL ABUT VERTICALLY.

REFER TO STANDARD SHEET No. TR-1208_02 "METAL SIGN POSTS AND SIGN MOUNTING DETAILS" FOR SIGN POSTS AND SIGN MOUNTING.

IF A RETFOREFLECTIVE STRIP IS USED ON SIGN SUPPORT, IT SHALL BE PLACED FOR THE FULL LENGTH OF THE SUPPORT FROM THE BOTTOM OF THE SIGN TO WITHIN 2 FT ABOVE THE EDGE OF THE ROADWAY.

PARKING SIGNS TYPICALLY USE 45° MOUNTING BRACKET.

DIM."A" MIN SIGN HEIGHT	DIM."B" MIN LATERAL OFFSET ①	DIM."C" MIN PLAQUE HEIGHT ①	ASSEMBLY LOCATION
7' ②	6' 12' ③	5'	SIGNS ON FREEWAYS AND EXPRESSWAYS EXCEPT CHEVRON ALIGNMENT SIGNS, ONE-DIRECTION LARGE ARROW SIGNS, DO NOT ENTER SIGNS, AND WRONG WAY SIGNS
5'	2'	4'	• SIGNS IN RURAL AREAS • DO NOT ENTER AND WRONG WAY SIGNS ALONG EXIT RAMPS • DO NOT ENTER AND WRONG WAY SIGNS ON LIMITED ACCESS HIGHWAYS
5'	2'	N/A	• CHEVRON ALIGNMENT SIGNS LOCATED ON FREEWAYS, EXPRESSWAYS, RAMPS, AND IN RURAL AREAS • ONE-DIRECTION LARGE ARROW SIGNS LOCATED ON FREEWAYS, EXPRESSWAYS, RAMPS, AND IN RURAL AREAS
4'	6' 12' ③	N/A	INCIDENT MANAGEMENT SIGNS AND MILE POST MARKER ASSEMBLIES LOCATED ON FREEWAYS AND EXPRESSWAYS
4'	2'	4'	CENTRAL ISLANDS OF ROUNDABOUTS
7'	2' ④	6'	BUSINESS & RESIDENTIAL AREAS WHERE PARKING OR OTHER OBSTRUCTIONS LIMIT VISIBILITY
7'	2' ④	7'	SIDEWALKS ⑤

① OR AS DIRECTED BY THE ENGINEER

② 8 FT MINIMUM HEIGHT REQUIRED IF A SUPPLEMENTAL PLAQUE IS SUBMOUNTED BELOW THE MAJOR SIGN.

③ 6 FT FROM EDGE OF SHOULDER, WHEN SHOULDER IS OVER 6 FT WIDE
12 FT FROM EDGE OF TRAVELWAY, WHEN SHOULDER IS LESS THAN 6 FT WIDE.

④ A LATERAL OFFSET OF AT LEAST 1 FT FROM THE FACE OF THE CURB MAY BE USED WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING UTILITY POLES ARE CLOSE TO THE CURB.

⑤ A CLEAR PATH OF NOT LESS THAN 4 FT SHALL BE PROVIDED IN SIDEWALK AREAS.

REV.	DATE	REVISION DESCRIPTION
3	8-2018	INCLUDED INCIDENT MANAGEMENT AND MILE MARKER SIGNS.
2	4-2017	MINOR REVISIONS.
1	2-2011	MINOR REVISIONS.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 8/10/2018

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR_1208_01_1_2018.dgn Model: TR-1208_01

SUBMITTED BY: NAME/DATE/TIME:
Mark F. Makuch, P.E.
2018.08.17
09:06:06-04'00'

APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E.
2018.08.21 07:48:06-04'00'

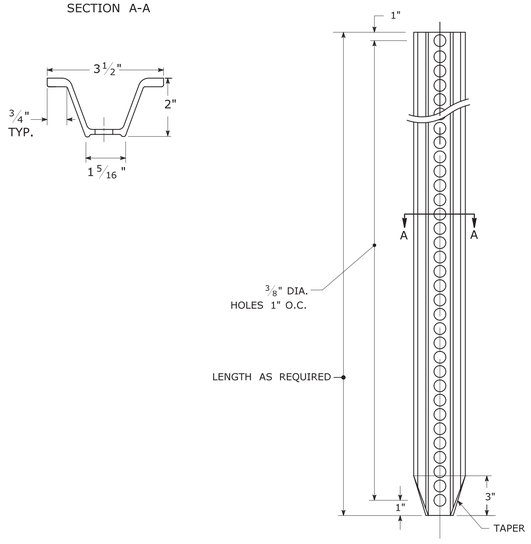
CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

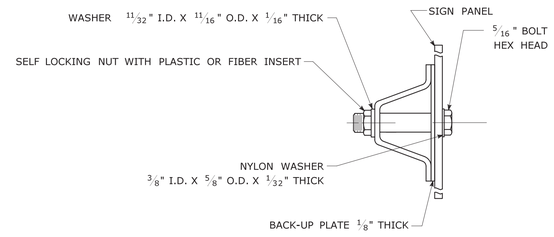
STANDARD SHEET TITLE:
SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS

STANDARD SHEET NO.:
TR-1208_01

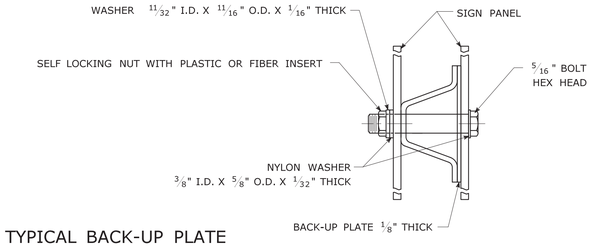
TYPICAL METAL SIGN POSTS



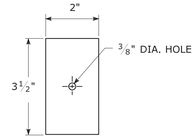
TYPICAL SIGN PANEL ATTACHMENT



TYPICAL BACK TO BACK SIGN PANEL ATTACHMENT



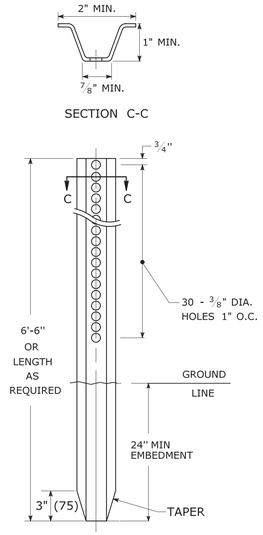
TYPICAL BACK-UP PLATE



BOLTS - STAINLESS STEEL CONFORMING TO ASTM F593, ALLOY GROUP 1 OR 2 (ALLOY TYPES 304 OR 316).
SELF LOCKING NUTS - STAINLESS STEEL CONFORMING TO ASTM F594, ALLOY GROUP 1 OR 2 (ALLOY TYPES 304 OR 316).
WASHERS - STAINLESS STEEL CONFORMING TO ASTM A240, (ALLOY TYPES 304 OR 316).

