PROJECT MANUAL

REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER

TOWN OF CHESHIRE, CONNECTICUT

MARCH 31, 2020

RFP #1920-15

Prepared for:

Town of Cheshire
84 South Main Street
Cheshire, CT 06410

Don Nolte, Engineering Operations Manager

Prepared by:

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Legal Notice

Invitation to Bid & Instructions to Bidders

Bid Proposal Documents

Special Provisions

Permits
NOTICE TO CONTRACTORS:
Sealed bids for the construction of the following project will be received by The Town of Cheshire at the Cheshire Town Hall main entrance, 84 South Main Street Cheshire, CT 06410 until 2:00 p.m. on May 14, 2020, after which time no further bids will be accepted. NO EXCEPTIONS. Since the Town Hall doors are locked to the public due to the COVID-19 Virus, bidders are directed to call the Department of Public Works and Engineering Office at 203-271-6650 to arrange for their submission in the lobby. The bid results will be posted on the Town’s website, under “Bids and RFPs,” http://www.cheshirect.org/bids-and-rfps/.

There shall be a non-mandatory pre-bid meeting with potential bidders via web-ex please email contact information to Kishor Patel at kpatel@mminc.com until 5:00 p.m. on April 7, 2020. The web-ex meeting will be held on April 9 at 10:00 a.m.

The Town of Cheshire hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprises will be afforded full opportunity to submit bids in response to this invitation and that they will not be discriminated against on the grounds of race, color, national origin, sex, mental retardation or physical disability including but not limited to blindness, in consideration for an award. This contract is subject to state set-aside and contract compliance requirements.

"Bid Proposal Form" (in triplicate), "Schedule of Prices," "Bid Bond," "Non-Collusion Affidavit," “Affirmative Action Program Certification,” “Subcontract Certification,” and “Statement of Bidder’s Qualifications” must be completed and returned with the submitted bid. Failure to properly execute and include any one of these four documents in the bid submission will result in the bid not being posted and the subsequent rejection of the bid.

The Plans and Project Manual for the above project may be obtained on the Town’s website, under “Bids and RFPs,” http://www.cheshirect.org/bids-and-rfps/ after 12:00 p.m. on April 2, 2020.

All construction materials and methods shall conform to the Town of Cheshire requirements and to the applicable section of The State of Connecticut Department of Transportation Standard Specifications For Roads, Bridges, Facilities and Incidental Construction, Form 817 and addenda.

NOTE: Prime contractors must be prequalified with CTDOT for the work to be performed.

NOTE: Any contractor or subcontractor engaged in surface preparation and/or coating application must be certified by the Steel Structures Painting Council.

NOTE: A Surety Company Bond, on the form furnished by the Town, for at least 30 percent of the amount of the bid must accompany each proposal. A certified check will not be accepted. The Town reserves the right to reject any and all bids.
CONTRACTORS that find discrepancies and/or errors in or between plans, standard specifications, special provisions, quantities and other matters, must immediately notify Don Nolte, Engineering Operations Manager, at Town of Cheshire, 84 South Main Street, Cheshire, CT 06410 or rdnolte@cheshirect.org in writing not less than 10 days before the scheduled bid opening (by end of day May 4, 2020).
TOWN OF CHESHIRE, CONNECTICUT

INVITATION TO BID & INSTRUCTIONS TO BIDDERS

Project Name: Rehabilitation of West Johnson Avenue Bridge (No. 0549) Over Ten Mile River
Bid Number: RFP #1920-15
Bid Opening Date: May 14, 2020
Bid Opening Time: 2:00 p.m.
Bid Opening Place: Bid results will be posted on the Town’s website

The Town of Cheshire is seeking bids for the Rehabilitation of West Johnson Avenue Bridge (No. 0549) Over Ten Mile River.

One (1) original and two (2) copies of sealed bids Sealed bids must be received by The Town of Cheshire at the Cheshire Town Hall, Lobby Drop Box at 84 South Main Street, Cheshire, CT 06410 by the date and time noted above. The Town of Cheshire (the “Town”) will not accept submissions by e-mail or fax. The Town will reject bids received after the date and time noted above.

The documents comprising this Invitation to Bid may be obtained from the Town’s website, www.cheshirect.org, under “Bids and Requests for Proposals.” Each bidder is responsible for checking the Town’s website to determine if the Town has issued any addenda and, if so, to complete its bid in accordance with the ITB as modified by the addenda.

Bids must be held firm and cannot be withdrawn for sixty (60) calendar days after the opening date.

The Town reserves the rights to amend or terminate this Invitation to Bid, accept all or any part of a bid, reject all bids, waive any informalities or non-material deficiencies in a bid, and award the bid to the bidder that, in the Town’s judgment, will be in the Town’s best interests.

1. KEY DATES

OPTIONAL Pre-Bid Meeting: April 9, 2020, at 10:00 AM via Web-Ex

Bid Opening: May 14, 2020, at 2:00 p.m.

2. QUESTIONS AND AMENDMENTS

Questions concerning the process and procedures applicable to this RFP are to be submitted in writing (including by e-mail or fax) and directed only to:
Name: Louis Zullo
Department: Town Manager’s Office
E-mail: LZullo@CheshireCT.org
Fax: 203-271-6639

Questions concerning this RFP’s Specifications are to be submitted in writing (including by e-mail or fax) and directed only to:
Proposers are prohibited from contacting any other Town employee, officer or official concerning this RFP. A proposer’s failure to comply with this requirement may result in disqualification.

The appropriate Town representative listed above must receive any questions from proposers no later than ten (10) days before the proposal opening date. That representative will confirm receipt of a proposer’s questions by e-mail. The Town will answer all written questions by issuing one or more addenda, which shall be a part of this RFP and the resulting Contract, containing all questions received as provided for above and decisions regarding same.

At least four (4) calendar days prior to proposal opening, the Town will post any addenda on the Town’s website, www.cheshirect.org, under “Bids & Requests for Proposals.” Each proposer is responsible for checking the website to determine if the Town has issued any addenda and, if so, to complete its proposal in accordance with the RFP as modified by the addenda.

No oral statement of the Town, including oral statements by the Town representatives listed above, shall be effective to waive, change or otherwise modify any of the provisions of this RFP, and no proposer shall rely on any alleged oral statement.

3. ADDITIONAL INFORMATION
The Town reserves the right, either before or after the opening of proposals, to ask any proposer to clarify its proposal or to submit additional information that the Town in its sole discretion deems desirable.

4. COSTS FOR PREPARING PROPOSAL
Each proposer’s costs incurred in developing its proposal are its sole responsibility, and the Town shall have no liability for such costs.

5. OWNERSHIP OF PROPOSALS
All proposals submitted become the Town’s property and will not be returned to proposers.

6. FREEDOM OF INFORMATION ACT
All information submitted in a proposal or in response to a request for additional information is subject to disclosure under the Connecticut Freedom of Information Act as amended and judicially interpreted. A proposer’s responses may contain financial, trade secret or other data that it claims should not be public (the “Confidential Information”). A proposer must identify specifically the pages and portions of its proposal or additional information that contain the claimed Confidential Information by visibly marking all such pages and portions. Provided that the proposer cooperates with the Town as described in this section, the Town shall, to the extent permitted by law, protect from unauthorized disclosure such Confidential Information.

If the Town receives a request for a proposer’s Confidential Information, it will promptly notify the proposer in writing of such request and provide the proposer with a copy of any written disclosure request. The proposer may provide written consent to the disclosure, or may object to the disclosure by notifying the Town in writing to withhold disclosure of the information, identifying in the notice the basis
for its objection, including the statutory exemption(s) from disclosure. The proposer shall be responsible for defending any complaint brought in connection with the nondisclosure, including but not only appearing before the Freedom of Information Commission, and providing witnesses and documents as appropriate.

7. REQUIRED DISCLOSURES

In its Proposal Form each proposer must disclose, if applicable:

- Its inability or unwillingness to meet any requirement of this RFP, including but not only any of the Contract Terms contained in Section 26, below;
- If it is listed on the State of Connecticut’s Debarment List;
- If it is ineligible, pursuant to Conn. Gen. Stat. § 31-57b, to be awarded the Contract because of occupational safety and health law violations;
- All resolved and pending arbitrations and litigation matters in which the proposer or any of its principals (regardless of place of employment) has been involved within the last ten (10) years;
- All criminal proceedings in which the proposer or any of its principals (regardless of place of employment) has ever been the subject; and
- Each instance in which it or any of its principals (regardless of place of employment) has ever been found to have violated any state or local ethics law, regulation, ordinance, code, policy or standard, or to have committed any other offense arising out of the submission of proposals or bids or the performance of work on public works projects or contracts.

A proposer’s acceptability based on these disclosures lies solely in the Town’s discretion.

8. LEGAL STATUS

If a proposer is a corporation, limited liability company, or other business entity that is required to register with the Connecticut Secretary of the State’s Office, it must have a current registration on file with that office. The Town may, in its sole discretion, request acceptable evidence of any proposer’s legal status.

9. PRESUMPTION OF PROPOSER’S FULL KNOWLEDGE

Each proposer is responsible for having read and understood each document in this RFP and any addenda issued by the Town. A proposer’s failure to have reviewed all information that is part of or applicable to this RFP, including but not only any addenda posted on the Town’s website, shall in no way relieve it from any aspect of its proposal or the obligations related thereto.

Each proposer is deemed to be familiar with and is required to comply with all federal, state and local laws, regulations, ordinances, codes and orders that in any manner relate to this RFP or the performance of the work described herein.

By submitting a proposal, each proposer represents that it has thoroughly examined and become familiar with the scope of work outlined in this RFP, and it is capable of performing the work to achieve the Town’s objectives. If applicable, each proposer shall visit the site, examine the areas and thoroughly familiarize itself with all conditions of the property before preparing its proposal.
10. TAX EXEMPTIONS
The Town is exempt from the payment of federal excise taxes and Connecticut sales and use taxes. Federal Tax Exempt #066-001971. Exemption from State sales tax per Conn. Gen. Stat. Chapter 219, § 12-412(1). No exemption certificates are required, and none will be issued.

11. INSURANCE
The successful bidder agrees to maintain in force at all times during the Contract the following coverages placed with company(ies) licensed by the State of Connecticut which have at least an “A-” VIII policyholders rating according to Best Publication’s latest edition Key Rating Guide.

(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*
   Each Occurrence $1,000,000
   (Excess Liability) Aggregate $1,000,000

* The Town of Cheshire and State of Connecticut shall be named as “Additional Insured.” Coverage is to be provided on a primary, noncontributory basis. Waiver of subrogation must be provided. If any policy is written on a “Claims Made” basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of the Contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the Contract for two (2) years from the completion date.

Workers’ Compensation and WC Statutory Limits:
Employers’ Liability (EL) Each Accident $100,000
EL Disease Each Employee $100,000
EL Disease Policy Limit $500,000

Original, completed Certificates of Insurance must be presented to the Town prior to Contract execution. The successful bidder agrees to provide replacement/renewal certificates at least 60 days prior to the expiration of the policy. Should any of the above described policies be cancelled before the expiration date, written notice must be given to the Town thirty (30) days prior to cancellation.

The successful bidder shall, at its own expense and cost, obtain and keep in force at least the insurance listed in the Insurance Requirements that are a part of this RFP. The Town reserves the right to request from the successful proposer a complete, certified copy of any required insurance policy.
12. AWARD CRITERIA; SELECTION; CONTRACT EXECUTION

All proposals will not be publicly opened due to the COVID-19 Virus and the bid results will be posted on the Town’s website.

The Town reserves the right to correct, after proposer verification, any mistake in a proposal that is a clerical error, such as a price extension, decimal point error or FOB terms. If an error exists in an extension of prices, the unit price shall prevail. In the event of a discrepancy between the price quoted in words and in figures, the words shall control.

The Town reserves the rights to accept all or any part of a proposal, reject all proposals, and waive any informalities or non-material deficiencies in a proposal. The Town also reserves the right, if applicable, to award the purchase of individual items under this RFP to any combination of separate proposals or proposers.

The Town will accept the proposal that, all things considered, the Town determines is in its best interests. Although price will be an important factor in most RFPs, it will not be the only basis for award. Due consideration may also be given to a proposer’s experience, references, service, ability to respond promptly to requests, past performance, and other criteria relevant to the Town’s interests, including compliance with the procedural requirements stated in this RFP.

The Town will not award the proposal to any business that or person who is in arrears or in default to the Town with regard to any tax, debt, contract, security or any other obligation.

If the lowest proposer meets all specifications, is responsive, and, if applicable, qualified, but the proposal is not acceptable to the Town Manager or, if applicable, the Public Building Commission or the Board of Education, the matter must be referred to the Town Council for its decision on whether to reject all proposals, to accept a higher proposal, or to take such other action as may be in the Town’s best interests.

The Town will select the proposal that it deems to be in the Town’s best interest and issue a Preliminary Notice of Award to the successful proposer. The award may be subject to further discussions with the proposer. The making of a preliminary award to a proposer does not provide the proposer with any rights and does not impose upon the Town any obligations. The Town is free to withdraw a preliminary award at any time and for any reason. A proposer has rights, and the Town has obligations, only if and when a Contract is executed by the Town and the proposer.

13. COMPLIANCE WITH IMMIGRATION LAWS

By submitting a proposal, each proposer confirms that it has complied, and during the term of the Contract will comply, with the Immigration Reform and Control Act (“IRCA”) and that each person it provides under the Contract will at all times be authorized for employment in the United States of America. Each proposer confirms that it has a properly completed Employment Eligibility Verification, Form I-9, for each person who will be assigned under the Contract and that it will require each subcontractor, if any, to confirm that it has a properly completed Form I-9 for each person who will be assigned under the Contract.

The successful proposer shall defend, indemnify, and hold harmless the Town, its employees, officers, officials, agents, volunteers and independent contractors, including any of the foregoing
sued as individuals (collectively, the “Town Indemnified Parties”), against any and all proceedings, suits, actions, claims, damages, injuries, awards, judgments, losses or expenses, including fines, penalties, punitive damages, attorney’s fees and costs, brought or assessed against, or incurred by, the Town Indemnified Parties related to or arising from the obligations under IRCA imposed upon the successful proposer or its subcontractor. The successful proposer shall also be required to pay any and all attorney’s fees and costs incurred by the Town Indemnified Parties in enforcing any of the successful proposer’s obligations under this provision, whether or not a lawsuit or other proceeding is commenced, which obligations shall survive the termination or expiration of the Contract.

14. CONTRACT TERMS

The following provisions will be mandatory terms of the Town’s Contract with the successful proposer. If a proposer is unwilling or unable to meet any of these Contract Terms, the proposer must disclose that inability or unwillingness in its Proposal Form (see Section 11 of these Standard Instructions to Proposers):

   a. DEFENSE, HOLD HARMLESS AND INDEMNIFICATION

The successful proposer agrees, to the fullest extent permitted by law, to defend, indemnify, and hold harmless the Town, its employees, officers, officials, agents, volunteers and independent contractors, including any of the foregoing sued as individuals (collectively, the “Town Indemnified Parties”), from and against all proceedings, suits, actions, claims, damages, injuries, awards, judgments, losses or expenses, including attorney’s fees, arising out of or relating, directly or indirectly, to the successful proposer’s malfeasance, misconduct, negligence or failure to meet its obligations under the RFP or the Contract.

The successful proposer’s obligations under this section shall not be limited in any way by any limitation on the amount or type of the successful proposer’s insurance. Nothing in this section shall obligate the successful proposer to indemnify the Town Indemnified Parties against liability for damage arising out of bodily injury to persons or damage to property caused by or resulting from the negligence of the Town Indemnified Parties.

In any and all claims against the Town Indemnified Parties made or brought by any employee of the successful proposer, or anyone directly or indirectly employed or contracted with by the successful proposer, or anyone for whose acts or omissions the successful proposer is or may be liable, the successful proposer’s obligations under this section shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by the successful proposer under workers’ compensation acts, disability benefit acts, or other employee benefits acts.

The successful proposer shall also be required to pay any and all attorney’s fees incurred by the Town Indemnified Parties in enforcing any of the successful proposer’s obligations under this section, which obligations shall survive the termination or expiration of this RFP and the Contract.

As a municipal agency of the State of Connecticut, the Town will NOT defend, indemnify, or hold harmless the successful proposer.
b. **ADVERTISING**

The successful proposer shall not name the Town in its advertising, news releases, or promotional efforts without the Town’s prior written approval.

If it chooses, the successful proposer may list the Town in a Statement of References or similar document required as part of its response to a public procurement. The Town’s permission to the successful proposer to do so is not a statement about the quality of the successful proposer’s work or the Town’s endorsement of the successful proposer.

c. **W-9 FORM**

The successful proposer must provide the Town with a completed W-9 form before Contract execution.

d. **PAYMENTS**

Payments are to be made 30 days after the appropriate Town employee receives and approves the invoice, unless otherwise specified in the Specifications.

e. **TOWN INSPECTION OF WORK**

The Town may inspect the successful proposer’s work at all reasonable times. This right of inspection is solely for the Town’s benefit and does not transfer to the Town the responsibility for discovering patent or latent defects. The successful proposer has the sole and exclusive responsibility for performing in accordance with the Contract.

f. **REJECTED WORK OR MATERIALS**

The successful proposer, at its sole cost and expense, shall remove from the Town’s property rejected items, commodities and/or work within 48 hours of the Town’s notice of rejection. Immediate removal may be required when safety or health issues are present.

g. **MAINTENANCE AND AVAILABILITY OF RECORDS**

The successful proposer shall maintain all records related to the work described in the RFP for a period of five (5) years after final payment under the Contract or until all pending Town, state and federal audits are completed, whichever is later. Such records shall be available for examination and audit by Town, state and federal representatives during that time.

h. **SUBCONTRACTING**

Prior to entering into any subcontract agreement(s) for the work described in the Contract, the successful proposer shall provide the Town with written notice of the identity (full legal name, street address, mailing address (if different from street address), and telephone number) of each proposed subcontractor. The Town shall have the right to object to any proposed subcontractor by providing the successful proposer with written notice thereof within seven (7) business days of receipt of all required information about the proposed subcontractor. If the Town objects to a proposed subcontractor, the successful proposer shall not use that subcontractor for any portion of the work described in the Contract.
All permitted subcontracting shall be subject to the same terms and conditions as are applicable to
the successful proposer. The successful proposer shall remain fully and solely liable and responsible
to the Town for performance of the work described in the Contract. The successful proposer also
agrees to promptly pay each of its subcontractors within thirty (30) days of receipt of payment from
the Town or otherwise in accordance with law. The successful proposer shall assure compliance with
all requirements of the Contract. The successful proposer shall also be fully and solely responsible to
the Town for the acts and omissions of its subcontractors and of persons employed, whether directly
or indirectly, by its subcontractor(s).

i. PREVAILING WAGES
This item is not applicable to this RFP.

j. PREFERENCES
This item is not applicable to this RFP.

k. WORKERS COMPENSATION
Prior to Contract execution, the Town will require the tentative successful proposer to provide a
current statement from the State Treasurer that, to the best of her knowledge and belief, as of the
date of the statement, the tentative successful proposer was not liable to the State for any workers’

l. SAFETY
The successful proposer and each of its permitted subcontractors shall furnish proof that each
employee performing the work of a mechanic, laborer or worker under the Contract has completed a
course of at least ten (10) hours 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. Such proof shall be provided with
the certified payroll submitted for the first week each such employee, mechanic, laborer, or worker
begins work under the Contract.

m. COMPLIANCE WITH LAWS
The successful proposer shall comply with all applicable laws, regulations, ordinances, codes and
orders of the United States, the State of Connecticut and the Town related to its proposal and the
performance of the work described in the Contract.

n. LICENSES AND PERMITS
The successful proposer certifies that, throughout the Contract term, it shall have and provide proof
of all approvals, permits and licenses required by the Town and/or any state or federal authority. The
successful proposer shall immediately and in writing notify the Town of the loss or suspension of any
such approval, permit or license.

o. AMENDMENTS
The Contract may not be altered or amended except by the written agreement of both parties.
p. **ENTIRE AGREEMENT**

It is expressly understood and agreed that the Contract contains the entire agreement between the parties, and that the parties are not, and shall not be, bound by any stipulations, representations, agreements or promises, oral or otherwise, not printed or inserted in the Contract or its attached exhibits.

q. **VALIDITY**

The invalidity of one or more of the phrases, sentences or clauses contained in the Contract shall not affect the remaining portions so long as the material purposes of the Contract can be determined and effectuated.

r. **CONNECTICUT LAW AND COURTS**

The Contract shall be governed by and construed in accordance with the internal laws (as opposed to the conflicts of law provisions) of the State of Connecticut, and the parties irrevocably submit in any suit, action or proceeding arising out of the Contract to the jurisdiction of the United States District Court for the District of Connecticut or of any court of the State of Connecticut, as applicable.

s. **NON-EMPLOYMENT RELATIONSHIP**

The Town and the successful proposer are independent parties. Nothing contained in the Contract shall create, or be construed or deemed as creating, the relationships of principal and agent, partnership, joint venture, employer and employee, and/or any relationship other than that of independent parties contracting with each other solely for the purpose of carrying out the terms and conditions of the Contract. The successful proposer understands and agrees that it is not entitled to employee benefits, including but not limited to workers compensation and employment insurance coverage, and disability. The successful proposer shall be solely responsible for any applicable taxes.

15. **CHRO CONTRACT COMPLIANCE REGULATIONS**

The Contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 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.

The Contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities (CHRO) within thirty (30) calendar days of Contract Award. Forms can be found at: [http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=180622](http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=180622)

Contractor shall also file an Affirmative Action Plan or Set Aside Plan, in accordance with CHRO requirements, with the Commission within thirty (30) calendar days of Contract Award.

**END OF STANDARD INSTRUCTIONS TO PROPOSE.**
Pursuant to and in full compliance with the RFP, the undersigned proposer, having visited the site or property if applicable, and having thoroughly examined each and every document comprising the RFP, including any addenda, hereby offers and agrees as follows:

To provide the products and/or services specified in, and upon the terms and conditions of, the RFP for the following:

**Summary of Item Descriptions**

1. **MOBILIZATION AND DEMOBILIZATION**

   The work under this item shall include all personnel, materials, equipment, and labor for the movement of all the contractor's field offices, buildings, facilities, and equipment to and from the project site as necessary for the performance of the work. This item shall also include permits, quality control, material testing and certification, as-built drawings, bonds, and insurance as may be required. This item shall also include all site clean-up and restoration.

   This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

2. **CONSTRUCTION STAKING**

   This item shall include all construction layout and reference staking necessary for the proper control and satisfactory completion of all the work per the Contract Documents. Also included shall be the protection of existing benchmarks, property, highway and control monuments. This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

3. **CONSTRUCTION FIELD OFFICE**

   This item shall include all materials, equipment, and labor to furnish, maintain, and remove a construction field office, for use by the Town of Cheshire, in accordance with the Contract Documents. The cost of providing the parking area, utility services, external illumination, trash removal, and snow and ice removal shall be included in this item.

   Payment will be provided at the contract unit price per month based on the number of calendar months that the office is in place and in operation.
4. CLEARING AND GRUBBING

This item shall include all work associated with clearing and grubbing to the limits designated in the contract documents or as directed by the Engineer. This item shall also include protection of existing site features scheduled to remain.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

5. SEDIMENT AND EROSION CONTROL

This item shall include all materials, equipment, and labor to establish, maintain, replace if necessary and remove at the completion of construction, sediment and erosion controls as indicated on the Contract Documents and as directed by the Engineer. This shall include but is not limited to construction entrance anti-tracking pads, all sedimentation filter fence systems, sedimentation control at catch basins, erosion control blankets, and hay bales. Also included shall be sweeping, dust control, and construction, maintenance, and erosion control of temporary stockpile areas.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

6. REMOVAL AND SITE PREPARATION

This item shall include all work associated with the removal of all existing bridge features; including but not limited to the deck, beams, removal of existing masonry, parapet, and railing. This item shall also include all coordination with utility companies, protection and temporary support of all existing utilities.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

7. ROADWAY RECONSTRUCTION

This item shall include all roadway work per the Contract Documents. This works includes all materials, equipment, and labor to cut and remove existing pavement and to remove existing curbing. Also included shall be all earth excavation, disposal of materials, and formation of subgrade.

This works includes all materials, equipment, and labor to furnish, place and compact subbase, processed aggregate base, and bituminous concrete pavement, including tack coat.

This work includes all materials, equipment, and labor to construct bituminous concrete curbing in accordance with the Contract Documents.

This work includes all materials, equipment, labor, and incidentals to furnish and install retroreflective epoxy resin pavement markings of the width and color specified in the Contract Documents, at the locations indicated, and in accordance with the Contract Documents.
This work includes furnishing roadway luminaire and coordination with the Town, in accordance with the Contract Documents.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

8. DRAINAGE

This item shall include all materials, equipment, labor, and incidentals to construct drainage systems and structures in accordance with the Contract Documents; including but not limited to catch basins, reinforced concrete pipe, and culvert ends. This item also shall include all excavation, bedding, backfilling, all temporary shoring, bracing, and excavation support that may be required, and removal of existing catch basins and pipes.

This item shall include all materials, equipment, labor, and incidentals to remove and reset manhole frames and covers in accordance with the Contract Documents. This also shall include all excavation, backfilling, and setting of mortar and masonry work as necessary to adjust structures to finished grade.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

9. BRIDGE STRUCTURE

This item shall all include all materials, equipment, and labor to complete in place the bridge deck, reconstruction of abutments, wingwalls, concrete curbing, approach slabs, and end blocks per the Contract Documents.

This shall include but is not limited to temporary earth retaining systems, structure excavation, pervious structure backfill, crushed stone, underdrain, prestressed deck units and appurtenances, concrete shims, non-shrink grout pad, concrete, deformed steel bars (epoxy coated), joint filler, closed cell elastomer, dampproofing, and membrane waterproofing.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

10. MAINTENANCE & PROTECTION OF TRAFFIC

This item shall include all work associated with the roadway and bridge closure, temporary traffic control and protection, and safety of civilians and workers with the vicinity of the project. This shall include but is not limited to all materials, equipment, services, and labor to furnish, erect, maintain, move, adjust, clean, relocated, store, and remove sufficient construction signs, construction barricades, warning lights, traffic cones, traffic drums, temporary precast concrete barrier curb, delineators, temporary pavement markings, construction fences, and any incidentals. This item shall also include any traffic control personnel that may be needed.
This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

11. METAL BRIDGE RAIL – THREE RAIL (COMBINATION)

This item shall include all materials, equipment, labor, and incidentals to furnish and install metal bridge rail in accordance with the Contract Documents. This shall include but is not limited to metal pipe and fittings, structural steel shapes, castings or other material, anchor bolts, and hardware fasteners.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

12. METAL BEAM RAIL SYSTEM (TYPE R-B 350)

This item shall include all materials, equipment, labor, and incidentals to furnish and install Metal Beam Rail System (Type R-B 350) in accordance with the Contract Documents.

This item shall include all materials, equipment, labor, and incidentals to furnish and install guiderail attachments in accordance with the Contract Documents, including drilling and grouting anchor bolts and other incidental work.

These items shall include all materials, equipment, labor, and incidentals to furnish and install guiderail end anchorages of the type specified in the Contract Documents, at the locations indicated, and in accordance with the Contract Documents; including excavation, concrete, reinforcing steel, drilling and grouting, backfilling and other incidental work. This item shall also include all materials, equipment, labor, and incidentals to remove existing railings to the limits shown on the Plans.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

13. LOAM AND SEED

This item shall all materials, equipment, labor, and incidents to furnish and place fertilizer, seed, conservation seeding for slopes, and mulch on all areas indicated in the Contract Documents or where designated by the Engineer. This item shall include stripping and stockpiling existing topsoil.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

14. SIGN FACE – SHEET ALUMINUM (TYPE III)

This item shall include all materials, equipment, labor, and incidentals to furnish and install all permanent signs in accordance with the Contract Documents, including metal signposts and hardware.
Payment will be provided at the contract unit price for each sign completed and accepted.

15. WATER MAIN SUPPORT BRACKETS

This item shall include all materials, equipment, labor, and incidentals to furnish and install all brackets and hangers in accordance with the contract Documents.

This item shall be based on a lump sum value and paid based on the percentage of work completed and accepted as determined by the Engineer.

The above Summary of Item Descriptions provides a general description of the work shown on the Contract Drawings and described in the Specifications and is intended to include all equipment, materials and labor necessary for the completion of the work. Although the above descriptions may be limited, the Summary of Item Descriptions, as defined, shall include all costs associated with performing the work.

**SCHEDULE OF ITEMS**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>UNIT PRICE (Figures)</th>
<th>EXT TOTAL (Figures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization and Demobilization</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Construction Staking</td>
<td>LS</td>
<td>1</td>
<td></td>
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<tr>
<td>3</td>
<td>Construction Field Office</td>
<td>MO.</td>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
<td>Clearing and Grubbing</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Sediment and Erosion Control</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>Removal and Site Preparation</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Roadway Reconstruction</td>
<td>LS</td>
<td>1</td>
<td></td>
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<td>8</td>
<td>Drainage</td>
<td>LS</td>
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<td>9</td>
<td>Bridge Structure</td>
<td>LS</td>
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<td></td>
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<td>Maintenance &amp; Protection of Traffic</td>
<td>LS</td>
<td>1</td>
<td></td>
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<tr>
<td>11</td>
<td>Metal Bridge Rail – Three (Combination)</td>
<td>LS</td>
<td>1</td>
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<td>12</td>
<td>Metal Beam Rail System (Type R-B 350)</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Loam and Seed</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Sign Face – Sheet Aluminum (Type III)</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Water Main Support Brackets</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL BASE BID (in Figures)**
The TOTAL BASE BID (written in words), based upon the Schedule of Items listed above, to complete all work required by the Contract Documents is:

Dollars and ____________________________ Cents.

All work for this project shall be performed under the above Bid Items. These Bid Items shall become the basis of payment of work performed. The value of each Bid Item when added together shall equal the Total Base Bid amount. Should the Bidder have any questions regarding the specific elements of work to be included within each Item, said question shall be directed in writing sufficiently in advance of the bid date in order to allow for a proper response. The cost for other items of work included in the Contract Documents and/or on the Contract Documents and not listed in the Bid Items shall be included in the cost of the various Items bid. All Items shall include all costs necessary to perform the work and the costs for all materials, equipment, tools, labor and work incidental thereto, including overhead and profit.

ACKNOWLEDGEMENT

In submitting this Proposal Form, the undersigned proposer acknowledges that the price(s) include all labor, materials, transportation, hauling, overhead, fees and insurances, bonds or letters of credit, profit, security, permits and licenses, and all other costs to cover the completed work called for in the RFP. Except as otherwise expressly stated in the RFP, no additional payment of any kind will be made for work accomplished under the price(s) as proposed.

REQUIRED DISCLOSURES

1. Exceptions to the RFP

   ______ This proposal does not take exception to any requirement of the RFP, including but not only any of the Contract Terms set forth in Section 26 of the Standard Instructions to Proposers.

   OR

   ______ This proposal takes exception(s) to certain of the RFP requirements, including but not only the following Contract Terms set forth in Section 26 of the Standard Instructions to Proposers. Attached is a sheet fully describing each such exception.

2. State Debarment List

   Is the proposer on the State of Connecticut’s Debarment List?

