SPECIFICATIONS –
JOB SPECIFIC

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106.01
BUY AMERICA JOB SPECIFICATION (BABA)

Remove Section 106.01.1 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

106.01.1 Buy America Job Specification (BABA)

Introduction:

While existing Buy America requirements previously applied to iron, steel, and certain manufactured goods, the Infrastructure Investment and Jobs Act (IIJA) expands requirements to include all manufactured products and construction materials in construction contracts that include Federal Aid funding in the construction phase. Additional information available in 23 CFR 635.410 Buy America and it's Q&A at FHWA's Buy America Q and A for Federal-aid Program - Buy America - Contract Administration - Construction - Federal Highway Administration (dot.gov) [fhwa.dot.gov]

Purpose:

Provide materials from domestic sources when products are permanently incorporated into the work.

Ensure all manufacturing processes, including applications of coatings, occur in the United States. A coating includes all processes required to apply the coating to a product to protect or enhance the value of the product. The requirements of this JS are not applicable to equipment, tools, and temporary items, including materials left in place at the Contractor's convenience.

Certifications:

All certifications are submitted by the prime Contractor. When submitting certifications for materials that are subject to the requirements of this specification, the certification shall be on Form provided by the Department.

Determination of Material Category:

- Foreign or Uncertified Products.

Buy America does not apply to minimal use of steel/iron materials provided that the total cost of all foreign source items used in the contract, as delivered to the project site, is less than $2500 or one-tenth-of-one percent of the total contract amount, whichever is greater.

The total value is that shown to be the cost of the steel and iron products as delivered to the project site. Contractor to keep a log of foreign source items to ensure that the minimal use threshold is not exceeded during the life of the contract

- Manufactured Products

Provide manufactured products produced in the United States. A manufactured product is acceptable under this provision if:
The manufactured product was manufactured in the United States; and
The cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product.

- Construction Materials

The category of construction materials excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

Construction materials are materials that consist primarily of:

- Non-ferrous metals.
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

Waivers:

The Contractor may submit a waiver request to the department using RIDOT procedures and form provided in the PMP document management folder. The form must reflect a detailed justification for the use of goods, products, or materials mined, produced, or manufactured outside the United States and including copies of all documentation verifying the unavailability of the material or product.

The Department will submit approved waiver requests to FHWA for review. The Contractor shall investigate and respond to any public comments made to the FHWA Office of Program Administration, indicating that a domestic supplier cannot provide the material for which a waiver has been requested. Final approval of the Buy America Waiver request will be made by the Administrator, Federal Highway Administration. The waiver will be effective the date following publication in the Federal Register.

Contractor fully understands there is no guarantee a waiver request will be approved. Any contract delays caused by this waiver process will be the sole responsibility of the contractor.

The contractor shall be responsible for all cost associated with any of the construction materials that are permanently incorporated into the project that does not meet the requirements of this Special Provision without prior written approval from the Department, up to and including removal and replacement.

The Contractor may submit a waiver request to the department during construction:

1. Determine which type of the three waivers applies.

    - Public Interest Waiver: applying the domestic content procurement preference would be inconsistent with the public interest. A waiver in the public interest may be appropriate where the approving federal agency determines that other important policy goals cannot be achieved consistent with the IIJA requirements, and the proposed waiver would not meet the requirements for a nonavailability or unreasonable cost waiver.

    - Nonavailability Waiver: for types of iron, steel, manufactured products, or construction materials that are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality.

    - Unreasonable cost waiver: the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent. Provide documentation that no domestic alternatives are available within this cost parameter. Document in the waiver a comparison of the cost of the domestic product to the cost of the foreign product or a comparison of the overall cost of the project with domestic products to the overall cost of the project with foreign-origin products.

2. Contractor shall prepare waiver documentation including waiver form provided by RIDOT; located in the PMP portal and submit to the Department's Project Manager with a cc: to the Construction Manager (RE)

3. RIDOT/Project Manager to Submit waiver to Federal Highway Division.

4. Federal Highway Division submits the waiver to the Made in America Office. All waivers have to be submitted by Federal agencies to the Made in America Office. Project specific waivers require a minimum of 15 calendar day public comment period. General applicability waivers are subject to a minimum 30 calendar day public comment period. Federal agencies are responsible for performing due diligence and approving or rejecting waivers.

108.03
PROSECUTION AND PROGRESS

In accordance with **Section 108.03; Prosecution and Progress, General Requirements** the Schedule Level for this contract is **Schedule Level C.**

108.1000
PROSECUTION AND PROGRESS

There is no Winter Shutdown for this project, the following revisions apply:

101.29 CONTRACT TIME - The number of days allowed for the completion of the Contract or the date by which the Contract shall be completed as stated in the Proposal, including any approved time extensions. The Contract Time **does not include** Winter Shutdown. The terms "Contract Time" and "Contract Completion Date" are used synonymously.

105.14 WINTER SHUTDOWN – This specification is deleted from the contract. This project does not have a winter shutdown.

Phase Completion: A maximum of one continuous 85-day closure of Pond Bridge Road shall be allowed unless otherwise directed by RIDOT. The fine/charge for not reopening Pond Bridge Road to traffic and any remaining work to be completed is accomplished without lane closures by November 25, 2025 is $1,000.00 per day.

Substantial Completion: The following fine/charge for not completing contract work according to Section 101.89 by June 1, 2026 is $1,000.00 per day.

Final Acceptance: All Contract work shall be completed as defined by Section 105.18 by October 29, 2026 or a Daily Charge will be deducted from any money due in the amount of $1,950.00 per day.

SECTION 110
FINES/CHARGES TABLE

Remove Section 110 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

The Department will place the Contractor on notice for each failure to perform or comply with each provision. The Department will follow its internal process to review and assess the fines or charges in the Table below.

Specification	Failure to Perform and/or Comply	Frequency	Posted Speed up to 35 MPH	Posted Speed over 35 MPH
104.08	Maintenance of Traffic	Each day or location	$ 5,000.00	$ 10,000.00
104.09	Maintenance of Public Access	Each day per location	$ 2,500.00	$ 5,000.00
104.15	Environmental Protection	Each day per incident and location	$ 1,000.00	$ 1,000.00
105.01	Authority of the Engineer	Each incident	$ 1,000.00	$ 1,000.00
105.05	Contractor Removal of Personnel	Each day per person	$ 1,000.00	$ 2,000.00
105.07	Cooperation Between Contractors	Each day	$ 1,000.00	$ 1,000.00
105.12	Load Restrictions	Each Incident	$ 1,000.00	$ 1,000.00
105.13	Maintenance During Construction	Each day per location	$ 500.00	$ 1,000.00
105.15	Opening Sections of Project to Traffic	Each day	$ 1,000.00	$ 2,000.00
105.22	Tolling Facilities	Each incident	Daily Lost Revenue	Daily Lost Revenue
106.05	Storage of Materials	Each day per location	$ 1,500.00	$ 3,000.00
107.07	Sanitary, Health and Safety Provisions	Each day per location	$ 1,000.00	$ 2,000.00
107.08	Public Convenience and Safety	Each incident per day	$ 500.00	$ 1,000.00
107.09	Barricades and Warning Signs	Each incident per day	$ 500.00	$ 1,000.00
107.11	Protection and Restoration of Property and Landscape	Each day	$ 500.00	$ 1,000.00

107.13	Public Lands Protection	Each day per location	$ 1,000.00	$ 2,000.00
107.18	Hazardous Material	Each day per location	$ 1,000.00	$ 2,000.00
108.03	Prosecution and Progress	Each incident per day	$ 500.00	$ 1,000.00
108.03(c)	Meeting Minutes Not Provided/Not prepared for Project Status Meeting	Each meeting	$2,500.00	$2,500.00
108.04	Limitation Of Operations	Each incident per day	$ 500.00	$ 1,000.00
108.05	Character of Workers	Each person per day	$ 500.00	$ 1,000.00
108.06	Equipment, Means, and Methods	Each Incident per day	$ 500.00	$ 1,000.00
108.08	Phase Completion	Each day	Job Specific	Job Specific
108.08	Substantial Completion	Each day	Job Specific	Job Specific
108.08	Final Acceptance	Each day	Job Specific	Job Specific
206	Perimeter Erosion Controls	Each day	$ 500.00	$ 1,000.00
207	Check Dams	Each day	$ 500.00	$ 1,000.00
209	Storm Drain Inlet Protection	Each Incident per day	$ 500.00	$ 1,000.00
212.03.3	Failure to Maintain, Erosion, Sediment, and Pollution Prevention Controls	Each day per location	$ 1,500.00	$ 1,500.00
401	Cleaning and sweeping pavement	Each day	$ 500.00	$ 1,000.00
401.03.6	Quality Control (QC)	Per Ton	$10.00	$10.00
401.03.7	Joints	Each incident	$30,000.00	$30,000.00
403	Asphalt Emulsion Tack Coat	Per Square Yard	$50.00	$100.00
410	Temporary Patching of Potholes and Trenches	Each location per day	$1,000	$1,000
413	Rideability – Surface Course	Each day	$ 1,000.00	$ 2,500.00