METAL DELINEATOR POST

WT./FT. = 1.12 LBS./FT. MIN.

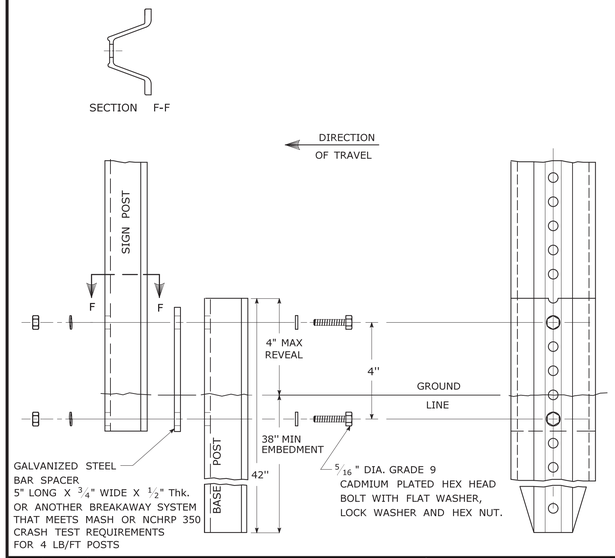


GENERAL NOTES:

1. STEEL FOR DELINEATOR POSTS SHALL BE ASTM A36 STEEL. STEEL FOR ALL OTHER POSTS SHALL CONFORM TO THE MECHANICAL REQUIREMENTS OF ASTM A 499 GRADE 80 AND TO THE CHEMICAL REQUIREMENTS OF ASTM A1 CARBON STEEL TEE RAIL HAVING NOMINAL WEIGHT (MASS) OF 91 LBS. OR GREATER PER LINEAR YARD.
2. AFTER FABRICATION, ALL STEEL POSTS, STRAPS AND PLATES SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF ASTM A123.
3. WASHERS FOR BREAKAWAY INSTALLATIONS SHALL MEET ASTM F436, TYPE 1.
4. SPACER BAR FOR BREAKAWAY INSTALLATION SHALL CONFORM TO THE MECHANICAL REQUIREMENTS OF ASTM A36.
5. ALL BOLTS, NUTS, AND WASHERS FOR BREAKAWAY INSTALLATIONS SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF ASTM A153.
6. ALL SIGN POSTS SHALL HAVE BREAKAWAY FEATURES THAT MEET AASHTO REQUIREMENTS CONTAINED IN THE CURRENT "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS." THE BREAKAWAY FEATURES SHALL BE STRUCTURALLY ADEQUATE TO CARRY THE SIGNS SHOWN IN THE PLANS AT 60 mph WIND LOADINGS. INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. SIGN POSTS SHALL BE 4 LBS./FT.

BREAKAWAY INSTALLATION

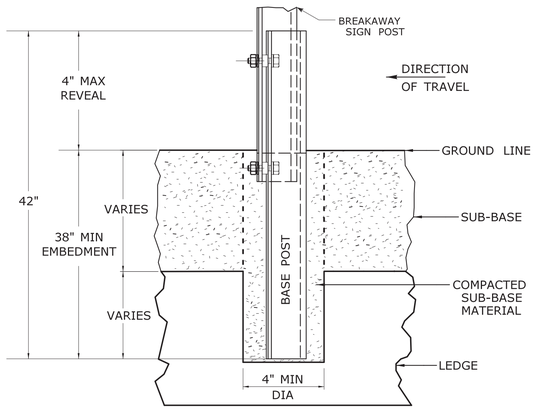
FOR 4 LBS./FT. POSTS



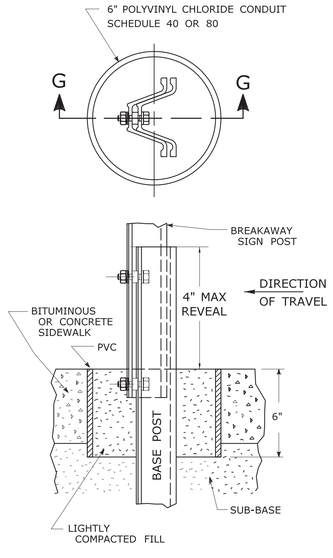
TYPICAL SIGN POST INSTALLATION IN LEDGE

LEDGE SHALL BE REMOVED TO DRIVE THE BASE POST TO A DEPTH OF 38".

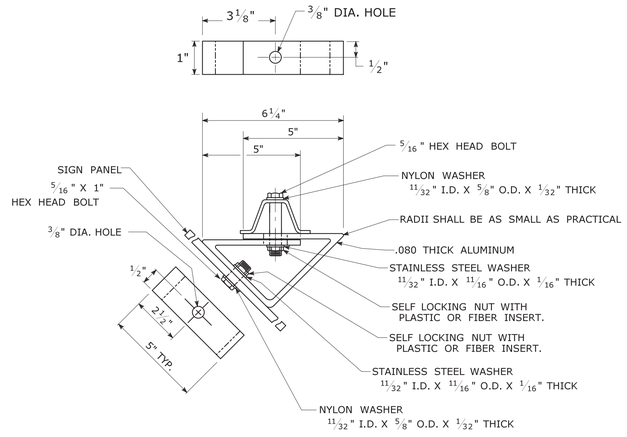
HOLE SHALL BE FILLED WITH SUB-BASE MATERIAL AND COMPACTED WITH A TAMPING BAR, OR TECHNIQUE APPROVED BY THE ENGINEER, PRIOR TO BASE POST INSTALLATION.