       ______ Yes
       ______ No
3. **Occupational Safety and Health Law Violations**

Has the proposer or any firm, corporation, partnership or association in which it has an interest (1) been cited for three (3) or more willful or serious violations of any occupational safety and health act or of any standard, order or regulation promulgated pursuant to such act, during the three-year period preceding the proposal (provided such violations were cited in accordance with the provisions of any state occupational safety and health act or the Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency or court having jurisdiction) or (2) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the proposal?

_____ Yes
_____ No

If “yes,” attach a sheet fully describing each such matter.

4. **Arbitration/Litigation**

Has either the proposer or any of its principals (regardless of place of employment) been involved for the most recent ten (10) years in any resolved or pending arbitration or litigation?

_____ Yes
_____ No

If “yes,” attach a sheet fully describing each such matter.

5. **Criminal Proceedings**

Has the proposer or any of its principals (regardless of place of employment) ever been the subject of any criminal proceedings?

_____ Yes
_____ No

If “yes,” attach a sheet fully describing each such matter.
6. Ethics and Offenses in Public Projects or Contracts

Has either the proposer or any of its principals (regardless of place of employment) ever been found to have violated any state or local ethics law, regulation, ordinance, code, policy or standard, or to have committed any other offense arising out of the submission of proposals or bids or the performance of work on public works projects or contracts?

______ Yes
______ No

If “yes,” attach a sheet fully describing each such matter.

PROPOSAL (BID) SECURITY

I/we have included herein the required proposal (bid) bond in the amount of 10% of the proposal amount.

NOTE: THIS DOCUMENT, IN ORDER TO BE CONSIDERED A VALID PROPOSAL, MUST BE SIGNED BY A PRINCIPAL OFFICER OR OWNER OF THE BUSINESS ENTITY THAT IS SUBMITTING THE PROPOSAL. SUCH SIGNATURE CONSTITUTES THE PROPOSER’S REPRESENTATIONS THAT IT HAS READ, UNDERSTOOD AND FULLY ACCEPTED EACH AND EVERY PROVISION OF EACH DOCUMENT COMPROMISING THE RFP, UNLESS AN EXCEPTION IS DESCRIBED ABOVE.

BY ___________________________   TITLE: _______________________________
(PRINT NAME)

______________________________   DATE: _______________________________
(SIGNATURE)

END OF PROPOSAL FORM
TOWN OF CHESHIRE, CONNECTICUT

PROPOSER’S LEGAL STATUS DISCLOSURE

Please fully complete the applicable section below, attaching a separate sheet if you need additional space.

For purposes of this disclosure, “permanent place of business” means an office continuously maintained, occupied and used by the proposer’s regular employees regularly in attendance to carry on the proposer’s business in the proposer’s own name. An office maintained, occupied and used by a proposer only for the duration of a contract will not be considered a permanent place of business. An office maintained, occupied and used by a person affiliated with a proposer will not be considered a permanent place of business of the proposer.

IF A SOLELY OWNED BUSINESS:

Proposer’s Full Legal Name ________________________________
Street Address _______________________________________
Mailing Address (if different from Street Address)__________
Owner’s Full Legal Name _________________________________
Number of years engaged in business under sole proprietor or trade name __________
Does the proposer have a “permanent place of business” in Connecticut, as defined above?

_______ Yes  ________ No

If yes, please state the full street address (not a post office box) of that “permanent place of business.”

________________________________________________________________________

IF A CORPORATION:

Proposer’s Full Legal Name ________________________________
Street Address _______________________________________
Mailing Address (if different from Street Address)__________
Owner’s Full Legal Name _________________________________
Number of years engaged in business _______________________
Names of Current Officers

President__________________ Secretary__________________ Chief Financial Officer________________

Does the proposer have a “permanent place of business” in Connecticut, as defined above?
________ Yes  ________ No

If yes, please state the full street address (not a post office box) of that “permanent place of business.”

________________________________________________________________________

IF A LIMITED LIABILITY COMPANY:

Proposer’s Full Legal Name

Street Address

Mailing Address (if different from Street Address)

Owner’s Full Legal Name

Number of years engaged in business

Names of Current Manager(s) and Member(s)

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

Does the proposer have a “permanent place of business” in Connecticut, as defined above?

________ Yes  ________ No

If yes, please state the full street address (not a post office box) of that “permanent place of business.”

________________________________________________________________________
IF A PARTNERSHIP:

Proposer’s Full Legal Name _________________________________
Street Address _________________________________
Mailing Address (if different from Street Address)_______________________________
Owner’s Full Legal Name _________________________________
Number of years engaged in business _________________________________
Names of Current Partners

_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)
_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)
_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)
_______________________________  _______________________________
Name & Title (if any)     Residential Address (street only)

Does the proposer have a “permanent place of business” in Connecticut, as defined above?

_______ Yes   ________ No

If yes, please state the full street address (not a post office box) of that “permanent place of business.”

*************************************************************************

Sign on the next page
Proposer’s Full Legal Name

(print)
Name and Title of Proposer’s Authorized Representative

(signature)
Proposer’s Representative, Duly Authorized

Date

END OF LEGAL STATUS DISCLOSURE FORM
TOWN OF CHESHIRE, CONNECTICUT

PROPOSAL # 1920-15
REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER

PROPOSER’S CERTIFICATION
Concerning Equal Employment Opportunities
And Affirmative Action Policy

I/we, the proposer, certify that:

1) I/we are in compliance with the equal opportunity clause as set forth in Connecticut state law (Executive Order No. Three, http://www.cslib.org/exeorder3.htm).

2) I/we do not maintain segregated facilities.

3) I/we have filed all required employer's information reports.

4) I/we have developed and maintain written affirmative action programs.

5) I/we list job openings with federal and state employment services.

6) I/we attempt to employ and advance in employment qualified handicapped individuals.

7) I/we are in compliance with the Americans with Disabilities Act.

8) I/we (check one):
   ______ have an Affirmative Action Program, or
   _____ employ 10 people or fewer.

_________________________________  ____________________________________
Legal Name of Proposer      (signature)

Proposer’s Representative, Duly Authorized

____________________________________
Name of Proposer’s Authorized Representative

____________________________________
Title of Proposer’s Authorized Representative

____________________________________
Date
TOWN OF CHESHIRE, CONNECTICUT

PROPOSER’S NON-COLLUSION AFFIDAVIT

PROPOSAL FOR: REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER

PROPOSAL NUMBER: 1920-15

The undersigned proposer, having fully informed himself/herself/itself regarding the accuracy of the statements made herein, certifies that:

(1) the proposal is genuine; it is not a collusive or sham proposal;
(2) the proposer developed the proposal independently and submitted it without collusion with, and without any agreement, understanding, communication or planned common course of action with, any other person or entity designed to limit independent competition;
(3) the proposer, its employees and agents have not communicated the contents of the proposal to any person not an employee or agent of the proposer and will not communicate the proposal to any such person prior to the official opening of the proposal; and
(4) no elected or appointed official or other officer or employee of the Town of Cheshire is directly or indirectly interested in the proposer’s proposal, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.

The undersigned proposer further certifies that this affidavit is executed for the purpose of inducing the Town of Cheshire to consider its proposal and make an award in accordance therewith.

_________________________________  _____________________________________
Legal Name of Proposer      (signature)

Proposer’s Representative, Duly Authorized

_________________________________
Name of Proposer’s Authorized Representative

_________________________________
Title of Proposer’s Authorized Representative

_________________________________
Date

Subscribed and sworn to before me this _______ day of _____________________, 20___.

_________________________________
Notary Public
My Commission Expires:
TOWN OF CHESHIRE, CONNECTICUT

PROPOSAL # 1920-15
REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER

PROPOSER’S STATEMENT OF REFERENCES

Provide at least three (3) references:

1. BUSINESS NAME________________________________________________________
   ADDRESS_______________________________________________________________
   CITY, STATE____________________________________________________________
   TELEPHONE:____________________________________________________________
   INDIVIDUAL CONTACT NAME AND POSITION ____________________________
________________________________________________________________________

2. BUSINESS NAME________________________________________________________
   ADDRESS_______________________________________________________________
   CITY, STATE____________________________________________________________
   TELEPHONE:____________________________________________________________
   INDIVIDUAL CONTACT NAME AND POSITION ____________________________
________________________________________________________________________

3. BUSINESS NAME________________________________________________________
   ADDRESS_______________________________________________________________
   CITY, STATE____________________________________________________________
   TELEPHONE:____________________________________________________________
   INDIVIDUAL CONTACT NAME AND POSITION ____________________________
________________________________________________________________________

END OF STATEMENT OF REFERENCES
CONTRACT FOR REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER

This Contract is made as of the _____ day of __________, 20___ (the “Effective Date”), by and between the Town of Cheshire, 84 South Main Street, Cheshire, Connecticut, a municipal corporation organized and existing under the laws of the State of Connecticut (the “Town”), and [name and address of successful proposer] (the “Contracting Party”).

RECITALS:

WHEREAS, the Town has issued a Request for Proposals for Rehabilitation of West Johnson Avenue Bridge (No. 0549) Over Ten Mile River (the “RFP”), a copy of which, along with any addenda, is attached as Exhibit A;

WHEREAS, the Contracting Party submitted a proposal to the Town dated ________________ (the “Proposal”), a copy of which is attached as Exhibit B;

WHEREAS, the Town has selected the Contracting Party to perform the Work (as defined in Section 1 below); and

WHEREAS, the Town and the Contracting Party desire to enter into a formal contract for the performance of the Work.

NOW THEREFORE, in consideration of the recitals set forth above and the parties’ mutual promises and obligations contained below, the parties agree as follows:

1. Work: The Contracting Party agrees to perform the Work described more fully in the attached Exhibits A and B (collectively, the “Work”).

The Contracting Party also agrees to comply with all of the terms and conditions set forth herein and in the RFP, including but not only all of the terms set forth in Section 26 (the “Contract Terms”) of the Standard Instructions to Bidders.

2. Term: ninety (90) calendar days

3. Contract Includes Exhibits; Order of Construction: The Contract includes the RFP (Exhibit A) and the Proposal (Exhibit B), which are made a part hereof. In the event of a conflict or inconsistency between or among this document, the RFP, and the Proposal, this document shall have the highest priority, the RFP the second priority, and the Proposal the third priority.

4. Price and Payment: [price and payment]

5. Right to Terminate – If the Contracting Party’s fails to comply with any of the terms, provisions or conditions of the Contract, including the exhibits, the Town shall have the right, in addition to all other available remedies, to declare the Contract in default and, therefore, to terminate it and to resubmit the subject matter of the Contract to further public procurement. In that event, the Contracting Party shall pay the Town, as liquidated damages, the amount of any excess of the price of the new contract over the Contract price provided for herein, plus any legal
or other costs or expenses incurred by the Town in terminating this Contract and securing a new contracting party.

6. **No Waiver or Estoppel** – Either party’s failure to insist upon the strict performance by the other of any of the terms, provisions and conditions of the Contract shall not be a waiver or create an estoppel. Notwithstanding any such failure, each party shall have the right thereafter to insist upon the other party’s strict performance, and neither party shall be relieved of such obligation because of the other party’s failure to comply with or otherwise to enforce or to seek to enforce any of the terms, provisions and conditions hereof.

7. **Notice** – Any notices provided for hereunder shall be given to the parties in writing (which may be hardcopy, facsimile, or e-mail) at their respective addresses set forth below:

   If to the Town:

   **[name, address, fax and e-mail]**

   If to the Contracting Party:

   **[name, address, fax and e-mail]**

8. **Execution** - This Contract may be executed in one or more counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same agreement, and shall become binding when one or more counterparts have been signed by each of the parties hereto and delivered (including delivery by facsimile) to each of the parties.

   IN WITNESS THEREOF, the parties have executed this contract as of the last date signed below.

   **TOWN OF CHESHIRE**

   By ________________________________
   Sean M. Kimball
   Its Town Manager, Duly Authorized
   Date: ____________________________

   **[CONTRACTING PARTY LEGAL NAME]**

   By ________________________________
   Its _____________, Duly Authorized
   Date: ____________________________
SPECIFICATIONS FOR REHABILITATION OF WEST JOHNSON AVENUE BRIDGE (NO. 0549) OVER TEN MILE RIVER
INDEX TO SPECIFICATIONS

INTRODUCTION TO THE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS

NOTICE TO CONTRACTOR – CONTRACT TIME AND LIQUIDATED DAMAGES

NOTICE TO CONTRACTOR – BI-WEEKLY PROGRESS MEETINGS

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

NOTICE TO CONTRACTOR – WORK ON ADJACENT PROJECTS

NOTICE TO CONTRACTOR – PROCUREMENT OF MATERIALS

NOTICE TO CONTRACTOR – PROTECTION OF EXISTING UTILITIES

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

NOTICE TO CONTRACTOR – AS-BUILT PLANS

NOTICE TO CONTRACTOR – SUBMITTALS FOR IMPORTED AGGREGATES

SECTION 1.07 – LEGAL RELATIONS AND RESPONSIBILITIES

SECTION 1.08 – PROSECUTION AND PROGRESS

SECTION 1.09 – MEASUREMENT AND PAYMENT

SECTION 4.06 – BITUMINOUS CONCRETE

SECTION M.04 – BITUMINOUS CONCRETE MATERIALS

SPECIAL PROVISIONS

ITEM #0216003A – PERVIOUS STRUCTURE BACKFILL

ITEM #0503001A – REMOVAL OF SUPERSTRUCTURE

ITEM #0520036A – ASPHALTIC PLUG EXPANSION JOINT SYSTEM

ITEM #0602910A – DRILLING HOLES AND GROUTING DOWELS

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

ITEM #0904304A – METAL BRIDGE RAIL – THREE RAIL (COMBINATION)
INDEX TO SPECIFICATIONS – Continued

ITEM #0950040A – CONSERVATION SEEDING FOR SLOPES
ITEM #0969060A – CONSTRUCTION FIELD OFFICE, SMALL
ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC
ITEM #0974001A – REMOVAL OF EXISTING MASONRY
ITEM #0975004A – MOBILIZATION AND PROJECT CLOSEOUT
ITEM #0979003A – CONSTRUCTION BARRICADE TYPE III
ITEM #0980001A – CONSTRUCTION STAKING
ITEM #1401257A – WATER MAIN SUPPORT BRACKETS
INTRODUCTION TO SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, and latest supplements is hereby made part of this contract. The Standard Specifications as defined below shall apply to the various items of work which constitute the construction contemplated under this Contract except as amended, supplemented or replaced by the Special Provisions of this Contract and as described herein.

Within the Standard Specifications and Special Provisions of this Contract, the following definitions shall apply:


3. **Items**: Reference within the text of these Specifications to Items without a number but a title only, are Technical Specification Items within this Contract. Sections or Articles referred to with a number refer to the Standard Specifications defined above.

4. **Local Regulatory Agency(ies)**: is defined as the governing body or authority having jurisdiction over or responsibility for a particular activity within the Scope of this Contract. They may be as specifically defined within the Special Conditions or Special Provisions, otherwise, the Contractor shall be responsible to determine same in the local area of the Contract and should be cognizant of the limit of jurisdiction within the project area.

5. **These Specifications**, where used in the text shall be inclusive of all Standard
Specifications and Special Provisions of this Contract.

Payment will only be made for items in the Bid Proposal. Other items may be included in the Standard Specifications or Special Provisions but payment for those items not listed in the Bid Proposal will be included in the cost of other items of work. Bid Proposal Items may have alphanumeric designations consistent with applicable sections or articles in the Standard Specifications or Special Provisions.

In the case of any conflicts between the Agreement, Special Provisions, Drawings, and Standard Specifications, the order of governance in order of descending authority shall be as follows:

NOTICE TO CONTRACTOR – CONTRACT TIME AND LIQUIDATED DAMAGES

Ninety (90) calendar days will be allowed for the completion of the contract work, including fully opening the roadway. Accordingly, the liquidated damages charge to apply will be One Thousand Dollars ($1,000.00) per calendar day.

NOTICE TO CONTRACTOR – BI-WEEKLY PROGRESS MEETINGS

The Contractor will be responsible for coordinating bi-weekly progress meetings with the Town Engineer, Public Works Department and Emergency Services, as appropriate. These meetings will be held to discuss the Contractors immediate schedule and coordinate traffic operations with emergency personnel. Frequency of meetings shall be as directed by the Town.

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

In accordance with Connecticut General Statute 31-53b and Public Act No. 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 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.

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 the 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 Department of Transportation on which the employee's name first appears.

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

This section does not apply to employees of public service companies, as defined in section 16-1 of the 2008 supplement to the General Statutes, 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.

Additional information regarding this statute can be found at the Connecticut Department of Labor website, [http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm](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 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 – WORK ON ADJACENT PROJECTS**

The Contractor is responsible for coordinating with the Town of Cheshire for any projects being constructed concurrently within the area of this project. The Contractor is responsible for coordinating with the Town to minimize disruption to traffic operations within the area. Detour operations on projects will require approval by the Town.

**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 – PROTECTION OF EXISTING UTILITIES**

Existing utilities shall be maintained during construction except as specifically stated herein and/or noted on the plans and as coordinated with the utilities. The Contractor shall verify the location of underground, structure mounted and overhead utilities. Construction work within the vicinity of utilities shall be performed in accordance with current safety regulations.

The Contractor shall notify "Call Before You Dig", dial 811 or go to [www.cbyd.com](http://www.cbyd.com), for the location of public utility, in accordance with Section 16-345 of the Regulations of the Department of Utility Control, at least two full working days prior to the start of construction.

Representatives of the various utility companies shall be provided access to the work, by the Contractor. The Contractor shall notify the various utility companies a minimum of two weeks before construction activities begin.

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 Town. The Contractor shall allow the Engineer complete access to the work.

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.

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

The Contractor's attention is directed to the requirements of Section 1.07.13 – "Contractor's Responsibilities for Adjacent Property and Services".

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

Should the Contractor encounter any existing utility services owned by property owners that conflict with proposed construction, the Contractor shall refer to the Special Provision for Item No. 1700001A – Service Connections (Estimated Cost).

The following utility operators have facilities within and/or in the vicinity of the project limits. This list is not intended to be exhaustive, and the contractor shall maintain existing utilities subject to this Notice to Contractor.

The Contractor shall notify the utility representatives a minimum of thirty (30) days prior to the start of the road construction work.

**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 Town 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 – AS-BUILT PLANS**

The Contractor shall be responsible for furnishing as-built drawings upon completion of the project. The Contractor has an option to submit as-builts electronically or by hand and shall be maintained as the work progresses. The as-builts should clearly define any deviations from the original plans either geometrically (horizontal or vertical) or changes in materials used. **Final payment will not be released until the final as-built drawings have been furnished to the Town.**

This work shall be performed on a continuing basis and shall be included in the general cost of the work. No separate payment will be made for As-Built Drawings. This information will be used by the Municipality and may serve as public information.

**NOTICE TO CONTRACTOR – SUBMITTALS FOR IMPORTED AGGREGATES**

In accordance with the requirements in these special provisions and the CT DOT Form 817, specifically the Materials Section, the contractor is hereby notified of the requirement to provide submittals which include tests on the gradation, abrasion, soundness and any other parameters specified for the various aggregate materials proposed for use on this project. The tests must be current and based on a specific source location/pile. No material shall be imported until the Engineer issues a written approval. The Contractor shall also provide testing and documentation of the imported and stockpiled material to confirm consistency with the approved submittals and compliance with these specifications.
SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.13 - Contractor's Responsibility for Adjacent Property 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:

CoxCom, LLC
Ms. Denise Mazzoli
Project Planner
170 Utopia Road
Manchester, CT 06042
PHONE: 860-432-5041
E-MAIL: denise.mazzoli@cox.com

South Central Connecticut Regional Water Authority
Mr. Tom Adamo
Underground Infrastructure Land
90 Sargent Drive
New Haven, CT 06511
PHONE: 203-401-2541
E-MAIL: tadamo@rwater.com

Lightower Fiber Networks I, LLC dba Crown Castle Fiber
Mr. Terence J. Shea
Manager Fiber Construction
1781 Highland Avenue, Suite 102
Cheshire, CT 06410
PHONE: (203) 649-3905 Mobile: 860-402-6471
E-MAIL: Terence.Shea@crowncastle.com

The Southern New England Telephone Company dba Frontier Communications of Connecticut
Ms. Lynne DeLucia
Manager - Engineering & Construction
1441 North Colony Road
Meriden, CT 06450-4101
PHONE: (203) 238-5000 Mobile: 860-967-4389
E-MAIL: Lynne.m.delucia@ftr.com

Eversource Energy (gas)
Mr. Kenneth H. Cook III, P.E.
Project Engineer
PHONE: 860-665-3640
E-MAIL: Kenneth.cookiii@eversource.com
Eversource Energy (electric)
Mr. Thomas Woronik
Construction Engineering Supervisor
22 East High Street
East Hampton, CT 06424
PHONE: 860-267-3891
E-MAIL: thomas.woronik@eversource.com
SECTION 1.08 – PROSECUTION AND PROGRESS

1.08.03 – Prosecution of Work: is supplemented as follows:

The Contractor shall not be permitted to interrupt traffic for any continuous period of time until both of the following conditions are satisfied:

1. The Contractor has secured all of the required approvals from the Engineer, and,
2. The Contractor has, as much as practical, all of the required materials needed on the site or readily available for that construction which requires the interruption of traffic.

1.08.04 – Limitation of Operations: is supplemented by the following:

The Contractor shall schedule his construction operations so that construction at the site in this contract begins June 15, 2020, and ends on September 15, 2020, except as approved by the Engineer.

COORDINATION WITH OTHER PROJECTS

The Contractor shall be aware of work on adjacent projects that may be ongoing simultaneously with this project. The Contractor shall be aware of those projects so that coordination is maintained for proper traffic flow at all times on all project roadways and this coordination is acceptable to the Engineer.

OTHER LIMITATIONS

Longitudinal dropdowns greater than 3 inches will not be allowed during those periods when the maximum number of lanes of through traffic are required. The Contractor shall provide a temporary 1V:4H traversable slope of suitable material in those areas where a longitudinal dropdown exists. The cost of furnishing, installing, and removing this material shall be included in the contract lump sum for "Maintenance and Protection of Traffic".

All transverse height differentials on all roadway surfaces shall be tapered to negate any 'bump' to traffic as approved by the Engineer. Material for this taper shall be as approved by the Engineer.

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, with the exception of transition areas, shall be open to traffic unless the appropriate pavement markings have been installed. The transition areas shall have pavement markings applied before opening to traffic.

All temporary concrete barriers, other 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.
SECTION 1.09 - MEASUREMENT AND PAYMENT

Article 1.09.04 – Extra and Cost-Plus Work:

Section 1.09.04 (f) - Add the following after the first sentence:

Increases in bonding costs shall not be compensated within any extra work payment. Payment for such costs, if substantiated as outlined in Article 1.04.05, shall be based on a lump sum for actual costs with no additional mark-ups.

Replace 1.09.06 – “Partial Payments” with the following:

1.09.06—Partial Payments:

A. Monthly and Semi-monthly Estimates.

(1) Once each month, the Engineer will make, in writing, current estimates of the value of work performed in accordance with the Contract, calculated at Contract unit prices, including but not limited to the value of materials complete in place and materials not yet incorporated into the Project, but approved by the Engineer for payment (as provided for elsewhere in this article). Retainage will not be held.

Exceptions may be made as follows:

(a) When not in conflict with the interests of the State, the Contractor may request, and the Engineer may make, semi-monthly estimates for payment.

(b) No estimates for payments will be made when, in the judgment of the Engineer, the Project is not proceeding in accordance with the Contract.

(2) The Engineer may also make payment at Contract unit prices for the number of units that represent the value of the Project work performed to date, if said units are essentially, though not totally, complete.

(3) As soon as possible after the final inspection, the apparent final quantities will be sent to the Contractor. The Contractor shall respond in writing within 21 days of receipt by either signing and thus accepting the final quantities or by disagreeing in writing, citing the pay items involved with documentation and justification of such agreement. Failure to respond within the 21 days will be considered as acceptance of the final quantities and the Department may proceed with final payment.

B. Payment for Stored Materials: Non-perishable materials that meet Contract requirements, that have been produced or purchased specifically for incorporation into the Project, and that have been delivered to the Project site or to such location as the Engineer may have approved, but which have not yet been incorporated into the Project, may be included in current estimates at such fraction of the applicable Contract unit price or lump sum price as the Engineer may
deem to represent a fair value for the material, if such materials have been paid for by the Contractor as shown by receipted bills or, in lieu of such receipted bill(s), a duly-executed Certification of Title executed by the Contractor and the Vendor in the form approved by the Department. When partial payment is made for stored materials, such materials shall become the property of the State; but such payment shall in no way release the Contractor from its responsibility for the condition, protection and, in case of loss, replacement of such materials, or from any liability resulting in any manner from the presence of such materials wherever they may be stored or kept. All materials shall be stored in accordance with Article 1.06.03 and in accordance with the manufacturer’s recommendations. Material test approval by the Department shall be required prior to payment for such materials.

Offsite storage may be approved by the Engineer provided that the materials proposed for payment are segregated from other materials, clearly labeled as being owned by the Department for use on the identified Project, otherwise handled in compliance with Article 1.06.03, and stored in accordance with the manufacturer’s recommendations. All such materials must be readily-available for inventory and inspection by the Engineer. Storage outside of the State of Connecticut may be considered only when a representative of the Department is able to verify that the above requirements have been satisfied.

For items requiring extended fabrication, manufacturing or assembly time, the Contractor may propose to the Engineer a schedule of values for the related material costs. If the Engineer approves such a schedule of values, it shall become the Basis of Payment for the stored materials, so long as all other pertinent Contract requirements have been satisfied.

Generic materials having a use on many projects will be considered for payment prior to their incorporation into the Project only if stored in unopened packaging or in large lots. Stock and raw materials will not be considered for such advance payment without the Engineer’s prior written consent there to.

In no case shall material payments exceed the Contract unit price or lump sum price less the actual value of delivery and installation of the materials; if they do exceed such a price, the Engineer reserves the right to reduce any related payment accordingly. Such reductions in payment shall in no way affect the Department’s ownership interest in the stored materials.

Replace 1.09.07 – “Final Payment” with the following:

1.09.07—Final Payment: When the Town has accepted the Project, the Engineer will prepare a final payment estimate and a list of final item quantities. The list will include the entire amount of each item of Project work performed, the value thereof, and the amount of all payments made on prior estimates, all such estimated payments being merely partial payments and subject to correction in the calculation of the final payment.
SECTION 4.06 – BITUMINOUS CONCRETE

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

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

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

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

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

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

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

Density Lot: The total tonnage of all bituminous concrete placed in a single lift which are:
PWL density lots = When the project total estimated quantity per mixture is larger than 3,500 tons

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

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

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

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

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

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

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

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

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

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

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

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

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

**Segregation:** A non-uniform distribution of a bituminous concrete mixture in terms of gradation, temperature, or volumetric properties.
Warm Mix Asphalt (WMA) Technology: A qualified additive or technology that may be used to produce a bituminous concrete at reduced temperatures and/or increase workability of the mixture.

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

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

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

4.06.03—Construction Methods

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

   b. Name of Producer, identification of Plant, and specific storage silo if used.
   c. Date and time.
   d. Mixture Designation, mix type and level. Curb mixtures for machine-placed curbing must state "curb mix only."
   e. If WMA Technology is used, “-W” must be listed following the mixture designation.
   f. Net weight of mixture loaded into the vehicle. (When RAP and/or RAS is used, the moisture content shall be excluded from mixture net weight.)
   g. Gross weight (equal to the net weight plus the tare weight or the loaded scale weight).
   h. Tare weight of vehicle (daily scale weight of the empty vehicle).
   i. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
   j. Vehicle number - unique means of identification of vehicle.
   k. For Batch Plants: individual aggregate, recycled materials, and virgin asphalt max/target/min weights when silos are not used.
   l. For every mixture designation: the running daily and project total delivered and sequential load number.

   The net weight of mixture loaded into the vehicle must be equal to the cumulative measured weights of its components.

   The Contractor must notify the Engineer immediately if, during production, there is a malfunction of the weight recording system in the automated Plant. Manually written tickets containing all required information will be allowed for no more than 1 hour.

   The State reserves the right to have an Inspector present to monitor batching and/or weighing operations.
2. **Transportation of Mixture:** The mixture shall be transported in vehicles that are clean of all foreign material, excessive coating or cleaning agents, and that have no gaps through which material might spill. Any material spilled during the loading or transportation process shall be quantified by re-weighing the vehicle. The Contractor shall load vehicles uniformly so that segregation is minimized. Loaded vehicles shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The cover must minimize air infiltration. Vehicles found not to be in conformance shall not be loaded.

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list and allowable weights of all vehicles transporting mixture. The State reserves the right to check the gross and tare weight of any vehicle. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4%, the Engineer will recalculate the net weight. The Contractor shall correct the discrepancy to the satisfaction of the Engineer.

If a vehicle delivers mixture to the Project and the delivery ticket indicates that the vehicle is overweight, the load may not be rejected but a “Measured Weight Adjustment” will be taken in accordance with Article 4.06.04.

Vehicle body coating and cleaning agents must not have a deleterious effect on the mixture. The use of solvents or fuel oil, in any concentration, is prohibited for the coating of vehicle bodies.

For each delivery, the Engineer shall be provided a clear, legible copy of the delivery ticket.

3. **Paving Equipment:** The Contractor shall have the necessary paving and compaction equipment at the Project Site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective, or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. During the paving operation, the use of solvents or fuel oil, in any concentration, is strictly prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

Refueling or cleaning of equipment is prohibited in any location on the Project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off of areas paved or to be paved.

**Pavers:** Each paver shall have a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. The paver shall be equipped with and use a vibratory screed system with heaters or burners. The screed system shall be capable of producing a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screed units as part of the system shall have auger extensions and tunnel extenders as necessary. Automatic screed controls for grade and slope shall be used at all times unless otherwise authorized by the Engineer. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable, and shall operate from a fixed or moving reference such as a grade wire or floating beam (minimum length 20 feet).
Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Roller types shall include steel wheeled, pneumatic, or a combination thereof. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination. Vibratory rollers shall be equipped with indicators for amplitude, frequency, and speed settings/readouts to measure the impacts per foot during the compaction process. Oscillatory rollers shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

Pneumatic tire rollers shall be equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 psi uniformly over the surface. The Contractor shall furnish documentation to the Engineer regarding tire size, pressure and loading to confirm that the proper contact pressure is being developed and that the loading and contact pressure are uniform for all wheels.

Lighting: For paving operations which will be performed during hours of darkness the paving equipment shall be equipped with lighting fixtures as described below or with an approved equal. Lighting shall minimize glare to passing traffic. The lighting options and minimum number of fixtures are listed in Tables 4.06-1 and 4.06-2.