814.03.8(c)	Falling Temperatures	Each day, incident, and location	10% if no structural effect	10% if no structural effect
905.03.1	Sidewalks – Scheduling Construction	Each day or location	$ 500.00	$ 1,000.00
905.03.2	Compliance with the Americans with Disability Act	Each day or location	$ 1,500.00	$ 3,000.00
907	Dust Control	Each day or location	$ 500.00	$ 1,000.00
914	Flagpersons	Hourly per person	$ 200.00	$ 300.00
916	Crash Cushions	Daily per each	$ 1,000.00	$ 2,000.00
922	Temporary Construction Signs	Daily per each	$ 1,000.00	$ 2,000.00
923	Portable Channelizing Devices and Barricades	Hourly per location	$ 500.00	$ 1,000.00
924	Advanced Warning Arrow Panel	Each day or location	$ 500.00	$ 1,000.00
925	Portable Changeable Message Sign	Each location or Day	$ 500.00	$ 1,000.00
926	Anchored and Unanchored Barrier for Temporary Traffic Control	Hourly per location	$ 1,000.00	$ 2,000.00
928	Truck Mounted Attenuator (TMA)	Per Hour	$ 500.00	$ 1,000.00
929	Field Offices	Each day	$ 500.00	$ 500.00
930	Plant Field Laboratory	Each day	$ 500.00	$ 500.00
934	Field Control and Construction Layout	Each day	$ 500.00	$ 1,000.00
937.05.2(a)	Maintenance	Each day	$ 5,000.00	$ 5,000.00

937.05.2(b)	Movement	Per instance	$5,000 and an additional $1,000** per half hour per lane (paved shoulders will be counted as lanes) per direction of travel that travel lane(s) remain out of compliance with the Transportation Management Plan.	$5,000 and an additional $1,000** per half hour per lane (paved shoulders will be counted as lanes) per direction of travel that travel lane(s) remain out of compliance with the Transportation Management Plan.
937	Daily Reports upon request if not provided within 24 hours	Each day	$ 500.00	$ 1,000.00
937	Emergency Response if not initiated within 90 minutes	Per hour	$ 3,000.00	$ 6,000.00
941	e-Ticketing HMA	Per Ton	$10.00	$10.00
941	e-Ticketing Concrete	Per CY	$10.00	$10.00
944	Lighting for Night Work Operations	Each day	$ 2,500.00	$5,000.00
L02.03.7	Seeding - Care During Construction	Each location or day	$ 500.00	$ 1,000.00
L03.03.10	Sodding - Care During Construction	Each location or day	$ 500.00	$ 1,000.00
L06.03.10	One Year Establishment Period	Each day	$ 250.00	$ 500.00
L07.03.10	Extended Establishment Period	Each day	$ 250.00	$ 500.00
T13	Detectors And Relays	Each location per day	$ 500.00	$ 1,000.00

** *Project specific hourly charges shall be set at a default value of $1,000 and increased accordingly based on the location of the project and other various project specific factors.*

Explanations. The following frequencies used in the above Table are applicable:

1. Per Each. Each individual sign, arrow panel, message board, truck mounted attenuator, barrier module (regardless of location).
2. Each Day. Fine applies once every calendar day.
3. Each Location. Each individual channelizing device setup, concrete barrier (regardless of locations).

4. Per On/Off Ramp. Each individual State numbered on ramp and off ramp (regardless of location).
5. Per Person. Each individual flag person (regardless of location).
6. Per Shoulder. Each individual high-speed lane and low-speed lane shoulder (regardless of location).
7. Per Travel Lane. Each individual travel lane, including all turn lanes (regardless of location).
8. After the first occurrence the amounts listed in the Table above will double for subsequent occurrences. Hourly items continue to be a single occurrence until they are no longer in violation.

110.01 EMERGENCIES

If emergency repair work has not been initiated within the 90-minute time frame specified above, the charge set forth above will be deducted from monies then due the Contractor until the repair work is completed.

CODE 202.9901
CONTAMINATED SOIL MANAGEMENT

DESCRIPTION: This work includes the management of site security/access, excavation, removal, stockpiling, and transportation of unclassified, contaminated, or hazardous soil according to the Environmental Protection Agency (EPA) and Rhode Island Department of Environmental Management (RIDEM) regulations, and in compliance with all applicable permits.

MATERIALS: Materials are specified in Subsection 202.02.3 Contaminated Soils of the Standard Specifications.

CONSTRUCTION METHODS: Construction Methods are specified in Subsection 202.03.4 Handling, Hauling, and Stockpile Management of Contaminated Soils and Unclassified Soils of the Standard Specifications and modified as follows:

Subsection 202.03.4.1 Health and Safety Plan modified as follows:
Ensure that the Contractor's and Subcontractor's employees who will be potentially exposed to the subsurface soils have OSHA 40-hour health and safety training and the eight-hour refresher training, if applicable.

Subsection 202.03.4.2 Applicable Laws and Regulations modified as follows:
Conduct the management of site security/access, excavation, removal, stockpiling, and transportation of unclassified, contaminated, or hazardous soil according to the Environmental Protection Agency (EPA) and Rhode Island Department of Environmental Management (RIDEM) regulations, and in compliance with all applicable permits.

Ensure that compliance with site security/access requirements, according to applicable regulations, are maintained during all earthwork operations. Maintain a daily field/operating report during the earthwork activities to include dates of earthwork activities, dates, and times of field sampling, soil management observations, and tracking related to stockpile generation and the documentation of lawful off-site disposition.

Subsection 202.03.4.7 Stockpiles modified as follows:
Maintain site security/access, fencing, erosion control hay bales, and dust control as required by the Contract at the stockpile locations and at all areas traveled for the stockpiling operation leading to and from the stockpile areas.

Subsection 202.03.5 Load, Haul, and Dispose Contaminated Soils of the Standard Specifications modified as follows:

If unclassified, contaminated, or hazardous soil will be stockpiled, place the soil on and cover with polyethylene sheeting.

METHOD OF MEASUREMENT: Method of Measurements are specified in Subsection 202.04 Method of Measurement of the Standard Specifications.

BASIS OF PAYMENT: Basis of Payments are specified in Subsection 202.05 Basis of Payment of the Standard Specifications.

CODE 208.9901
CONTROL OF WATER

DESCRIPTION: The work covered by this section shall consist of diverting channel flow and controlling groundwater for activities within the channel including demolition to the existing superstructure and substructure, repairs to the portions of the existing substructure that will remain, and all other work as necessary to completethe bridge structure as detailed on the Plans and in accordance with the February 2024 Rhode Island Rhode Island Standard Specifications for Road and Bridge Construction.

The work shall also be in accordance with the Coastal Resource Management Council (CRMC) CRMP Category B Assent Wetlands Permit included in the General Provisions–Contract Specific. The Contractor may elect to propose means and methods for control of water not allowed by the Permit. However, the Contractor shall be fully responsible for obtaining approval from CRMC for such changes, and no additional payment will be made for obtaining and implementing the additional approvals.

MATERIALS: The use of earthen berms is prohibited.

CONSTRUCTION METHODS: All work performed under this item shall be done in a cautious, safe, and professional manner in accordance with all regulatory permits. Allowable methods for control of water are by blocking flow through a portion of the channel using sandbag cofferdams and diverting flow to the remaining (unblocked) channel area. The control of water layout shown on the plans meets the maximum requirements, less than 25% of the width of the channel blocked, set forth by CRMC, as required in the permits included in the General Provisions-Contract Specific. Water diversions may be relocated as needed to perform the construction activities in the channel, however at no time shall the channel be blocked greater than 25% of its width.

The water control system shall accommodate the Mean High Water Springs with a minimum 1-foot of freeboard: Mean High Water Springs El. = 2.4

This elevation is referenced from the appendices of the CRMC Assent Application, File Number 94-1-40, for the replacement of the Seapowet Bridge, Bridge No. 291.

The manipulation of water elevations in Nonquit Pond for water control and/or placing stop logs or other barriers in the Nonquit Pond Dam outlet control structure is prohibited without authorization from the dam owner/operator, and the RIDEM.

Construction dewatering effluent shall be treated prior to discharge.