TYPICAL SLEEVE FOR PAVED AREAS



45° MOUNTING BRACKET FOR INSTALLATION OF PARKING SIGNS



REV.	DATE	REVISION DESCRIPTION
2	6-2017	SIGN POST REVISIONS.
1	2-2011	MINOR REVISIONS.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 6/6/2017

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR-1208_02_May_2017_Revision.dgn Model: TR-1208_02

SUBMITTED BY:	NAME/DATE/TIME:
Mark Makuch	Mark F. Makuch, P.E. 2017.06.07 07:30:30-04'00'
Mary E. Baker	Mary E. Baker, P.E. 2017.06.13 15:28:14-04'00'
APPROVED BY:	NAME/DATE/TIME:
	Gregory M. Dorosh, P.E. 2017.06.15 09:27:29-04'00'

CTDOT STANDARD SHEET

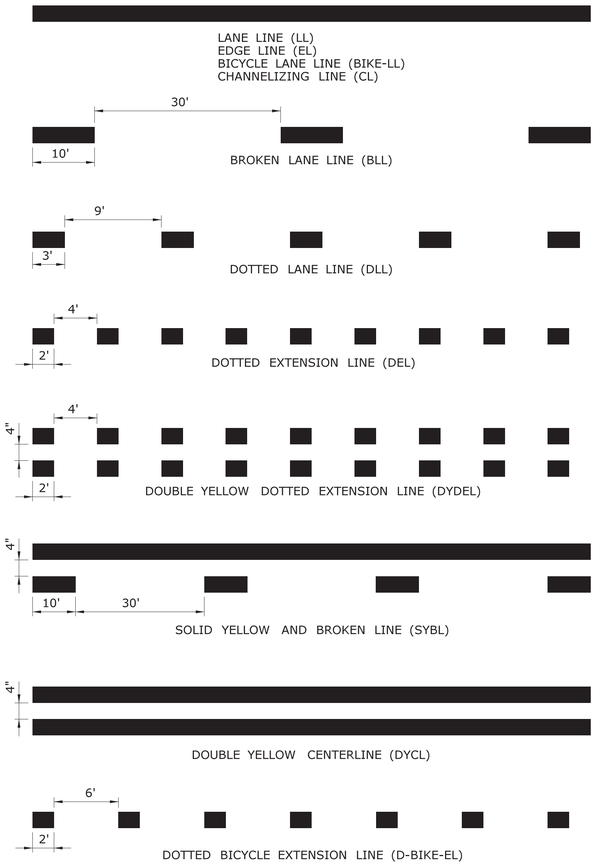
OFFICE OF ENGINEERING

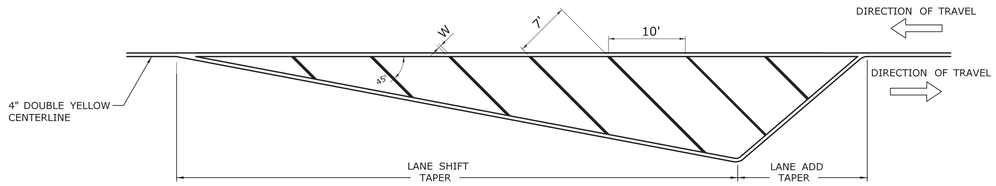
STANDARD SHEET TITLE:

METAL SIGN POSTS AND SIGN MOUNTING DETAILS

GUIDE SHEET NO.:

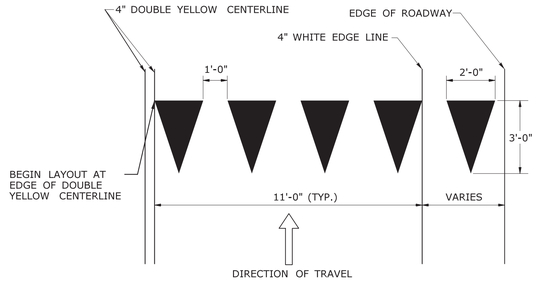
TR-1208_02



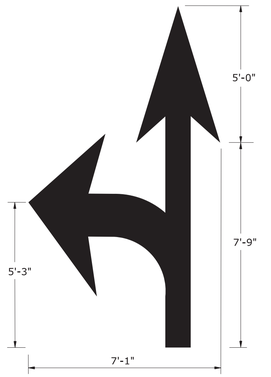


CROSS HATCHED ISLAND DETAIL
(YELLOW)

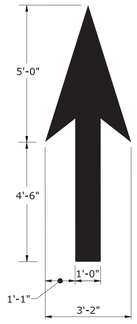
W IS TO BE 6" WHEN POSTED SPEED ≤ 45 MPH
W IS TO BE 12" WHEN POSTED SPEED > 45 MPH
CROSS HATCHED ISLANDS ARE TO BE INSTALLED WHERE CALLED FOR ON THE PLANS



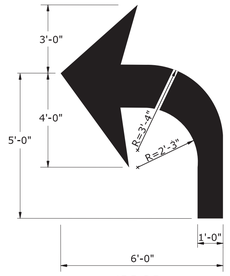
YIELD LINE DETAIL
(WHITE)



REFER TO ADJACENT VIEWS FOR DIMENSIONING
27.0 S.F.



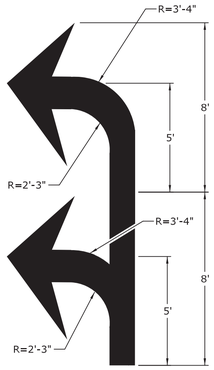
12.5 S.F.