**TABLE 4.06-1: Minimum Paver lighting**

<table>
<thead>
<tr>
<th>Option</th>
<th>Fixture Configuration</th>
<th>Fixture Quantity</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type A</td>
<td>3</td>
<td>Mount over screed area</td>
</tr>
<tr>
<td></td>
<td>Type B (narrow) or Type C (spot)</td>
<td>2</td>
<td>Aim to auger and guideline</td>
</tr>
<tr>
<td></td>
<td>Type B (wide)or Type C (flood)</td>
<td>2</td>
<td>Aim 25 feet behind paving machine</td>
</tr>
<tr>
<td>2</td>
<td>Type D Balloon</td>
<td>2</td>
<td>Mount over screed area</td>
</tr>
</tbody>
</table>

**TABLE 4.06-2: Minimum Roller Lighting**

<table>
<thead>
<tr>
<th>Option</th>
<th>Fixture Configuration</th>
<th>Fixture Quantity</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type B (wide)</td>
<td>2</td>
<td>Aim 50 feet in front of and behind roller</td>
</tr>
<tr>
<td></td>
<td>Type B (narrow)</td>
<td>2</td>
<td>Aim 100 feet in front of and behind roller</td>
</tr>
<tr>
<td>2</td>
<td>Type C (flood)</td>
<td>2</td>
<td>Aim 50 feet in front of and behind roller</td>
</tr>
<tr>
<td></td>
<td>Type C (spot)</td>
<td>2</td>
<td>Aim 100 feet in front of and behind roller</td>
</tr>
<tr>
<td>3</td>
<td>Type D Balloon</td>
<td>1</td>
<td>Mount above the roller</td>
</tr>
</tbody>
</table>

*All fixtures shall be mounted above the roller.*

Type A: Fluorescent fixture shall be heavy duty industrial type. Each fixture shall have a minimum output of 8,000 lumens. The fixtures shall be mounted horizontally and be designed for continuous row installation.

Type B: Each floodlight fixture shall have a minimum output of 18,000 lumens.

Type C: Each fixture shall have a minimum output of 19,000 lumens.

Type D: Balloon light – each balloon light fixture shall have minimum output of 50,000 lumens and emit light equally in all directions.
**Material Transfer Vehicle (MTV):** A MTV shall be used when placing bituminous concrete surface course (a lift or multiple lifts) as indicated in the Contract except as noted on the plans or as directed by the Engineer. In addition, continuous paving lengths of less than 500 feet may not require the use of a MTV as determined by the Engineer.

The MTV must be a vehicle specifically designed for the purpose of delivering the bituminous concrete mixture from the delivery vehicle to the paver. The MTV must continuously remix the bituminous concrete mixture throughout the placement process.

The use of a MTV will be subject to the requirements stated in Article 1.07.05 Load Restrictions. The Engineer may limit the use of the vehicle if it is determined that the use of the MTV may damage highway components, utilities, or bridges. The Contractor shall submit to the Engineer at time of pre-construction the following information:

1. The make and model of the MTV.
2. The individual axle weights and axle spacing for each piece of paving equipment (haul vehicle, MTV and paver).
3. A working drawing showing the axle spacing in combination with all pieces of equipment that will comprise the paving echelon.

**4. Test Section:** The Engineer may require the Contractor to place a test section whenever the requirements of this specification or Section M.04 are not met.

The Contractor shall submit the quantity of mixture to be placed and the location of the test section for review and approval by the Engineer. The same equipment used in the construction of a passing test section shall be used throughout production.

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, Plant operations, or procedures for placement and compaction. The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

**5. Transitions for Roadway Surface:** Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall meet the criteria below unless otherwise specified.

**Permanent Transitions:** Defined as any gradual change in pavement elevation that remains as a permanent part of the work.

A transition shall be constructed no closer than 75 feet from either side of a bridge expansion joint or parapet. All permanent transitions, leading and trailing ends shall meet the following length requirements:
### Posted Speed Limit vs. Permanent Transition Length Required

<table>
<thead>
<tr>
<th>Posted Speed Limit</th>
<th>Permanent Transition Length Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 35 mph</td>
<td>30 feet per inch of elevation change</td>
</tr>
<tr>
<td>35 mph or less</td>
<td>15 feet per inch of elevation change</td>
</tr>
</tbody>
</table>

In areas where it is impractical to use the above-described permanent transition lengths, the use of a shorter permanent transition length may be permitted when approved by the Engineer.

**Temporary Transitions:** Defined as a transition that does not remain a permanent part of the work.

All temporary transitions shall meet the following length requirements:

<table>
<thead>
<tr>
<th>Posted Speed Limit</th>
<th>Temporary Transition Length Required</th>
</tr>
</thead>
</table>
| > 50 mph          | Leading Transition: 15 feet per inch of vertical change (thickness)  
|                   | Trailing Transition: 6 feet per inch of vertical change (thickness) |
| 40, 45 or 50 mph  | Leading and Trailing: 4 feet per inch of vertical change (thickness) |
| 35 mph or less    | Leading and Trailing: 3 feet per inch of vertical change (thickness) |

**Note:** Any temporary transition to be in place over the winter shutdown period or during extended periods of inactivity (more than 14 calendar days) shall meet the greater than 50 mph requirements shown above.

### 6. Spreading and Finishing of Mixture:

Prior to the placement of the mixture, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance.

Immediately before placing a bituminous concrete lift, a uniform coating of tack coat shall be applied to all existing underlying pavement surfaces and on the exposed surface of a wedge joint. Such surfaces shall be clean and dry. Sweeping or other means acceptable to the Engineer shall be used.

The mixture shall not be placed whenever the surface is wet or frozen.

**Tack Coat Application:** The tack coat shall be applied by a pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gal./s.y. for a non-milled surface and an application rate of 0.05 to 0.07 gal./s.y. for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gal/s.y. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall be heated to 160°F ± 10°F and shall not be further diluted.

Tack coat shall be allowed sufficient time to break prior to any paving equipment or haul vehicles driving on it.
The Contractor may request to omit the tack coat application between bituminous concrete layers that have not been exposed to traffic and are placed during the same work shift. Requests to omit tack coat application on the upper and lower surfaces of a wedge joint will not be considered.

Placement: The mixture shall be placed and compacted to provide a smooth, dense surface with a uniform texture and no segregation at the specified thickness and dimensions indicated in the plans and specifications.

When unforeseen weather conditions prevent further placement of the mixture, the Engineer is not obligated to accept or place the bituminous concrete mixture that is in transit from the Plant.

In advance of paving, traffic control requirements shall be set up, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The mixture temperature will be verified by means of a probe or infrared type of thermometer. The placement temperature range shall be listed in the quality control plan (QCP) for placement and meet the requirements of Table M.04.03-4. Any HMA material that falls outside the specified temperature range as measured by a probe thermometer may be rejected.

The Contractor shall inspect the newly placed pavement for defects in mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impracticable due to physical limitations to operate the paving equipment, the Engineer may permit the use of other methods or equipment. Where hand spreading is permitted, the mixture shall be placed by means of suitable shovels and other tools, and in a uniformly loose layer at a thickness that will result in a completed pavement meeting the designed grade and elevation.

Placement Tolerances: Each lift of bituminous concrete placed at a specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an adjustment or removal. Lift tolerances will not relieve the Contractor from meeting the final designed grade. Lifts of specified non-uniform thickness, i.e. wedge or shim course, shall not be subject to thickness and area adjustments.

a) Thickness: Where the average thickness of the lift exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the Engineer will calculate the thickness adjustment in accordance with Article 4.06.04.

b) TABLE 4.06-3: Thickness Tolerances

<table>
<thead>
<tr>
<th>Mixture Designation</th>
<th>Lift Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>+/- 3/8 inch</td>
</tr>
<tr>
<td>S0.25, S0.375, S0.5</td>
<td>+/- 1/4 inch</td>
</tr>
</tbody>
</table>
Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this Section.

c) Area: Where the width of the lift exceeds that shown on the plans by more than the specified thickness, the Engineer will calculate the area adjustment in Article 4.06.04.
d) Delivered Weight of Mixture: When the delivery ticket shows that the truck exceeds the allowable gross weight for the vehicle type, the Engineer will calculate the weight adjustment in accordance with Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting to expose the full thickness of the lift. Tack coat shall be applied to the sawn face immediately prior to additional mixture being placed.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.04 and eliminate all roller marks without displacement, shoving cracking, or aggregate breakage.

When placing a lift with a specified thickness less than 1 1/2 inches, or a wedge course, the Contractor shall provide a minimum rolling pattern as determined by the development of a compaction curve. The procedure to be used shall be documented in the Contractor’s QCP for placement and demonstrated on the first day of placement.

The use of the vibratory system on concrete structures is prohibited. When approved by the Engineer, the Contractor may operate a roller using an oscillatory system at the lowest frequency setting.

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities or adjacent property, the Contractor shall provide alternate compaction equipment.

Rollers operating in the dynamic mode shall be shut off when changing directions.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements:

Each lift of the surface course shall not vary more than 1/4 inch from a Contractor-supplied 10 foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be 3/8 inch. Such tolerance will apply to all paved areas.

Any surface that exceeds these tolerances shall be corrected by the Contractor at its own expense.

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I - Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are
1 ½ inches to 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II - Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1 1/2 inches or greater than 3 inches. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed 1/4 inch at any location.

**Method I - Notched Wedge Joint:**

A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width “curb to curb” as described in Method II may be waived if addressed in the QC plan and approved by the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device. The compaction device shall be the same width as the taper and not reduce the angle of the wedge or ravel the top notch of the joint during compaction.

When placed on paved surfaces, the area below the sloped section of the joint shall be treated with tack coat. The top surface of the sloped section of the joint shall be treated with tack coat prior to placing the completing pass.

The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

Any exposed wedge joint must be located to allow for the free draining of water from the road surface.

The Engineer reserves the right to define the paving limits when using a wedge joint that will be exposed to traffic.

If Method I cannot be used on those lifts which are 1 ½ inches to 3 inches, Method III may be substituted according to the requirements below for “Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment.”
**Method II - Butt Joint:**

When adjoining passes are placed, the Contractor shall use the end gate to create a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inch from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

The Contractor shall not allow any butt joint to be incomplete at the end of a work shift unless otherwise allowed by the Engineer. When using this method, the Contractor is not allowed to leave a vertical edge exposed at the end of a work shift and must complete paving of the roadway full width “curb to curb.”

**Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment:**

If Method I cannot be used due to physical constraints in certain limited locations, the Contractor may submit a request in writing for approval by the Engineer to use Method III as a substitution in those locations. There shall be no additional measurement or payment made when Method III is substituted for Method I. When required by the Contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.

**Figure 4.06-2: Butt Joint (Not to Scale)**

**Figure 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment (Not to Scale)**

All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D6690, Type 2. The joint sealant shall be placed on the face of the “cold side” of the butt joint as shown above prior to placing the “hot side” of the butt joint. The joint seal material shall
be applied in accordance with the manufacturer’s recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

8. Contractor Quality Control (QC) Requirements: The Contractor shall be responsible for maintaining adequate quality control procedures throughout the production and placement operations. Therefore, the Contractor must ensure that the materials, mixture, and work provided by Subcontractors, Suppliers, and Producers also meet Contract specification requirements.

This effort must be documented in Quality Control Plans (QCP) and must address the actions, inspection, or sampling and testing necessary to keep the production and placement operations in control, to determine when an operation has gone out of control and to respond to correct the situation in a timely fashion.

The Standard QCP for production shall consist of the quality control program specific to the production facility.

There are 3 components to the QCP for placement: a Standard QCP, a Project Summary Sheet that details Project-specific information, and, if applicable, a separate Extended Season Paving Plan as required in 4.06.03-9 “Temperature and Seasonal Requirements.”

The Standard QCP for both production and placement shall be submitted to the Department for approval each calendar year and at a minimum of 30 days prior to production or placement.

Production or placement shall not occur until all QCP components have been approved by the Engineer.

Each QCP shall include the name and qualifications of a Quality Control Manager (QCM). The QCM shall be responsible for the administration of the QCP, and any modifications that may become necessary.

The QCM shall have the ability to direct all Contractor personnel on the Project during paving operations.

The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QC Technician performing in-place density testing shall be NETTCP certified as a paving inspector.

Approval of the QCP does not relieve the Contractor of its responsibility to comply with the Project specifications. The Contractor may modify the QCPs as work progresses and must document the changes in writing prior to resuming operations. These changes include but are not limited to changes in quality control procedures or personnel. The Department reserves the right to deny significant changes to the QCPs.

QCP for Production: Refer to M.04.03-1.
QCP for Placement: The Standard QCP, Project Summary Sheet, and Extended Season Paving Plan shall conform to the format provided by the Engineer. The format is available at http://www.ct.gov/dot/lib/dot/documents/dconstruction/pat/qcp_outline_hma_placement.pdf

The Contractor shall perform all quality control sampling and testing, provide inspection, and exercise management control to ensure that bituminous concrete placement conforms to the requirements as outlined in its QCP during all phases of the work. The Contractor shall document these activities for each day of placement.

The Contractor shall submit complete field density testing and inspection records to the Engineer within 48 hours in a manner acceptable to the Engineer.

The Contractor may obtain 1 mat core and 1 joint core per day for process control, provided this process is detailed in the QCP. The results of these process control cores shall not be used to dispute the Department’s determinations from the acceptance cores. The Contractor shall submit the location of each process control core to the Engineer for approval prior to taking the core. The core holes shall be filled to the same requirements described in Subarticle 4.06.03-10.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into 2 seasons, “In-Season” and “Extended-Season.” In-Season paving occurs from May 1 to October 14, and Extended Season paving occurs from October 15 to April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

- Mixtures shall not be placed when the air or subbase temperature is less than 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the Project that addresses minimum delivered mix temperature considering WMA, PMA, or other additives; maximum paver speed; enhanced rolling patterns; and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

10. Field Density The Contractor shall obtain cores for the determination of mat and longitudinal joint density of bituminous concrete pavements. Within five calendar days of placement, mat and joint cores shall be extracted on each lift with a specified thickness of 1 1/2 inches or more. Joint cores shall not be extracted on HMA S1.0 lifts.

The Contractor shall extract cores from random locations determined by the Engineer in accordance with ASTM D3665. Four (4) or six (6) inch diameter cores shall be extracted for S0.25, S0.375 and S0.5 mixtures; 6 inch diameter cores shall be required for S1.0 mixtures. The Contractor shall coordinate with the Engineer to witness the extraction, labeling of cores, and filling of the core holes.

Each lift will be separated into lots as follows:

a. Simple Average Density Lots: For total estimated quantities below 2,000 tons, the lift
will be evaluated in one lot which will include the total paved tonnage of the lift and all longitudinal joints between the curb lines. For total estimated quantities between 2,000 and 3,500 tons, the lift will be evaluated in two lots in which each lot will include approximately half of the total tonnage placed for the full paving width of a lift including all longitudinal joints between the curb lines.

b. PWL Density Lots: Mat density lots will include each 3,500 tons of mixture placed within 30 calendar days. Joint density lots will include 14,000 linear feet of constructed joints. Bridge density lots will always be analyzed using simple average lot methodology.

c. Partial Density Lot (For PWL only): A mat density lot with less than 3,500 tons or a joint density lot with less than 14,000 linear feet due to:
- completion of the course; or
- a lot spanning 30 calendar days.

Prior to paving, the type and number of lot(s) will be determined by the Engineer.

Noncontiguous areas such as highway ramps may be combined to create one lot.

After the lift has been compacted and cooled, the Contractor shall cut cores to a depth equal to or greater than the lift thickness and shall remove them without damaging the lift(s) to be tested. Any core that is damaged or obviously defective while being obtained will be replaced with a new core from a location within 2 feet measured in a longitudinal direction.

A mat core shall not be located any closer than 1 foot from the edge of a paver pass. If a random number locates a core less than 1 foot from any edge, the location will be adjusted by the Engineer so that the outer edge of the core is 1 foot from the edge of the paver pass.

Method I, Notched Wedge Joint cores shall be taken so that the center of the core is 5 inches from the visible joint on the hot mat side (Figure 4.06-4).

**Figure 4.06-4: Notched Wedge Joint Cores** (Not to Scale)

![Figure 4.06-4: Notched Wedge Joint Cores](image)

When Method II or Method III Butt Joint is used, cores shall be taken from the hot side so the edge of the core is within 1 inch of the longitudinal joint.
The cores shall be labeled by the Contractor with the Project number, date placed, lot number, and sub-lot number. The core’s label shall include “M” for a mat core and “J” for a joint core. For example, a mat core from the first lot and the first sub-lot shall be labeled with “M1 – 1.” A mat core from the second lot and first sub-lot shall be labeled “M2-1” (see Figure 4.06-5). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the cores and MAT-109 to the Department’s Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using security seals at the removable hinges(s) and at the lid opening(s). The security seals’ identification number must be documented on the MAT-109. All sealed containers shall be delivered to the Department’s Central Lab within two working days from time of extraction. Central Lab personnel will break the security seal and take possession of the cores.

![Figure 4.06-5: Labeling of Cores](image)

Each core hole shall be filled within 4 hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other means to uniformly cover the cut surface. The core hole shall be filled using a bituminous concrete mixture at a minimum temperature of 240°F containing the same or smaller nominal maximum aggregate size and compacted with a hand compactor or other mechanical means to the maximum compaction possible. The bituminous concrete shall be compacted to 1/8 inch above the finished pavement.

**Simple Average Density Lots:**

A standard simple average density lot is the quantity of material placed within the defined area excluding any bridge decks.

A combo simple average density lot is the quantity of material placed within the defined area including bridge decks less than or equal to 500 feet long.

A bridge simple average density lot is the quantity of material placed on a bridge deck longer than 500 feet.
The number of cores per lot shall be determined in accordance with Table 4.06-4. If a randomly selected mat or joint core location is on a bridge deck, the core is to be obtained on the bridge deck in addition to the core(s) required on the bridge deck.

The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

The longitudinal locations of mat cores within a standard, combo, or bridge lot containing multiple paving passes will be determined using the combined length of the paving passes within the lot.

### TABLE 4.06-4: Number of Cores per Lot (Simple Average)

<table>
<thead>
<tr>
<th>Lot Type</th>
<th>No. of Mat Cores</th>
<th>No. of Joint Cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Lot &lt; 500 Tons</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Standard Lot ≥ 500 Tons</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Combo Lot &lt; 500 Tons</td>
<td>2 plus 1 per bridge (≤ 300')</td>
<td>2 plus 1 per bridge (301’ – 500’)</td>
</tr>
<tr>
<td>Combo Lot ≥ 500 Tons(1)</td>
<td>4 plus 2 per bridge (301’ – 500’)</td>
<td>4 plus 2 per bridge (301’ – 500’)</td>
</tr>
</tbody>
</table>

### TABLE 4.06-5: Number of Core per Bridge Density Lot (Simple Average)

<table>
<thead>
<tr>
<th>Length of Bridge(s) (Feet)</th>
<th>Minimum No. of Mat Cores</th>
<th>Minimum No. of Joint Cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 500</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>501 – 1,500</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1,501 – 2,500</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2,501 and greater</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

**PWL Density Lots:**

A PWL mat density lot is 3,500 tons of material placed within the defined area excluding any bridges. One mat core will be obtained per every 500 tons placed.

A PWL joint density lot is 14,000 linear feet of longitudinal joint excluding any joints on bridge decks. One joint core will be obtained per every 2,000 linear feet of joint.

Bridge density lots will always be analyzed as using the simple average lot methodology. The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.
11. **Acceptance Sampling and Testing:** Sampling shall be performed in accordance with ASTM D3665 or a statistically-based procedure of stratified random sampling approved by the Engineer.

Plant Material Acceptance: The Contractor shall provide the required sampling and testing during all phases of the work in accordance with M.04. The Department will verify the Contractor’s acceptance test results. Should any test results exceed the specified tolerances in the Department’s current QA Program for Materials, the Contractor’s test results for a subject lot or sub lot may be replaced with the Department’s results for the purpose of calculating adjustments. The verification procedure is included in the Department’s current QA Program for Materials.

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production’s average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department’s current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.

12. **Density Dispute Resolution Process:** The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer’s test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within five calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results from samples taken prior to and after finish rolling, and within the timeframe described in 4.06.03-8 supporting its position. No request for dispute resolution will be allowed for a density lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new core or set of core samples per disputed lot. The core samples must be extracted no later than seven calendar days from the date of the Engineer’s authorization. All such core samples shall be extracted and the core hole filled using the procedure outlined in 4.06.03-10.

a) Simple Average Lots: The Contractor may only dispute any simple average lot that is adjusted at or below 95 percent payment. The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. The dispute resolution results shall be combined with the original results and averaged for determining the final in-place density value.

b) PWL Lots: The Contractor may dispute any PWL sublot when the PWL falls below 50% calculated in accordance with section 4.06.04.2.b. An additional random core in the sublot may be taken to validate the accuracy of the core in question. The Department will verify the additional core test result and may average the original test result with the additional core result for purpose of calculating adjustments.
13. **Corrective Work Procedure:**

If pavement placed by the Contractor does not meet the specifications, and the Engineer requires its replacement or correction, the Contractor shall:

a) Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:
   - Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.
   - Proposed work schedule.
   - Construction method and sequence of operations.
   - Methods of maintenance and protection of traffic.
   - Material sources.
   - Names and telephone numbers of supervising personnel.

b) Any corrective courses placed as the final wearing surface shall match the specified lift thickness after completion.

14. **Protection of the Work:** The Contractor shall protect all sections of the newly finished pavement from damage that may occur as a result of the Contractor’s operations for the duration of the Project.

15. **Cut Bituminous Concrete Pavement:** Work under this item shall consist of making a straight-line cut in the bituminous concrete pavement to the lines delineated on the plans or as directed by the Engineer. The cut shall provide a straight, clean, vertical face with no cracking, tearing or breakage along the cut edge.

4.06.04—**Method of Measurement:**

1. **HMA S* or PMA S*:** Bituminous concrete will be measured for payment as the amount of material in tons placed as determined by the net weight on the delivered tickets and adjusted by area, thickness and weight as follows:

   **Quantity Adjustments:** Adjustments may be applied to the placed bituminous concrete quantities that will be measured for payment using the following formulas:

   **Yield Factor** for Adjustment Calculation = 0.0575 tons/SY/inch

   **Actual Area (SY)** = \([\frac{(\text{Measured Length (ft)} \times \text{Avg. of width measurements (ft)})}{9} \text{ s.f./SY}]\)

   **Actual Thickness (t)** = \(\frac{\text{Total tons delivered}}{\text{Actual Area (SY) x 0.0575 tons/SY/inch}}\)

   a) Area: If the average width exceeds the allowable tolerance, an adjustment will be made using the following formula. The tolerance for width is equal to the specified thickness (inch) of the lift being placed.
Quantity Adjusted for Area ($T_A$) = \[((L \times W_{adj})/9) \times (t) \times 0.0575 \text{ Tons/SY/inch} = (-) \text{ tons}\]

Where:
- L = Length (ft)
- (t) = Actual thickness (inches)
- \(W_{adj} = (\text{Designed width (ft)} + \text{tolerance /12}) - \text{Measured Width}\)

b) Thickness: If the actual average thickness is less than the allowable tolerance, the Contractor shall submit a repair procedure to the Engineer for approval. If the actual thickness exceeds the allowable tolerance, an adjustment will be made using the following formula:

Quantity Adjusted for Thickness ($T_T$) = \(A \times t_{adj} \times 0.0575 = (-) \text{ tons}\)

Where:
- A = Area = \[\left[\frac{L \times (\text{Design width} + \text{tolerance (lift thickness)/12})}{9}\right]\]
- \(t_{adj} = \text{Adjusted thickness} = \left[\frac{(Dt + \text{tolerance}) - \text{Actual thickness}}{9}\right]\)
- Dt = Designed thickness (inches)

c) Weight: If the quantity of bituminous concrete representing the mixture delivered to the Project is in excess of the allowable gross vehicle weight (GVW) for each vehicle, an adjustment will be made using the following formula:

Quantity Adjusted for Weight ($T_W$) = GVW – DGW = (-) tons

Where: DGW = Delivered gross weight as shown on the delivery ticket or measured on a certified scale

2. Bituminous Concrete Adjustment Cost:

   a) Production Lot Adjustment: An adjustment may be applied to each production lot as follows:
   
i. Non-PWL Production Lot (less than 3,500 tons):
      The adjustment values in Tables 4.06-6 and 4.06-7 will be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day’s production (lot) will be computed as follows:

   \[\text{Tons Adjusted for Superpave Design (}T_{SD}\) = \left[\frac{\text{AdjAV}_1 + \text{AdjPB}_1}{100}\right] \times \text{Tons}\]

   Where:
   - AdjAV$_i$: Percent adjustment for air voids
   - AdjPB$_i$: Percent adjustment for asphalt binder
   - Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

   Percent Adjustment for Air Voids = \(\text{AdjAV}_1 = \left[\frac{\text{AdjAV}_1 + \text{AdjAV}_2 + \text{AdjAV}_i + \ldots + \text{AdjAV}_n}{n}\right]\)

   Where: AdjAV$_1$ = Total percent air void adjustment value for the lot
AdjAV\textsubscript{i} = Adjustment value from Table 4.06-6 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.
n = number of sub lots based on Table M.04.03-2

<table>
<thead>
<tr>
<th>Adjustment Value (AdjAV\textsubscript{i}) (%)</th>
<th>S0.25, S0.375, S0.5, S1 Air Voids (AV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2.5</td>
<td>3.8 - 4.2</td>
</tr>
<tr>
<td>+3.125*(AV-3)</td>
<td>3.0 - 3.7</td>
</tr>
<tr>
<td>-3.125*(AV-5)</td>
<td>4.3 - 5.0</td>
</tr>
<tr>
<td>20*(AV-3)</td>
<td>2.3 - 2.9</td>
</tr>
<tr>
<td>-20*(AV-5)</td>
<td>5.1 - 5.7</td>
</tr>
<tr>
<td>-20.0</td>
<td>≤ 2.2 or ≥ 5.8</td>
</tr>
</tbody>
</table>

Percent Adjustment for Asphalt Binder = AdjPB\textsubscript{t} = \frac{[\text{AdjPB}_{1} + \text{AdjPB}_{2} + \text{AdjPB}_{3} + \ldots + \text{AdjPB}_{n}]}{n}

Where: AdjPB\textsubscript{i} = Total percent liquid binder adjustment value for the lot
AdjPB\textsubscript{t} = Adjustment value from Table 4.06-7 resulting from each sub lot
n = number of binder tests in a production lot

<table>
<thead>
<tr>
<th>Adjustment Value (AdjAV\textsubscript{i}) (%)</th>
<th>S0.25, S0.375, S0.5, S1 Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>JMF Pb ± 0.3</td>
</tr>
<tr>
<td>-10.0</td>
<td>≤ JMF Pb - 0.4 or ≥ JMF Pb + 0.4</td>
</tr>
</tbody>
</table>

ii. PWL Production Lot (3500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on AV, VMA, and PB test results. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

Only one test result will be considered for each sub lot. The specification limits are listed in M.04.

For AV, PB, and voids in mineral aggregate (VMA), the individual material quantity characteristic adjustment (Adj) will be calculated as follows:

For PWL between 50 and 90%: Adj(AV\textsubscript{i} or PB\textsubscript{i} or VMA\textsubscript{i}) = (55 + 0.5 PWL) - 100

For PWL at and above 90%: Adj(AV\textsubscript{i} or PB\textsubscript{i} or VMA\textsubscript{i}) = (77.5 + 0.25 PWL) - 100

Where: AdjAV\textsubscript{i} = Total percent AV adjustment value for the lot
AdjPB\textsubscript{i} = Total percent PB adjustment value for the lot
AdjVMA\textsubscript{i} = Total percent VMA adjustment value for the lot
A lot with PWL less than 50% in any of the 3 individual material quality characteristics will be evaluated under 1.06.04.

The total adjustment for each production lot will be computed using the following formula:

**Tons Adjusted for Superpave Design** ($T_{SD}$) = \[
\frac{(0.5\text{AdjAV}_t + 0.25\text{AdjPB}_t + 0.25 \text{AdjVMA}_t)}{100} \times \text{Tons}
\]

Where Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

iii. **Partial Lots:**

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material or if the last test result of the prior lot is over 30 calendar days old, the adjustment will be calculated as indicated in 4.06.04-2.a)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.a)ii.

**Production Lot Adjustment:** $T_{SD} \times \text{Unit Price} = \text{Est. (Pi)}$

Where: Unit Price = Contract unit price per ton per type of mixture

Est. (Pi) = Pay Unit in dollars representing incentive or disincentive per lot

b) **Density Lot Adjustment:** An adjustment may be applied to each density lot as follows:

i. **Simple Average Density Lot** (less than 3500 tons) and Bridge Lots:

The final lot quantity shall be the difference between the total payable tons for the Project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace,” the density lot shall be removed and replaced (curb to curb).

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

**Tons Adjusted for Density** ($T_D$) = \[
\frac{\{(\text{PA}_M x 0.50) + (\text{PA}_J x 0.50)\}}{100} \times \text{Tons}
\]

Where: $T_D$ = Total tons adjusted for density for each lot

PA$_M$ = Mat density percent adjustment from Table 4.06-8

PA$_J$ = Joint density percent adjustment from Table 4.06-9

Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

**TABLE 4.06-8: Adjustment Values for Pavement Mat density**

<table>
<thead>
<tr>
<th>Average Core Result</th>
<th>Percent Adjustment (Bridge and Non-Bridge) $^{(1)(2)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Mat Density</td>
<td></td>
</tr>
<tr>
<td>97.1 - 100</td>
<td>-1.667*(ACRPD-98.5)</td>
</tr>
<tr>
<td>94.5 – 97.0</td>
<td>+2.5</td>
</tr>
<tr>
<td>93.5 – 94.4</td>
<td>+2.5*(ACRPD-93.5)</td>
</tr>
<tr>
<td>92.0 – 93.4</td>
<td>0</td>
</tr>
<tr>
<td>90.0 – 91.9</td>
<td>-5*(92-ACRPD)</td>
</tr>
<tr>
<td>88.0 – 89.9</td>
<td>-10*(91-ACRPD)</td>
</tr>
<tr>
<td>87.0 – 87.9</td>
<td>-30</td>
</tr>
</tbody>
</table>
### TABLE 4.06-9: Adjustment Values for Pavement Joint Density

<table>
<thead>
<tr>
<th>Average Core Result Percent Joint Density</th>
<th>Percent Adjustment (Bridge and Non-Bridge) $(1)(2)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.1 – 100</td>
<td>-1.667*(ACRPD-98.5)</td>
</tr>
<tr>
<td>93.5 – 97.0</td>
<td>+2.5</td>
</tr>
<tr>
<td>92.0 – 93.4</td>
<td>+1.667*(ACRPD-92)</td>
</tr>
<tr>
<td>91.0 – 91.9</td>
<td>0</td>
</tr>
<tr>
<td>89.0 – 90.9</td>
<td>-7.5*(91-ACRPD)</td>
</tr>
<tr>
<td>88.0 – 88.9</td>
<td>-15*(90-ACRPD)</td>
</tr>
<tr>
<td>87.0 – 87.9</td>
<td>-30</td>
</tr>
<tr>
<td>86.9 or less</td>
<td>Remove and Replace (curb to curb)</td>
</tr>
</tbody>
</table>

**Notes:**

$(1)$ ACRPD = Average Core Result Percent Density

$(2)$ All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67.