The contractor shall conduct a pre and post construction condition survey of the wetlands. Prior to conducting control of water operations, the contractor shall document the pre-construction conditions of the wetlands. The contractor shall submit this documentation to the Engineer for record. The contractor shall also submit the post construction condition of the restored wetlands to the Engineer for record. The Contractor shall restore all temporarily disturbed wetlands and riverbed contours to preconstruction elevations.

The Contractor shall submit to the Engineer for approval a complete plan and description of the methods intended to be used to perform all work under this item. Contractor’s proposed methods must not increase impacts beyond the limits shown on the Plans. The proposed plan must be stamped by a Rhode Island Registered Professional Engineer. No work shall commence on this item until such submission is approved by the Engineer.

METHOD OF MEASUREMENT: This item will not be measured for payment.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities at the Contract unit prices as follows.

Pay Item	Pay Unit
CONTROL OF WATER	LS

The price so stated shall constitute full compensation for all labor, materials, equipment, and all incidentals required to finish the work, as described above and elsewhere in the Contract Documents, complete in place and accepted. Pre and Post Construction Survey of the Wetlands is not included in this lump sum item.

SECTION 401
DENSE GRADED HOT MIX ASPHALT (HMA) PAVEMENTS

Remove Section 401 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

401.01 DESCRIPTION.

This work includes constructing HMA pavements on prepared foundations.
HMA includes a mixture of aggregate, performance graded asphalt binder (PGAB), and filler if required. The aggregate is sized, graded, and combined in proportions necessary for the mixture to meet the gradation requirements of the job mix formula (JMF).

401.02 MATERIALS.

401.02.1 Aggregates.

Use aggregates that comply with Subsection M03.02.2 and AASHTO M 323. Ensure that no more than 10 percent of the aggregate in the HMA is natural sand with the exception of Class 4.75 HMA, which must include no more than 20 percent.

401.02.2 Performance Graded Asphalt Binder (PGAB).

Use PGAB that meets AASHTO M 320, M 332, R 29, and R 92.

PGAB Requirements

Class of Mix	PGAB Requirement
4.75, 9.5, 12.5, 19.0, and Base Courses	PG 64S-28
19.0 and Base Course with less than 15 percent RAP required	PG 64S-22
19.0 and Base Course with 15 to 25 percent RAP required	PG 58S-22
All classes designated as “Modified”	PG 64E-28 with a minimum 2.5 percent SBS polymer

If a class of HMA is designated as “with WMA,” use a warm mix additive. Select the WMA from the RIDOT Approved Materials List.

Do not use re-refined engine oil bottoms (REOB) in any PGAB.
Supply binder from a facility compliant with AASHTO Product Evaluation and Audit Solutions (PEAS)

401.02.3 Mix Design.

Use HMA mixes that conform to AASHTO M 323, “Standard Specification for Superpave Volumetric Mix Design.” Follow the design procedure for AASHTO R 35, “Standard Practice for Superpave Volumetric Design for Hot-Mix Asphalt (HMA).” Determine the optimum binder content (OBC) as follows:

- Determine the OBC for Class 4.75, Class 9.5, and Class 12.5 when not designated as base course using PG 64S-28.
- Determine the OBC for Class 4.75, Class 9.5, and Class 12.5 when designated as base course with less than 15 percent RAP using PG 64S-22.
- Determine the OBC for Class 4.75, Class 9.5, and Class 12.5 when designated as base course with 15 to 25 percent RAP using PG 58S-28.

- Determine the OBC for Class 19.0 with less than 15 percent RAP using PG 64S-22.
- Determine the OBC for Class 19.0 with 15 to 25 percent RAP using PG 58S-28.

Provide the effective voids in the mineral aggregate (VMAeffective) for each asphalt content during the mix design process. An individual certified in mix design technology by the Asphalt Institute shall develop and sign the mix design. Provide new mix designs no later than two weeks before the date when production of the mixture is scheduled to begin and provide a copy of the individual's certification. Do not produce a mixture for State projects until the mix design is approved by the Engineer. Provide mix designs on forms provided by the Engineer.

The following specific requirements and exceptions to AASHTO M 323 apply:

- Obtain the specific gravity, absorption, and consensus properties of the aggregates from RIDOT's most recent sampling and testing or from a laboratory accredited by AASHTO to perform AASHTO T 84 and T 85.
- Comply with the recommendations of Section 4.2 of AASHTO R 35.
- Use a coarse-graded mix as defined in Section 6.1.3 of AASHTO M 323.
- Ensure that the dust to binder ratio (P0.075/Pbe) is 0.5 to 1.0. Use the effective binder content to calculate this ratio.
- In addition to the sieves listed in Table 3 of AASHTO M 323, use the 0.600 mm, 0.300 mm, and 0.150 mm sieves. The 50.0 mm and 37.5 mm sieves are not required.
- Design Class 19.0 and mixes designated as base course with a 0 percent, 10 percent, 15 percent, 20 percent, or 25 percent RAP content. Do not use RAP in any other mix.
- Ensure that Ninitial is 6, Ndesign is 50, and Nmax is 75 gyrations.
- A moisture susceptibility test is not required.
- Ensure that the design VMA, VFA, air voids, and minimum optimum binder content (OBC) meet the criteria in the following Table.

HMA Properties

Class of Mix	VMA (minimum)	VFA	Air Voids	Minimum OBC
4.75	17.5%	70% – 80%	4%	7.0
9.5	16.5%	70% -–80%	4%	6.0
12.5	15.5%	70% – 80%	4%	5.5
19.0	14.5%	70% – 80%	4%	5.0

Comply with the following procedures for each mix design:

- Provide three aggregate trial blend gradations for approval.
- After approval, blend the three trial aggregate blend gradations, and provide according to Section 4.2 of AASHTO R 35.
- Provide all trial mixture data and calculations determined per Section 9 of AASHTO R 35 on forms provided by the Engineer. The Engineer will determine which trial mixture will be used for the mix design procedure.
- After a new mix design is completed, provide to the Engineer for review and approval.
- The Engineer will provide the correction factors for each mix for each ignition furnace in the plant lab.

Provide the two gyratory cores (AASHTO T 312) and the theoretical maximum specific gravity sample (AASHTO T 209) at the optimum binder content to the Engineer.

Before beginning production of a new HMA mix, perform a successful plant trial batch for that mix. The Engineer will test a split of the sample taken by the Contractor. Provide notification of the date and time of the trial batch to the Engineer 24 hours in advance.

If there is a change in sources of materials, establish a new mix design before the new material is used. When the

Engineer determines that unsatisfactory results or other conditions make it necessary, establish a new mix design and provide it to the Engineer for approval.

401.02.4 Quality Assurance.

- Process Control. Exercise process control over all production operations. Provide constant monitoring of equipment, materials, and production activity such as testing and analysis to ensure that the HMA meets all applicable requirements and is produced within the allowable tolerances. Use personnel certified by Northeast Transportation Training and Certification Program (NETTCP) as an Asphalt Plant Technician. The technician is subject to RIDOT Independent Assurance sampling and testing.
- Acceptance Testing. The Engineer will conduct acceptance testing. Take samples at the direction and in the presence of the Engineer according to AASHTO R 97. The Engineer will take immediate possession of the samples. Samples not provided to the Engineer immediately will not be used for acceptance.

1. Gradation, Binder Content, and Air Void Content. Perform gradations according to AASHTO T 30. A wet wash will not be performed. The requirements in the Table below apply to mixes with and without pay adjustments.

   During production of a specific mix, if two consecutive tests do not meet the gradation requirements of the Table below or if one test exceeds double the tolerance on the control sieve, cease production of that HMA mix. The Engineer will allow production to resume after the Contractor completes a successful trial batch for that class of mix. Acceptance sampling will resume with the subsequent sublot or as determined by the Engineer.

Gradation Requirements

	Class 19.0	Class 12.5	Class 9.5	Class 4.75
25.0 mm (1 in.)	100%	100%	100%	100%
19.0 mm (¾ in.)	90% – 100%	100%	100%	100%
12.5 mm (½ in.)	90% max	90% – 100%	100%	100%
9.5 mm (⅜ in.)	—	90% max	90% – 100%	95% – 100%
4.75 mm (#4)	—	—	90% max	85% – 100%
2.36 mm (#8)	±5% from design	±5% from design	±5% from design	—
1.18 mm (#16)	—	—	—	±5% from design
0.075 mm (#200)	≥ 2%	≥ 2%	≥ 2%	≥ 2%
Control Sieve	2.36 mm (#8)	2.36 mm (#8)	2.36 mm (#8)	1.18 mm (#16)

The Engineer will determine the binder content according to AASHTO T 308 and the air voids according to AASHTO T 269. The plant shutdown criteria in the Table below will apply for binder content and air voids that exceed the following tolerances.