15.5 S.F.

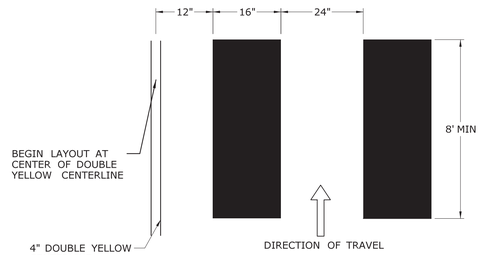
27.0 S.F.
LEFT & RIGHT
ARROW COMBO

38.5 S.F.
3 WAY ARROW
COMBO



35 S.F.
DOUBLE LEFT
ARROW

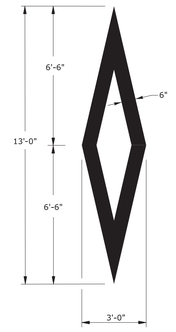
PAVEMENT ARROW DETAILS
(WHITE)
ARROWS SHALL BE CENTERED IN TRAVEL LANE



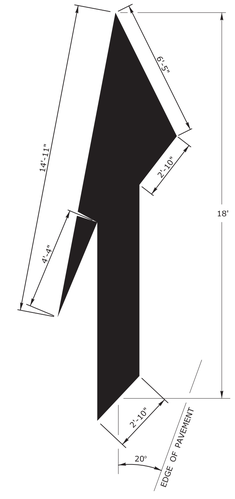
CROSSWALK DETAIL
(WHITE)

NOTES :

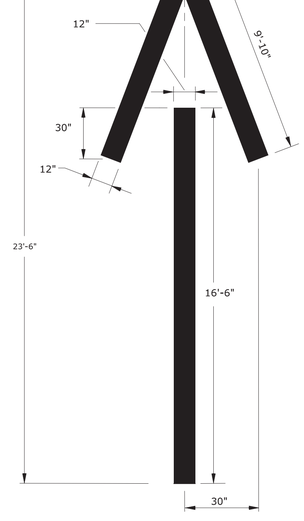
1. AREA OF PAVEMENT MARKINGS AS INDICATED IS APPROXIMATE.
2. RIGHT TURN PAVEMENT MARKING ARROWS ARE MIRROR IMAGE OF LEFT TURN PAVEMENT MARKING ARROWS.



WHITE PREFERENTIAL
LANE SYMBOL
13.0 S.F.



WHITE LANE
REDUCTION ARROW
41.8 S.F.



WHITE WRONG WAY
PAVEMENT ARROW
36.2 S.F.

REV.	DATE	REVISION DESCRIPTION
1	8-2018	REMOVED ROUNDABOUT MARKINGS.

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Plotted Date: 8/10/2018

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR-1210_04.dgn Model: CT_Civil_2D_Sheet

SUBMITTED BY: NAME/DATE/TIME:
Mark F. Makuch, P.E.
2018.08.17 09:07:44-04'00'

APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E.
2018.08.21 07:48:45-04'00'

CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

STANDARD SHEET TITLE:

PAVEMENT MARKING LINES AND SYMBOLS

STANDARD SHEET NO.:

TR-1210_04

E5 - SERIES

ES-1

COPY & BORDER - WHITE
BACKGROUND - GREEN

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	51-6147	2

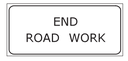
16 - SERIES

	AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16-M	5.0	30X24	80-1613	1
16-H	17.5	60X42	80-1608	2
16-E	35.0	84X60	80-1605	2

	AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16-S	10.0	48X30	80-1619	2

G20 - SERIES

G20-2a



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
8.0	48X24	80-9612	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9711	1
16.0	48	80-9712	2

VARIABLE MILEAGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
7.0	72X14	80-9720	

VARIABLE ARROW
COPY & BORDER - WHITE
BACKGROUND - BLUE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	50-5934	2

VARIABLE MILEAGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
90.0	120X108	80-9728	

M4 - SERIES

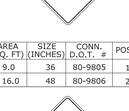
M4-8

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.0	24X12	80-9707	1

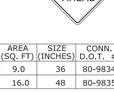
M4-8a

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
3.0	24X18	80-9708	1

M4-10



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
6.0	48X18	80-9701R	2
6.0	48X18	80-9702L	2



VARIABLE ARROW

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
5.0	30X24	80-9710	1

M4-9b

VARIABLE ARROW

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
5.0	30X24	80-9703	1

M4-9b

VARIABLE ARROW

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
6.25	30X24	80-9706	1

R4 - SERIES

R4-7

COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
5.0	24X30	80-1526	1

R1 - SERIES

R1-1

COPY & BORDER - WHITE
BACKGROUND - RED

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
5.19	30	31-0552	1
13.30	48	31-0557	2

R1-2

COPY & BORDER - RED
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
3.90	36	31-0523	1
10.83	60	31-0528	2

R4-9

COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
5.0	24X30	31-1517	1
12.0	36X48	31-1518	1
20.0	48X60	31-1519	2

R9 & R11 - SERIES

R9-9

COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
3.75	30X18	80-9076	1

R9-11

VARIABLE ARROW
COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
3.0	24X18	80-9074	1

R9-11a

VARIABLE ARROW
COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.0	24X12	80-9075	1

R11-2

COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
10.0	48X30	80-9080	2

R11-3a

VARIABLE MILEAGE
COPY & BORDER - BLACK
BACKGROUND - WHITE

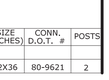
AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
12.5	60X30	80-9077	2

R11-3b

VARIABLE MILEAGE
COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
12.5	60X30	80-9078	2

R11-3b



COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
12.5	60X30	80-9081	2

R11-3b

COPY & BORDER - BLACK
BACKGROUND - WHITE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
14.0	48X42	31-1906	2
22.5	60X54	31-1907	2

W1 - SERIES

W1-4

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9432L	1
9.0	36	80-9431R	1
16.0	48	80-9452L	2
16.0	48	80-9451R	2

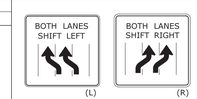
W1-6

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
8.0	48X24	80-9424	2
12.5	60X30	80-9423	2

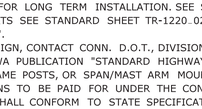
W1-8

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
3.0	18X24	80-9401	1
5.0	24X30	80-9403	1
7.5	30X36	80-9404	1

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9433L	2
16.0	48	80-9435R	2

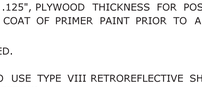


AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9434L	2
16.0	48	80-9436R	2



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
25.0	60	80-9443L	2
25.0	60	80-9445R	2

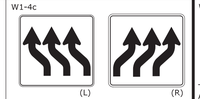
W1-4b



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
25.0	60	80-9444L	2
25.0	60	80-9446R	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
25.0	60	80-9483L	2
25.0	60	80-9485R	2

W1-4c



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
25.0	60	80-9484L	2
25.0	60	80-9486R	2