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

ii. **PWL Density Lot (3,500 tons or more):**

   For each lot, the adjustment values will be calculated using PWL methodology based on mat and joint density test results. Only one result will be included for each subplot. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

   The specification limits for the PWL determination are as follows:
   - Mat Density: 91.5-98%
   - Joint Density: 90-98%

   For mat and joint density, the individual percent adjustment (PA) will be calculated as follows:

   For PWL between 50 and 90%: PA $(M\ or\ J) = 0.25\ *\ PWL – 22.50$
   For PWL at and above 90%: PA $(M\ or\ J) = 0.125\ *\ PWL – 11.25$

   Where: $PA_M = \text{Total percent mat density adjustment value for the PWL mat density lot}$
   $PA_J = \text{Total percent joint density adjustment value for the PWL joint density lot}$

   No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.
A lot with PWL less than 50% will be evaluated under 1.06.04.

The total adjustment for each PWL mat density lot will be computed as follows:

**Tons Adjusted for Mat Density (T_{MD})** = \( \frac{PAM}{100} \times Tons \)

Where: Tons = Weight of material (tons) in the lot adjusted by 4.06.4-1.

The total adjustment for each PWL joint density lot will be computed as follows:

**Tons Adjusted for Joint Density (T_{JD})** = \( \frac{PAJ}{100} \times J_{\text{Tons}} \)

Tons Adjusted for Joint Density will be calculated at the end of each project or project phase.

Where: \( J_{\text{Tons}} = \text{Tons in project or phase adjusted by 4.06.4 - 1} \times \frac{\text{Lot joint length}}{\text{Joint length in project or phase}} \)

All bridge density lot adjustments will be evaluated in accordance with 4.06.04-2.b)i.

Additionally, any sublot with a density result below 87% will be evaluated under 1.06.04.

iii. Partial Lots:

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material and placement conditions or if the last test result of the prior lot is over 30 calendar days old, the mat and joint individual adjustments will be calculated in accordance to Tables 4.06-8 and 4.06-9. \( T_{MD} \) and \( T_{JD} \) will be calculated as indicated in 4.06.04-2.b)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.b)ii.

**Density Lot Adjustment (Simple Average Lots):** \( TD \times \text{Unit Price} = \text{Est. (Di)} \)

**Density Lot Adjustment (PWL Lots):** \( (T_{MD} \text{ or } T_{JD}) \times \text{Unit Price} = \text{Est. (DMi \text{ or DJi})} \)

Where: Unit Price = Contract unit price per ton per type of mixture

\( \text{Est. (Di)} = \text{Pay Unit in dollars representing incentive or disincentive per simple average density lot} \)

\( \text{Est. (DMi)} = \text{Pay Unit in dollars representing incentive or disincentive per PWL mat lot} \)

\( \text{Est. (D Ji)} = \text{Pay Unit in dollars representing incentive or disincentive per PWL joint lot} \)

Additionally, any sublot with a density result below 87% will be evaluated under 1.06.04.

3. **Transitions for Roadway Surface:** The installation of permanent transitions will be measured under the appropriate item used in the formation of the transition.

The quantity of material used for the installation of temporary transitions will be measured for payment under the appropriate item used in the formation of the transition. The installation and
removal of a bond breaker and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is not measured for payment.

4. **Cut Bituminous Concrete Pavement:** The quantity of bituminous concrete pavement cut will be measured in accordance with 2.02.04.

5. **Material for Tack Coat:** The quantity of tack coat will be measured for payment by the number of gallons furnished and applied on the Project and approved by the Engineer. No tack coat material shall be included that is placed in excess of the tolerance described in 4.06.03.

   a. Container Method – Material furnished in a container will be measured to the nearest 1/2 gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest 1/2 gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

   b. Vehicle Method
      i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:
         \[
         \text{Tack Coat (gallons at 60°F)} = \frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at 60°F}}
         \]
         \[
         \text{Tack Coat (gallons at 60°F)} = 0.996 \times \frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at 77°F}}
         \]
      ii. Measured by automated metering system on the delivery vehicle:
         \[
         \text{Tack Coat (gallons at 60°F)} = 0.976 \times \text{Measured Volume (gallons)}
         \]

4.06.05—Basis of Payment:

1. **HMA S* or PMA S*:** The furnishing and placing of bituminous concrete will be paid for at the Contract unit price per ton for "HMA S*" or "PMA S*".

All costs associated with providing illumination of the work area are included in the general cost of the work.

All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.

All costs associated with obtaining cores for acceptance testing and dispute resolution are included in the general cost of the work.

2. **Bituminous Concrete Adjustment Costs:** This adjustment will be calculated using the formulas shown below if all of the measured adjustments in 4.06.04-2 are not equal to zero. A positive or negative adjustment will be applied to monies due the Contractor.

   \[
   \text{Production Lot: } \Sigma \text{ Est.} (\text{Pi}) = \text{Est.} (\text{P})
   \]
   \[
   \text{Density Lot (Simple Average Lots): } \Sigma \text{ Est.} (\text{Di}) = \text{Est.} (\text{D})
   \]

   \[
   \text{Production Lot: } \Sigma \text{ Est.} (\text{Pi}) = \text{Est.} (\text{P})
   \]
   \[
   \text{Density Lot (Simple Average Lots): } \Sigma \text{ Est.} (\text{Di}) = \text{Est.} (\text{D})
   \]
Density Lot (PWL): \[ \sum \text{Est} (\text{DMi}) + \sum (\text{DJi}) = \text{Est. (D)} \]

Bituminous Concrete Adjustment Cost = Est. (P) + Est. (D)

Where: Est. ( ) = Pay Unit in dollars representing incentive or disincentive in each production or density lot calculated in 4.06.04-2

The Bituminous Concrete Adjustment Cost item, if included in the bid proposal or estimate, is not to be altered in any manner by the Bidder. If the Bidder should alter the amount shown, the altered figure will be disregarded and the original estimated cost will be used for the Contract.

3. **Transitions for Roadway Surface:** The installation of permanent transitions will be paid under the appropriate item used in the formation of the transition. The quantity of material used for the installation of temporary transitions will be paid under the appropriate pay item used in the formation of the transition. The installation and removal of a bond breaker, and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is included in the general cost of the work.

4. The cutting of bituminous concrete pavement will be paid in accordance with 2.02.05.

5. Material for tack coat will be paid for at the Contract unit price per gallon at 60°F for "Material for Tack Coat."

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMA S*</td>
<td>ton</td>
</tr>
<tr>
<td>PMA S*</td>
<td>ton</td>
</tr>
<tr>
<td>Bituminous Concrete Adjustment Cost</td>
<td>est.</td>
</tr>
<tr>
<td>Material for Tack Coat</td>
<td>gal.</td>
</tr>
</tbody>
</table>
SECTION M.04 – BITUMINOUS CONCRETE MATERIALS

Section M.04 is being deleted in its entirety and replaced with the following:

M.04.01—Bituminous Concrete Materials and Facilities
M.04.02—Mix Design and Job Mix Formula (JMF)
M.04.03—Production Requirements
M.04.01—Bituminous Concrete Materials and Facilities: Each source of material, Plant, and laboratory used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. AASHTO or ASTM Standards noted with an (M) have been modified and are detailed in Table M.04.03-5.

Aggregates from multiple sources of supply must not be blended or stored in the same stockpile.

1. Coarse Aggregate: All coarse aggregate shall meet the requirements listed in M.01.
2. Fine Aggregate: All fine aggregate shall meet the requirements listed in M.01.
4. Performance Graded (PG) Asphalt Binder:

   (a) General:
      i. PG asphalt binder shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binder shall be properly heated and stored to prevent damage or separation.
      ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 77°F; rotational viscosity at 275°F and 329°F; and the mixing and compaction viscosity-temperature chart for each shipment.
      iii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder. Contractor Plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport vehicle was inspected before loading was found acceptable for the material shipped and that the binder is free of contamination from any residual material, along with 2 copies of the bill of lading.
      iv. The blending or combining of PG binders in 1 storage tank at the Plant from different suppliers, grades, or additive percentages is prohibited.

   (b) Basis of Approval: The request for approval of the source of supply shall list the location where the material will be manufactured, and the handling and storage methods, along with necessary certification in accordance with AASHTO R 26(M). Only suppliers/refineries that have an approved “Quality Control Plan for Performance Graded Binders” formatted in accordance with AASHTO R 26(M) may supply PG binders to Department projects.
(c) **Standard Performance Grade (PG) Binder:**
   i. Standard PG binder shall be defined as “Neat.” Neat PG binders shall be free from modification with: fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives such as re-refined motor oil, and shall indicate such information on each bill of lading and Certified Test Report.
   ii. The standard asphalt binder shall be PG 64S-22.

(d) **Modified Performance Grade (PG) Binder:** The modified asphalt binder shall be Performance Grade PG 64E-22 asphalt modified solely with a Styrene-Butadiene-Styrene (SBS) polymer. The polymer modifier shall be added at either the refinery or terminal and delivered to the bituminous concrete production facility as homogenous blend. The stability of the modified binder shall be verified in accordance with ASTM D7173 using the Dynamic Shear Rheometer (DSR). The DSR G*/sin(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 332 (including Appendix X1) and AASHTO R 29.

(e) **Warm Mix Additive or Technology:**
   i. The warm mix additive or technology must be listed on the North East Asphalt User Producer Group (NEAUPG) Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at [http://www.neaupg.uconn.edu](http://www.neaupg.uconn.edu).
   ii. The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer’s recommendations.
   iii. The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing demonstrating the binder grade. In addition, it must include the grade of the virgin binder, the brand name of the warm mix additive, the manufacturer’s suggested rate for the WMA additive, the water injection rate (when applicable), and the WMA Technology manufacturer’s recommended mixing and compaction temperature ranges.

5. **Emulsified Asphalts:**

   (a) **General:**
   i. The emulsified asphalt shall meet the requirements of AASHTO M 140(M) or AASHTO M 208 as applicable.
   ii. The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.
   iii. The blending at mixing Plants of emulsified asphalts from different suppliers is prohibited.

   (b) **Basis of Approval:**
   i. The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO R 77. Only suppliers that have an approved “Quality Control Plan for Emulsified Asphalt” formatted in accordance with AASHTO R 77 and that submit monthly split samples per grade to the Engineer may supply emulsified.
asphalt to Department projects.

ii. Each shipment of emulsified asphalt delivered to the Project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material Certificate.

iii. Anionic emulsified asphalts shall meet the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1 or RS-1h. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1h may be substituted if permitted by the Engineer.

iv. Cationic emulsified asphalt shall meet the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80°F and rising, grade CSS-1 or CSS-1h may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

(a) General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the 1/2 inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.

(b) Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:
   i. When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
   ii. When the RAP material source or quality is not known, the Contractor shall request approval from the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of M.04.01-1 through M.04.01-3 and that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
      1. A 50-lb. sample of the RAP to be incorporated into the recycled mixture.
      2. A 25-lb. sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

(a) Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.

(b) Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG.
The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic, and metal and conforms to the following gradation:

<table>
<thead>
<tr>
<th>CRCG Grading Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
</tr>
<tr>
<td>3/8 inch</td>
</tr>
<tr>
<td>No. 4</td>
</tr>
<tr>
<td>No. 200</td>
</tr>
</tbody>
</table>

The Contractor shall submit a Material Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this Section.

8. **Joint Seal Material:** Joint seal material must meet the requirements of ASTM D6690 - Type 2. The Contractor shall submit a Material Certificate in accordance with 1.06.07 certifying that the joint seal material meets the requirements of this Section.

9. **Recycled Asphalt Shingles (RAS):** RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos-free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23.

The Producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The Producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Material Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this Section.

10. **Plant Requirements:**

   (a) **General:** The Plant producing bituminous concrete shall comply with AASHTO M 156.

   (b) **Storage Silos:** The Contractor may use silos for short-term storage with the approval of the Engineer. A storage silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge 1 silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.
<table>
<thead>
<tr>
<th>Type of silo cylinder</th>
<th>Maximum storage time for all classes (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HMA</td>
</tr>
<tr>
<td>Open Surge</td>
<td>4</td>
</tr>
<tr>
<td>Unheated - Non-insulated</td>
<td>8</td>
</tr>
<tr>
<td>Unheated - Insulated</td>
<td>18</td>
</tr>
<tr>
<td>Heated - No inert gas</td>
<td>TBD by the Engineer</td>
</tr>
</tbody>
</table>

*Not to exceed HMA limits

(c) **Documentation System:** The mixing Plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence, and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage, and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of 3 years after the completion of the Project.

For batch Plants, the Plant ticket shall be produced for each bath and maintained by the vendor for a period of 3 years after the completion of the Project. In addition, an asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

<table>
<thead>
<tr>
<th>Each Aggregate Component</th>
<th>±1.5% of individual or cumulative target weight for each bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Filler</td>
<td>±0.5% of the total batch</td>
</tr>
<tr>
<td>Bituminous Material</td>
<td>±0.1% of the total batch</td>
</tr>
<tr>
<td>Zero Return (Aggregate)</td>
<td>±0.5% of the total batch</td>
</tr>
<tr>
<td>Zero Return (Bituminous Material)</td>
<td>±0.1% of the total batch</td>
</tr>
</tbody>
</table>

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.
The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the truck and batch plant printout when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

(d) **Aggregates:** Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum Plants only, the percent moisture content, at a minimum prior to production and half way through production, shall be determined.

(e) **Mixture:** The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASTO T 195(M).

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

(f) **RAP:** RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).

(g) **Asphalt Binder:** A binder log shall be submitted to the Department’s Central Lab on a monthly basis.

(h) **Warm mix additive:** For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.

(i) **Testing Laboratory:** The Contractor shall maintain a laboratory to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 s.f., have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have a high speed internet connection and a functioning web browser with unrestricted access to [https://ctmail.ct.gov](https://ctmail.ct.gov). This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all the applicable tests in their entirety that are referenced in AASHTO R 35 and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the Project with all necessary testing materials and equipment.
The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including, but not limited to, balances, scales, manometer/vacuum gauge, thermometers, and gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

M.04.02—Mix design and Job Mix Formula (JMF)

1. Curb Mix:

(a) Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.

(b) Basis of Approval: Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use.

The Contractor shall test the mixture for compliance with the submitted JMF and Table M.04.02-1. The maximum theoretical density (Gmm) will be determined by AASHTO T 209. If the mixture does not meet the requirements, the JMF shall be adjusted within the ranges shown in Table M.04.02-1 until an acceptable mixture is produced.

An accepted JMF from the previous operating season may be acceptable to the Engineer provided that there are no changes in the sources of supply for the coarse aggregate, fine aggregate, recycled material (if applicable) and the Plant operation had been consistently producing acceptable mixture.

Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.
TABLE M.04.02-1:
Control Points for Curb Mix Mixtures

<table>
<thead>
<tr>
<th>Mix</th>
<th>Curb Mix</th>
<th>Production Tolerances from JMF Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade of PG Binder content %</td>
<td>PG 64S-22 6.5 - 9.0</td>
</tr>
<tr>
<td></td>
<td>No. 200</td>
<td>3.0 - 8.0 (b)</td>
</tr>
<tr>
<td></td>
<td>No. 50</td>
<td>10 - 30</td>
</tr>
<tr>
<td></td>
<td>No. 30</td>
<td>20 - 40</td>
</tr>
<tr>
<td></td>
<td>No. 8</td>
<td>40 - 70</td>
</tr>
<tr>
<td></td>
<td>No. 4</td>
<td>65 - 87</td>
</tr>
<tr>
<td></td>
<td>1/4 inch</td>
<td>95 - 100</td>
</tr>
<tr>
<td></td>
<td>3/8 inch</td>
<td>95 - 100</td>
</tr>
<tr>
<td></td>
<td>1/2 inch</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>3/4 inch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 inch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 inch</td>
<td></td>
</tr>
</tbody>
</table>

Additionally, the fraction of material retained between any 2 consecutive sieves shall not be less than 4%.

**Mixture Temperature**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Binder</td>
<td>325°F maximum</td>
</tr>
<tr>
<td>Aggregate</td>
<td>280-350°F</td>
</tr>
<tr>
<td>Mixtures</td>
<td>265-325°F</td>
</tr>
</tbody>
</table>

**Mixture Properties**

| Air Voids (VA) % | 0 – 4.0 (a) |

**Notes:**

(a) Compaction Parameter 50 gyrations ($N_{des}$)
(b) The percent passing the No. 200 sieve shall not exceed the percentage of bituminous asphalt binder.

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

(a) **Requirements:** All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 to M.04.02-5. Each JMF and component samples must be submitted no less than 7 days prior to production and must be approved by the Engineer prior to use. All JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP Certified Technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the
TSR test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of laboratory or plant blended mixture and the corresponding complete Form MAT-412s shall be submitted to the Division of Material Testing (DMT) for design TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer.

i. Superpave Mixtures with RAP: RAP may be used with the following conditions:
   • RAP amounts up to 15% may be used with no binder grade modification.
   • RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
   • Two (2) representative samples of RAP shall be obtained. Each sample shall be split, and 1 split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance with AASHTO T 308.
   • RAP material shall not be used with any other recycling option.

ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:
   • RAS amounts up to 3% may be used.
   • RAS total binder replacement up to 15% may be used with no binder grade modification.
   • RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
   • Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations.

iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent (1%) of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.

(b) Basis of Approval: The following information must be included in the JMF submittal:
   i. Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
   ii. Average asphalt content of the RAP or RAS by AASHTO T 164.
   iii. Source of RAP or RAS and percentage to be used.
   iv. Warm mix Technology, manufacturer’s recommended additive rate and tolerances, and manufacturer recommended mixing and compaction temperatures.
   v. TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
   vi. Mixing and compaction temperature ranges for the mix with and without the warm-mix
technology incorporated.

vii. JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:

- 4 - one (1) quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs. bag of RAP
- 2 - 50 lbs. bags of Plant-blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department’s current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated Plant, it utilizes the same components, and the production of material continues to meet all criteria as specified in Tables M.04.02-2, M.04.02-3 and M.04.02-4. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only 1 mix with 1 JMF will be approved for production at a time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.
### TABLE M.04.02-2: Superpave Master Range for Bituminous Concrete Mixture Design Criteria

<table>
<thead>
<tr>
<th>Sieve</th>
<th>S0.25</th>
<th>S0.375</th>
<th>S0.5</th>
<th>S1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control Points</td>
<td>Control Points</td>
<td>Control Points</td>
<td>Control Points</td>
</tr>
<tr>
<td>inches</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>Min (%)</td>
<td>Max (%)</td>
</tr>
<tr>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3/4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1/2</td>
<td>100</td>
<td>-</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>3/8</td>
<td>97</td>
<td>100</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>72</td>
<td>90</td>
<td>-</td>
<td>72</td>
</tr>
<tr>
<td>No. 8</td>
<td>32</td>
<td>67</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>No. 16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No. 30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No. 50</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No. 100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No. 200</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

| VMA (%) | 16.5 ± 1 | 16.0 ± 1 | 15.0 ± 1 | 13.0 ± 1 |
| VA (%)  | 4.0 ± 1  | 4.0 ± 1  | 4.0 ± 1  | 4.0 ± 1  |
| Gse     | JMF value| JMF value| JMF value| JMF value|
| Gmm     | JMF ± 0.030 | JMF ± 0.030 | JMF ± 0.030 | JMF ± 0.030 |

| Dust / effective binder | 0.6 - 1.2 | 0.6 - 1.2 | 0.6 - 1.2 | 0.6 - 1.2 |
| TSR     | ≥ 80%    | ≥ 80%    | ≥ 80%    | ≥ 80%    |

T-283 Stripping Minimal as determined by the Engineer

(c) Mix Status: Each facility will have each type of bituminous concrete mixture rated based on the results of the previous year of production. Mix status will be provided to each bituminous concrete Producer prior to the beginning of the paving season.
The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.
Criteria B: The average of the percentage of acceptance results with compliant VMA and the percentage of acceptance results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or Criteria B.

Mix status is defined as:

“A” – Approved: Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.
“PPT” – Pre-Production Trial: Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components;
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season;
6. it is a new JMF not previously submitted; or
7. the average of 10 consecutive acceptance results for VFA, Density to N_{ini} or dust to effective binder ratio does not meet the criteria in tables M.04.02-2 and M.04.02-4.

Bituminous concrete mixtures rated with a “PPT” status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specification requirements in Tables M.04.02-2 through M.04.02-4 are met and the binder content (Pb) meets the requirements in Table M.04.03-2 before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing
Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval.
Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the Contractor’s laboratory.

Witnessing or verifying by the Department of compliant test results will change the mix’s status to “A”
The differences between the Department’s test results and the Contractor’s must be within the “C” tolerances included in the Department’s QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures in order to be verified.

“U” – Not Approved: Status assigned to a type of mixture that does not have an approved JMF. Bituminous concrete mixtures with a “U” status cannot be used on Department projects.

**TABLE M.04.02-3:**
Superpave Consensus Properties Requirements for Combined Aggregate

<table>
<thead>
<tr>
<th>Traffic Level</th>
<th>Design ESALs (80kN) Millions</th>
<th>Coarse Aggregate Angularity(^{(1)}) ASTM D5821, Minimum %</th>
<th>Fine Aggregate Angularity AASHTO T 304, Method A Minimum %</th>
<th>Flat and Elongated Particles(^{(2)}) ASTM D4791, Maximum %</th>
<th>Sand Equivalent AASHTO T 176, Minimum %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt; 0.3</td>
<td>55/ - -</td>
<td>40</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>0.3 to &lt; 3.0</td>
<td>75/ - -</td>
<td>40</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>≥ 3.0</td>
<td>95/90</td>
<td>45</td>
<td>10</td>
<td>45</td>
</tr>
</tbody>
</table>

Notes:
\(^{(1)}\) 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.

\(^{(2)}\) Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the No. 4 sieve, determined at 5:1 ratio.

**TABLE M.04.02-4:** Superpave Traffic Levels and Design Volumetric Properties

<table>
<thead>
<tr>
<th>Traffic Level</th>
<th>Design ESALs (million)</th>
<th>Number of Gyrations by Superpave Gyratory Compactor</th>
<th>Percent Density of Gmm from HMA/WMA Specimen</th>
<th>Voids Filled with Asphalt (VFA) Based on Nominal Mix Size - Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N_{ini})</td>
<td>(N_{des})</td>
<td>(N_{max})</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>&lt;0.3</td>
<td>6</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>0.3 to &lt;3.0</td>
<td>7</td>
<td>75</td>
<td>115</td>
</tr>
<tr>
<td>3</td>
<td>≥3.0</td>
<td>7</td>
<td>75</td>
<td>115</td>
</tr>
</tbody>
</table>
TABLE M.04.02-5: Superpave Minimum Binder Content by Mix Type and Level

<table>
<thead>
<tr>
<th>Mix Type</th>
<th>Level</th>
<th>Binder Content Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0.25</td>
<td>1</td>
<td>5.80</td>
</tr>
<tr>
<td>S0.25</td>
<td>2</td>
<td>5.70</td>
</tr>
<tr>
<td>S0.25</td>
<td>3</td>
<td>5.70</td>
</tr>
<tr>
<td>S0.375</td>
<td>1</td>
<td>5.70</td>
</tr>
<tr>
<td>S0.375</td>
<td>2</td>
<td>5.60</td>
</tr>
<tr>
<td>S0.375</td>
<td>3</td>
<td>5.60</td>
</tr>
<tr>
<td>S0.5</td>
<td>1</td>
<td>5.10</td>
</tr>
<tr>
<td>S0.5</td>
<td>2</td>
<td>5.00</td>
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<tr>
<td>S0.5</td>
<td>3</td>
<td>5.00</td>
</tr>
<tr>
<td>S1</td>
<td>1</td>
<td>4.60</td>
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<tr>
<td>S1</td>
<td>2</td>
<td>4.50</td>
</tr>
<tr>
<td>S1</td>
<td>3</td>
<td>4.50</td>
</tr>
</tbody>
</table>

M.04.03—Production Requirements:

1. **Standard Quality Control Plan (QCP) for Production**: The QCP for production shall describe the organization and procedures, which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts:

- percent passing No. 4 sieve
- percent passing No. 200 sieve
- binder content
- air voids
- Gmm
- Gse
- VMA
The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling and testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

(a) General:
For those mixes with a total estimated project tonnage over 500 tons, a NETTCP HMA Paving Inspector certified Contractor representative shall obtain a field sample of the material placed at the project site in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.3 or an alternate procedure approved by the Engineer. Sampling from the truck at the Plant in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.2 will be allowed for those mixes with a total estimated project tonnage equal to or less than 500 tons. Regardless of sampling location, the sample shall be quartered by the Contractor in accordance with AASHTO R 47 and placed in an approved container. The container shall be sealed with a security tape provided by the Department and labelled to include the project number, date of paving, mix type, lot and sublot numbers and daily tonnage. The minimum weight of each quartered sample shall be 14000 grams. The Contractor shall transport one of the containers to the Departments Central Laboratory in Rocky Hill, retain one of the sealed containers for potential use in dispute resolution and test the remaining samples for acceptance in accordance with past practice.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day’s production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing QC and acceptance testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material
for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Verification and dispute resolution testing will be performed by the Engineer in accordance with the Department’s QA Program for Materials.

Should the Department be unable to validate the Contractor’s acceptance test result(s) for a lot of material, the Engineer will use results from verification testing and re-calculate the pay adjustment for that lot. The Contractor may request to initiate the dispute resolution process in writing within 24 hours of receiving the adjustment and must include supporting documentation or test results to justify the request.

(b) Curb Mix Acceptance Sampling and Testing Procedures: Curb Mixes shall be tested by the Contractor at a frequency of 1 test per every 250 tons of cumulative production, regardless of the day of production.

When these mix designs are specified, the following acceptance procedures and AASHTO test methods shall be used:

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AASHTO T 30(M)</td>
<td>Mechanical Analysis of Extracted Aggregate</td>
</tr>
<tr>
<td>2</td>
<td>AASHTO T 168</td>
<td>Sampling of Bituminous Concrete</td>
</tr>
<tr>
<td>3</td>
<td>AASHTO T 308</td>
<td>Binder Content by Ignition Oven Method (adjusted for aggregate correction factor)</td>
</tr>
<tr>
<td>4</td>
<td>AASHTO T 209(M)(2)</td>
<td>Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures</td>
</tr>
<tr>
<td>5</td>
<td>AASHTO T 312(2)</td>
<td>(1) Superpave Gyratory Molds Compacted to $N_{des}$</td>
</tr>
<tr>
<td>6</td>
<td>AASHTO T 329</td>
<td>Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method</td>
</tr>
</tbody>
</table>

Notes: (1) One (1) set equals 2 each of 6-inch molds. Molds to be compacted to 50 gyrations. (2) Once per year or when requested by the Engineer.

i. Determination of Off-Test Status:
1. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1 for that mixture. If the mix is “off test,” the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
2. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “off test” status.
3. The Engineer may cease supply from the Plant when test results from 3 consecutive samples are not within the JMF tolerances or the test results from 2 consecutive
samples not within the control points indicated in Table M.04.02-1 regardless of production date.

ii. JMF Revisions
1. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
2. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.

(c) Superpave Mix Acceptance:

i. Sampling and Testing Procedures

Production Lot: The lot will be defined as one of the following types:
- Non-PWL Production Lot for total estimated Project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
- PWL Production Lot for total estimated Project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:
- For Non-PWL: As defined in Table M.04.03-2
- For PWL: 500 tons (The last sub lot may be less than 500 tons.)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:
- completion of the course;
- a Job Mix Formula revision due to changes in:
  o cold feed percentages over 5%,
  o target combined gradation over 5%,
  o target binder over 0.15%,
  o any component specific gravity; or
- a lot spanning 30 calendar days.

The acceptance sample(s) location(s) shall be selected using stratified - random sampling in accordance with ASTM D3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total size for PWL lots.

One (1) acceptance sample shall be obtained and tested per sub lot with quantities over 125 tons. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one (1) acceptance test shall always be performed in the last sub lot based on actual tons of material produced.