Plant Shutdown Criteria

Pay Adjustments	Shutdown Criteria	One Test	Two Consecutive Tests
With Pay Adjustments	Optimum Binder Content	±0.6%	—
	Design Air Voids	±2.0%	—
Without Pay Adjustments	Optimum Binder Content	±0.6%	±0.4%
	Design Air Voids	±2.0%	±1.0%

Any combination of gradation, binder content, and voids that exceed specifications on two consecutive

tests requires the Contractor to shut down the plant. Do not sample trial batches until acceptance testing is complete. The Engineer will allow production to resume after the Contractor completes a successful trial batch for that class of mix.

2. Mix Production — Lots and Sublots. A standard sublot is 600 tons for HMA sampled at the plant for each production run. A standard lot for each mix is 10 sublots. A sample will be randomly selected and tested for each sublot. At least five sublots will be used when calculating pay adjustments.

   If the quantity of HMA needed to finish a production run is projected by the Contractor to be less than the standard sublot size of 600 tons, the projected tonnage may be used to select a random sample. If the projected tonnage is not produced or a random sample is unable to be taken, the Engineer may select a sample at the end of the run or at the paver. If no sample is taken, the tonnage will be added to the previous sublot.

   Additional samples may be taken at the discretion of the Engineer.

   Gyratory cores and theoretical maximum density samples will be retained by the Engineer for two weeks after the results are reported to the Contractor.

3. Adjustments to Lots. If less than five sublots are tested after the end of the final standard lot, they will be added to that lot. Five or more sublots tested after the end of the final standard lot will constitute a separate lot.

4. Plant Pay Adjustments. If a class of HMA is designated with pay adjustments, the pay adjustments for deviation from the optimum binder content (established by the mix design) in the Table below and the design air void content in the second Table will apply.

OBC Pay Adjustments

Deviation from Optimum Binder Content	Pay Adjustment
Less than or equal to 0.1%	+2%
0.2%	+1%
0.3%	0%
0.4%	-5%
0.5%	-15%
0.6%	-30%
0.7%	-40%
Greater than 0.7%	-50% or Remove and Replace*

Air Void Pay Adjustments

Deviation from Design Air Void Content	Pay Adjustment
Less than or equal to 0.5%	+1%
0.6% to 1.0%	0%
1.1% to 1.5%	-5%
1.6% to 2.0%	-10%
2.1% to 2.5%	-30%
2.6% to 3.0%	-40%
Greater than 3.0%	-50% or Remove and Replace*

** The decision to make 50% payment or remove and replace will be made by the Engineer.*
Note: All deviation values will be rounded to the nearest 0.1 percent before applying pay adjustments.

5. Calculation of Pay Adjustments for Production Binder and Air Void Content. For each test, absolute deviations will be used when determining binder and air void content pay adjustments. Absolute deviations are the values of deviation regardless of sign (±). The average of the absolute deviations from the optimum binder content of all sublots in each lot will be used to determine the appropriate pay adjustments for the lots. The same will apply for air void content. No payment will be made for any pavement that is removed.

6. Independent Assurance Testing. The Department will perform this testing according to the RIDOT publication, "Schedule for Sampling, Testing, and Certification of Materials."

401.03 CONSTRUCTION METHODS.

401.03.1 HMA Mixing Plant.

Ensure that the HMA plant complies with AASHTO M 156 and Section 941 e-Ticketing.

401.03.2 Hauling Equipment.

Ensure that trucks or other equipment used for hauling HMA have tight, clean, smooth, metal beds, which have been thinly coated with an approved release agent. Do not apply diesel fuel or other petroleum based material to any portion of the vehicle that contacts the HMA. For each truck, provide a solid cover of canvas or other suitable material that protects the mixture from the weather and covers the entire length and width of the truck body.

Load tri-axle trucks using a minimum of two drops, front and back. Load trailers using a minimum of three drops with the center drop always occurring last.

Do not clean equipment (vehicles, truck beds, etc.) in areas to be paved.

A material transfer vehicle (MTV) is required for the construction of all HMA friction, surface, intermediate, and base courses on all limited access highways listed in the Table below. Use the MTV on travel lanes, auxiliary lanes, climbing lanes, acceleration and deceleration lanes, ramps, collector/distributor roads and service roads. Ensure that the MTV independently delivers HMA from the hauling equipment to the paving equipment. Install a paving hopper insert with a minimum capacity of 14 tons in the hopper of conventional paving equipment when an MTV is used.

As a minimum, use an MTV that has a high-capacity truck unloading system that will receive HMA from the hauling equipment, a storage system in the MTV with a minimum capacity of 14 tons of HMA, and a discharge conveyor that can swivel to either side to deliver the mixture to the paver while allowing the MTV to operate from an adjacent lane. In addition, ensure that the paving operation contains a remixing system to blend the mixture before placement. Adjust the speed of the paver and MTV to coordinate with the availability of HMA. Failure to keep the MTV supplied with HMA may because to cease paving operations for this work. The Engineer may suspend paving operations if more than two stoppages occur. Operate the MTV from an adjacent lane unless otherwise permitted by the Engineer.

When an MTV is used on a Project, investigate the possible movement of the fully or partially loaded MTV on the Project. If there are any structures that the MTV will traverse, request an Overweight Permit Check from the Department. Provide a copy of the request in writing to the Engineer, and include the axle configuration, weights, and the Project limits. Do not restart operations until permission is received from the Engineer.

The following Table is a list of roadways requiring the use of an MTV.

Route Number	Limits
I-95	Connecticut State Line to Massachusetts State Line
I-195	I-95 to Massachusetts State Line
I-295	I-95 to Massachusetts State Line
US Route 1	Prosser Trail to Wakefield Cut-Off
RI Route 4	Route 1 to I-95
US Route 6	Route 102 to Route 101; Route 10 to I-295
RI Route 10	Park Avenue to Route 6
US Route 6/RI Route 10	Magnolia Street Bridge to I-95
RI Route 24	Route 114 to Massachusetts State Line
RI Route 37	Natick Avenue to Post Road
RI Route 78	Route 1 to Connecticut State Line
RI Route 99	Route 146 to Mendon Road
East Shore Expressway	I-195 to Wampanoag Trail
RI Route 114	East Shore Expressway to Forbes Street
RI Route 138	Route 1 to Admiral Kalbfus Road
RI Route 146	I-95 to Reservoir Road
RI Route 146	Route 146A to Massachusetts State Line
RI Route 403	Route 4 to Quonset Point
Airport Connector	I-95 to Post Road
Henderson Bridge Access Roadway	Waterman Street/So. Angell Street to Broadway

401.03.3 Pavers.

Spread mixtures using a self-powered paver capable of spreading to line, grade, and crown.

Use auger extensions when the end of the screed extension is more than 2 ft from the end of the augers.

Ensure that the screed and screed extenders continually vibrate while placing the mixture. Ensure that the screed is heated to maintain the HMA at the required placement temperature.

Use automatic screed controls with sensors on both sides of the paver in accordance with the manufacturer's instructions. Ensure that the controls are capable of sensing grade from an outside reference line, sensing the transverse slope of the screed and providing the automatic signals that operate the screed to maintain the desired grade and transverse slope. Ensure that the sensors can operate from a ski-type device or reference beam of not less than 25 ft in length. Ensure that the sensors can operate from a reference line, unless the ski-type device or reference beam can ride on an adjacent, newly placed lift of HMA.
Provide reference lines for the control of horizontal alignment, subject to the approval of the Engineer.
Ensure that the transverse slope controller can maintain the screed at the desired slope within ±0.1 percent. Ensure that the paver is equipped with automatic feeder controls, properly adjusted to maintain a uniform depth of materials ahead of the screed.

Manual operation will be permitted in the construction of irregularly shaped and minor areas or where otherwise allowed by the Engineer.

401.03.4 Conditioning of Existing Surfaces.

Remove all striping on existing surfaces before applying the tack coat. Provide a thin, even coating of tack to surfaces of curbs, gutters, vertical faces of existing pavements, and all structures that will contact the HMA.

Avoid the splattering of surfaces that will not contact the HMA.

When a tack coat is required, provide a type and grade and application method that conforms to SECTION M03 and SECTION 403.

401.03.5 Spreading and Finishing.

Lay the mixture on an approved clean surface, which has been spread and struck off to the established grade and elevation. Use HMA pavers to distribute the mixture either over the entire width or over a partial width approved by the Engineer. **Ensure that transverse joints are clean, smooth, uniform, vertical, and constructed using a fixed depth road saw.**

Ensure that the practices and guidelines for placing HMA comply with the Asphalt Institute Publication MS-22, "Construction of Hot Mix Asphalt Pavements."

Do not allow unnecessary walking on the uncompacted HMA mat.

Before beginning a new lane, heat the screed to the proper operating temperature and remove any clumps of cold material in the paver hopper.