W3 - SERIES

W3-1

OCTAGON - RED W/ WHITE BORDER
ARROW & BORDER - BLACK
BACKGROUND - FLUORESCENT ORANGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9050	1
16.0	48	80-9051	2

W3-2

TRIANGLE - RED W/ WHITE BORDER
ARROW & BORDER - BLACK
BACKGROUND - FLUORESCENT ORANGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9054	1
16.0	48	80-9055	2

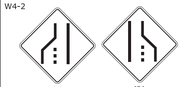
W3-3

TOP CIRCLE - RED
MIDDLE CIRCLE - YELLOW
BOTTOM CIRCLE - GREEN
COPY & BORDER - BLACK
BACKGROUND - FLUORESCENT ORANGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9052	1
16.0	48	80-9053	2

W4-W6 - SERIES

W4-2



AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9918L	2
16.0	48	80-9917R	2

W6-3

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9945	2

W8-W9 - SERIES

W8-1

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9901	1
16.0	48	80-9902	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9801	1
16.0	48	80-9802	2

W9-2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9910L	2
16.0	48	80-9911R	2

W13 - SERIES

W13-1

SUBPLATE
VARIABLE SPEED

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
4.0	24	80-9569	1
6.25	30	80-9567	1

VARIABLE SPEED

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9506	1
16.0	48	80-9508	2

W3-5

VARIABLE SPEED

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9520	1
16.0	48	80-9521	2

W16 - SERIES

W16-15P

COPY & BORDER - BLACK
BACKGROUND - ORANGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.0	24X12	80-9049	

W20 - SERIES

W20-1

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
6.25	30	80-9602	1
9.0	36	80-9603	1
16.0	48	80-9604	2

W20-1

VARIABLE DISTANCE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9614	1
16.0	48	80-9615	2

W20-2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9805	1
16.0	48	80-9806	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9834	1
16.0	48	80-9835	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
(L) 16.0	48	80-9836	2
(R) 16.0	48	80-9839	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
(L) 16.0	48	80-9837	2
(R) 16.0	48	80-9838	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
(L) 16.0	48	80-9847	2
(R) 16.0	48	80-9848	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
(L) 16.0	48	80-9846	2
(R) 16.0	48	80-9849	2

W20-7a

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9803	1
16.0	48	80-9804	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
32.0	96X48	80-9815	2

W16-9P

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.0	24X12	80-9870	
3.75	30X18	80-9871	

W16-3aP

VARIABLE MILEAGE

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.5	30X12	80-9872	
4.5	36X18	80-9873	

W21 - SERIES

W21-6

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9607	1

W22 - SERIES

W22-1

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9620	1
16.0	48	80-9625	2

W22-2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
10.5	42X36	80-9623	2

W22-3

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
10.5	42X36	80-9621	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
4.17	60X10	80-9913	2
12.0	96X18	80-9914	2
3.33	48X10	80-9916	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
9.0	36	80-9933	1
16.0	48	80-9934	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
16.0	48	80-9956	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
12.5	60X30	80-9928	2
24.0	72X48	80-9929	2

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
(1) 16.0	48	80-9957	2
(2) 9.0	36	80-9958	1
(2) 16.0	48	80-9959	2

STOP-SLOW PADDLE

SIDE A
BACKGROUND - RED
COPY & BORDER - WHITE
SIDE B
BACKGROUND - ORANGE
COPY & BORDER - BLACK PLAIN

AREA (SQ. FT)	SIZE (INCHES)	CONN. D.O.T. #	POSTS
2.25	18	80-9950	PADDLE

NOTES:
1. R1-SERIES SIGN THE LEGEND "O.S.T.A." SHALL APPEAR.
2. POSTS - SEE STANDARD SHEET TR-1208_02 - "METAL SIGN POSTS AND SIGN MOUNTING DETAILS".
3. POSTS SHALL BE 4 LBS./FT.
4. ALL POSTS NOTED ARE FOR LONG TERM INSTALLATION. SEE STANDARD SHEET TR-1208_02.
5. FOR TEMPORARY SUPPORTS SEE STANDARD SHEET TR-1220_02 - "CONSTRUCTION SIGN SUPPORTS AND CHANNELIZING DEVICES".
6. FOR SPECIFIC SIGN DESIGN, CONTACT CONN. D.O.T., DIVISION OF TRAFFIC ENGINEERING. FOR BOLT HOLE PATTERN REFER TO FHWA PUBLICATION "STANDARD HIGHWAY SIGNS". SIGNS OF DIFFERENT DIMENSIONS TO BE ERECTED ON THE SAME POSTS, OR SPAN/MAST ARM MOUNTED, MAY REQUIRE SPECIAL BOLT HOLE PATTERNS.
7. ALL CONSTRUCTION SIGNS TO BE PAID FOR UNDER THE CONSTRUCTION SIGNS ITEM IN THE CONTRACT.
8. MATERIALS & COLORS SHALL CONFORM TO STATE SPECIFICATIONS.

MATERIALS:
SIGNS AND THEIR PORTABLE SUPPORTS SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 2 DEVICES. ALUMINUM THICKNESS FOR POST MOUNTED SIGNS SHALL BE .100" EXCEPT SIGN #s. 80-1605, 80-9914, 80-9815, 80-9728, 80-9519, & 51-6147 (L OR R) WHICH SHALL BE .125", PLYWOOD THICKNESS FOR POST MOUNTED SIGNS SHALL BE 1/2" EXTERIOR GRADE A-C OR BETTER. SIGN BLANKS SHALL HAVE ONE COAT OF PRIMER PAINT PRIOR TO APPLICATION OF RETROREFLECTIVE SHEETING & COPY.

COLORS:
BACKGROUND - FLUORESCENT ORANGE - EXCEPT AS NOTED.
LEGEND - BLACK - EXCEPT AS NOTED.
ALL SIGNS WITH FLUORESCENT ORANGE BACKGROUND TO USE TYPE VIII RETROREFLECTIVE SHEETING.
ALL OTHER SIGNS TO USE TYPE IX RETROREFLECTIVE SHEETING.