For non-PWL lots, quantities of the same mixture per Plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.
TABLE M.04.03-2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL Lots

<table>
<thead>
<tr>
<th>Daily Quantity Produced in Tons (Lot)</th>
<th>Number of Sub Lots/Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 125</td>
<td>0, Unless requested by the Engineer</td>
</tr>
<tr>
<td>126 to 500</td>
<td>1</td>
</tr>
<tr>
<td>501 to 1,000</td>
<td>2</td>
</tr>
<tr>
<td>1,001 to 1,500</td>
<td>3</td>
</tr>
<tr>
<td>1,500 or greater</td>
<td>1 per 500 tons or portions thereof</td>
</tr>
</tbody>
</table>

The following test procedures shall be used for acceptance:

TABLE M.04.03-3: Superpave Acceptance Testing Procedures

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AASHTO T 168</td>
<td>Sampling of bituminous concrete</td>
</tr>
<tr>
<td>2</td>
<td>AASHTO R 47</td>
<td>Reducing samples to testing size</td>
</tr>
<tr>
<td>3</td>
<td>AASHTO T 308</td>
<td>Binder content by ignition oven method (adjusted for aggregate correction factor)</td>
</tr>
<tr>
<td>4</td>
<td>AASHTO T 30(M)</td>
<td>Gradation of extracted aggregate for bituminous concrete mixture</td>
</tr>
<tr>
<td>5</td>
<td>AASHTO T 312</td>
<td>(1) Superpave gyratory molds compacted to N_{des}</td>
</tr>
<tr>
<td>6</td>
<td>AASHTO T 166</td>
<td>(2) Bulk specific gravity of bituminous concrete</td>
</tr>
<tr>
<td>7</td>
<td>AASHTO R 35</td>
<td>(2) Air voids, VMA</td>
</tr>
<tr>
<td>8</td>
<td>AASHTO T 209(M)</td>
<td>Maximum specific gravity of bituminous concrete (average of 2 tests)</td>
</tr>
<tr>
<td>9</td>
<td>AASHTO T 329</td>
<td>Moisture content of bituminous concrete</td>
</tr>
</tbody>
</table>

Notes:  
(1) One (1) set equals 2 each of 6-inch molds. Molds to be compacted to N_{max} for PPTs and to N_{des} for production testing. The first sub lot of the year shall be compacted to N_{max}.  
(2) Average value of 1 set of 6-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in 5 consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause, and correct the issue. When 2 consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last 5 acceptance results.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 Plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of plant blended mixture and the
corresponding complete Form MAT-412s shall be submitted to the DMT for production TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer. Additionally, the TSR test report and tested specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

i. **Determination of Off-Test Status:**
   1. Superpave mixes shall be considered “off test” when any control point sieve, binder content, VA, VMA, and Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.
   2. Any time the bituminous concrete mixture is considered off-test:
      A. The Contractor shall notify the Engineer when the Plant is “off test” for any mix design that is delivered to the Project in any production day. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “off test” determination.
      B. The Contractor must take immediate actions to correct the deficiency, minimize “off test” production to the Project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance with the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

ii. **Cessation of Supply for Superpave Mixtures in Non-PWL Lots:**
   A mixture **shall not be used** on Department projects when it is “off test” for:
   1. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or
   2. two (2) consecutive tests in the control point sieves in 1 production shift.
   As a result of cessation of supply, the mix status will be changed to PPT.

iii. **JMF revisions:**
   JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).
   JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate or RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP or bin percentage deviates by more than 5% or the Plant target binder content deviates by more than 0.15% from the active JMF.
### TABLE M.04.03-4: Superpave Mixture Production Requirements

<table>
<thead>
<tr>
<th>Sieve</th>
<th>S0.25</th>
<th>S0.375</th>
<th>S0.5</th>
<th>S1</th>
<th>Tolerances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control Points</td>
<td>Control Points</td>
<td>Control Points</td>
<td>Control Points</td>
<td>From JMF Targets(2)</td>
</tr>
<tr>
<td>inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+/- Tolerance</td>
</tr>
<tr>
<td>1.5</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>Min (%)</td>
</tr>
<tr>
<td>1.0</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td></td>
<td></td>
<td>Min (%)</td>
</tr>
<tr>
<td>3/4</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>100</td>
</tr>
<tr>
<td>1/2</td>
<td>100</td>
<td>-</td>
<td>100</td>
<td>-</td>
<td>90</td>
</tr>
<tr>
<td>3/8</td>
<td>97</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>No. 4</td>
<td>72</td>
<td>90</td>
<td>-</td>
<td>72</td>
<td>-</td>
</tr>
<tr>
<td>No. 8</td>
<td>32</td>
<td>67</td>
<td>32</td>
<td>67</td>
<td>28</td>
</tr>
<tr>
<td>No. 16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No. 200</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Pb</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>0.3(3)</td>
</tr>
<tr>
<td>VMA (%)</td>
<td>16.5</td>
<td>16.0</td>
<td>15.0</td>
<td>13.0</td>
<td>1.0(4)</td>
</tr>
<tr>
<td>VA (%)</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>1.0(5)</td>
</tr>
<tr>
<td>Gmm</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>0.030</td>
</tr>
<tr>
<td>Mix Temp. – HMA(6)</td>
<td>265-325°F (1)</td>
<td>265-325°F (1)</td>
<td>265-325°F (1)</td>
<td>265-325°F (1)</td>
<td></td>
</tr>
<tr>
<td>Mix Temp. – PMA(6)</td>
<td>285-335°F (1)</td>
<td>285-335°F (1)</td>
<td>285-335°F (1)</td>
<td>285-335°F (1)</td>
<td></td>
</tr>
<tr>
<td>Prod. TSR</td>
<td>N/A</td>
<td>N/A</td>
<td>≥80%</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>T-283 Stripping</td>
<td>N/A</td>
<td>N/A</td>
<td>Minimal TBD by the Engineer</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. (1) 300°F minimum after October 15.
2. (2) JMF tolerances shall be defined as the limits for production compliance.
3. (3) 0.4 for PWL lots
4. (4) 1.3 for all PWL lots except S/P 0.25 mixes. 1.1 for S/P 0.25 Non-PWL lots. 1.4 for S/P 0.25 PWL lots
5. (5) 1.2 for PWL lots
6. (6) Also applies to placement
### Table M.04.03-5:
**Modifications to Standard AASHTO and ASTM Test Specifications and Procedures**

<table>
<thead>
<tr>
<th>AASHTO Standard Method of Test</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference</strong></td>
<td><strong>Modification</strong></td>
</tr>
<tr>
<td>T 30</td>
<td>Section 7.2 through 7.4 Samples are not routinely washed for production testing</td>
</tr>
</tbody>
</table>
| T 209 | Section 7.2 The average of 2 bowls is used proportionally in order to satisfy minimum mass requirements.  
8.3 Omit Pycnometer method. |
| T 283 | When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufacturer’s recommended compaction temperature prior to fabrication of the specimens. |

<table>
<thead>
<tr>
<th>AASHTO Standard Recommended Practices</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference</strong></td>
<td><strong>Modification</strong></td>
</tr>
</tbody>
</table>
| R 26 | All laboratory technician(s) responsible for testing PG binders shall be certified or Interim Qualified by NETTCP as a PG Asphalt Binder Lab Technician.  
All laboratories testing binders for the Department are required to be accredited by the AMRL.  
Sources interested in being approved to supply PG binders to the Department by use of an “in-line blending system” must record properties of blended material and additives used.  
Each source of supply of PG binder must indicate that the binders contain no additives used to modify or enhance their performance properties. Binders that are manufactured using additives, modifiers, extenders, etc., shall disclose the type of additive, percentage and any handling specifications or limitations required.  
All AASHTO M 320 references shall be replaced with AASHTO M 332. Once a month, 1 split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department’s Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for 2 BBR tests at 2 different temperatures in accordance with AASHTO R 29. |
INDEX TO SPECIAL PROVISIONS

Items numbers and Sections listed in this index correspond to the applicable Standard Specification sections. Items with an “A” designation have supplemental information prescribed in these Special Provisions. Items without this designation shall be referenced to the appropriate Section in the Standard Specifications. This list may not be inclusive of all references to the Standard Specification. It is intended that the Standard Specification shall apply to all work defined in the Contract Documents.

1. MOBILIZATION AND DEMOBILIZATION
   Section 9.75 Mobilization
   0975004A Mobilization and Project Closeout

2. CONSTRUCTION STAKING
   0980001A Construction Staking

3. CONSTRUCTION FIELD OFFICE
   0969060A Construction Field Office, Small

4. CLEARING AND GRUBBING
   Section 2.01 Clearing and Grubbing

5. SEDIMENT & EROSION CONTROL
   Section 2.19 Sedimentation Control System
   Section 9.39 Sweeping for Dust Control
   Section 9.43 Water for Dust Control

6. REMOVAL AND SITE PREPARATION
   Section 5.03 Removal and Alterations to Existing Bridges
   0503001A Removal of Superstructure
   0974001A Removal of Existing Masonry

7. ROADWAY
   Section 2.02 Earth Excavation
   Section 2.09 Formation of Subgrade
   Section 2.12 Subbase
   Section 3.04 Processed Aggregate Base
   Section 4.06 Bituminous Concrete
   Section 8.15 Bituminous Concrete Lip Curbing
   Section 9.21 Concrete Sidewalk and Ramps
   Section 12.09 Painted Pavement Markings
8. DRAINAGE
Section 2.05 Trench Excavation
Section 5.07 Catch Basin, Manhole and Drop Inlets
Section 6.51 Culverts
Section 6.52 Culvert Ends
Section 7.03 Riprap

9. BRIDGE STRUCTURE
Section 2.03 Structure Excavation
0216000A Pervious Structure Backfill
Section 5.06 Retaining Walls, Endwalls, and Steps
Section 5.14 Prestressed Concrete Members
Section 5.21 Elastomeric Bearing Pads
0520036A Asphaltic Plug Expansion Joint System
Section 6.01 Concrete for Structures
Section 6.02 Reinforcing Steel
0602910A Drilling Holes and Grouting Dowels
0707009A Membrane Waterproofing (Cold Liquid Elastomeric)
Section 7.08 Dampproofing

10. MAINTENANCE & PROTECTION OF TRAFFIC
Section 8.22 Temporary Precast Concrete Barrier Curb
Section 9.70 Trafficperson
0971001A Maintenance & Protection of Traffic
Section 9.76 Barricade Warning Lights
0979003A Construction Barricade Type III
Section 12.09 Painted Pavement Markings
Section 12.20 Construction Signs

11. METAL BRIDGE RAIL – THREE RAIL (COMBINATION)
0904304A Metal Beam Rail – Three Rail (combination)

12. METAL BEAM RAIL (TYPE R-B 350)
Section 9.10 Metal Beam Rail
Section 9.11 Metal Beam Rail Anchorages
Section 9.12 Remove and Reset Posts, Rail, and Rail Anchorages

13. LOAM AND SEED
Section 9.44 Topsoil
Section 9.50 Turf Establishment
0950040A Conservation Seeding for Slopes

14. SIGN FACE – SHEET ALUMINUM (TYPE III)
Section 12.08 Sign Face Sheet Aluminum (Type III)

15. WATER MAIN SUPPORT BRACKETS
1401257A Water Main Support Brackets
ITEM #0216003A – PERVIOUS STRUCTURE BACKFILL

Description: Pervious structure backfill shall include the furnishing, placing, and compaction of pervious material adjacent to structures. This item shall also consist of furnishing and placing crushed stone or gravel in burlap bags at the inlet ends of weep holes in structures to the dimensions indicated on the plans or as ordered by the Engineer.

Material: Pervious structure backfill shall conform to the requirements of Article M.02.05.

The materials for bagged stone shall conform to the following requirements:

(a) The crushed stone or gravel shall conform to the grading requirements of Article M.01.01 for No. 3 or No. 4 coarse aggregate or a mixture of both.
(b) The bag shall be of burlap and shall be large enough to contain one cubic foot of loosely packed granular material.

Construction Methods: Pervious structure backfill shall be placed adjacent to abutments, retaining walls, box culverts, and elsewhere as called for. It shall be placed above a plane extending on a 2 to 1 slope from the upper edge of the footing to the top of the embankment, or as shown on the plans. Where the face of undisturbed material is above or beneath this slope plane, the amount of pervious structure backfill shall be decreased or increased accordingly, if ordered by the Engineer.

In filling behind abutments, retaining walls, box culverts, or other structures, the fill is placed against undisturbed material, or against compacted embankments having a length in a direction at right angles to the abutment wall or culvert not less than twice the height of the structure against which the fill is placed. The slope of the embankment on which the pervious structure backfill is to be placed shall be plowed deeply or cut into steps before and during the placing of pervious structure backfill so both types of material will be thoroughly bonded and compacted.

Each layer of pervious structure backfill shall be spread to a thickness not exceeding 6 inches in depth after compaction and shall be thoroughly compacted as directed by the Engineer by the use of power rollers or other motorized vehicular equipment, by tamping with mechanical rammers or vibrators, or by pneumatic tampers. Any equipment not principally manufactured for compaction purposes and equipment, which is not in proper working order in all respects, shall not be used within the area described above.

Special attention shall be given to compaction in places close to walls where motorized vehicular equipment cannot reach. Within 3 feet of the back face of walls and within a greater distance at angle points of walls, each layer of pervious structure backfill shall be compacted by mechanical rammers, vibrators, or pneumatic tampers.

The dry density of each layer of pervious structure backfill formed from broken or crushed stone, broken or crushed gravel or reclaimed miscellaneous aggregate free of bituminous concrete
shall have a dry density after compaction that is no less than 100 percent of the dry density for that material when tested in accordance with AASHTO T180, Method D. If a layer formed from reclaimed miscellaneous aggregate containing bituminous concrete is placed as pervious structure backfill, the wet density of this layer after compaction shall not be less than 100 percent of the wet density of that material when tested in accordance with AASHTO T180, Method D.

In this test, material retained on the ¾ inch sieve shall be replaced with material retained on the number 4 sieve, as noted as an option in the specifications for this test.

Each layer of the pervious structure backfill shall be compacted at optimum moisture content. No Subsequent layer shall be placed until the specified compaction is obtained for the pervious layer.

Where weep holes are installed, bagged stone shall be placed around the inlet end of each weep hole, to prevent movement of the pervious material into the weep hole. Approximately one cubic foot of crushed stone or gravel shall be enclosed in each of the burlap bags. All bags shall then be securely tied at the neck with cord or wire so that the enclosed material is contained loosely. The filled bags shall be stacked at the weep holes to the dimensions shown on the plans or as directed by the Engineer. The bags shall be unbroken at the time pervious material is placed around them, and bags which are broken or burst prior to or during the placing of the pervious material shall be replaced at the expense of the contractor.
ITEM #0503001A – REMOVAL OF SUPERSTRUCTURE

Work under this item shall conform to the requirements of Section 5.03 amended as follows:

5.03.01 – Description:  Delete the first two paragraphs and replace with the following:

Work under this item shall consist of the removal and satisfactory disposal of the superstructure. Those items to be removed and disposed of shall include, but not be limited to, prestressed deck units, post-tensioning cables, curbs, parapets, bituminous wearing surface, metal bridge rail and bearings as shown on the plans or as directed by the Engineer.

5.03.03 – Construction Methods:  Add the following:

I – Removal of Superstructure:  All work shall proceed as directed by and to the satisfaction of the Engineer in accordance with the details shown on the plans and the requirements of the Special Provisions "Maintenance and Protection of Traffic" and "Prosecution and Progress", contained elsewhere in these Specifications.

Material that is not specified for salvage shall become the property of the Contractor and shall be removed and disposed of by him.

Material designated for salvage shall be removed by methods that shall not cause damage to the salvaged material.

The removal shall not result in damage to any permanent construction (new or existing) or to adjoining property. If any damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the State.

The Contractor shall prepare and submit to the Engineer for review working drawings, computations, and written procedures for the removal of the existing deck and beams to the Engineer for review in accordance with Article 1.05.02. Acceptance of the Contractor's plans shall not be considered as relieving the Contractor of any responsibility.

1047-52-04-f1320-spec 6 - 0216003a removal of superstructure.doc
ITEM #0520036A - ASPHALTIC PLUG EXPANSION JOINT SYSTEM

Description: Work under this item shall consist of furnishing and installing an asphaltic plug expansion joint system (APJ) in conformance with ASTM D6297, as shown on the plans, and as specified herein.

Work under this item shall also consist of the removal and disposal of bituminous concrete, membrane waterproofing, existing joint components and sealing elements, cleaning and sealing median barrier joints, parapet joints, and sidewalk joints.

Work under this item excludes the removal of Portland cement concrete headers.

Materials: The APJ component materials shall conform to ASTM D6297 and the following:

Aggregate: The aggregate shall meet the following requirements:
  a) Loss on abrasion: The material shall show a loss on abrasion of not more than 25% using AASHTO Method T96.
  b) Soundness: The material shall not have a loss of more than 10% at the end of five cycles when tested with a magnesium sulfate solution for soundness using AASHTO Method T104.
  c) Gradation: The aggregate shall meet the requirements of Table A below:
  d) Dust: aggregate shall not exceed 0.5% of dust passing the #200 sieve when tested in accordance with AASHTO T-11.

<table>
<thead>
<tr>
<th>Square Mesh Sieves</th>
<th>1”</th>
<th>¼”</th>
<th>½”</th>
<th>⅜”</th>
<th>No. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(25.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(19.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(12.5 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(9.5 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4.75 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% passing</td>
<td>100</td>
<td>90 - 100</td>
<td>20 - 55</td>
<td>0 - 15</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

A sample of the aggregate shall be submitted to the Department with a Certified Test Report in accordance with Article 1.06.07 for each 20 tons of loose material or its equivalent number of bags delivered to the job site. The Certified Test report must include a gradation analysis resulting from a physical test performed on the actual material that accompanies the report.

Anti-Tacking Material: This material shall be a fine graded granular material with 100% passing the 3/16” sieve and no more than 5% passing the #200 when tested in accordance with AASHTO T-27.

Backer Rod: All backer rods shall satisfy the requirements of ASTM D5249, Type 1.

Bridging Plate: The bridging plates shall be steel conforming to the requirements of ASTM A36 and be a minimum ¼” thick and 8” wide. For joint openings in excess of 3” the minimum...
plate dimensions shall be \(\frac{3}{8}\)” thick by 12” wide. Individual sections of plate shall not exceed 4’ in length. Steel locating pins for securing the plates shall be size 16d minimum, hot-dip galvanized, and spaced no more than 12” apart.

**Concrete Leveling Material:** Shall be a cementitious-based material that conforms to ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repair, for R3 performance requirements in Table 1 and achieve the following:

a. Final set in 45 Minutes
b. 2500 psi compressive strength in 24 hours
c. 5000 psi compressive strength in 7 days

**Parapet Sealant:** The sealant used in parapet joint openings shall be a single component non-sag silicone sealant that conforms to the requirements of ASTM D5893.

**Sidewalk Sealant:** The sealant used in sidewalk joint openings shall be a rapid cure, self-leveling, cold applied, two-component silicone sealant. The silicone sealant shall conform to the requirements listed in Table B:

<table>
<thead>
<tr>
<th>Properties - As Supplied</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrusion Rate</td>
<td>ASTM C1183</td>
<td>200-600 grams/min</td>
</tr>
<tr>
<td>Leveling</td>
<td>ASTM C639</td>
<td>Self-Leveling</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>ASTM D792</td>
<td>1.20 to 1.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties - Mixed</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tack Free Time</td>
<td>ASTM C679</td>
<td>60 min. max.</td>
</tr>
<tr>
<td>Joint Elongation –</td>
<td>ASTM D5329</td>
<td>600% min</td>
</tr>
<tr>
<td>Adhesion to concrete</td>
<td>12,3</td>
<td></td>
</tr>
<tr>
<td>Joint Modulus @ 100%</td>
<td>ASTM D5329</td>
<td>15 psi max</td>
</tr>
<tr>
<td>elongation</td>
<td>12,3</td>
<td></td>
</tr>
<tr>
<td>Cure Evaluation</td>
<td>ASTM D5893</td>
<td>Pass @ 5 hours</td>
</tr>
</tbody>
</table>

1. Specimens cured at 77±3°F and 50±5% relative humidity for 7 days
2. Specimens size: \(\frac{1}{2}\)” wide by \(\frac{1}{2}\)” thick by 2” long
3. Tensile Adhesion test only

The date of manufacture shall be provided with each lot. No sealant shall be used beyond its maximum shelf-life date.

The two–part silicone sealants shown in Table C are known to have met the specified requirements:
Other two-component silicone joint sealants expressly manufactured for use with concrete that conform to the aforementioned ASTM requirements will be considered for use provided they are submitted in advance for approval to the Engineer. Other joint sealants will be considered for use only if a complete product description is submitted, as well as documentation describing at least five installations of the product. These documented installations must demonstrate that the product has performed successfully for at least three years on similar bridge expansion joint applications.

A Materials Certificate and Certified Test Report for the asphaltic binder shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07 certifying that the asphaltic binder satisfies the requirements of the most current version of ASTM D6297.

A Materials Certificate for all other components of the APJ, leveling material, backer rod and sealant used in sealing parapet and sidewalk joint openings, shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07.

**Construction Methods:** The APJ shall be installed at the locations shown on the plans and in stages in accordance with the traffic requirements in the special provisions “Maintenance and Protection of Traffic” and “Prosecution and Progress”.

At least 30 days prior to start of the work, the Contractor shall submit to the Engineer for approval a detailed Quality Control Plan for the installation of the APJ. The submittal shall include:

a) A list of all manufactured materials and their properties to be incorporated in the joint system, including, but not limited to the asphaltic binder, anti-tack material, backer rod, sealant, leveling material, as well as the aggregate’s source.

b) A detailed step by step installation procedure and a list of the specific equipment to be used for the installation. The Quality Control Plan must fully comply with the specifications and address all anticipated field conditions, including periods of inclement weather.

The APJ shall not be installed when bituminous concrete overlay or joint cutout is wet. The APJ shall only be installed when the bridge superstructure surface temperature is within the limits.
specified in Table D and when the ambient air temperature is within the range of 45°F to 95°F. The bridge superstructure surface temperature range is determined using the thermal movement range provided on the contract plans for the proposed APJ deck installation location and the selected APJ product.

### Table D

<table>
<thead>
<tr>
<th>Designed Deck Joint Thermal Movement Range</th>
<th>Bridge Superstructure Surface Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0” to 1”</td>
<td>45°F to 95°F</td>
</tr>
<tr>
<td>1-1/8”</td>
<td>45°F to 90°F</td>
</tr>
<tr>
<td>1-1/4”</td>
<td>45°F to 80°F</td>
</tr>
<tr>
<td>1-3/8”</td>
<td>45°F to 70°F</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>45°F to 65°F</td>
</tr>
</tbody>
</table>

1. The superstructure surface temperature shall be determined from the average of three or more surface temperature readings taken at different locations on the interior girder surfaces by the Contractor as directed by the Engineer. Temperature measurements of the superstructure shall be taken by the contractor with a calibrated hand held digital infrared laser-sighted thermometer on the surfaces of an interior steel girder, or interior concrete girder protected from direct sunlight. The infrared thermometer to be supplied by the Contractor for this purpose shall meet certification requirements of EN61326-1, EN61010-1, and EN60825-1 maintained by the European Committee for Electrotechnical Standardization (CENELEC). The thermometer shall have a minimum distance-to-spot ratio of 50:1 and shall have adjustable emissivity control. The thermometer shall have a minimum accuracy value of ±1% of reading or ±2°F, whichever is greater. The thermometer shall be used in strict accordance with the manufacturer’s written directions. An additional infrared thermometer satisfying the same standards to be used in this application shall also be provided to the Engineer for quality assurance purposes.

2. Linear interpolation may be used to determine an allowable surface temperature range for thermal movement ranges in between values shown in the table, as approved by the Engineer.
Prior to installing the APJ, the Contractor shall determine the exact location of the deck joint beneath the bituminous concrete overly. The APJ shall be installed symmetrically about the deck joint opening to the dimensions shown on the plans or as directed by the Engineer; not to exceed 24 inches measured perpendicular to the deck joint. The proposed saw cut lines shall be marked on the bituminous concrete overlay by the Contractor and approved by the Engineer, prior to saw-cutting. The saw-cuts delineating the edges of the APJ shall extend full depth of the bituminous concrete overlay.

The existing bituminous concrete overlay, waterproofing membrane and/or existing expansion joint material, within the saw cut limits shall be removed and disposed of by the Contractor to create the joint cutout.

Concrete surfaces that will support the bridging plates shall be smooth and form a plane along and across the deck joint. Rough or damaged concrete surfaces shall be repaired with a leveling compound meeting the requirements of this specification. Deteriorated concrete areas within the joint limits shall be repaired as directed by the Engineer: such repairs, when deemed necessary by the Engineer, shall be compensated for under the applicable concrete deck repair items in the Contract. The existing and repaired concrete surfaces shall provide continuous uniform support for the bridging plate and prevent the plate from rocking and deflecting.

Prior to the installation of the backer rod, all horizontal and vertical surfaces of the joint cutout shall be abrasive blast cleaned using an oil-free, compressed air supply. The entire cutout shall be cleared of all loose blast media, dust, debris and moisture using an oil-free, hot air lance capable of producing an air stream at 3,000ºF with a velocity of 3,000 feet per second.

A single backer rod, with a diameter at least 25% greater than the existing joint opening at the time of installation, shall be installed at an inch below the bridging plate in the existing deck joint opening between the concrete edges.

Asphaltic binder shall be heated to a temperature within the manufacturer’s recommended application temperature range which shall be provided in the Quality Control Plan. During application, the temperature of the binder shall be maintained within this range. In no case shall the temperature of the binder go below 350º F nor exceed the manufacturer’s recommended maximum heating temperature.

Asphaltic binder shall then be poured into the joint opening until it completely fills the gap above the backer rod. A thin layer of binder shall next be applied to the all horizontal and vertical surfaces of the joint cutout.

Bridging plates shall be abrasive blast-cleaned on-site prior to installation and then placed over the deck joint opening in the joint cutout. The plates shall be centered over the joint opening and secured with locating pins along its centerline. The plates shall be placed end to end, without overlap, such that the gap between plates does not exceed ¼”. The plates shall extend to the gutter line and be cut to match the joint’s skew angle, where concrete support exists on both sides of the
joint. Within APJ installation limits, where concrete support does not exist at both sides of the joint opening (such as where a bridge deck end abuts a bituminous concrete roadway shoulder), bridging plates shall not be installed. Installed bridging plates shall not rock or deflect in any way. After installation of bridging plates, a thin layer of asphaltic binder shall be applied to all exposed surfaces of the plates.

The remainder of the joint cutout shall then be filled with a mixture of hot asphaltic binder and aggregate prepared in accordance with the submitted Quality Control Plan and the following requirements:

- The aggregate shall be heated in a vented, rotating drum mixer by the use of a hot-compressed air lance to a temperature of between 370° F. to 380° F. This drum mixer shall be dedicated solely for the heating and, if necessary, supplemental cleaning of the aggregate. Venting of the gas and loose dust particles shall be accomplished through ¼” drilled holes spaced no more than 3” on center in any direction along the entire outside surface of the drum.
- Once the aggregate has been heated, it shall then be transferred to a secondary drum mixer where it shall be fully coated with asphaltic binder. A minimum of two gallons of binder per 100lbs of stone is required.
- The temperature of the aggregate and binder shall be monitored by the contractor with a calibrated digital infrared thermometer.
- The coated aggregate shall be loosely placed in the joint cutout in lifts not to exceed 2 inches.
- Each lift shall be leveled, compacted and then flooded with hot asphaltic binder to the level of the aggregate to fill all voids in the coated aggregate layer. The surface of each lift shall be flooded until only the tips of the aggregate protrude out of the surface.
- The final lift shall be placed such that no stones shall project above the level of the adjacent overlay surface following compaction of the coated aggregate.
- Following installation of the final lift, sufficient time and material shall be provided to allow all voids in the mixture to fill. This step may be repeated as needed.
- The joint shall then be top-dressed by heating the entire area with a hot-compressed air lance and applying binder. The final joint surface must be smooth with no protruding stones and be absent of voids.
- Once top-dressed, the joint shall have an anti-tack material spread evenly over the entire surface to prevent tracking.

The Contractor shall be responsible for removing all binder material that leaks through the joint and is deposited on any bridge component, including underside of decks, headers, beams, diaphragms, bearings, abutments and piers.

Traffic shall not be permitted over the joint until it has cooled to 130º F when measured with a digital infrared thermometer. Use of water to cool the completed joint is permitted.
Sidewalk, parapet, and/or curb joint openings

Before placement of any sealing materials in parapets, curbs, or sidewalks, the joints shall be thoroughly cleaned of all scale, loose concrete, dirt, dust, or other foreign matter by abrasive blast cleaning. Residual dust and moisture shall then be removed by blasting with oil free compressed air using a hot air lance. Projections of concrete into the joint space shall also be removed. The backer rod shall be installed in the joint as shown on the plans. The joint shall be clean and dry before the joint sealant is applied. Under no circumstances is the binder material to be used as a substitute for the joint sealant.

Whenever abrasive blast cleaning is performed under this specification, the Contractor shall take adequate measures to ensure that the abrasive blast cleaning will not cause damage to adjacent traffic or other facilities.

The joint sealant shall be prepared and placed in accordance with the manufacturer's instructions and with the equipment prescribed by the manufacturer. Extreme care shall be taken to ensure that the sealant is placed in accordance with the manufacturer’s recommended thickness requirements.

The joint sealant shall be tooled, if required, in accordance with the manufacturer's instructions.

Primer, if required, shall be supplied by the sealant manufacturer and applied in accordance with the manufacturer's instructions.

When the sealing operations are completed, the joints shall be effectively sealed against infiltration of water. Any sealant which does not effectively seal against water shall be removed and replaced at the Contractor's expense.

Any installed joint that exhibits evidence of failure, as determined by the Engineer, such as deboning, cracking, rutting, or shoving of the APJ mixture shall be removed and replaced full-width and full–depth to a length determined by the Engineer at no additional cost to the State.
ITEM #0602910A – DRILLING HOLES AND GROUTING DOWELS

Description:

Work under this item shall consist of drilling holes in concrete and grouting reinforcing bars at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendations, and as directed by the Engineer.

Materials:

The adhesive bonding material shall be a resin compound specially formulated to anchor steel bars in holes drilled into concrete for the purpose of resisting tension pull-out. The adhesive bonding materials shall be selected from the Connecticut Department of Transportation Approved Product List.

Certification: A Materials Certificate shall be required for the adhesive bonding material in accordance with Article 1.06.07, certifying the conformance of this material to the requirements stated herein.

Construction Methods:

The Contractor shall drill holes into the concrete to the depth and at the locations shown on the plans.

The Contractor shall submit the following to the Engineer for approval: type of drill, diameter of bit, method of cleaning holes and method of placement of the adhesive bonding material. Specifications and recommendations for the aforementioned may be obtained from the manufacturer of the adhesive bonding material. The weight of the drill shall not exceed 20 pounds.

The reinforcing bars shall be able to develop a pull-out resistance of 90 percent of their nominal yield strength when bonded at the embedment depths provided.

The Contractor shall provide the minimum cover for the dowels as shown on the plans.

If the existing reinforcing steel is encountered during drilling, the holes will be located only if approved by the Engineer.

Drilling methods shall not cause spalling, cracking, or other damage to the concrete. Those areas damaged by the Contractor shall be repaired by him in a manner suitable to the Engineer and at no expense to the Town.

For the adhesive bonding material, a Certificate of Compliance and a Materials Certificate will be required in accordance with Article 1.06.07, confirming the conformance of the adhesive bonding material to the requirements set forth in these specifications.
**ITEM #0707009A - MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)**

**Description:** Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating which is applied in one or two layers for a minimum total thickness of 80 mil, an additional 40 mil membrane layer with aggregate broadcast into the material while still wet, and a bond coat of bitumen-based adhesive material.

**Materials:** The Contractor shall select a waterproofing membrane system from the Department’s current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer’s specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane and bond coat material in accordance with the requirements of Article 1.06.07.

**Construction Methods:** At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer’s recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces or discontinuities, applying the primer and membrane, and placing of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer’s recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.

All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project’s records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.
1. Applicator Approval: The Contractor’s membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least three spray membrane projects in the past five years. The Contractor shall furnish references from those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. Job Conditions:

   (a) Environmental Requirements: Air and substrate temperatures shall be between 32°F and 104°F providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

   The Applicator shall be provided with adequate disposal facilities for nonhazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

   (b) Safety Requirements: All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

   “No Smoking” signs shall be visibly posted at the job site during application of the membrane waterproofing.

   Personnel not involved in membrane application shall be kept out of the work area.

3. Delivery, Storage and Handling:

   (a) Packaging and Shipping: All components of the membrane system shall be delivered to the site in the Manufacturer’s packaging, clearly identified with the products type and batch number.

   (b) Storage and Protection: The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and shall be in accordance with the Manufacturer’s recommendations and relevant health and safety regulations.

   Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.
(c) Shelf Life - Membrane Components: Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

(a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.

(b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed 1/4 inch (peak to valley) and areas of minor surface deterioration of 1/2 inch and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer’s technical representative shall inspect and approve the prepared substrate.

(a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a “Sovereign Portable Electronic Moisture Master Meter,” a “Tramex CMEXpertII Concrete Moisture Meter” or approved equal. The minimum frequency shall be one test per 1000 s.f. but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.
The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system’s manufacturer, but shall not be greater than 6%, whichever is less.

(b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The minimum frequency shall be one test per 5,000 s.f. but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi or failure in a concrete surface and greater than or equal to 300 psi for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor’s expense, as directed by Engineer.

(c) Cracks and grouted joints shall be treated in accordance with the Manufacturer’s recommendations, as approved or directed by the Engineer.

6. Application:

(a) The System shall be applied in four distinct steps as follows:
   1) Substrate preparation and gap/joint bridging preparation
   2) Priming
   3) Membrane application
   4) Membrane with aggregate

(b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.

(c) Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.

(d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer’s recommendations or as approved or directed by the Engineer.
(e) A neat finish with well defined boundaries and straight edges shall be provided by the Applicator.

(f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal unless otherwise recommended in the manufacturer’s written instructions.

All components shall be measured and mixed in accordance with the Manufacturer’s recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer’s instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

(g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils. If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer’s recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the
membrane to the substrate of greater than or equal to 150 psi or failure in a concrete surface and greater than or equal to 300 psi for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787-“Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates.” Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer’s recommendations to the satisfaction of the Engineer at no additional cost to the State.

(h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least four inches on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with four inches overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches. Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer’s written instructions.

(i) Aggregated Finish:
1) Apply an additional 40 mil thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.