Do not allow trucks or other equipment on freshly placed HMA, unless permitted by the Engineer.

Where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, place the mixture as close to its final position as possible. Spread, rake, and lute with hand tools to minimize segregation and provide the required compacted thickness.

Protect catch basins to prevent HMA from entering the basin and to enable the grate to be easily removed after paving. If paving results in HMA entering the catch basin or in bonding the grate to the frame preventing its normal removal, remove all HMA from the catch basin and clean the grate to debond the two.

If unforeseen circumstances cause the paving operation to cease, provide a minimum of three loaded trucks on site before paving will be allowed to resume.

401.03.6 Compaction.

Immediately after the HMA has been spread, struck off, and surface irregularities adjusted, uniformly compact by rolling.

Roll the surface when the mixture is in the proper condition and when rolling does not cause undue displacement, cracking, and shoving.

Compact HMA used on bridge decks with an oscillatory roller.

Compact HMA used as leveling course with a pneumatic roller.

Use a minimum of two rollers for all paving operations that exceed a daily total of 500 tons, except for driveway, sidewalk, and bridge deck paving operations. Provide a number, weight, and type of roller(s) sufficient to compact the mixture to the required density before it reaches the minimum compaction temperature. Use rollers in the vibratory or oscillatory mode for asphalt placed on soil. Use rollers in the oscillatory mode on bridge decks. Finish rollers may be used in static mode. Provide rollers used for compaction with a minimum operating weight of 10 tons or greater. Do not use equipment that results in excessive crushing of the aggregate.

Ensure that the speed of a roller does not exceed 5 mph.

Do not park rollers on HMA. Only stop rollers on HMA when reversing direction. When reversing direction, ensure that the action is smooth, not abrupt. Ensure that the drive wheel approaches the new mix, not the tiller wheel.

When a vibratory roller is used for finish rolling, use the roller in the static mode. Continue finishing rolling until all roller marks are eliminated. Do not allow traffic on newly placed pavement until the temperature falls below

130 degrees F.

Ensure that the motion of the rollers is sufficiently slow to avoid displacement of the hot mixture. Ensure that the wheels of steel-wheel rollers remain moist and clean to prevent adhesion of the fresh material; however, do not apply an excess of water.

If satisfactory density cannot be obtained in any lift, and if the Engineer determines that it is structurally inadequate and/or incapable of maintaining material integrity, remove and replace the area(s) at no additional cost to the Department.

Remove and replace any mixture that becomes loose and broken, mixed with dirt, or is otherwise defective and place fresh hot mixture, which must be compacted to conform to the surrounding area. Remove and replace any area demonstrating an excess or deficiency of PGAB.

- In-Place Density for Classes of HMA not designated as "with Pay Adjustments." For HMA not designated with Pay Adjustments, ensure that the in-place density is a minimum of 92 percent of the theoretical maximum density obtained at the plant. Acceptance testing will be performed with a nuclear or non-nuclear gauge.

  If a class of HMA is designated for bridge decks, use an oscillatory roller with a minimum operational weight of 8 tons. For HMA designated for bridge decks and with Pay Adjustments, the pay adjustments will only apply to binder content and air voids. In-place density will not be used for acceptance testing.

  If a class of HMA is used for leveling, place the HMA with a paver. Use a pneumatic roller with a minimum operational weight of 8 tons. In-place density will not be used for acceptance testing. For HMA designated for leveling and with Pay Adjustments, the pay adjustments will apply only to binder content and air voids.

  If a class of HMA is designated for patching, miscellaneous work, or paved waterways, place the HMA by hand. Use a vibratory plate compactor or roller. Use a hand tamper only if approved by the Engineer. In-place density will not be used for acceptance testing.

- In-Place Density for Classes of HMA designated as "with Pay Adjustments." Compaction density will be measured using cores of in-place pavement extracted according to AASHTO R 67.
  Extract cores under the direction of and witnessed by the Engineer. Otherwise, the cores will not be used for acceptance. The Engineer will determine the location of all cores.
  Each lot and sublot for in-place density cores will be matched as near as practical to each production lot and sublot used at the plant. The average Gmm for the paving session will be used to determine the in-place density of the cores extracted for that session.
  Extract all cores after completion of rolling operations and before the paved section is open to traffic. The Engineer will take immediate possession of the cores upon extraction. If the Contractor does not obtain cores before a sublot is open to traffic, no bonus (pay adjustment resulting in more than 0 percent) will be paid for the sublot but disincentives will still apply.

  Bulk specific gravities will be determined according to AASHTO T 166, regardless of whether the absorption exceeds 2.0 percent. The Engineer will retain the cores for four weeks after the results are reported to the Contractor.

  For HMA used on bridge decks, cores will not be required or allowed.

  The Contractor may extract its own cores for QC to monitor in-place density and production quality; however, these cores will not be used for acceptance.

  - Mat Density. A standard sublot is 600 tons. A non-standard sublot is the quantity of HMA placed if there is less than 600 tons produced after the final standard sublot.

    Under the direction of and witness by the Engineer, extract two stratified, randomly selected

cores (diameters between 3.75 in. and 4 in.) from the mat for each standard sublot. One core is taken for sublots less than 450 tons. The Table below will be used to determine the minimum number of cores extracted from the mat. The center of each core used to determine mat density will be at least 1 ft away from the edge of pavement, transverse or longitudinal joints, or drainage structures.

MAT Density Core Quantities

Expected Daily Production Tonnage	Minimum Number of Mat Cores
450 or Less	1
451 – 750	2
751 – 1050	3
1051 – 1350	4
1351 – 1650	5
1651 – 1950	6
1951 – 2250	7
2251 – 2550	8
2551 – 2850	9
2851 – 3150	10

- Joint Density. Extract one joint density core for every 3000 ft or less when a joint is formed. Extract joint cores so that the center is within 2 in. of the middle of the sloped portion of a notched-wedge joint or within 1 in. of the middle of a butt joint. Ensure that cores taken from butt joints are 6 in. in diameter.
- In-Place Density Pay Adjustments. In-place density will be measured and reported as a percent of theoretical maximum density. The pay adjustments from the Table below will be made for in-place mat density.

MAT Density Pay Adjustments

In-Place Mat Density	Pay Adjustment
95.0% and greater	+2%
94.0% to 94.9%	+1%
93.0% to 93.9%	0%
92.0% to 92.9%	-5%
91.0% to 91.9%	-15%
90.0% to 90.9%	-25%
89.0% to 89.9%	-35%
Below 89.0%	Remove and Replace

The pay adjustments from the Table below will be made for in-place joint density.

Joint Density Pay Adjustments

In-Place Joint Density	Pay Adjustment
93.0% and greater	+2%
92.0% to 92.9%	+1%
91.0% to 91.9%	0%
90.0% to 90.9%	-5%
89.0% to 89.9%	-15%
88.0% to 88.9%	-25%
87.0% to 87.9%	-35%
Below 87.0%	-100%

Note: All density values will be rounded to the nearest 0.1% before applying pay adjustments.

4. Calculation of Pay Adjustments for In-Place Density.

- Mat Density. For each sublot, the bulk specific gravity (Gmb) of the mat density core(s) will be averaged and then compared to the average of the corresponding plant theoretical maximum specific gravities (Gmm) for that paving session to calculate the in-place density for each sublot. The average of the sublot densities in a lot will be used to determine the appropriate pay adjustment for that lot. Lot pay adjustments will be applied to the respective quantity of HMA in each lot.
- Joint Density. For joint density pay adjustments, a joint lot will be defined as 10 joint density results. However, if less than five joint density results are remaining after the final full joint lot is formed, they will be added to the previous joint lot. Five or more joint density results remaining after the final full joint lot will constitute a separate joint lot. A minimum of five joint density cores will be used to calculate pay adjustments. If five cores are not available, the joint density pay adjustments will not be used and the joint quantity will be added to the mat quantity.

  Calculation of in-place joint density will be determined using the Gmb of joint density cores and the project average plant Gmm of the respective mix. The average of the individual joint density results in a joint lot will be used to determine the appropriate pay adjustment for that joint lot. The calculation of material quantity used to construct the joints will be based on the joint core density, the specified thickness, a width of one ft and the total length of the joints on the Project. This quantity will be deducted from the total tonnage.

Quality control (QC) for paving operations include measurement of in-place mat and joint density using a nuclear or non-nuclear density gauge calibrated and operated in accordance with AASHTO T 343 or T 355 as applicable. The operator of the gauge shall direct and guide both the paver and roller operators to ensure conformance with density specifications. This QC operation shall be performed for all paving sessions greater than 300 tons or if the mix being placed includes pay adjustments. It is not required for leveling course but is required for all dense graded mixes, Friction Courses and PPEST.