REV.	DATE	REVISION DESCRIPTION
6	8-2018	REVISED POST REQUIREMENTS AND SHEETING TYPE.
5	8-2015	UPDATED PER MUTCD AND FORM 816 JAN 2015 REVISION.
4	6-2012	REVISED NOTE #1 TO REFERENCE "O.S.T.A."
3	4-2012	REVISED NEW SIGNAL SIGN(S) TO CONFORM TO 2009 MUTCD.
2	2-2011	MINOR REVISIONS.
1	3-2010	REMOVED OBSOLETE SIGNS (50-5925, 50-5935).

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 8/10/2018

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR-1220_01_1_2018.dgn Model: TR-1220_01

SUBMITTED BY: NAME/DATE/TIME:
Mark F. Makuch, P.E. 2018.08.17 09:11:08-04'00'

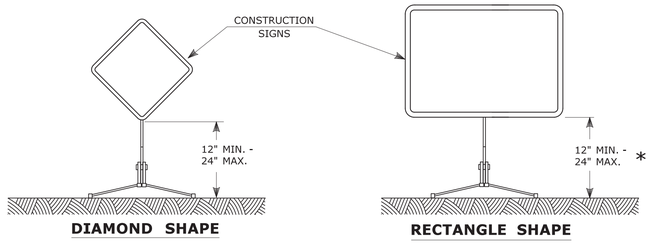
APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E. 2018.08.21 07:49:34-04'00'

CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

STANDARD SHEET TITLE:
SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS

STANDARD SHEET NO.:
TR-1220_01

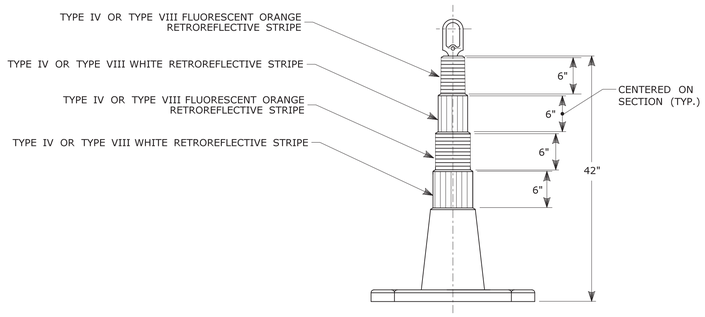


PORTABLE CONSTRUCTION SIGNS

NOTES FOR PORTABLE SIGN SUPPORTS:

1. SIGNS AND THEIR PORTABLE SUPPORTS SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 2 DEVICES AND THE LATEST EDITION OF THE MUTCD.
2. MOUNTING HEIGHT OF SIGNS SHALL BE A MINIMUM OF 12" AND A MAXIMUM OF 24". SIGNS SHALL BE MOUNTED HIGHER AS NEEDED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
3. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY SUPPORT DEEMED UNSUITABLE FOR THE PURPOSE INTENDED.
4. PORTABLE SIGN SUPPORTS SHALL BE STABILIZED IN A MANNER THAT WILL NOT AFFECT THEIR COMPLIANCE WITH NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 2 DEVICES.
5. PORTABLE CONSTRUCTION SIGN SUPPORTS SHOULD NOT BE USED FOR DURATION OF MORE THAN 3 DAYS EXCEPT FOR R9-8 THROUGH R9-11a SERIES, R11 SERIES, W1-6 THROUGH W1-8 SERIES, M4-10, AND E5-1. SEE STANDARD SHEET TR-1220_01 - "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" FOR SIGN DETAILS.

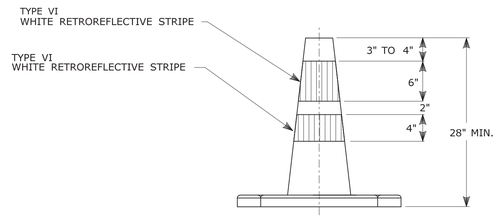
* FOR E5-1 (EXIT SIGNS) USE MIN 48".



42" TRAFFIC CONE

NOTES:

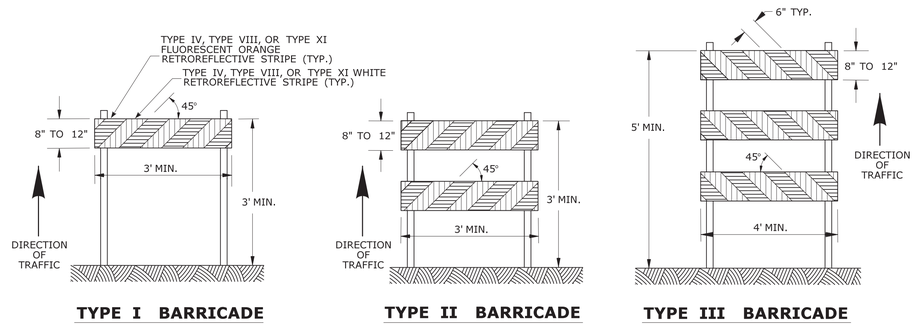
1. TRAFFIC CONES SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 1 DEVICES AND THE LATEST EDITION OF THE MUTCD.
2. IF RUBBER CONES ARE USED, THEY SHALL HAVE INTERIOR RIBS FOR RIGIDITY.
3. IF PLASTIC CONES ARE USED, THEY SHALL BE COLOR IMPREGNATED.
4. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY CONE DEEMED UNSUITABLE FOR THE PURPOSE INTENDED.
5. THE ENTIRE AREA OF FLUORESCENT ORANGE AND WHITE STRIPES SHALL BE RETROREFLECTIVE SHEETING AS REQUIRED IN THE SPECIFICATIONS.
6. THE SECTIONS OF CONES NOT COVERED WITH RETROREFLECTIVE STRIPES SHALL BE ORANGE.



TRAFFIC CONE

NOTES:

1. TRAFFIC CONES SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 1 DEVICES AND THE LATEST EDITION OF THE MUTCD.
2. IF RUBBER CONES ARE USED, THEY SHALL HAVE INTERIOR RIBS FOR RIGIDITY.
3. IF PLASTIC CONES ARE USED, THEY SHALL BE COLOR IMPREGNATED.
4. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY CONE DEEMED UNSUITABLE FOR THE PURPOSE INTENDED.
5. THE ENTIRE AREA OF WHITE STRIPES SHALL BE RETROREFLECTIVE SHEETING AS REQUIRED IN THE SPECIFICATIONS.
6. TRAFFIC CONES NOT USED AT NIGHT MAY UTILIZE TYPE III SHEETING.
7. THE SECTIONS OF CONES NOT COVERED WITH RETROREFLECTIVE STRIPES SHALL BE ORANGE.