(j) Bond Coat:
Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with a bonding material. The bonding material shall be per the membrane waterproofing manufacturer’s recommendations.
7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.
ITEM #0904304A – METAL BRIDGE RAIL – THREE RAIL (COMBINATION)

9.04.01-Description: Work under this item shall consist of furnishing and erecting metal bridge railing of the type shown on the plans in accordance with the design and in close conformity with the lines and grades shown on the plan or as established by the Engineer.

9.04.02 - MATERIALS

General.
Materials for the bridge rail system shall conform to the requirements of Article 6.03.02 for metal bridge rail (structural steel) specified in the following:

The Contractor will be required to submit specifications showing the chemical and physical analyses of the Steel to the Engineer for approval.

1/8” molded pad shall be manufactured from new unvulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad.

9.04.03 - CONSTRUCTION METHODS

A. Shop Drawings.

After the Contract is awarded, the Contractor shall furnish the Engineer with complete detail or shop drawings of the proposed work. No material for the bridge railings shall be fabricated before the approval of the detail or shop drawings by the Engineer.

B. Welding.

The railing shall be accurately fabricated in accordance of the plans or as ordered. Fabrication and erection shall be done in accordance with the requirements for steel bridges and structural steel members can only be performed by fabricators who are approved by the Department. In the case of welded railing, after welding, all exposed joints shall be finished by grinding or filing to give a neat appearing job. All components shall be blast cleaned prior to fabrication. The blast cleaning shall conform to the Steel Structures Painting Council Surface Preparation Specification "Near-White Blast Cleaning," SSPC11.290

Welding and fabrication of steel shall conform to the AASHTO Standard Specifications for Highway Bridges and the AASHTO AWS D1.5 Bridge Welding Code. If the members are tubular sections, the fabrication and welding shall conform to AASHTO and the AWS D 1.1 Structural Welding Code-Steel.
C. Setting Railing

The three-rail steel posts shall be plumb except when the grade is less than 1.50% and then they shall be set normal to the grade. One-rail aluminum and steel posts shall be set to normal grade. Longitudinal members shall follow the grade of the coping. In setting up the railing, care shall be taken to ensure proper level and alignment in order to prevent springing or bending of the railing during erection.

Steel base plates shall be set on a 1/8” thick molded pad. If additional shimming of the plates is required, the shims shall be of the same material as base plates. The edges of the base plate shall be caulked to make a water tight joint.

All anchor bolts shall have between 3/8” and 5/8” of exposed thread after nuts have been properly tightened.

D. Galvanizing.

All bolts, screws, nuts, rods, and washers shall be galvanized in accordance with AASHTO M 232 and the Supplemental Specifications. Stainless steel studs shall not be galvanized. The posts, base plates, backing panel components, splice tubes, and structural tubing shall be galvanized after fabrication in accordance with AASHTO M 1ll. Backing panels should not be galvanized fully assembled, since field adjustment may be required, i.e., by racking, to align panels with the rail connections.

The galvanizing bath shall contain nickel (0.05% to 0.09% by mass).

Galvanized members requiring shop assembly shall be welded and drilled prior to galvanizing.

E. Coating.

Prior to applying a coat over the galvanizing, the fabricator shall ensure that all rails are smooth and without sharp protrusions that would present an injury hazard to pedestrians. Also, all welds shall be cleaned thoroughly in accordance with good practice and shall have a suitable surface to accept the primer.

A two coat painting system shall be applied by the galvanizer in his/her own facility within twelve hours of galvanizing the railing components.

The color shall be dark bronze, which will match color number 10045 of the federal standard 595B.

Heads of round head bolts, plates, hardware, as noted on the plans shall be painted to match the rail.
F. Touch Up and Repairs.

Should any damage occur to the galvanized coating during shipping or handling at the job site, the Contractor shall repair and touch up any damaged areas to the satisfaction of the Engineer and the following:

- Touch up of galvanizing before finish coat is applied shall be accomplished by applying a galvanizing repair paint. The dry film thickness of the applied repair paint shall not be less than 3 mil. Applications shall be in accordance with the Manufacturer's instructions. Field touch up procedures shall conform to the recommendations of the Galvanizer.
ITEM #0950040A - CONSERVATION SEEDING FOR SLOPES

Description: The work included in this item shall consist of providing an accepted stand of established conservation grasses by furnishing and placing seed as shown on the plans, permits, or as directed by the Engineer within the wetland mitigation Sites(s) or other areas when required.

Materials: All conservation grass mixture sources shall be locally obtained within the Northeast USA (New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland) in order to preserve and enhance the diversity of native conservation grass species.

Three qualified conservation seed mixtures are detailed below:

1. **New England Conservation/Wildlife Mix**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be 1 pound PLS per 1,750 sq. ft.

2. **5311 Conservation Mix**, Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 3-5 pound PLS per 1,000 sq. ft.

3. **Vermont Conservation and Wildlife**, Vermont Wetland Plant Supply, LLC, P.O. Box 153, Orwell, VT 05760, or equal. Rate shall be 1 pound PLS per 2,180 sq. ft.

Fertilizer, if required, shall meet the requirements of Article M.13.03.

Mulch shall meet the requirements of Article M.13.05.

Erosion control matting shall be bio-degradable and meet the requirements of Article M.13.09.

All conservation seed mixture sources shall be reviewed and approved by the Engineer in advance of purchase and prior to application.

The Materials Certificate for all seed mixtures shall have a statement that certifies that the seed mixture does not include any invasive species pursuant to Connecticut General Statutes Sec. 22a-381d or any State Threatened or State Endangered species pursuant to Connecticut General Statutes Sec. 26-303. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. Seeding shall not occur if these requirements are not met.

All approved seed mixtures shall be obtained in sufficient quantities to meet the pure live seed (PLS) application rates as determined by the seed analysis of the mixture.

Construction Methods: Construction methods shall be those established as agronomically acceptable and feasible and shall be approved by the Engineer. The methods described in Article 9.50.03 shall be amended as follows:
Conservation seeding for slopes for wetland mitigation Site(s): Seeding shall occur during the fall season immediately following construction of the wetland mitigation Site(s). Seeding for wetland mitigation Site(s) must occur from August 15th to October 31st.

For non-wetland mitigation Site(s), seeding shall occur during the dates specified in Article 9.50.03-2.

If seed is purchased in bulk rather than by PLS, the rate of application must be adjusted to meet the required PLS seeding rate. This seeding rate shall be increased by the appropriate percentage as determined by the following formula based off of the information provided on the seed tags at delivery.

\[
\frac{\text{Germination Percentage} \times \text{Purity Percentage}}{100} = \text{Percentage PLS}
\]

The Engineer will verify that the seed is applied at a rate that will allow for 100 percent PLS. Mowing will not be allowed within areas that are seeded with conservation seed mix, unless authorized by the Engineer.
ITEM #0969060A - CONSTRUCTION FIELD OFFICE, SMALL

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

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

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

<table>
<thead>
<tr>
<th>Description \ Office Size</th>
<th>Small</th>
<th>Med.</th>
<th>Large</th>
<th>Extra Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.</td>
<td>400</td>
<td>400</td>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>Minimum number of exterior entrances.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Minimum number of parking spaces.</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

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

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

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

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.
Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

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

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

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

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

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.
Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

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

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

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

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

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

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:
<table>
<thead>
<tr>
<th>Furnishing Description</th>
<th>Office Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td><strong>Med.</strong></td>
</tr>
<tr>
<td>Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.</td>
<td>1</td>
</tr>
<tr>
<td>Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.</td>
<td>-</td>
</tr>
<tr>
<td>Personal computer tables (4 ft. x 2.5 ft.).</td>
<td>2</td>
</tr>
<tr>
<td>Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.</td>
<td>1</td>
</tr>
<tr>
<td>Conference table, 3 ft. x 12 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Table – 3 ft. x 6 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Office Chairs.</td>
<td>2</td>
</tr>
<tr>
<td>Mail slot bin – legal size.</td>
<td>-</td>
</tr>
<tr>
<td>Non-fire resistant cabinet.</td>
<td>-</td>
</tr>
<tr>
<td>Fire resistant cabinet (legal size/4 drawer), locking.</td>
<td>1</td>
</tr>
<tr>
<td>Storage racks to hold 3 ft. x 5 ft. display charts.</td>
<td>-</td>
</tr>
<tr>
<td>Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.</td>
<td>1</td>
</tr>
<tr>
<td>Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Case of cardboard banker boxes (Min 10 boxes/case)</td>
<td>1</td>
</tr>
<tr>
<td>Open bookcase – 3 shelves – 3 ft. long.</td>
<td>-</td>
</tr>
<tr>
<td>White Dry-Erase Board, 36” x 48” min. with markers and eraser.</td>
<td>1</td>
</tr>
<tr>
<td>Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.</td>
<td>-</td>
</tr>
<tr>
<td>Coat rack with 20 coat capacity.</td>
<td>-</td>
</tr>
<tr>
<td>Wastebaskets - 30 gal., including plastic waste bags.</td>
<td>1</td>
</tr>
<tr>
<td>Wastebaskets - 5 gal., including plastic waste bags.</td>
<td>1</td>
</tr>
<tr>
<td>Electric wall clock.</td>
<td>-</td>
</tr>
<tr>
<td>Telephone.</td>
<td>1</td>
</tr>
<tr>
<td>Full size stapler 20 (sheet capacity, with staples)</td>
<td>1</td>
</tr>
<tr>
<td>Desktop tape dispensers (with Tape)</td>
<td>1</td>
</tr>
<tr>
<td>8 Outlet Power Strip with Surge Protection</td>
<td>3</td>
</tr>
<tr>
<td>Rain Gauge</td>
<td>1</td>
</tr>
<tr>
<td>Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.</td>
<td>-</td>
</tr>
<tr>
<td>Item Description</td>
<td>Quantity</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Mini refrigerator - 3.2 c.f. min.</td>
<td>1</td>
</tr>
<tr>
<td>Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.</td>
<td>1</td>
</tr>
<tr>
<td>Microwave, 1.2 c.f., 1000W min.</td>
<td>1</td>
</tr>
<tr>
<td>Fire extinguishers - provide and install type and number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.</td>
<td>*</td>
</tr>
<tr>
<td>Electric pencil sharpeners.</td>
<td>1</td>
</tr>
<tr>
<td>Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.</td>
<td>1</td>
</tr>
<tr>
<td>Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
<tr>
<td>Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
<tr>
<td>Field Office Wi-Fi Connection as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
<tr>
<td>Wi-Fi Printer as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
<tr>
<td>Digital Camera as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
<tr>
<td>Video Projector as specified below under Computer Related Hardware and Software.</td>
<td>-</td>
</tr>
<tr>
<td>Smart Board as specified below under Computer Related Hardware and Software.</td>
<td>-</td>
</tr>
<tr>
<td>Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.</td>
<td>1</td>
</tr>
<tr>
<td>Concrete Curing Box as specified below under Concrete Testing Equipment.</td>
<td>1</td>
</tr>
<tr>
<td>Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.</td>
<td>1</td>
</tr>
<tr>
<td>Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.</td>
<td>1</td>
</tr>
<tr>
<td>First Aid Kit</td>
<td>1</td>
</tr>
<tr>
<td>Flip Phones as specified under Computer Related Hardware and Software.</td>
<td>-</td>
</tr>
</tbody>
</table>
Smart Phones as specified under **Computer Related Hardware and Software**.

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

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

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

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

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

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better replacement must be provided.
Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

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

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

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

A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.

B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.

C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

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

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

**Maintenance**: During the occupancy by the CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.
ITEM #0971001A - MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 - Description is supplemented as follows:

The Contractor shall maintain and protect traffic as follows and as limited in the Special Provision “Prosecution and Progress” and as shown on the Maintenance and Protection of Traffic Plans contained in the contract plans:

**West Johnson Avenue**

The Contractor shall close the road and detour traffic during construction. During construction, existing traffic operations will be considered to be as shown on the Maintenance and Protection of Traffic Plans contained in the contract plans.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least one lane of through traffic in each direction, each lane on a paved travelpath not less than 11 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor will be permitted to maintain and protect at least an alternating one-way traffic operation on a paved travelpath not less than 12 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor will be allowed to halt traffic for a period of time not to exceed ten minutes. The Contractor shall allow all stored vehicles to proceed through the work area before halting traffic for another ten-minute period.

**COMMERCIAL AND RESIDENTIAL DRIVEWAYS**

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

**SIGNING**

The Contractor shall maintain all existing signs throughout the project limits during the duration of the project. The Contractor shall temporarily relocate existing signs and sign supports as many times as deemed necessary and install temporary sign supports and foundations if necessary and as directed by the Engineer. The temporary relocation of any existing signs and supports, and the furnishing, installation and removal of any temporary supports and foundations, shall be paid for under the item “Maintenance and Protection of Traffic.”
When all work is completed, the Contractor shall remove and relocate existing signs and install new signs as shown on the Signing and Pavement Marking Plans contained in the contract plans.

**SIGNING PATTERNS**

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

These signs shall be post-mounted on breakaway sign supports or installed on portable sign supports. These signs are to remain for two weeks, after which the signs and sign supports are to be removed.

**Pavements Markings - Secondary and Local Roadways**

During all phases of construction, the Contractor shall maintain pavement markings on all paved roadway surfaces throughout the project limits.

**Interim Pavement Markings**

The Contractor shall install painted pavement markings which shall include center lines, shoulder edge lines, lane lines, broken lines, lane-use arrows, and stop bars on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. If the next course of bituminous concrete pavement will be placed within seven days, shoulder edge lines are not required. The painted pavement markings will be paid under the appropriate items. If the Contractor will install another course of bituminous concrete pavement within 24 hours, the Contractor may install Temporary Plastic Pavement Marking Tape in place of the painted pavement markings by the end of the work day/night. These temporary pavement markings shall include centerlines, lane lines, broken lines and stop bars; shoulder edge lines will not be required. Centerlines shall consist of two 4-inch wide yellow markings, 2 ft. on length, side by side, 4 to 6-inches apart, at 40-foot intervals. Stop bars may consist of two 6-inch wide white markings or three 4-inch wide white markings placed side by side. The Contractor shall remove and dispose of the Temporary Plastic Pavement Marking Tape immediately prior to installing another course of bituminous concrete pavement. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor’s expense.

If an intermediate course of bituminous concrete pavement will be exposed throughout the winter, then Epoxy Resin Pavement Markings should be installed unless otherwise directed by the Engineer.

**Final Pavement Markings**

In accordance with Section 12.10 entitled “Epoxy Resin Pavement Markings, Symbols, and Legends,” the Contractor should install permanent Epoxy Resin Pavement Markings on the final course of bituminous concrete pavement by the end of the work day/night. If the permanent pavement markings are not installed by the end of the work day/night, then Temporary Plastic Pavement Marking Tape shall be installed as described above and the permanent Epoxy Resin Pavement Markings shall be installed by the end of the work day/night on Friday of that week.
If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the permanent Epoxy Resin Pavement Markings are installed. The cost of furnishing and installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor’s expense.

Note: Painted pavement markings will not be allowed as a substitution for either the permanent Epoxy Resin Pavement Markings or the Temporary Plastic Pavement Marking Tape on the final course of bituminous concrete pavement.
TRAFFIC CONTROL DURING CONSTRUCTION OPERATIONS (English Version)

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

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

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

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

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

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

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

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

Typical traffic control plans 20 through 25 may be used for moving operations such as line striping, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

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

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

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

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

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

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

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

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

### Table I – Minimum Taper Lengths

<table>
<thead>
<tr>
<th>Posted Speed Limit Miles Per Hour</th>
<th>Minimum Taper Length in Feet for a Single Lane Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 OR LESS</td>
<td>180</td>
</tr>
<tr>
<td>35</td>
<td>250</td>
</tr>
<tr>
<td>40</td>
<td>320</td>
</tr>
<tr>
<td>45</td>
<td>540</td>
</tr>
<tr>
<td>50</td>
<td>600</td>
</tr>
<tr>
<td>55</td>
<td>660</td>
</tr>
<tr>
<td>65</td>
<td>780</td>
</tr>
</tbody>
</table>

SECTION 1. WORK ZONE SAFETY MEETINGS

1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the contract requirements and discuss the Department’s procedures. Other work zone safety meetings during the course of the project should be scheduled as needed.

1.b) A Work Zone Safety Meeting Agenda, (see Section 9), shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. Any issues that can’t be resolved at these meetings will be brought to the attention of the District Engineer and the Office of Construction.
SECTION 2. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

2.a) Lane Closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area.

2.b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

2.c) Stopping traffic may be allowed:
   - As per the contract for such activities as blasting, steel erection, etc.
   - During paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation.
   - To move slow moving equipment across live traffic lanes into the work area.

2.d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, State Police may use traffic slowing techniques, including the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of one mile in advance of the pattern starting point. Once the advanced warning signs and the first ten traffic cones/drums are installed/removed, the two TMAs and sign crew should continue to install/remove the pattern as described in Section 4c and traffic shall be allowed to resume their normal travel.

2.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

2.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travelpath prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

2.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

2.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.
SECTION 3. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

3.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).

3.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.

3.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.

3.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closures and in the “caution” mode for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.

3.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

3.f) If the required number of Flashing Arrows is not available, the traffic control pattern shall not be installed.

SECTION 4. USE OF TRUCK MOUNTED IMPACT ATTENUATOR VEHICLES (TMAs)

4.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.

4.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to utilize the TMAs.

4.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be 1000 feet ahead blocking the lane. The sign truck and workers should be immediately ahead of the second TMA. In no case shall the TMA blocking the lane be used as the sign truck. Once the transition is in place, both TMAs shall travel in the closed lane until all Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed.

4.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs may be positioned at each additional work area as needed.

4.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not
so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to the specification entitled “Type ‘D’ Portable Impact Attenuation System”. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

4.f) TMAs should be paid in accordance with how the unit is utilized. When it is used as a TMA and is in the proper location as specified, then it should be paid at the specified hourly rate for “Type ‘D’ Portable Impact Attenuation System”. When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for “High Mounted Internally Illuminated Flashing Arrow”. If a TMA is used to install and remove a pattern and then is used as a Flashing Arrow, the unit should be paid as a “Type ‘D’ Portable Impact Attenuation System” for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove), and is also paid for the day as a “High Mounted Internally Illuminated Flashing Arrow”.

4.g) If the required number of TMAs is not available, the pattern shall not be installed.

SECTION 5. USE OF STATE POLICE OFFICERS

5.a) On limited access highways, the Engineer may determine that State Police Officers will be utilized for regional work zone traffic safety and enforcement operations in addition to project-related work zone assignments. State Police Officers shall be uniformed off-duty sworn Connecticut State Police Officers. Their services will also include the use of official State Police vehicles and associated equipment. State Police Officers will be used on all limited access highways. State Police Officers will not be used on non-limited access highways unless specifically under their jurisdiction or authorized in writing by the Engineer.

5.b) On a weekly basis, the Contractor shall submit to the Engineer the state police request form as an indication of their scheduled operations for the following week. This form shall be submitted no later than Wednesday Morning of the week prior to the scheduled operations. The Engineer shall review this schedule and approve the type and number of Officers required by signing off under the “Completed by DOT’s Authorized Representative” line on Department of Public Safety Form DPS-0691-C. Once the Engineer has approved the number of Officers requested the Engineer will fax the order to the Department of Public Safety’s Overtime Office.

5.c) Prior to the start of operations, a meeting will be held with the Contractor, Trooper in charge and Engineer to review the Trafficperson operations, lines of responsibility, and operating guidelines which will be used for the scheduled work.

5.d) At least one Officer should be used per critical sign pattern. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer.
Likewise, in areas with moderate traffic and wide, unobstructed medians, left lane closures can be implemented without State Police presence. Certain situations may require State Police presence, if one is available, even though the general guidelines above indicate otherwise. Examples of this include nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur.

5.e) Once the pattern is in place, the State Police Officer should be positioned in a non-hazardous location at the beginning of the pattern or at one of the work areas not protected by a TMA. If traffic backs up beyond the beginning of the pattern, then the State Police Officer should be repositioned prior to the backup to give warning to the oncoming motorists. Where State Police Officer and TMA are in close proximity to each other, the TMA should be placed to protect the State Police Officer’s vehicle from oncoming traffic.

5.f) Other functions of the State Police Officer(s) shall include:

- *Assisting entering/exiting construction vehicles within the work area.
- *Enhancing worker visibility/safety for workers in close proximity to the open travel lane(s).
- Speed control of traffic within the work area.
- Enforcement of speed and other motor vehicle laws within the work area.

Typically, the State Police Officer should be out of the vehicle for the functions marked with an asterisk (*).

5.g) State Police Officers assigned to a work site are to only take direction from the Engineer.

5.h) There will be no separate payment to the Contractor for State Police Services. The direct cost of such services will be paid by the Department. Indirect costs associated with scheduling and coordinating State Police shall be included under the Item – Maintenance and Protection of Traffic.

SECTION 6. USE OF (REMOTE CONTROL) CHANGEABLE MESSAGE SIGNS

6.a) For lane closures on limited access roadways, one Changeable Message Sign shall be used in advance of the traffic control pattern. Prior to installing the pattern, the Changeable Message Sign shall be installed and in operation, displaying the appropriate lane closure information (i.e.: Left Lane Closed - Merge Right). The Changeable Message Sign shall be positioned ½ - 1 mile ahead of the lane closure taper. If the nearest Exit ramp is greater than the specified ½ - 1 mile distance, then an additional Changeable Message Sign shall be positioned a
sufficient distance ahead of the Exit ramp to alert motorists of the lane closure and provide them an opportunity to take the exit.

6.b) On non-limited access roadways, the use of Changeable Message Signs for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Changeable Message Sign.

6.c) The advance Changeable Message Sign is typically placed off the right shoulder, 5 feet from the edge of pavement. In areas where the Changeable Message Sign cannot be placed beyond the edge of pavement, it may be placed on the paved shoulder with a minimum of five (5) traffic drums placed in a taper in front of it to delineate its position. The advance Changeable Message Sign shall be adequately protected if it is used for a continuous duration of 36 hours or more.

6.d) When the Changeable Message Signs are no longer required, they should be removed from the clear zone and have the display screen cleared and turned 90° away from the roadway.

6.e) The Changeable Message Sign generally should not be used for generic messages (ex: Road Work Ahead, Bump Ahead, Gravel Road, etc.).

6.f) The Changeable Message Sign should be used for specific situations that need to command the motorist’s attention which cannot be conveyed with standard construction signs (Examples include: Exit 34 Closed Sat/Sun - Use Exit 35, All Lanes Closed - Use Shoulder, Workers on Road - Slow Down).

6.g) Messages that need to be displayed for long periods of time, such as during stage construction, should be displayed with construction signs. For special signs, please coordinate with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

6.h) Section 10 contains the messages that are allowed on the Changeable Message Sign. For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

6.i) If the required number of Changeable Message Signs is not available, the pattern shall not be installed.

SECTION 7. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

7.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.

7.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 72-hour duration.

7.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.
7.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

SECTION 8. GENERAL

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

8.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. In the case of sudden equipment breakdowns, the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.

8.c) Failure of the Contractor to have the required minimum number of signs and equipment, which results in the not being installed, shall not be a reason for a time extension.

8.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. The matter shall be brought to the District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

SECTION 9. WORK ZONE SAFETY MEETING AGENDA

1) Review Project scope of work and time.
2) Review Section 1.08, Prosecution and Progress of the Special Provisions.
3) Review Section 9.70, Trafficperson of the Specifications.
5) Review Contractor’s schedule and method of operations.
6) Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
7) Open discussion of work zone questions and issues.
8) Discussion of review and approval process for changes in contract requirements as they relate to work zone areas.
### SECTION 10. WORK ZONE SAFETY PROCEDURES - ALLOWABLE VMS MESSAGES

<table>
<thead>
<tr>
<th>Message No.</th>
<th>Frame 1</th>
<th>Frame 2</th>
<th>Message No.</th>
<th>Frame 1</th>
<th>Frame 2</th>
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<tbody>
<tr>
<td>1</td>
<td>LEFT LANE CLOSED</td>
<td>MERGE RIGHT</td>
<td>9</td>
<td>LANES CLOSED AHEAD</td>
<td>REDUCE SPEED</td>
</tr>
<tr>
<td>2</td>
<td>2 LEFT LANES CLOSED</td>
<td>MERGE RIGHT</td>
<td>10</td>
<td>LANES CLOSED AHEAD</td>
<td>USE CAUTION</td>
</tr>
<tr>
<td>3</td>
<td>LEFT LANE CLOSED</td>
<td>REDUCE SPEED</td>
<td>11</td>
<td>WORKERS ON ROAD</td>
<td>REDUCE SPEED</td>
</tr>
<tr>
<td>4</td>
<td>2 LEFT LANES CLOSED</td>
<td>REDUCE SPEED</td>
<td>12</td>
<td>WORKERS ON ROAD</td>
<td>SLOW DOWN</td>
</tr>
<tr>
<td>5</td>
<td>RIGHT LANE CLOSED</td>
<td>MERGE LEFT</td>
<td>13</td>
<td>EXIT XX CLOSED</td>
<td>USE EXIT YY</td>
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<tr>
<td>6</td>
<td>2 RIGHT LANES CLOSED</td>
<td>MERGE LEFT</td>
<td>14</td>
<td>EXIT XX CLOSED</td>
<td>FOLLOW DETOUR</td>
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<td>8</td>
<td>2 RIGHT LANES CLOSED</td>
<td>REDUCE SPEED</td>
<td>16</td>
<td>3 LANES SHIFT AHEAD</td>
<td>USE CAUTION</td>
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</table>
The 16-S sign shall be used on all projects that require sidewalk reconstruction or restrict pedestrian travel on an existing sidewalk.

Series 16 signs shall be installed in advance of the traffic control patterns to allow motorists the opportunity to avoid a work zone. Series 16 signs shall be installed on any major intersecting roadways that approach the work zone.

On limited-access highways, these signs shall be located in advance of the nearest upstream exit ramp and on any entrance ramps prior to or within the work zone limits.

The location of series 16 signs can be found elsewhere in the plans or installed as directed by the engineer.

Sign 16-E and 16-H shall be post mounted.

Sign 16-H shall be used on all ramps, other state roadways, and major town/city roadways. Sign 16-H shall be used on other town roadways.

Regulatory sign "Road Work Ahead, Fines Doubled"

The regulatory sign "Road Work Ahead, Fines Doubled" shall be installed for all work zones that occur on any state highway in Connecticut when there are workers on the highway or when there is other than existing traffic operations.

The "Road Work Ahead, Fines Doubled" regulatory signs shall not be installed on town roads.

The "Road Work Ahead, Fines Doubled" regulatory sign shall be placed after the series 16 sign and in advance of the "Road Work Ahead" sign.

"End Road Work" Sign

The last sign in the pattern must be the "End Road Work" sign.
NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (A), (A), AND (A) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE #1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. A CHANGEABLE MESSAGE SIGN MAY BE UTILIZED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

5. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 72 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

6. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA WILL BE CEMENTED WITH AN UPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT AND UNGUARDEN WHEN THE ROADWAY / LANE CLOSURE IS REOPENED TO ALL LANES OF TRAFFIC.

7. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED AND TEMPORARY PAVEMENT MARKINGS THAT DEPICT THE PROPER TRAVEL PATHS SHALL BE INSTALLED.

8. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 200' ON LOW SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).

9. FOR LANE CLOSURES ONE MILE OR LONGER, A "REDUCE SPEED TO 45 MPH" SIGN SHALL BE PLACED AT THE ONE MILE POINT AND AT EACH MILE THEREAFTER.

10. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRELCAGE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

11. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.
Rehabilitation of West Johnson Avenue Bridge
Cheshire, Connecticut

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

SIGN FACE
98 SQ. FT (MIN)

DENOTES TRAFFIC CONE
OR TRAFFIC DRUM
DENOTES PORTABLE SIGN SUPPORT

DENOTES APPROXIMATE LOCATION OF
UNIFORMED FLAGGER, TRAFFIC PERSON
OTHER THAN POLICE OFFICERS
SHALL USE SIGN 80-9850 MOUNTED ON
A 6 MIN. STAFF

FROM THE DETOUR
Yard decentering of flagger shown in
Whenever of the Work Area

<table>
<thead>
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<th>Posted Speed (mph)</th>
<th>Distance (ft)</th>
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REV. 03

CONSTRUCTION
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING &
HIGHWAY OPERATIONS

CONSTRUCTION
TRAFFIC CONTROL PLAN
PLAN 13

APPROVED
J. COMB
PRINCIPAL ENGINEER
DATE 10-02

ITEM #0971001A
TS-46
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS:

THE FOLLOWING METHODS FROM SECTION 65.04 FLAGGER PROCEDURES IN THE "MANUAL ON UNIFORM
TRAFFIC CONTROL DEVICES" SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC
THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 60-9690) SHOWN ON THE TYPICAL
DETAIL SHEET ENTITLED "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC.

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

B. TO DIRECT TRAFFIC TO PROCEED.

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

C. TO ALERT OR SLOW TRAFFIC.

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

SIGN FACE
148 SQ. FT (MIN)

11' MIN.

250'

250'

11' MIN.

250'

250'

D

A

H

W

O.

DENOTES TRAFFIC CONE OR TRAFFIC DRUM

H.

DENOTES PORTABLE SIGN SUPPORT

SEE NOTES 1, 2, 5, 7 & 10

80-9612

80-9612

END ROAD WORK

REV D 402

MAD

STATE HIGHWAY

CONSTRUCTION DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING

HIGHWAY OPERATIONS

DEPARTMENT OF TRAFFIC ENGINEERING

CONSTRUCTION

TRAFFIC CONTROL PLAN

PLAN 19

DATE 102

APPROVED

PRINCIPAL ENGINEER

Rehabilitation of West Johnson Avenue Bridge
Cheshire, Connecticut

ITEM #0971001A

TS-51
Article 9.71.05 – Basis of Payment is supplemented by the following:

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary traversable slope in those areas where a longitudinal dropdown exists.

If there is no method for payment for the temporary transition in those areas where a transverse dropdown exists, then the contract lump sum price for the “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary transition.

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include temporarily relocating existing signs and sign supports as many times as deemed necessary and furnishing, installing, and removing temporary sign supports and foundations if necessary during construction of the project.
ITEM #0974001A – REMOVAL OF EXISTING MASONRY

Work under this item shall conform to the requirements of Section 9.74 amended as follows:

9.74.01 – Description: Add the following:

The work shall also include a 1” deep saw cut around the limits of concrete removal prior to the start of removal operations.

1047-52-04-f1320-spec 13 - 0974001a removal of existing masonry.doc
ITEM #0975004A - MOBILIZATION AND PROJECT CLOSEOUT

9.75.01 – Description:
This item shall consist of all work necessary for the movement of personnel and furnishing equipment to the project site, and for the establishment of all Contractors’ field offices, buildings and other facilities necessary to the performance of the work. In addition, this item shall include the preparation of work plans and submittals necessary to facilitate the commencement of physical construction. These initial submittals are identified elsewhere in the contract and may include project schedules, project management plans, safety plans, quality plans, erosion and sedimentation control plans and similar submittals addressing the general sequencing and management of the project. This item shall also include demobilization of plant and equipment, completion of all punchlist work, and administrative closeout items necessary to satisfy all contract requirements.