Take acceptance cores at the direction of the Department.

401.03.7 Joints.

Ensure that the placement of the HMA is as continuous as possible. Do not allow rollers to pass over the unprotected end of a freshly laid mixture, unless authorized by the Engineer.

Stagger both longitudinal and transverse joints in successive courses so that neither is above the other. Stagger longitudinal and transverse joints a minimum of 6 in. and ensure that the longitudinal joint in the top course is at the location of the line dividing the traffic lanes. Rake any HMA that falls on the cold side of the mat onto the hot side during paving operations. Ensure that the material pushed onto the hot side of the joint remains in the joint area and is not broadcast over the pavement.

Use a notched wedge joint maker on all longitudinal drop-offs, regardless of whether they are on the left, right, or both sides of the pavement. Construct joints so that the height of the notch is the same as the nominal maximum

aggregate size. Provide a width of the sloped portion of the joint that is at least 12 in. Use a notched wedge joint maker on ramps when they are paved in two passes.

401.03.8 Pavement Samples.

As directed, cut samples from the compacted pavement for testing by the Engineer. Extract samples of the mixture for the full depth of the course at the locations directed by the Engineer.

Where samples have been taken, place and compact new material to conform to the surrounding area.

401.03.9 Weather Limitations.

Do not place HMA on any wet surface or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

For lifts with a target compacted lift thickness less than or equal to 1.5 in., only place HMA when both the air and surface temperature in the shade is 45°F or greater. If an approved WMA (warm mix additive) is used, ensure that the temperatures are 40°F or greater. For lifts with a target compacted lift thickness greater than 1.5 in., only place HMA when both the air and surface temperature in the shade is 40°F or greater. Do not place HMA on frozen ground.

Ensure that the HMA mat is at least 265°F when placed. If, after mobilization, the weather limitations have an impact, assume all costs associated with the stopping, delaying, or canceling of operations.

401.03.10 Cold-Weather Paving.

If the existing pavement is removed before the winter shutdown, do not close the Project for the season until a new HMA layer has been placed and striped with temporary epoxy pavement markings. If paving cannot be performed because temperatures do not rise above 40oF, then the pavement will be designated as temporary. Repave that segment of roadway in the spring when temperatures exceed 40oF.

401.03.11 Drop-Offs.

Longitudinal Drop-Offs. A longitudinal drop-off is the difference in elevation between the top of recently placed or milled HMA pavement and the top of adjacent ground or pavement. Ensure that drop-offs on recently placed pavements conform to Subsection.401.03.7. Construct all longitudinal drop-offs using a notched wedge joint maker, unless otherwise approved by the Engineer. See the RIDOT Standard Details.

a. Transverse Drop-Offs. Transverse drop-offs occur as follows:

- Pavement Removal. A transverse drop-off occurs when pavement removal operations begin or end on a working day. The drop-off is the difference in elevation between the bottom of the excavated pavement and the top of the existing pavement.

- Pavement Overlay. A transverse drop-off occurs when pavement overlay operations begin or end on a working day. The drop-off is the difference in elevation between the top of the overlay pavement and the top of the underlying pavement or soil. Construct drop-offs using a bond breaking material between the drop-off and the underlying pavement or soil.

If traffic is allowed across any transverse drop-off before the resumption of pavement removal or pavement overlay operations, provide tapers as follows:

- Construct all tapers with HMA conforming to the requirements of SECTION 401.

- For Posted Speeds of 35 mph or Less. Transverse drop-offs in place at the end of a working day shall be graded at a slope not steeper than 2 feet horizontal to 1 inch vertical.

- For Posted Speeds Greater than 35 mph. Transverse drop-offs in place at the end of a working day shall be graded at a slope not steeper than 5 feet horizontal to 1 inch vertical.

- Place BUMP signs according to the Manual on Uniform Traffic Control Devices for each drop-off for each direction of traffic.

- Before the resumption of pavement overlay operations, remove the transition slope as follows: Saw cut the pavement overlay back approximately 6 in. to expose a fresh, full thickness vertical face. Brush paint or pressure spray this face with tack coat, after which the HMA paving may resume. The sawcut work will be considered incidental to pavement operations.

401.04 METHOD OF MEASUREMENT.

401.04.1 Measurement of HMA Pavement.

HMA pavements will be measured by the number of tons placed.

a. Determination of Thickness. Before the determination of the in-place thickness, ensure that the roadway exhibits acceptable workmanship and that all defects have been corrected. The placed thickness of HMA pavement will be determined by cutting or coring holes. For courses with in-place density cores specified, the thickness of the density cores will be used to determine the in-place thickness. For courses placed on bridge decks, bike paths, or sidewalks, neither final nor density cores will be required.

   Cores will be measured according to ASTM D3549, "Standard Test Method for Thickness or Height of Compacted HMA Paving Mixture Specimens." The depth measurement will apply to the full width of the lane. Measurements will be made at random locations as determined by the Engineer.

   For the determination of thickness, a shoulder width of 8 ft or greater will be considered to be a separate lane of the roadway. A shoulder width of less than 8 ft will be considered part of the adjacent lane. For cores taken by the Contractor, fill all holes with a compacted, dense HMA that is acceptable to the Engineer. If required by the Engineer, maintain and control traffic while pavement samples are taken and while the holes are being filled and compacted.

a. Adjustment of Tonnage Quantity. The pavement thickness will be considered acceptable if both of the following requirements are met:

   - The total HMA tonnage delivered and placed does not exceed the tonnage calculated from the approved area measured from the final surface course width by the Project length and the specified pavement thickness by more than 5 percent.

   - When "Specification Conformity Analysis," FHWA Technical Advisory T5080.12," dated June 23, 1989, is applied to the entire roadway or sections thereof as determined by the Engineer, at least 80 percent of the total HMA pavement will have a thickness that meets the minimum pavement thickness. The minimum pavement thickness is that contained in the Contract minus ½ in. (e.g., a total pavement thickness of 7 in. will have a minimum pavement thickness requirement of 6.5 in.).

   If the first requirement is not met, no payment will be made for all tonnage exceeding 5 percent, unless unusual field conditions are present and documented (e.g., pavement rutting).

   If the second requirement indicates that the pavement thickness is deficient, place a correction course, with the permission of the Engineer and at no cost to the State, not less than 1 in. in depth after compaction, provided that an acceptable grade and cross section can be achieved. Where an acceptable grade and cross section cannot be achieved through the above means, reconstruct by cutting back and into the pavement a sufficient distance to permit the placement of an acceptable depth, and place new material to achieve the proper depth, cross section, and profile. Where a corrective course is placed or reconstruction of the pavement is performed, these areas will be measured again as though originally constructed. No compensation will be made for the material removed; or removal of materials and disposal thereof; or for restoration of the affected supporting base or adjacent construction; or for traffic

control; or for adjusting all utility appurtenances in the roadway; or for correcting pavement striping. Compensation will be made for the additional pavement correction course accepted in place.

Determination of the quantity to be used for adjusted payment or exclusion for payment will be based on tons per square yard per inch thickness as determined using in-place density cores or 96 percent of the plant core (AASHTO T245) densities if in-place densities are not available. If both in-place and plant core densities are not available, 94 percent of the plant theoretical maximum density results will be used.

Sweeping and cleaning, as included in the items covered by this Section, only refers to the normal removal of dust, debris, etc.

Work described in Subsection 401.03.4 will be paid for at the Contract unit prices for the material used.

b. Tolerance Limitation. Electronic tickets marked "Delivered" by the Department's representative at the point of placement will be used in the determination of total tonnage delivered and placed. Payment will be made at the Contract unit bid prices with pay adjustments for all accepted HMA up to 105 percent of the Contract quantity tonnage. Accepted HMA quantities above 105 percent and up to 110 percent of the Contract quantity tonnage will be paid at 50 percent of the Contract unit bid price and, with the resultant adjusted price, will be further modified by additional pay adjustments as applicable according to the following formula:

   Pay adjustments will apply to 50 percent of the Contract unit bid price for quantities above 105 percent and up to 110 percent. No payment will be made for quantities above 110 percent.

401.04.2 Measurement of HMA Preparation.

HMA preparation will be measured by SY. This includes asphalt emulsion tack coat, cleaning and sweeping, removal and disposal, micro milling and removing pavement markings.

401.05 BASIS OF PAYMENT.

The Department will pay for the in-place, completed and accepted quantities at the Contract unit prices as follows.

Pay Item	Pay Unit
Hot Mix Asphalt	Ton
Hot Mix Asphalt Preparation – Partial Depth	SY
Hot Mix Asphalt Preparation – Full Depth	SY

The price for HMA constitutes full compensation for all labor, materials, and equipment, and all other incidentals required to finish the work, complete and accepted. Includes labor & materials for asphalt berm.