TYPE I BARRICADE

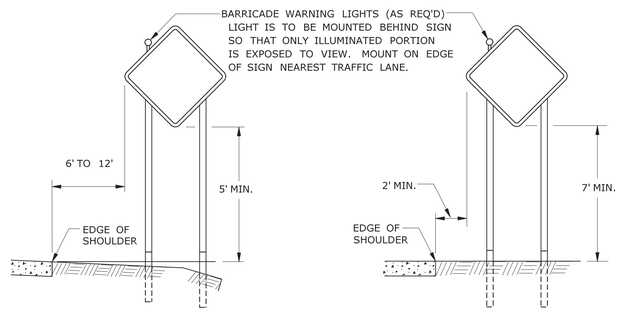
TYPE II BARRICADE

TYPE III BARRICADE

CONSTRUCTION BARRICADES

NOTES:

1. CONSTRUCTION BARRICADES SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH AND THE LATEST EDITION OF THE MUTCD.
2. MARKINGS FOR BARRICADE RAILS SHALL BE ALTERNATE FLUORESCENT ORANGE AND WHITE STRIPES SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS. 6" WIDE STRIPES SHALL BE USED.
3. THE ENTIRE AREA OF FLUORESCENT ORANGE AND WHITE STRIPES SHALL BE RETROREFLECTIVE SHEETING AS REQUIRED IN THE SPECIFICATIONS. THE SIDES OF BARRICADES FACING TRAFFIC SHALL HAVE RETROREFLECTIVE RAIL FACES.
4. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY BARRICADE DEEMED UNSUITABLE FOR THE PURPOSE INTENDED.
5. CORNERS OF BARRICADE RAILS SHALL BE ROUNDED.
6. SIGNS MAY ONLY BE INSTALLED ON TYPE III BARRICADES AND SHALL BE PLACED SO AS TO COVER NO MORE THAN ONE BARRICADE RAIL.



RURAL AREA

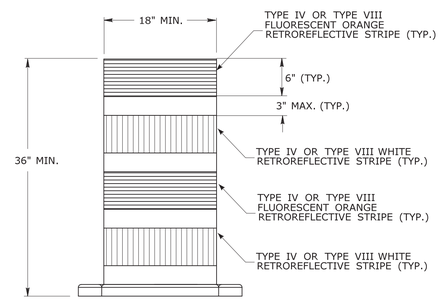
URBAN AREA

PLACEMENT OF CONSTRUCTION SIGNS TYPICAL LONG TERM INSTALLATION

NOTES:

SUPPORTS SHALL BE METAL SIGN POSTS AND HAVE BREAK-AWAY FEATURES.

REFER TO STANDARD SHEETS:
TR-1208_01 - "SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS."
TR-1208_02 - "METAL SIGN POSTS AND SIGN MOUNTING DETAILS."



TRAFFIC DRUM FRONT VIEW

NOTES:

1. TRAFFIC DRUM SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350 (TL-3) OR THE AASHTO MASH FOR CATEGORY 1 DEVICES AND THE LATEST EDITION OF THE MUTCD.
2. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY DRUM DEEMED UNSUITABLE FOR THE PURPOSE INTENDED.
3. THE ENTIRE AREA OF FLUORESCENT ORANGE AND WHITE STRIPES SHALL BE RETROREFLECTIVE SHEETING AS REQUIRED IN THE SPECIFICATIONS.
4. THE SECTIONS OF DRUMS NOT COVERED WITH RETROREFLECTIVE STRIPES SHALL BE ORANGE.

REV.	DATE	REVISION DESCRIPTION
3	8-2018	UPDATED SHEETING TYPE AND COLOR.
2	8-2015	UPDATED PER MUTCD AND FORM 816 JAN 2015 REVISION.
1	2-2011	MINOR REVISIONS.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 8/10/2018

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR-1220_02_3_2018.dgn Model: TR-1220_02

SUBMITTED BY: NAME/DATE/TIME:
Mark F. Makuch, P.E. 2018.08.17 09:12:43-04'00'

APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E. 2018.08.21 07:49:51-04'00'

CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

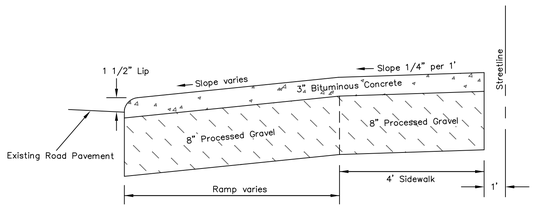
STANDARD SHEET TITLE:

CONSTRUCTION SIGN SUPPORTS AND CHANNELIZING DEVICES

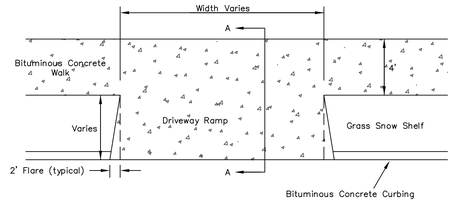
STANDARD SHEET NO.:

TR-1220_02

DRIVEWAYS



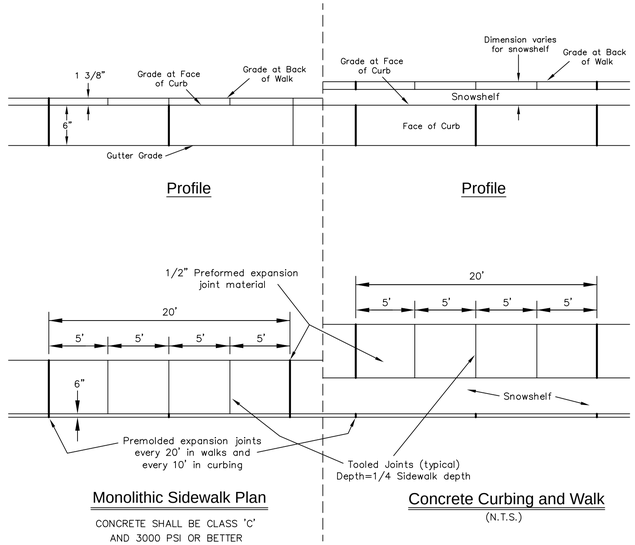
Section A-A



Plan

Residential Bituminous Concrete Driveway and Sidewalk

SIDEWALK AND CURBING

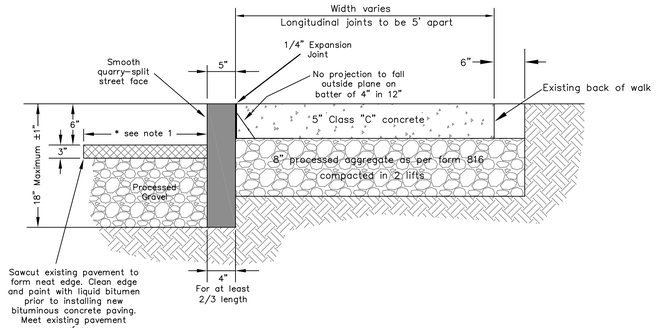


Monolithic Sidewalk Plan

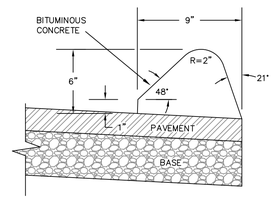
CONCRETE SHALL BE CLASS 'C' AND 3000 PSI OR BETTER
(N.T.S.)

Concrete Curbing and Walk
(N.T.S.)

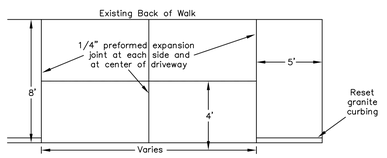
CURBING



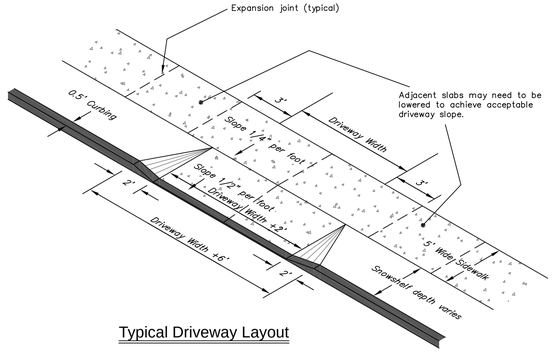
Granite Curbing
(N.T.S.)



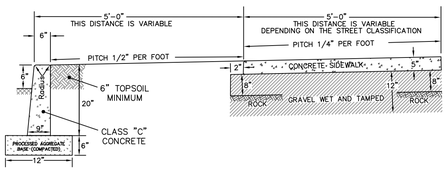
Bituminous Concrete Lip Curbing
Machine Formed



Profile
Typical Driveway

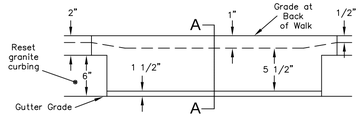


Typical Driveway Layout

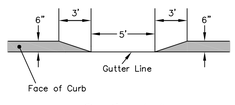


Typical Curb & Sidewalk

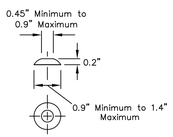
Plan



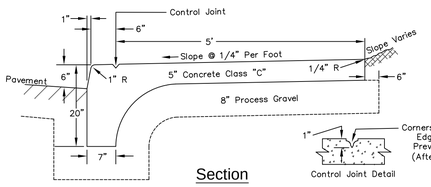
Profile



Section A-A

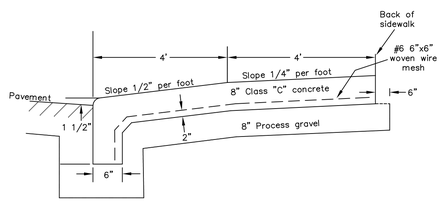


Dome Section

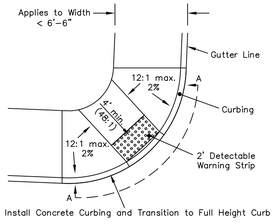


Section

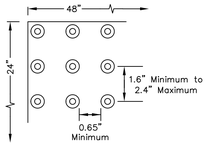
Typical Monolithic Curb & Sidewalk



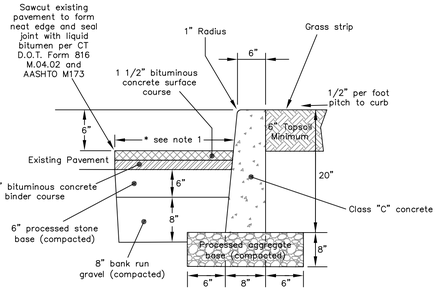
Apron Replacement
(N.T.S.)



Diagonal Sidewalk Ramp (Type 4B)



Dome Spacing



Poured in Place Concrete Curb

CURBING
CONCRETE CURBING WILL BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FORM 816, SECTION 8.11 EXCLUDING PARAGRAPHS 8.11.04 AND 8.11.05 FOR MEASUREMENT AND PAYMENT.

CONCRETE WALKS
CONCRETE WALKS WILL BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FORM 816, SECTION 9.21 EXCLUDING PARAGRAPHS 9.21.04 AND 9.21.05 FOR MEASUREMENT AND PAYMENT.

NOTES:

1. Width to accomodate mechanical compaction as approved by Engineering Department.
2. Buffer strips to be a minimum of 5' wide for new trees. Species to be approved by City Planner.
3. Driveway widths will be based upon field conditions and Planning Department approval. Maximum width will be 20' for residential or 30' for commercial property unless otherwise approved by the Planning Department.
4. Entire sidewalk sections may need to be lowered to achive slope or as instructed by Engineering Department.
5. Bond breaker must be placed between concrete and all metal fixtures within sidewalk area.

Detail Sheet

Sidewalk and Driveway Standards

DEPARTMENT OF PUBLIC WORKS

Engineering Division

City Hall Room 19

Meriden, Connecticut

DATE: 05/07/15
DESIGN:
DRAWN: BBD
SCALE: Not to Scale
DWG.
SHEET 1
OF 1