This item may not be subcontracted, in whole or part.
ITEM #0979003A - CONSTRUCTION BARRICADE TYPE III

Article 9.79.01 – Description: The Contractor shall furnish construction barricades to conform to the requirements in National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO Manual for Assessing Safety Hardware (MASH) and to the requirements stated in Article 9.71 “Maintenance and Protection of Traffic,” as shown on the plans and/or as directed by the Engineer.

Article 9.79.02 – Materials: Prior to using the construction barricades, the Contractor shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices have been crash tested and have approval in writing from FHWA conforming to the requirements in National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO Manual for Assessing Safety Hardware (MASH), as appropriate.

Alternate stripes of white and orange Type III or Type VI reflective sheeting shall be applied to the horizontal members as shown on the plans. Application of the reflective sheeting shall conform to the requirements specified by the reflective sheeting manufacturer. Only one type of sheeting shall be used on a barricade and all barricades furnished shall have the same type of reflective sheeting. Reflective sheeting shall conform to the requirements of Article M.18.09.01.

Construction barricades shall be designed and fabricated so as to prevent them from being blown over or displaced by the wind from passing vehicles. Construction barricades shall be approved by the Engineer before they are used.

Article 9.79.03 – Construction Methods: Ineffective barricades, as determined by the Engineer and in accordance with the ATSSA guidelines contained in “Quality Standards for Work Zone Traffic Control Devices” shall be replaced by the Contractor at no cost to the State.

Barricades that are no longer required shall be removed from the project and shall remain the property of the Contractor.

1047-52-04-fl320-spec 15 - 0979003a construction barricade type iii.doc
ITEM NO. 0980001A – CONSTRUCTION STAKING

9.80.01—Description: The work under this item shall consist of construction layout and reference staking necessary for the proper control and satisfactory completion of all work on the project, except property lines, highway lines, or non-access lines.

9.80.02—Materials: All stakes used for control staking shall be of the same quality as used by the Department for this purpose. For slope limits, pavement edges, gutter lines, etc., where so-called "green" or "working" stakes are commonly used, lesser quality stakes will be acceptable, provided the stakes are suitable for the intended purpose.

9.80.03—Construction Methods: The Department will furnish the Contractor such control points, benchmarks, and other data as may be necessary for the construction staking and layout by qualified engineering or surveying personnel as noted elsewhere herein.

The Contractor shall be responsible for the placement and preservation of adequate ties to all control points, necessary for the accurate re-establishment of all base lines, center lines, and all critical grades as shown on the plans.

All stakes, references, and batter boards which may be required for construction operations, signing and traffic control shall be furnished, set and properly referenced by the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade of all features of the work. Any errors or apparent discrepancies found in previous surveys, plans, specifications or special provisions shall be called to the Engineer's attention immediately for correction or interpretation prior to proceeding with the work.

During roadway construction (or site work), the Contractor shall provide and maintain for the periods needed, as determined by the Engineer, reference stakes at 100-foot intervals outside the slope limits. Further, the Contractor shall provide and maintain reference stakes at 50-foot intervals immediately prior to and during the formation of subgrade and the construction of all subsequent pavement layers. These stakes shall be properly marked as to station, offset and shall be referenced to the proposed grade, even if laser or GPS machine controls are used.

The Contractor shall provide and maintain reference stakes at drainage structures, including reference stakes for the determination of the structure alignments as may be needed for the proper construction of the drainage structure. The reference stakes shall be placed immediately prior to and maintained during the installation of the drainage structure. These stakes shall be properly marked as to station, offset and shall be referenced to the proposed grade.

The Contractor shall furnish copies of data used in setting and referencing stakes and other layout markings used by the Contractor after completion of each operation.

The Contractor shall provide safe facilities for convenient access by Department forces to control points, batter boards, and references.

All staking shall be performed by qualified engineering or surveying personnel who are trained, experienced and skilled in construction layout and staking of the type required under the contract. Prior to start of work, the Contractor shall submit for review and comment the qualifications of personnel responsible for construction staking on the project. On all projects with an original contract value greater than $25 million and bridge rehabilitation and reconstruction projects greater than $10 million, surveying shall be performed under the direct
supervision of a Professional Surveyor licensed in the State of Connecticut. The submission shall include a description of the experience and training which the proposed staff possesses and a list of state projects the personnel have worked on previously. All field layout and staking required for the project shall be performed under the direct supervision of a person, or persons, of engineering background experienced in the direction of such work and acceptable to the Engineer. If the personnel responsible for construction staking change during the course of the project, then a revised submittal will be required.

The Department may check the control of the work, as established by the Contractor, at any time as the work progresses. The Contractor will be informed of the results of these checks, but the Department by so doing in no way relieves the Contractor of responsibility for the accuracy of the layout work. The Contractor shall correct or replace, at the Contractor’s own expense, any deficient layout and construction work which may be the result of the inaccuracies in the Contractor’s staking operations or the failure to report such inaccuracies, or the Contractor’s failure to report inaccuracies found in work done by the Department or by others. If, as a result of these inaccuracies, the Department is required to make further studies, redesign, or both, all expenses incurred by the Department due to such inaccuracies will be deducted from any monies due the Contractor.

The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, transportation, and work incidental to the accurate and satisfactory completion of this work.

**For roadways where the existing pavement markings need to be reestablished:**
Prior to any resurfacing or obliteration of existing pavement markings, the Contractor and a representative of the Engineer must establish and document pavement marking control points from the existing markings. These control points shall be used to reestablish the positions of the lanes, the beginnings and endings of tapers, channelization lines for on and off ramps, lane use arrows, stop bars, and any lane transitions in the project area. The Contractor shall use these control points to provide appropriate premarking prior to the installation of the final markings.

The Contractor shall provide and maintain reference stakes and/or markings at 100-foot intervals immediately off the edge of pavement to be used to reestablish the existing pavement markings. The Contractor shall also provide and maintain reference stakes and/or markings at any point where there is a change in pavement markings to reestablish the existing pavement markings.

**For non-limited access roadways**
On non-limited access roadways, it may be necessary to adjust the final locations of the pavement markings to accommodate pedestrians and bicyclists where feasible. Prior to any resurfacing or obliteration of existing pavement markings, the Contractor, a representative of the Engineer, and a representative of the Division of Traffic Engineering must establish and document pavement marking control points from the existing markings as described above. The control points at that time may be adjusted to provide minimum shoulder widths of 4 to 5 feet wherever possible while maintaining travel lane widths of no less than 11 feet and no more than 12 feet.
ITEM #1401257A – WATER MAIN SUPPORT BRACKETS

Description:

Work under this item shall include, but may not be limited to, threaded inserts, steel and steel erection, bolts, threaded rods, adjustable roll guide assemblies, and other appurtenances or attachments, and all other labor, materials and incidental work as shown on the plans.

It shall be the responsibility of the Contractor to coordinate this Work with the South Central Connecticut Regional Water Authority.

Materials:

The materials for this work shall conform to the following requirements:

- Structural Steel shall conform to AASHTO M270 T2 Grade 50 (galvanized)
- Bolts shall conform to ASTM A325M (galvanized)
- Threaded rods shall conform to ASTM A307 (galvanized)

Adjustable Roll Guides: Each Adjustable Roll Guides shall be galvanized pipe roll by Anvil International Figure 171 size 20 with 1" diameter rods or approved equal.

Construction Methods:

The Contractor shall prepare shop drawings for the support system shown on the plans.

The support system shall be set level and in the location and to the dimensions shown on the plans.
Please note, this is not a Permit Need Determination Form (PNDF). Please submit a PNDF to the Water Resources Unit of the Office of Environmental Planning if you have not previously done so, unless the project qualifies for an expedited PNDF. The Office of Environmental Planning has reviewed the subject activity, notes the following environmental concerns and makes certain recommendations:

*Throughout the duration of a project design, the Project Engineer is responsible for requesting an update of the entire Environmental Review Form every three years.*

1. **Socio-Economic**
   - [ ] Investigate displacement of families, businesses.
   - [ ] Investigate potential adverse impacts to minorities, and/or low-income neighborhoods.
   - [✓] No apparent conflict with or impact to socio-economic resources.
   - [ ] Project area is in a census tract containing certain ethnic populations with over 5% Limited English Proficiency.
   - Other:

2. **Parks, Recreation Areas, Wildlife Refuges, and Scenic Roads**
   - [ ] Investigate whether publicly owned parks, recreation areas and/or wildlife and waterfowl refuges are to be affected. Investigate Possible Section 4(f) and/or Section 6(f) Processing.
   - [ ] This road has been/is in the process of being designated as a Scenic road under P.A. 87-280. Contact the Scenic Roads Committee Chairperson for further information.
   - [✓] No apparent conflict/impact on publicly owned parks, recreation areas, refuges, or scenic roads.
   - Other: The Farmington Canal Trail is in the vicinity of the project, but does not appear to be impacted. Although Section 4(f) and Section 6(f) do not apply, all efforts should be made to avoid any impacts to the trail.
3. Historical and Archaeological Resources

The Office of Environmental Planning (OEP) makes recommendations of findings based on the research and/or field review of the project Area of Potential Effect (APE). The findings are in accordance with Section 106 of the National Historic Preservation Act and/or the Connecticut Environmental Policy Act (CEPA).

☐ No SHPO Consultation Required

It has been determined that this type of project will have No Effect on Historic Properties per an existing Memorandum of Understanding between SHPO and CTDOT for projects not involving Federal funding/actions. No coordination with SHPO is required. If Federal funds are introduced, an updated Environmental Review Request will need to be submitted.

☐ Minor Transportation Projects (FHWA Only)

For certain other FHWA funded Minor Transportation Projects, qualified staff from the OEP can make final findings or determinations of effect under the terms of a Programmatic Agreement, dated May 2018, between FHWA, SHPO, CTDOT, and the Advisory Council on Historic Preservation. A final determination form will be transmitted directly from OEP.

☐ The OEP staff have determined that this is a Minor Transportation Project and is exempt from full Section 106 review. Tribal coordination may still be required. Please see comments on next page for further information.

☐ The OEP staff have determined that this Minor Transportation Project will have the following effect:

☐ No Historic Properties Affected

☐ No Adverse Effect to Historic Properties

Additional consultation may still be required. Please see comments on next page for further information

☑ Consultation with SHPO Required

☐ The OEP recommends the following finding for this project in accordance with Section 106 and/or CEPA. OEP will consult with SHPO and/or the lead Federal agency, if applicable, for a final determination of effect. See comment box on the following page for any conditions:

☐ No Historic Properties Affected

☐ No Adverse Effect to Historic Properties

☐ Adverse Effect to Historic Properties (Mitigation and a Memorandum of Agreement is likely required)

☐ SHPO consultation to be conducted by the Municipality

☐ Additional Processing Required

☐ Additional Section 106 and/or CEPA processing is required because of possible effect to known historic properties. Avoidance of these resources is recommended. Please contact OEP for coordination. See comments for details.

☐ National Register Historic District(s)

☐ Tribal Land(s)

☐ Cemetery(ies)

☐ State Register Historic District(s)

☐ Archaeological Site(s)

☐ Bridge(s)

☐ Local Historic District(s)

☐ National Historic Landmark

☐ Structure(s)

☐ State Archaeological Preserve(s)

☐ Town Green(s)

☐ The project APE has moderate to high archaeological sensitivity. Field survey will be required if avoidance is not possible. Please contact OEP for coordination.

☐ Section 4(f) documentation for the use of historic property may be required. Please contact OEP for coordination.

☐ Bridge No(s). is/are listed in Connecticut's Historic Bridge Inventory. Rehabilitation must be done in accordance with the Historic Bridge Inventory Preservation Plan (1991). Please contact OEP for coordination.
3. Historical and Archaeological Resources cont.

☐ The project APE has a structure or structures that could be eligible for the National Register of Historic Places. Please see comments below for details and contact OEP for coordination.

☐ The project will impact a resource that is in one of the following locations. Please contact OEP for coordination.
  ☐ Quinebaug-Shetucket Heritage Corridor       ☐ The Merritt Parkway       ☐ Upper Housatonic Valley Heritage Area

☐ Additional Consultation Required

☐ Tribal Consultation required under Section 106 for Federal projects if no minimum impact agreement applies

☐ Other Stakeholding Parties. See comments below for details.

Comments: The Town of Cheshire proposes to rehabilitate Bridge #05495, which carries West Johnson Avenue over the Ten Mile River in Cheshire. The proposed project would involve replacing the superstructure of the bridge and completing ancillary work on the substructure and along the approaches. The bridge is located entirely within the town-owned right-of-way (ROW) and the footprint of the rehabilitated structure will not change.

No NRHP-listed or potentially eligible resources were found within the APE or in the immediate vicinity of the project area.

According to state-maintained soil modeling, the entire project area is located on soils classified as Rippowam Fine Sandy Loam (0-3%), this possessing a “high” likelihood of bearing archaeological resources. This being said, however, the original plans for Bridge #05495 indicate that the river was channelized at the time of construction and large amounts of fill topped with approximately 6” of gravel and 1’6” of riprap were introduced to protect the approaches and abutments of the bridge from the meander- and flood-prone Ten Mile River. These conditions are also clear in LiDAR imagery of the area, which identify West Johnson Avenue as an artificially raised roadway well beyond the boundaries of APE. Given the aforementioned conditions, OEP Qualified Staff has determined that there is minimal foreseeable potential to impact intact archaeological resources within the project area and no further study is recommended.

Qualified OEP staff hereby recommend to SHPO that this project will result in No Historic Properties Affected.

Attachments: ☑ Map       ☐ Photograph       ☐ Other

Name: Lucas A. Karmazinas
Extension: x2136
Office of Environmental Planning
Environmental Review - Historical and Archaeological Resources

State Project No. 9025-5495
F.I.D.#: N/A
Rehabilitation of Bridge #05495
West Johnson Avenue
Over Ten Mile River
Cheshire

Predicted Archaeological Soil Sensitivity

High
Moderate
Poor
Variable
Unknown

National Register Historic District

Cemetery/ 4(f) Resource

Approximate Location of Archaeological Site

Historic
Pre-Contact
Unknown

This product was created using TeleAtlas Information ©1984-2009 Tele Atlas, Rel. 6/2009.
4. Water Resources - Please note, this is not a Permit Need Determination Form. Contact must be made with the Water Resources Unit during scoping via a Permit Need Determination Form.

WATER RESOURCE CONCERNS

☑ Sole Source Aquifer
   ☑ Pootatuck (Newtown - Monroe)  ☐ Pawcatuck (Stonington & N. Stonington)

☑ Wild and Scenic Rivers
   ☐ Farmington River  ☑ Eightmile River  ☐ Pawcatuck River

Comments:

None of the above water resource concerns are present.

5. Natural Resources

THREATENED OR ENDANGERED SPECIES

☐ DEEP Natural Diversity Database Mapping and USFWS Mapping indicate that there are no records of listed species in the project area. Map Reference Date:

☑ There is an indication that there may be ☑ Federal  ☐ State listed species present in the area.
   Map Reference Date: USFWS October 2019/ CTDEEP June 2019

Comments:

USFWS Mapping indicates the potential presence of a Federal Species - the Northern Long Eared Bat - within the project area. However, this project is not located within 1/4mi any known Hibernacula or within 150ft of any known maternity roost trees so the project is NOT likely to adversely affect this species. Nothing further is required for Federal Species.

According to CTDEEP NDDB Mapping, there is potential for State listed species in the project area. Coordination with CTDEEP will be required by the Municipality.
6. Air Quality

REGIONAL CONFORMITY

☐ This project is included in the State / Regional Transportation Improvement Program (including the Safety and Bridge Reports) which the FHWA has determined to be in conformance as of:

☐ This project is NOT included in the State / Regional Transportation Improvement Program and may require a regional conformity determination. Please contact Steven Giannitti in the Travel Demand / Air Quality (TD/AQ) Modeling unit at ext. 2082.

☑ This project is 100% State and/or locally funded and is NOT considered regionally significant. Therefore, a regional level conformity analysis is NOT required. If funding sources change, this environmental review MUST be revisited.

PROJECT LEVEL CONFORMITY

☑ A Project Level Air Quality Conformity Determination is NOT required. This project type is exempt under the Clean Air Act pursuant to 40 CFR 93.126 or is located in an attainment area.

Project Type: Bridge Rehabilitation #05495

If the project is Federally funded, and requires an Individual Categorical Exclusion, please include the following paragraph in the Categorical Exclusion request letter to the FHWA:

"This project is located within the boundaries of the portion of the state which has been classified as attainment for carbon monoxide (CO), as attainment maintenance for PM 2.5 and non-attainment for Ozone, and attainment for PM 10. This project type has been determined to be exempt from the requirement that a conformity determination be made in accordance with the Final Rule on conformity."

☐ This project is 100% State and/or locally funded and is NOT considered regionally significant. Therefore, a project level hot-spot conformity analysis is NOT required. If funding sources change, the environmental review MUST be revisited.

☐ A Carbon Monoxide analysis may be required for this project. An intersection level of service (LOS) analysis is required to determine conformity. For projects affecting signalized intersections that are currently LOS D, E, or F or those that will change to LOS D, E, or F because of increased traffic volumes related to the project, a Carbon Monoxide air quality assessment is required and will be prepared by the TD/AQ Modeling Unit. Transmit the following information by memorandum or e-mail to (TD/AQ) Office:

1. AM & PM Peak LOS Analyses for Existing condition, Build year condition, and Design year condition
2. Appropriate traffic (peak hour)
3. Proposed signalization sequence / timing
4. Proposed lane arrangement (.dgn)

☐ If this project qualifies as an Individual Categorical Exclusion please insert the following paragraph in the Categorical Exclusion request letter to FHWA:

"This project is located within the boundaries of the portion of the state which has been classified as attainment maintenance for Particulate Matter (PM) 2.5 and/or PM 10 and a project level conformity determination is required. However, this project is not of the type listed in 40 CFR 93.123 (b)(1) as an air quality concern. Therefore, Clean Air Act and 40 CFR 93.116 requirements are met without an explicit PM 2.5/PM 10 hot-spot analysis."

☐ The project is located in an area that has been classified as attainment maintenance for PM 2.5 and/or PM 10, and a project level qualitative hot-spot analysis is required to determine conformity. Please contact Steven Giannitti in the TD/AQ modeling unit at ext. 2082.
6. Air Quality cont.

☑ This project is exempt from an analysis or discussion of Mobile Source Air Toxics (MSAT) effects for the following reason(s), in accordance with FHWA Interim Guidance Memorandum dated October 18, 2016. (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm):

☐ Project is categorically excluded under 23 CFR 771.117(c)

☐ Project is exempt under the Clean Air Act pursuant to 40 CFR 93.126

☐ Project is 100% State and/or Locally funded and is NOT considered regionally significant. A project level MSAT analysis is NOT required. If funding sources change, the environmental review MUST be revisited

☐ This project has no meaningful potential Mobile Source Air Toxics (MSAT) effects. The following language must be included in the project record in order to satisfy FHWA’s MSAT documentation requirements in accordance with FHWA Interim Guidance Memorandum dated October 18, 2016. (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm):

“The purpose of this project is to (insert major deficiency that the project is meant to address)

By constructing (insert major elements of the project).

This project has been determined to generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special MSAT concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA’s MOVES model forecasts a combined reduction of 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by 100 percent. This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

☐ This project has potential MSAT effects and an MSAT qualitative or quantitative analysis may be required. Please contact Steven Giannitti in the TD/AQ modeling unit at ext. 2082. Transmit the following information by memorandum or email to TD/AQ modeling unit.

1. Appropriate Build & No Build Daily Volumes

☐ Other:

Name: Steven Giannitti
Extension: 2082
The following shall be referenced in carrying out this section:

23 CFR 772 (July 2011)
Connecticut Department of Transportation Highway Traffic Noise Abatement Policy for Projects Funded by the Federal Highway Administration (May 2017)
Highway Traffic Noise Analysis and Abatement Policy and Guidance (June 1995)
Transit Noise and Vibration Impact Assessment (May 2006)
Projects will be assessed on a case by case need for State Funded Projects
8. **Conservation & Development Plan Consistency Determination and Related Requirements of CGS Chapter 297 Section 16a-31(a) and Chapter 297a. Section 16a-35(c) and 16a-35(d)**

Additional information and CTDOT's policies for implementing these requirements can be found by visiting: www.ct.gov/environmentaldocuments

A. ☑ The Project is exempt from the consistency requirements of CGS Section 16a-31(a) since the proposed action is for the reason checked below. No further action is required by your office.
   - ☐ c. Traffic Improvements

B. ☐ The Project is consistent with the requirements of CGS Section 16a-31(a) for the following reason(s):

C. ☐ The Project is a "Growth Related Project" located ENTIRELY in one or more of the following Priority Funding Areas as defined under CGS Section 16a-35(c). No further action is required by your office. The project may proceed without an exception.
   - ☐ a. Priority Funding Area
   - ☐ b. Balanced Priority Funding Area (See note below describing how any policy conflicts will be addressed).
   - ☐ c. Village Priority Funding Area (See note below describing how the project will sustain village character).

D. ☐ The Project is a "Growth Related Project' NOT ENTIRELY located in a Priority Funding Area, but qualifies as an exception under CGS Section 16a-35d(b). The project can proceed provided:
   - a. The project is consistent with the Plan of Conservation and Development of the municipality in which the project is located;
   - b. The project falls under the following categorical exception(s) listed in CGS Section 16a-35d(b):

   Note: This project will be included as part of a yearly report prepared by OEP to OPM describing grants made under CGS Section 16a-35d(b). No further action is required by your office.

E. ☐ The Project is not consistent with the requirements of CGS Section 16a-31(a) or is a "Growth Related Project" NOT ENTIRELY located in a Priority Funding Area and does not qualify for an exception under CGS Section 16a-35d(b). The project cannot go forward.

Name: Thomas Doyle
Extension: 2944
9. NEPA Recommendations

☐ a. Projects involving Federal funds and/or Federal action. The Office of Environmental Planning recommends that this activity be classified a CATEGORICAL EXCLUSION. This recommendation does not preclude the need for a Coastal Area Management Consistency Statement, environmental permits, Section 4(f) Statements, Section 106 processing or other environmental coordination. If the project is Federal Highway Administration (FHWA) funded or Federal Transit Administration (FTA) funded, a Categorical Exclusion (CE) determination to that effect must be completed by your office. FHWA projects will require the completion of a CE checklist to determine the correct level of CE documentation. Individual CEAs must be sent to FHWA for approval, while Programmatic and Automatic CEAs can be approved by CT DOT management. All CEAs for FTA projects must be sent to FTA for approval. No significant environmental impacts are foreseen resulting from the activity(s). No further analysis is required under CEPA unless stated below.

☐ b. Projects involving Federal funds and/or Federal action. The Office of Environmental Planning recommends a FEDERAL ENVIRONMENTAL ASSESSMENT be prepared. Contact this Office for scheduling. See below for any CEPA requirements.

☐ c. Projects involving Federal funds and/or Federal action. The Office of Environmental Planning recommends a FEDERAL ENVIRONMENTAL IMPACT STATEMENT be prepared. Contact this Office for scheduling.

10. CEPA Recommendations

✓ a. Projects involving State funds and/or State action. The Office of Environmental Planning does not recommend the preparation of an Environmental Impact Evaluation as no significant environmental impacts are foreseen resulting from the activity(s). No further analysis is required under CEPA. This recommendation does not preclude the need for environmental permits or other environmental coordination.

☐ b. Projects involving State funds and/or State action. The Office of Environmental Planning recommends that the Environmental Concerns noted, plus any others that may arise, be investigated through the preparation of an ENVIRONMENTAL IMPACT EVALUATION. Contact this Office for scheduling.

☐ c. Projects involving State funds and/or State action. In accordance with CTDOT's Environmental Classification Document (ECD), this project classifies as an action whose degree of impact is indeterminate, but has the potential for environmental impacts. A public scoping process must occur in accordance with Section 22a-1b(b) of the Connecticut General Statutes, and must be scoped in the Environmental Monitor. CTDOT shall take into consideration comments received and shall prepare a written memorandum that documents its findings and subsequent determination of the proposed action's significance. Said memorandum shall be posted in the Environmental Monitor, unless it is determined that an EIE shall be prepared. Please contact this Office for further coordination.

11. Comments:

Name: Kevin Fleming
Extension: 2924
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

subject: ENVIRONMENTAL REVIEW REQUEST FORM

Project No.: 9025-5495
Town/City: Cheshire, Connecticut
Bridge No.: 05495
Federal Aid Project No. N/A

date: August 28, 2019

memorandum

to: Ms. Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

from: for: Rabih M. Barakat
Transportation Principal Engineer
Bureau of Engineering and Construction

This request is to be sent electronically by the appropriate CTDOT design unit to DOT.EnvReviews@ct.gov
Please review the information below to determine what, if any, environmental, socioeconomic, or cultural documentation and mitigation will be required for this project.

1. The following items are attached:

☐ Detailed Project Description (project number, location, scope) [required]
☐ Site Location Map [required]
☐ Purpose and Need Statement [preferred]
☐ Aerial Photograph with the project limits delineated [preferred]
☐ Photographs showing project features and context [preferred]
☐ Concept/Sketch Plans

Location on server:

☐ Preliminary Design Plans (with proposed project and slope limits, existing and proposed right-of-way (ROW) lines and edges of pavement, existing and proposed drainage features, delineated (or potential) wetlands, State Plane North American Datum - 1983 coordinates of project limits and major features) [as available]

Location on server:

2. The Department of Transportation Project Contact/Ext/Room:

Francisco T. Fadul / x2078

3. This Environmental Review Request is as follows:

☐ Original

The originating office will advise the Office of Environmental Planning and resubmit the Environmental Review Request if a change in the project scope and/or conditions causes any of the responses, herein, to change or if three years has passed between any major steps (Env. Review completion date/Categorical Exclusion/Design Approval/ ROW Authorization/PS&E Approval/Construction).

☐ Resubmittal

Previous/Temporary Project No.(if any): ____________________________________________

Original Submittal Date: ____________________________________________

☐ A resubmittal is required due to time, however, the project scope/conditions are unchanged since last review of this project

☐ From the time the original ER recommendation was issued, changes made in the project scope and/or conditions (e.g., project or slope limits, taking lines, other) are as follows:

Francisco Fadul
Signature: 2019.08.26 11:26:23 -04'00'

Shelley Plude
Digitally signed by Shelley Plude
Date: 2019.08.26 10:06:49 -04'00'
4. Project Facts:

The proposed project is at the following stage:

- Concept
- Less than 30% PD
- 30% PD or greater
- Other:

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<th>Yes</th>
<th>No</th>
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- Project is located in multiple towns
- May cause public controversy relative to political, social, economic, environmental, and/or cultural factors or resources to the extent the project scope and/or conditions may require modification
- Abuts or is within the immediate environs of a park/recreation area
- Abuts or is within the immediate environs of a cemetery
- Requires a change in grade of earth or a paved surface
- Requires excavation, boring, augering, or any form of ground disturbance off of paved surfaces
- Requires removal of footings, drainage structures, utilities, or other underground features
- Requires removal of tree stumps or stone walls
- Requires removal/relocation or modification of a structure (Building, Bridge, Mast Arm, Span Pole, etc.)
- A Section 106 Determination of Effect has previously been made for this project

If Yes, please provide date and determination of letter:

5. Funding (Entire Project - All Phases):

- State Funds
- Federal Funds
- Local Funds

Other: ____________________________

Lead Federal Funding Agency (as applicable): ____________________________

- Project includes Highway Safety Improvement Program (HSIP) Funding

6. Schedule:

- Design Approval / ROW Obligation Date: 10/01/2019
- Final Design Plan Date: 11/01/2019
- Advertising Date: 01/15/2020
7. Permanent Railroad ROW to be acquired:
   ☐ Yes (see Project Description, best available plans, and table below)
   ☑ No
   ☐ Unknown at this time

8. Permanent Highway ROW to be acquired:
   ☐ Yes (see Project Description, best available plans, and table below)
   ☑ No
   ☐ Unknown at this time:

If Yes for 7 or 8 above, fill in table below with information, if known:

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Additional ROW required on a temporary basis, e.g., construction or utility easement, maintenance and protection of traffic:

☐ No ☐ Unknown ☑ Yes, as follows:

Construction easements will be required from at least two adjacent property owners to accommodate construction access, sedimentation and erosion control systems, and grading limits.

Project-related ROW acquired to date:

☐ None ☐ Yes, as follows:

9. Parcels with current or past land uses associated with hazardous and/or toxic materials will be affected by the project:

☐ No ☑ Unknown ☐ Yes, as follows:
10. Project involves work on a Bridge(s)

☐ No

☒ Yes, Bridge Number(s) and a description of the work is located within the project description

11. Public Outreach has begun:

☒ No, because: SF plans have been completed/submitted to the Town. Public outreach will begin upon approval from the Town

☐ Yes, as follows:

The project has been presented and/or made available to the following:

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Description of public outreach to date:
Utility providers have been contacted for available mapping. There has been on-going coordination with the Town throughout the project.

Other Dates / Future Planned Meetings: The project will be presented at an Inland Wetland Commission meeting open to the public.

12. Additional Project Information:

This project is being funded under the State Local Bridge Program.
PURPOSE AND NEED STATEMENT

The purpose of this project is to replace the superstructure of Bridge No. 05495, which is structurally deficient and has a sufficiency rating of 83.4, with a new prestressed concrete deck unit superstructure. The existing bridge has a load restriction and the new superstructure will restore the bridge to full load carrying capacity.

DETAILED PROJECT DESCRIPTION

Under the Connecticut Department of Transportation (CTDOT) State Local Bridge Program, the Town of Cheshire is seeking to rehabilitate Bridge No. 05495 carrying West Johnson Avenue over Ten Mile River. Originally constructed in 1987, the bridge consists of 13 prestressed concrete box beams with a bituminous concrete overlay supported by cast-in-place abutments with pile foundations. According to the most recent CTDOT Inspection Report, dated May 3, 2017, the superstructure is in fair condition; however, longitudinal cracking in the bituminous concrete wearing surface was observed as well as extensive water intrusion through the joints between beams, which may be indicative of failure or deterioration of the post-tensioning strands allowing the beams to act and deflect independently. A load rating analysis was performed, and the CTDOT concluded that the bridge must be posted with a load restriction. The eastbound shoulder was closed and a weight limit posted.

Due to the condition of the existing beams and the structural deficiency of the structure, a superstructure replacement is proposed.

PROPOSED ACTIVITIES

The proposed bridge rehabilitation will include the following:

- Maintain existing 42-foot curb-to-curb width and 5'-6" sidewalk.
- New steel bridge rail with reconstructed end blocks
- Reconstructed bridge seats
- Construction of approach slabs
- Full road closure during construction
- Repair of detached weep hole drains
- Slope clearing and grubbing
- Installation of new drainage

The proposed superstructure replacement will be comprised of eleven 48-inch-wide and two 36-inch-wide, 24-inch-deep box beams with a 6-inch reinforced concrete slab. The existing concrete parapets will
be replaced with a metal beam rail system. The upper portion of the wingwalls will be reconstructed. The bridge will have a 3-inch thick concrete overlay.

The existing low chord would be maintained and the roadway profile adjusted to accommodate the added thickness. The existing ½” premolded joint filler currently utilized for the bearings would be replaced with steel laminated elastomeric bearings 2 to 3 inches thick. The bridge seat will be reconstructed and lowered to accommodate the added thickness of the bearings.