The price for HMA Preparation – Partial Depth constitutes full compensation for all labor, materials, and equipment, including cleaning and sweeping, micro milling, removal & disposal of flexible pavement, removing pavement markings, saw cutting of pavement, placement and subsequent removal of temporary covers and structures, tack coat, and all other incidentals required to finish the work, complete and accepted.

The price for HMA Preparation – Full Depth constitutes full compensation for all labor, materials, and equipment, including cleaning and sweeping, saw cutting of pavement, removal & disposal of flexible pavement and rigid base, scarifying, mixing, pulverizing, spreading, reshaping, calcium chloride and water for compaction and dust control, regrading, rolling, compacting, trimming and fine grading of subgrade and subbase, the removal and disposal of unsuitable materials, hauling or other handling of recyclable materials off-site, the movement of surplus asphalt-stabilized base material from one location to another within the Project limits, placement and subsequent removal of temporary covers and structures, tack coat, and all other incidentals required to finish the work, complete and accepted.

Pay adjustments for binder content, air voids, and in-place density will be added together to determine a final pay adjustment for both the mat and the joint. If more than one pay adjustment is negative, then only the most negative adjustment will be added to the remaining non-negative adjustments to determine the final pay adjustment. Pay adjustments will be addressed using Item Code 416.0100. Disincentives will be addressed using a Report of Change.

All construction associated with drop-offs and the installation and removal of tapers is incidental and is not paid for separately.

Fines for Joints and QC are addressed in Section 110.

SECTION 601
PORTLAND CEMENT CONCRETE

Remove Section 601 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

DESCRIPTION: This work consists of furnishing, placing, curing, and finishing Portland cement concrete for bridges, pavements, structures, and incidental construction.

Concrete consists of a homogeneous mixture of Portland cement, coarse aggregate, fine aggregate, air entrainment, water, chemical and mineral admixtures (when used), mixed in the required proportions. Proportion Portland cement concrete with the required cement content for each class and mix to the consistency specified.

Use the classes of concrete required for the work. The Engineer will approve all concrete mixes. Various sizes of coarse aggregate for the classes of concrete may be combined during the batching operation in each fraction of aggregate size required to obtain the specified gradation. When testing aggregates to determine compliance with a specified gradation, fractions will be tested separately and combined mathematically or combined mechanically in predetermined proportions and tested.

601.02 MATERIALS.

601.02.1 Portland Cement.

Provide Portland cement that conforms to SECTION M02 and is listed on the Department's Approved Materials List.

For bridge projects, provide one brand of Portland cement and use for all visible portions of a structure; however, this is not required for interior deck slabs, beams, or corresponding elements that are semi-exposed.

Provide suitable means for storing and protecting the cement against dampness. Supply all Portland cement from mill silos that have cement that has been tested. Provide a copy of a certified Mill Test Report to the Engineer for the cement being used. Deliveries may be directed to the site or through a regional distribution base.

In addition, comply with the following:

- Provide a manufacturer's Mill Test Report, signed by the company representative having legal binding authority, with each shipment of cement. Copies of a standard form are available from the Department upon request.
- Under all steps and conditions, make delivery in weatherproofed and sealed transporting equipment. Protect all cement from moisture and contaminants. Any cement that fails to meet any of these requirements will be rejected and removed from the work. Retest any hydraulic cement stored for a period longer than 120 days according to AASHTO M85. An independent laboratory shall perform the retest at no cost to the Department, which must be approved by the Engineer before being used on the work.

601.02.2 Chemical Admixtures.

Use admixtures in Portland cement concrete that conform to **SECTION M02**. Perform all work according to the recommendations of the manufacturer. Do not use admixtures unless approved by the Engineer.

Ensure that the physical and chemical properties of admixtures are uniform throughout their use in the work. If an admixture as furnished is not uniform in properties, discontinue its use.

If more than one admixture type or brand is used, ensure that admixtures are compatible with one another so that the desirable effects of all admixtures used will be realized.

When using a brand and type of admixture on the Department's Approved Materials List, furnish a Certificate of Compliance from the manufacturer, certifying that the admixture furnished conforms to the chemical and physical requirements. The Engineer may take samples for testing at any time.

Dispense chemical admixtures, including air-entraining admixtures, in liquid form. If more than one chemical admixture is used in the concrete mix, provide a separate dispensing measuring unit for each admixture. Ensure that dispensers for chemical admixtures have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Ensure that each dispenser includes a graduated measuring unit into which liquid admixtures are measured to within ±2 percent of the prescribed quantity (volume or weight, as applicable) for each batch of concrete. Locate and maintain dispensers so that the graduations can be accurately read from where proportioning operations are controlled to permit a visual check of batching accuracy before discharge. Mark each dispensing unit for the type and quantity of admixture.

Equip each liquid admixture dispensing system with a sampling device consisting of a valve located in a safe and readily accessible position so that a sample of the admixture may be withdrawn by the Engineer.

For all types of admixtures, incorporate the water content as determined by the manufacturer's recommendations when calculating the total amount free water of the concrete mix.

601.02.3 Mineral Admixtures.

Mineral admixtures such as fly ash, blast furnace slag, and silica fume may be permitted as a partial replacement of Portland cement in any concrete as approved by the Engineer. Ensure that mineral admixtures conform to **Subsection M02.06** and are listed on the Department's Approved Materials List.

Provide suitable means for storing and protecting the mineral admixtures against moisture. Mineral admixtures that become partially hydrated or contain lumps will be rejected.

Ensure that the handling and storage of all mineral admixtures conform to **Subsection 601.02.1**.

Provide the manufacturer's Mill Certificate, signed by a company representative having legal binding authority, with each shipment of mineral admixtures.

Retest any mineral admixture stored for a period longer than 120 days for compliance with the required specifications. An independent laboratory shall perform the retest at no additional cost to the Department, which must be approved by the Engineer before use on the work.

601.02.4 Aggregates.

Provide coarse and fine aggregates that conform to **Subsections M01.05** and **M02.02**.

Obtain aggregates from sources that have been previously tested by the Department. Results and information on the tests may be obtained from the Engineer upon request. If the Contractor proposes to obtain aggregates from sources that have not been tested by the Department, comply with the following:

- Notify the Department three months in advance of use, including test results according to **SECTIONS M01** and **M02**. An AASHTO accredited laboratory shall perform the test, which must be signed by a Rhode Island Registered Professional Engineer.
- Submit the results of tests based on ASTM C295, Petrographic Examination of Aggregates for Concrete for the proposed aggregates. An AASHTO accredited laboratory shall perform the tests, which must be signed by a Rhode Island Registered Professional Engineer.
- Provide a sufficient quantity of aggregate samples to the Engineer for verification testing three months in advance of use.
- Assume all costs for sampling and testing, except for the cost of verification testing, which will be borne by the Department.

Test all proposed aggregates and produce concrete that has freeze-thaw durability of 80 percent as determined by the relative dynamic modulus (ASTM C215, Transverse Method) at 300 cycles as tested according to ASTM C666 - Procedure A, as modified by the Department. Copies of the modifications may be obtained from the Engineer upon request.

Handle and transport aggregates from stockpiles or other sources to the batching plant to ensure a uniform grading of the material.

Ensure that the batch plant site, layout, equipment, and provisions for transporting material provides a continuous supply of material to the work. Buildup stockpiles in layers of not more than 3 ft in thickness. Ensure that each layer is in place before beginning the next. Do not allow any layer to cone down over the next lower layer.

Provide safe and suitable facilities for obtaining and storing samples of aggregates. Ensure that the facilities provide safe access to the samples.

Do not stockpile aggregates together from different sources and of different gradings. Do not use aggregates that have become segregated, mixed with foreign materials, or contaminated by aggregates of different gradings. Stockpile or bin for draining all aggregates produced or handled by hydraulic methods at least 12 hours before being batched. Rail shipments requiring more than 12 hours will be accepted as adequate binning only if the car bodies permit free drainage. If the aggregates contain a high or nonuniform moisture content, the Engineer may require storage or stockpile periods in excess of 12 hours.

601.02.5 Water.

Ensure that water used in mixing and curing concrete conforms to **Subsection M02.07**.

601.03 CONSTRUCTION METHODS.

601.03.1 Proportioning.

- General. Ensure that all concrete used on State of Rhode Island projects is air entrained. Adhere to the classes and proportions of materials per cubic yard of concrete in the following Table.