**UTILITIES**

The existing underground facilities in West Johnson Avenue will not be impacted by this work. While permanent relocations will not be necessary for this project, the overhead utilities, primarily the electrical lines, may need to be temporarily relocated on an alley arm in order to provide the necessary clearance for crane operations when installing the superstructure.

The South Central Connecticut Regional Water Authority intends to connect its water main facilities on either side of the bridge following the replacement of the superstructure. In anticipation of this work, MMI has been contracted by the water company to design a support system for the water main to be installed as a part of the superstructure replacement. The water main will be attached to the northern (downstream) side of the superstructure.

**RIGHTS-OF-WAY IMPACTS**

The existing West Johnson Avenue bridge is located within the town-owned right-of-way, and the proposed superstructure replacement will occupy the same footprint. No permanent rights-of-way acquisitions are anticipated. The proposed drainage improvements will be outlet on the north side of the bridge within the existing right-of-way.

The right-of-way along the north side of the roadway widens just east of the bridge providing sufficient room to perform the work. On the south side of the roadway, however, the right-of-way is generally coincidental with the fascia of the bridge. While the structure is located just inside the right-of-way, a construction easement will be required for the reconstruction of the parapet walls.
ENVIRONMENTAL REVIEW REQUEST
PROJECT No. 9025-5495
REHABILITATION OF WEST JOHNSON AVENUE OVER TEN MILE RIVER
BRIDGE No. 05495
CHESHIRE, CONNECTICUT
ENVIRONMENTAL REVIEW REQUEST
PROJECT No. 9025-5495
REHABILITATION OF WEST JOHNSON AVENUE OVER TEN MILE RIVER
BRIDGE No. 05495
CHESHIRE, CONNECTICUT
AERIAL LOCATION PLAN

REHABILITATION OF WEST JOHNSON AVENUE
(BRIDGE NO. 05495) OVER TEN MILE RIVER

WEST JOHNSON AVENUE
CHESHIRE, CONNECTICUT

DATE: 08/23/2019
SCALE: 1"=100'
PROJ. NO.: 9025-5495
DESIGNED: ---
DRAWN: SEP
CHECKED: ---

PROJECT PHASE: ---
DRAWING NAME: ---
REVISED: ---

APPROXIMATE PROJECT LIMITS
1. **General Notes**
   - **Delineated:** Maps and data used in this document have been supplied by others.
   - **Site Access:** All construction materials and methods shall be compatible with the applicable sections of the State of Connecticut’s Department of Transportation Standards Specifications for Roads, Bridges, Facilities, and Incidents, Construction, Form 477 (2016), Supplemental Specifications January 2016, and Special Provisions.

2. **Utilities**
   - All construction materials and methods shall comply with the applicable sections of the State of Connecticut’s Department of Transportation Standards Specifications for Roads, Bridges, Facilities, and Incidents, Construction, Form 477 (2016), Supplemental Specifications January 2016, and Special Provisions.
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

3. **Construction Notes**
   - All construction must be performed in accordance with the applicable sections of the State of Connecticut’s Department of Transportation Standards Specifications for Roads, Bridges, Facilities, and Incidents, Construction, Form 477 (2016), Supplemental Specifications January 2016, and Special Provisions.
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

4. **Concretes**
   - All concrete shall be used for bridge seat reinforcement only. Bridge rail, bridge curb, and sidewalk on the bridge.
   - Joint seal: the cost of joint seal shall be included in the item “2” of the plans.
   - Exposed edges: exposed edges shall be beveled 1/4” unless specified otherwise.
   - Concrete grade: all reinforcement shall have two inches cover unless otherwise specified.
   - Reinforcement: all reinforcement shall be ASTM A615 grade 60.
   - All reinforcement in the abutments, windrows, approach, and bridge deck shall be epoxy coated and shall be included in the pay item “4”.
   - Preformed expansion joint filler: the cost of furnishing and installing closed expansion joints shall be included in the pay item “4”.
   - Construction joints: construction joints, other than those shown on the plans, will not be permitted without the prior approval of the engineer.
   - Closed cell eyelids: the cost of furnishing and installing closed cell eyelids shall be included in the pay item “4”.

5. **Conveyance**
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

6. **Navigational Notes**
   - No construction shall be performed in a manner that may be detrimental to the public’s safety or welfare.
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

7. **Environmental Notes**
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

8. **Specifications**
   - All construction shall conform to the specifications shown on the plans.
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

9. **Delineation**
   - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
   - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
   - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
   - No heavy machinery or vehicles may be parked in any turtle habitat.
   - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
   - The contractor shall remove any debris from the turtle habitat.

10. **Design Specifications**
    - All construction shall conform to the specifications shown on the plans.
    - All construction personnel working within the turtle habitat must be appraised of the species description and the possible presence of a turtle.
    - The turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside the existing area and fending should be inspected to identify and remove the access point.
    - In areas where turtle fence is used for exclusion, it shall be removed as soon as the area is stable to allow for natural or artificial passage to resume.
    - No heavy machinery or vehicles may be parked in any turtle habitat.
    - Special indications must be taken to avoid desalination of turtle habitat (including any wet meadows and seasonal pools).
    - The contractor shall remove any debris from the turtle habitat.
NOTES:

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. IT IS A TOPOGRAPHIC SURVEY CONFORMING TO TOPOGRAPHIC ACCURACY CLASS T-2, AND IS INTENDED TO DEPICT THE EXISTING CONDITIONS OF THE SITE.

2. NORTH IS BASED UPON THE CONNECTICUT COORDINATE SYSTEM (NAD 1983) & ESTABLISHED WITH GPS.

3. VERTICAL DATUM IS BASED UPON NAVO 1988 & ESTABLISHED WITH GPS.

4. STREET AND PROPERTY LINES FROM TOWN OF CHESHIRE GIS AND ARE APPROXIMATE IN NATURE.

5. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED WERE OBTAINED FROM INFORMATION SUPPLIED BY RESPECTIVE UTILITY COMPANIES, GOVERNMENTAL AGENCIES AND/OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE. THE EXISTENCE OF WELLS AND UNKNOWN TO MILONE & MACBROOM, INC. USERS IS NOT REPRESENTED ON THIS SURVEY. ADDITIONAL SURVEY WORK MAY BE NEEDED TO DETERMINE LOCATION AND SIZE OF SUCH FEATURES.

6. SITE WAS SNOW COVERED AT TIME OF TOPOGRAPHY.

7. MILONE AND MACBROOM, INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF PAPERS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.

8. THE FEMA 100-YEAR FLOOD ELEVATION IS 135.5 AND THE FLOODWAY ELEVATION IS 135.1 PER THE FEMA FLOOD INSURANCE STUDY FOR NEW HAVEN COUNTY.
DETOUR PLAN

DESCRIPTION

SCALE

DRAWING NO.

SHEET NO.

S

W

OHE

G

144

DG

143

CL&P

CL&P

INV.=136.5(E)

B

142

S

OHE

141

PROJECT

LOCATION

Post

Gas Marker

Assumed Street Line

TEN MILE RIVER

ROAD CLOSURE PLAN

Bridge

CONC. SIDewalk

Slope

Riprap

DETOUR PLAN

AUGUST 15, 2019

DETOUR SIGN LEGEND

PLAN DESIGNATION

MESSAGE

SIZE

DESCRIPTION

SCALE: 1" = 20'-0"

DETOUR NOTES:

1. DETOUR SIGNS SHALL BE COVERED WHEN THE DETOUR IS NOT IN OPERATION.

2. DETOUR SIGNS SHALL BE REMOVED WHEN THE DETOUR IS NO LONGER REQUIRED.

3. THE COST OF THE DETOUR SIGNS SHALL BE PAID FOR UNDER ITEM NO. 1208931 CONSTRUCTION SIGNS. STOP SIGNS SHALL BE PAID FOR UNDER ITEM NO. 1209313 SIGN FACE - SHEET ALUMINUM (TYPE III REFLECTIVE SHEETING).

4. CONTRACTOR SHALL NOTIFY STATE, TOWN AND EMERGENCY SERVICES AT LEAST 24 DAYS IN ADVANCE OF ROAD CLOSURE/DETOUR.

5. MOVING PRECAST CONCRETE BARRIER CURB AND CONSTRUCTION BARRIERS FOR DAILY ACCESS TO THE WORK AREA WILL NOT BE MEASURED FOR PAYMENT.

6. WHERE POST MOUNTED, CONSTRUCTION SIGNS SHALL BE MOUNTED ON BREAKAWAY POSTS.

7. EXISTING SIGNS THAT CONFLICT WITH CONSTRUCTION SIGNS SHALL BE REMOVED OR COVERED AS DIRECTED BY THE ENGINEER.

8. ACTUAL LOCATION OF DETOUR SIGNS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND

TEMPORARY CONSTRUCTION SIGN

CONSTRUCTION BARRIERS TYPE III

TEMPORARY PRECAST CONCRETE BARRIER CURB

* USE BARRICADE WARNING LIGHT - HIGH INTENSITY

ACTUAL LOCATION OF DETOUR SIGNS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
PROJECT REVIEW COVER FORM

This is: [ ] a new submittal  [ ] supplemental information  [ ] other  Date Submitted: 12-30-2019

PROJECT INFORMATION

Project Name: West Johnson Ave. Bridge Superstructure Replacement Over the Ten Mile River

Project Proponent: Town of Cheshire Dept. of Public Works and Engineering

The individual or group sponsoring, organizing, or proposing the project.

Project Street Address: Town r.o.w., approx. 450 feet east of Dickerman Rd. Intersection

Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town: Cheshire  County: New Haven

Please use the municipality name and not the village or hamlet.

PROJECT DESCRIPTION

Describe the overall project in detail. As applicable, provide any information regarding past land use, project area size, renovation plans, demolitions, and/or new construction. Note if this will included in a separate attachment:

Proposed bridge Superstructure replacement (bridge No. 5495); The project entails the removal of decking and concrete beams, and new storm drainage outfall onto an existing riprap embankment.

List all state and federal agencies involved in the project and indicate the funding, permit, license or approval program pertaining to the proposed project:

<table>
<thead>
<tr>
<th>Agency Type</th>
<th>Agency Name</th>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] State</td>
<td>Conn DOT / Francisco Fadul</td>
<td>Local Bridge Program</td>
</tr>
<tr>
<td>[ ] Federal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] State</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Federal</td>
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<td></td>
</tr>
<tr>
<td>[ ] State</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Federal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is no state or federal agency involvement, please state the reason for your review request:

FOR SHPO USE ONLY

Based on the information submitted to our office for the above named property and project, it is the opinion of the Connecticut State Historic Preservation Office that no historic properties will be affected by the proposed activities.*

Mary Dunne/Catherine Labadia
Deputy State Historic Preservation Officer

Date 3/24/20

*All other determinations of effect will result in a formal letter from this office
**PROJECT REVIEW COVER FORM**

**CULTURAL RESOURCES IDENTIFICATION**

Background research for previously identified historic properties within a project area may be undertaken at the SHPO's office. To schedule an appointment, please contact Catherine Labadia, 860-500-2329 or catherine.labadia@ct.gov. Some applicants may find it advantageous to hire a qualified historic preservation professional to complete the identification and evaluation of historic properties.

Are there any historic properties listed on the State or National Register of Historic Places within the project area?

- Yes
- No
- Do Not Know

If yes, please identify:

---

**Architecture**

Are there any buildings, structures, or objects within the project area (houses, bridges, barns, walls, etc.)?

- Yes (attach clearly labelled photographs of each resource and applicable property cards from the municipality assessor)
- No (proceed to next section)

Are any of the buildings, structures or objects greater than 50 years old?

- Yes
- No
- Do Not Know

If the project involves rehabilitation, demolition, or alterations to existing buildings older than 50 years, provide a work plan (If window replacements are proposed, provide representative photographs of existing windows).

**Archeology**

Does the proposed project involve ground disturbing activities?

- Yes (provide below or attach a description of current and prior land use and disturbances. Attach an excerpt of the soil survey map for the project area. These can be created for free at: https://websoilsurvey.nrcs.usda.gov)
- No

There will be minor excavation and filling to the existing earth embankment associated with raising the bridge height by six-inches.

---

**CHECKLIST (Did you attach the following information?)**

<table>
<thead>
<tr>
<th>Required for all Projects</th>
<th>Required for Projects with architectural resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed Form</td>
<td>Work plans for rehabilitation or renovation</td>
</tr>
<tr>
<td>Map clearly labelled depicting project area</td>
<td>Assessor’s Property Card</td>
</tr>
<tr>
<td>Photographs of current site conditions</td>
<td>Required for Projects with ground disturbing activities</td>
</tr>
<tr>
<td>Site or project plans for new construction</td>
<td>Soil survey map</td>
</tr>
</tbody>
</table>

Suggested Attachments, as needed

- Supporting documents needed to explain project
- Supporting documents identifying historic properties
- Historic maps or aerials (available at [http://magic.lib.uconn.edu](http://magic.lib.uconn.edu) or [https://www.historicaerials.com/](https://www.historicaerials.com/))

---

**PROJECT CONTACT**

Name: Don Nolte

Firm/Agency: Town of Cheshire Engineering Dept.

Address: 84 South Main St.

City: Cheshire

State: CT

Zip: 06410

Phone: 203-271-6650

Email: rdnolte@cheshirect.org

Federal and state laws exist to ensure that agencies, or their designated applicants, consider the impacts of their projects on historic resources. At a minimum, submission of this completed form with its attachments constitutes a request for review by the Connecticut SHPO. The responsibility for preparing documentation, including the identification of historic properties and the assessment of potential effects resulting from the project, rests with the federal or state agency, or its designated applicant. The role of SHPO is to review, comment, and consult. SHPO's ability to complete a timely project review largely depends on the quality of the materials submitted. Please mail the completed form with all attachments to the attention of Environmental Review at the address above. Electronic submissions are not accepted at this time.

---

Updated 1/2018
West Johnson Bridge (Superstructure Replacement Project Description)

Originally constructed in 1987, the West Johnson Avenue bridge over the Ten Mile River consists of 13 prestressed concrete box beams with a bituminous concrete overlay supported by cast-in-place abutments with pile foundations. The bearing-to-bearing span length is 60 feet. The curb-to-curb roadway width is 42 feet providing two 12-foot lanes, an 8-foot shoulder along the north side of the roadway, and a 10-foot shoulder along the south side of the roadway. A 5'-6" sidewalk runs along the north side of the bridge.

The existing bridge superstructure will be replaced with new 60-foot span prestressed concrete box beams on existing concrete abutments with reconstructed bridge seats to accommodate 6-inch vertical profile height increase at the bridge. The roadway will be reconstructed approximately 150 feet on the west and east of the bridge. Additional drainage will be included on the east of Abutment Number 2 and outlet onto the northeast slope. The existing bridge width will remain as-is. The bridge will go out to bid in late January 2020, and would be constructed beginning in early June 2020.

! MILONE & MACBROOM
WEST JOHNSON AVENUE BRIDGE
OVER TEN MILE RIVER, CHESHIRE
VIEW IS LOOKING WEST
West Johnson Bridge #5495
Over Ten-Mile River

Proposed New Storm Drain Outfall

East Abutment
**Inspection Photos**

**Bridge deck looking west**

**Bridge deck looking east**

Crack along grout line between girders (typical of multiple locations)

Hallow-sounding concrete and spalling at western end of A1-12
Soil Map—State of Connecticut
(West Johnson Bridge over Ten Mile River)

MAP LEGEND

- Area of Interest (AOI)
- Soil Map Unit Polygons
- Special Point Features
  - Blowout
  - Borrow Pit
  - Clay Spots
  - Closed Depression
  - Geysery Spot
  - Landfill
  - Levee Flow
  - Marsh or Swamp
  - Mines or Quarries
  - Miscellaneous Water
  - Parent Material
  - Rock Outcrop
  - Saline Spot
  - Sandy Spot
  - Severely Eroded Spot
  - Sinkholes
  - Slides or Slips
  - Sodic Spot

- Spill Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features
- Streams and Canals
- Transportation
  - Roads
  - Interstate Highways
  - US Routes
  - Major Roads
  - Local Roads

- Water Features
- Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: SoilMap may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS-certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Date: Version 19, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 27, 2018—Oct 30, 2017

The orthoimage or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
## Map Unit Legend

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres In AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Rockhaven soil loam</td>
<td>3.2</td>
<td>3.6%</td>
</tr>
<tr>
<td>15</td>
<td>Glastonbury mud, 0 to 3 percent slopes</td>
<td>11.1</td>
<td>12.3%</td>
</tr>
<tr>
<td>27A</td>
<td>Ridgevale soil loam, 0 to 15 percent slopes</td>
<td>8.7</td>
<td>9.7%</td>
</tr>
<tr>
<td>29A</td>
<td>Agawam fine sandy loam, 0 to 3 percent slopes</td>
<td>7.6</td>
<td>8.4%</td>
</tr>
<tr>
<td>30A</td>
<td>Brantford soil loam, 0 to 3 percent slopes</td>
<td>3.5</td>
<td>3.9%</td>
</tr>
<tr>
<td>37E</td>
<td>Brantford soil loam, 3 to 8 percent slopes</td>
<td>5.2</td>
<td>5.7%</td>
</tr>
<tr>
<td>37C</td>
<td>Mennopter gravelly sandy loam, 3 to 15 percent slopes</td>
<td>2.6</td>
<td>2.6%</td>
</tr>
<tr>
<td>37E</td>
<td>Mennopter gravelly sandy loam, 15 to 43 percent slopes</td>
<td>6.5</td>
<td>7.3%</td>
</tr>
<tr>
<td>43S</td>
<td>Slipperman fine sandy loam</td>
<td>17.2</td>
<td>19.2%</td>
</tr>
<tr>
<td>35S</td>
<td>Uxbridge Plains complex, gravelly</td>
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<td>2.2%</td>
</tr>
<tr>
<td>306</td>
<td>Uxbridge Urban land complex</td>
<td>30.2</td>
<td>32.6%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>89.8</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
November 15, 2019

Town of Cheshire Engineering Department
c/o Walter Gancarz
84 South Main Street
Cheshire, CT 06410

RE: PERMIT APPLICATION # 2019-025
Town of Cheshire Engineering Department
West Johnson Avenue
Bridge Replacement

Dear Mr. Gancarz:

At the November 7, 2019 Inland Wetlands and Watercourses Commission regular meeting, the commission approved with stipulations, the permit application of the Town of Cheshire Engineering Department, c/o Walter Gancarz, 84 South Main Street, Cheshire, CT 06410 for Bridge Replacement, property located on West Johnson Avenue, Cheshire, CT 06410, as general shown on Assessor’s Map No. 10, Lot No. 27, Map No. 3, Lot No. 51 and Town ROW, in an I-2 and ICSDD zone.

It is the responsibility of all parties involved with this application to review the enclosed approval and adhere to the stipulations. All work must be completed in the sequence, manner and timeframe detailed in the approval. Any changes or modifications made to the approved plans without the prior notification to staff and/or authorization from the Cheshire Inland Wetlands and Watercourses Commission may result in the issuance of a notice of violation, cease and desist order or permit revocation. This permit is issued to the applicant and the applicant of record is ultimately responsible for the execution of this permit. Transfer of this permit from the applicant to another individual is permissible, through application to and action by the Cheshire Inland Wetlands and Watercourses Commission.

Very truly yours,

Kerrie Dunne
Secretary
CHESHER INLAND WETLANDS AND WATERCOURSES COMMISSION

cc: Robert deJongh, Chairman, CIWWC
    Dr. Charles Dimmick, Vice Chairman, CIWWC
Motion:

That the Cheshire Inland Wetlands and Watercourses Commission, having considered the factors pursuant to Section 10 of the Inland Wetlands and Watercourses Regulations of the Town of Cheshire, Commissioners’ knowledge of the area, site visitations, and after review of written information provided by the applicant on this application finds the following:

1. That the applicant is seeking a permit to replace the West Johnson Avenue bridge over the Ten Mile River.

2. That the affected private property owners have signed the applications.

3. That the proposed bridge span replacement will use the existing abutments and work will not be conducted in-water, with no direct wetland or watercourse impact.

4. That the June 2019 CT DEEP NDDB identifies species of concern in the area and Sheet 02 of the Site Plan (October 7, 2019) details the site management details to ensure the protection of identified species, which the applicant has stated they will strictly adhere to.

5. That the Town Engineer attended the meeting and stated that the Town of Cheshire Engineering Department has third party licensed professional engineers under contract to be responsible to monitor and manage site conditions and ensure compliance with the permit.

6. That the activities will not have a significant adverse effect on adjacent wetlands or watercourses.

Based upon the foregoing findings, the Cheshire Inland Wetland and Watercourses Commission conditionally grants CIWWC Permit Application #2019-025, the permit application of Town of Cheshire Engineering Department for site plan approval as presented and shown on the plans entitled:

“Rehabilitation of West Johnson Avenue (Bridge No. 05495) Over Ten Mile River
West Johnson Avenue, Cheshire CT
Permit Plans 1047-52
October 7, 2019
18 Pages, Scale Varies
Prepared By: Milone and MacBroom, 99 Realty Drive, Cheshire, CT.”

The permit is granted on the following terms, conditions, stipulations and limitations (collectively referred to as the
"Conditions") each of which the Commission finds to be necessary to protect the wetlands and watercourses of the State and the Town of Cheshire:

1. Any lack of compliance with any condition or stipulation of this permit shall constitute a violation of the Cheshire Inland Wetlands and Watercourses Regulations, and an enforcement order shall be both issued and recorded on the Town of Cheshire Land Records.

2. No changes or modifications may be made to the plans as presented without subsequent review and approval by the Cheshire Inland Wetlands and Watercourses Commission.

3. Prior to the commencement of site work (aside from installation of erosion controls) the Town of Cheshire Engineering Department shall have the third party licensed professional engineer under contract with the Town of Cheshire Engineering Department submit a letter to the IWWC indicating that the erosion controls are installed correctly and in compliance with the permit. Report shall be submitted to the Town of Cheshire Engineering Department and Commission Staff within three days of inspection.

4. An inspection of the condition, integrity, and adequacy of the sedimentation and erosion controls shall be made by the third party licensed professional engineer under contract by the Town of Cheshire Engineering Department either weekly or after every significant rainfall of 1/2" or greater, whichever is sooner, until all disturbed areas are stabilized. Said party shall be independent of the contractor. All reports shall be submitted to the contractor and Commission Staff either within three days of inspection, or prior to the next storm event, whichever is sooner. All breeches or deficiencies shall be forwarded to a contact individual, as defined above, immediately after inspection. The costs of said inspections to be borne by the applicant.

5. All recommendations from the Connecticut Department of Energy and Environmental Protection regarding protective measures for the protection of Natural Diversity Database species shall be stringently adhered to.

6. Throughout the course of conducting construction activities, and per Section 11.2K of the Cheshire Inland Wetlands and
Watercourses Regulations, the applicant shall be responsible for ensuring the following:

a) That all maintenance and refueling of equipment and vehicles is performed as far as practical from all wetlands and watercourses, at least 100’ if possible. All oil, gasoline, and chemicals needed at the site shall be stored in secondary containment to prevent contamination of any wetlands or watercourses from possible leaks.

b) That all disturbed areas on the site not directly required for construction activities are temporarily hayed and seeded until the site is permanently stabilized.

7. This permit grant shall expire on November 7, 2024.

Moved by Ms. Dunne. Seconded by Dr. Dimmick. Motion approved unanimously by Commission members present.
Transmittal:

From: Lucas A. Karmazinas
Through: Kimberly Lesay
Transportation Assistant Planning Director
To: Mary Dunne
Deputy State Historic Preservation Officer

Date: December 11, 2019

Project:
State No.: 9025-5495
Project Title: Rehabilitation of Bridge #05495
Town: Cheshire

West Johnson Avenue Over the Ten Mile River

Subject: SHPO Consultation Documentation

Project Description

Using state and local funds, the Town of Cheshire proposes to rehabilitate Bridge #05495, which carries West Johnson Avenue over the Ten Mile River in Cheshire. The bridge was built in 1987 and is constructed of 13 prestressed concrete box beams with a bituminous concrete overlay supported by cast-in-place concrete abutments with pile foundations. The structure has recently been deemed structurally deficient and has been placed under a load restriction. State Project #9025-5495 would rehabilitate the bridge and restore it to full load carrying capacity.

The proposed project would involve replacing the superstructure of the bridge and completing ancillary work on the substructure and along the approaches. The bridge is located entirely within the town-owned right-of-way (ROW) and the footprint of the rehabilitated structure will not change. No permanent ROW acquisitions are anticipated, however, a construction easement on the south side of the bridge will be required for construction as the ROW is generally coincidental with the fascia of the bridge on that side of the road.

As a portion of the project funding is provided by the State of Connecticut, the project falls under the purview of the Connecticut Environmental Policy Act (CEPA).

Technical Review of Project

Bridge #05495 is a single-span structure that carries West Johnson Avenue over the Ten Mile River in Cheshire (Images 1-3, and 10). The bridge was built in 1987 as an ancillary component of the construction of I-691, which is located 0.2-mile to the
north. It is 60’ long and measures 50’6” from face to face, the latter including a 42’ curb-to-curb width and 5’6”-wide concrete sidewalk. The superstructure is comprised of 13 prestressed concrete box beams with a bituminous concrete overlay supported by cast-in-place concrete abutments with pile foundations. It has concrete parapets topped by metal rails, and metal guide rails flanking the roadway along the approaches.

A recent inspection has resulted in the bridge being deemed structurally deficient due to longitudinal cracking in the bituminous concrete wearing surface and extensive water intrusion through the joints between the beams. The eastbound shoulder of the bridge has been closed and a weight limit posted.

The proposed project consists of replacing the existing superstructure and completing ancillary work on the substructure and along the approaches. The bridge’s existing 42’ curb-to-curb width and 5’6”-wide sidewalk would be maintained, however, 13 new box beams topped with a 6” reinforced concrete slab would be installed on the existing bridge seats, which would be lowered slightly to accommodate the additional thickness of the new design and preserve the structure’s presently low chord. New combination bridge rail with reconstructed end blocks, new approach slabs, new metal beam guide rails, and a new drainage system would also be installed, and the existing weep hole drains repaired. Once completed, a new bituminous overlay will be applied to the roadway approaches and surface of the bridge, and a topsoil and turf reestablishment program will be conducted on the slopes just beyond the roadway within the project area.

Area of Potential Effect (APE)

The project’s Area of Potential Effect (APE) is centered on the bridge and includes approximately 150’ of approach roadway to both the east and west, and a 20’ buffer on the north and south sides of the project area. The town-owned ROW bumps out approximately 15’ north of the roadway along the north side of the bridge, yet runs along the fascia of the structure on the south side. As such, the APE includes the following adjoining parcels and any resources that have the potential to be impacted by construction:

Bridge #05495

This is a single-span, prestressed concrete box beam bridge with cast-in-place abutments and pile foundations. It was built in 1987 as an ancillary task associated with the construction of I-691 and carries West Johnson Avenue over the Ten Mile River. The latter has been channelized in the vicinity of the bridge in an attempt to stabilize the flow of this flood-prone stretch of the river and both the bridge and this section of West Johnson Avenue are located on raised fill (Images 4-10). NBI records maintained by CTDOT identify Bridge #05495 as being Not Eligible for listing on the NRHP and qualified OEP staff concur with this assessment.

The project calls for replacement of the bridge’s superstructure, modification of the
existing bridge seats, and various ancillary roadway and drainage work. All of the proposed work will take place within areas disturbed and heavily modified during the bridge’s original construction or during the modification (raising) of the West Johnson Avenue roadbed.

West Johnson Avenue (MBL# 3-51)

This undeveloped 84.6-acre parcel abuts the entirety of the north side of the APE and extends north approximately 0.5-mile to the Cheshire-Southington town line. The property is traversed from northeast to southwest by the meandering flow of the Ten Mile River, and the southern third of the parcel is transected from east to west by I-691. The landscape of the parcel is characterized by a mix of wetlands, woodland, and small overgrown fields. The most notable aspect of the property is the presence of the Ten Mile River Culvert (a.k.a. Feature 26), which is a contributing resource within the NRHP-listed Farmington Canal Historic District. The structure is located approximately 0.44-mile to the northeast of Bridge #05495 and is not visible from the project area due to the surrounding topography and the I-691 corridor.

All of the proposed work will take place within the town-owned ROW and will not impact this property.

245 West Johnson Avenue

The entirety of the south side of the project area is abutted by this 5.43-acre parcel. It is the site of a one-story, single-family, Ranch-style residence built in 1984. The house stands approximately 300’ southwest of Bridge #05495 and 150’ southwest of the APE. A gravel driveway leads south from West Johnson Avenue providing access to the house, which is surrounded by a small lawn. The majority of the remainder of the parcel is wooded, however, the Ten Mile River traverses the center of the property from northeast to southwest.

As the town-owned ROW abuts the bridge’s southern fascia, it is likely that a temporary construction easement will be necessary to complete the proposed work. This being said, no new below-ground impacts to the property are proposed, nor does it possess any historical significance or character that might be affected by the project.

Archaeological Conditions Within or Abutting the APE:

According to state-maintained soil modeling, the entire project area is located on soils classified as Rippowam Fine Sandy Loam (0-3%), this possessing a “high” likelihood of bearing archaeological resources. This being said, however, the original plans for Bridge #05495 indicate that the river was channelized at the time of construction and large amounts of fill topped with approximately 6” of gravel fill and 1’6” of riprap were introduced to protect the approaches and abutments of the bridge from the meander- and flood-prone Ten Mile River (Image 10). These conditions are also clear in LiDAR imagery of the area, which identify West Johnson Avenue as an artificially raised roadway well beyond the boundaries of APE (Image 9). Given the aforementioned conditions, OEP Qualified Staff has determined that there is minimal
foreseeable potential to impact intact archaeological resources within the project area and no further study is recommended.

**Conclusion**

Qualified cultural resources staff from CTDOT’s Office of Environmental Planning (OEP) completed background research and reviewed the project scope. A review of records maintained by the Connecticut State Historic Preservation Office (SHPO) did not identify any properties listed on or potentially eligible for the NRHP within the project APE, nor was Bridge #05495 determined to be potentially eligible for listing.

Furthermore, the fact that Bridge #05495 and the section of West Johnson Avenue in the vicinity of the project area are located on an artificially raised roadway surface and the section of the river that passes below the bridge has been heavily channelized supports the determination that there is minimal foreseeable potential to impact intact, NRHP-eligible archaeological resources within the APE.

Qualified OEP staff hereby recommend that this project will result in **No Historic Properties Affected**.

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Lucas A. Karmazinas  
National Register Specialist  
Office of Environmental Planning  
Connecticut Department of Transportation

Attached Documents:

- [ ] SHPO Letter from CTDOT
- [x] Maps
- [x] Photos
- [ ] Supporting Documents
SHPO Use Only

Based on the information provided to the State Historic Preservation Office, we:

*Concur* ☒  Do Not Concur *(additional comments attached)*

with CTDOT’s Office of Environmental Planning’s opinion that
State Project #9025-5495 in Cheshire will result in:

**No Historic Properties Affected**

Mary Dunne  Catherine Labadio Date
Deputy State Historic Preservation Officer
Image 1: Downstream (south) face of Bridge #05495. Note the riprap-lined slopes of the channelized course of the Ten Mile River. Facing north.

Image 2: Roadway level of Bridge #05495. Facing west.