Classes and Proportions of Concrete Materials

Class[1,5,9]	**B**	**A**	**XX**	**HP**	**MC[2]**	**Z**	**X**
Minimum Cementitious Content[3], lb/cu yd	400	400	500	500	500	500	500[11]
Maximum Cementitious Content[6], lb/cu yd	700	700	700	700[6]	600	700	700
Maximum w/cm	0.55	0.45	0.42	0.40	0.40	0.42	0.40
Acceptance Criteria							
Consistency Range[4], AASHTO T119 Slump, in.	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	< 1	2 - 4
AASHTO T23 Minimum, Compressive Strength, psi							
28 days	3000	3000	4000	5000	3500	5000	5000
56 days	—	—	—	—	5000	—	--
Air Content Range, AASHTO T152, %	5 - 9	5 - 9	5 - 9	5 - 9	5 - 9	—	5 - 9
Concrete Prequalification Criteria[7]							
Surface Resistivity, (4 in. × 8 in. cylinder) AASHTO T358, k-cm (minimum)							
28-day standard cure	—	—	—	15	15	—	--
56-day standard cure	—	—	—	21	21	—	--
Maximum 28-day drying shrinkage,[8], AASHTO T160, %	—	—	—	-0.04	-0.04	—	--
Aggregate Prequalification Criteria[9]							
Maximum 14-day expansion ASTM C1567, %	—	0.1	0.1	0.1	0.1	0.1	0.1

Footnotes:

1. *A single concrete mixture may be used for multiple classifications if performance and prequalification criteria are satisfied.*
2. *Class MC concrete may have a total supplementary cementitious content of 75 percent by weight of total cementitious material when using either ground-granulated, blast-furnace slag meeting the requirements of AASHTO M 302, or combinations of slag and other supplementary cementitious materials. Maximum cement replacement by fly ash or other mineral admixture meeting requirements of AASHTO M 295 is 30 percent by weight. Maximum cement replacement by silica fume meeting the requirements of AASHTO M 307 is 7 percent by weight.*
3. *Portland cement and all other mineral admixtures.*
4. *Slump range measured at the point of discharge. Do not exceed a slump of 4 in. for surfaces sloped greater than 4 percent. If additional workability is desired, the Engineer may allow an increase of the maximum specified slump to 6 in. if an AASHTO M 194 Type A - Water Reducing Admixture is used, or an increase of up to 9 in. if an AASHTO M 194 Type F or G - High Range Water Reducing admixture is used.*
5. *AASHTO M 194 Type F or G - High Range Water Reducing Admixture is required when concrete will be placed by pumping equipment.*
6. *The maximum cementitious content for Class HP may be exceeded for the fabrication of precast/prestressed concrete structures as approved by the Engineer.*
7. *Concrete prequalification testing will not be required for the following concrete items — Flared Ends, Highway Bounds, Fence Post Footings, Guardrail Anchorage, Unreinforced Footings, Paved Waterways, Thrust Blocks, Precast Elements for Collars, Catch Basins, Manholes, Drop Inlets, Sumps, Electrical Handholes, Curbing, Pipe, Headwalls, End-walls, High-Capacity Inlets, and Temporary Traffic Barriers.*
8. *Drying shrinkage prequalification is not required for precast/prestressed structures.*
9. *Aggregate prequalification is required for all concrete classifications.*
10. *Self-Consolidating Concrete (SCC) may be used for all classes of concrete except for Classes B and Z. Ensure that SCC meets all mix performance requirements listed in the Table for the respective concrete class. Test SCC for slump flow according to ASTM C1611; ensure that the visual stability index (VSI) is 0 in. or 1 in.*
11. *Class X is used only for precast drainage structures.*

- Design and Approval of Concrete Mixtures. Design the concrete mixtures for each class of concrete specified. Proportion the concrete mix components using the absolute volumes method according to the requirements for each class as specified herein and methods in the American Concrete Institute's *Manual of Concrete Practice*, latest edition; Standard 211.1, "Recommended Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete"; and Standard 301, "Specifications for Structural Concrete in Buildings – Section 4.2.3."
    - Step 1. Laboratory Testing. At least 60 days before production, submit in writing the concrete mix design on Department forms and trial batch reports supported by laboratory test data from an AASHTO accredited laboratory to the Engineer for review.

      Provide the following information in the trial batch test reports:

        + Contractor/testing laboratory name

+ The coarse and fine aggregate gradations and sources
+ The fine aggregate fineness modulus (FM)
+ Any other pertinent information (e.g., aggregate specific gravities, unit weights, absorptions, any other material properties)
+ Date of mixing
+ Mixing equipment and procedures used
+ The size of batch in cubic yards
+ Weight/volume, type, source/manufacturer of all ingredients used in the mix
+ Slump/spread
+ Air content of the mix
+ Concrete temperature
+ Unit weight of fresh concrete
+ Curing method, age at time of testing, and compressive strength of concrete

Note: Ensure that all testing conforms to the applicable AASHTO and/or ASTM requirements listed in these Specifications.

For original copies of concrete mix designs and trial batch reports submitted for approval to the Department, provide an original Rhode Island Professional Engineer's stamp and signature.

○ Step 2. Trial Runs. Once the concrete mix design has been reviewed and no exception taken by the Engineer, conduct trial runs before production using the mix design's component materials and proportions, including the amount of admixtures that will be necessary to meet the specifications and produce concrete of the required plasticity, workability, air content, compressive strength, flexural strength, or any other specified concrete property. Conduct the trial runs by employing the concrete batch plant, mixer, and handling equipment proposed to use in production. Calibrate all equipment employed in the batching, mixing, transporting, and testing, and meet the requirements listed herein before initiating the trial runs. Pursue the goal of producing concrete using the maximum amount of water and air content specified in the submitted mix design during the trial runs. Notify the Engineer at least 48 hours in advance of performing the trial runs so that the test procedures can be witnessed.

Once the concrete temperature, slump, and air content are tested and compliance with the Specifications has been established, the Engineer will fabricate compressive strength specimens to be tested by the Engineer.

When all specified concrete parameters have been met, the Engineer will accept the proposed mix design for production.

The accepted mix design proportions will govern during the progress of the work.

Do not make any changes in the sources or proportions of the materials, including aggregate size, without written approval of the Engineer. Do not use new materials until the Engineer approves a revised mix design and new proportions based on a trial batch and laboratory tests and a minimum 3 cu yd batch plant trial run. Trial batch laboratory testing shall be conducted by an AASHTO accredited laboratory at no additional cost to the Department. The testing requirements are:

+ No testing is required for changes in admixture dose provided that the proposed dose does not exceed the manufacturer's recommendations.

+ Slump, air content, concrete temperature, and unit weight are required for all modifications.

+ 28-day (56-day for Class MC) compressive strength is required for all modifications.

+ AASHTO T358 and AASHTO T160 testing is required for any change to cementitious material source, cementitious material proportion, or water quantity for concrete Classes HP and MC.

+ ASTM C 1567 is required for all concrete classes for the following changes:

aggregate source

aggregate size

single aggregate proportions greater than 300 lb/cu yd

cementitious material source

cementitious material proportions

water content

○ Heat development, as determined by Adiabatic Temperature Rise or calorimetry, is required for any change in cementitious material content or source for Class MC concrete.

- Concrete Prequalification Requirements. Proportion all concrete mixtures to meet the minimum prequalification requirements in the Table in Para. a. The Concrete Producer shall conduct all prequalification trial batches and prequalification testing using the materials in the submitted mix design. Trial batch and prequalification testing shall be performed by an AASHTO accredited laboratory. The Concrete Producer shall submit complete mixture proportions and prequalification test results of all plastic and hardened concrete properties in Para. b and the Table in Para. a to the Engineer for review. The Engineer reserves the right to perform testing for any of the specified prequalification properties.

  ○ Ensure that concrete mixtures have an AASHTO T358 surface resistivity greater than or equal to the value in the Table in Para. a for the class of concrete. Report a minimum of two 4 in. × 8 in. cylinder specimens for the AASHTO T358 testing.

  ○ Ensure that concrete mixtures have a 28-day drying shrinkage value less than the value in the Table in Para. a for the class of concrete. Determine drying according to the procedure in AASHTO T160 with the following clarifications: Specimens are 3 in. × 3 in. × 11.25 in. prisms. Moist cure all specimens in a saturated lime water bath for seven days before exposure to the drying environment. The specimen length is taken upon demolding after the curing period and weekly for 28 days while placed in the drying environment. Calculate the shrinkage value after 28 days of drying as the percent change in length from the time the specimen is removed from curing.

  ○ Ensure that all combinations of aggregate and cementitious materials used in concrete mixes are innocuous to alkali-aggregate reactivity as demonstrated by a mean expansion not greater than or equal to 0.10 percent after 14 days of soaking using the ASTM C 1567 test method.

Ensure that this requirement is satisfied for an aggregate if the mean expansion in an AASHTO T303 test after 14 days of soaking is less than or equal to 0.10 percent.

Test coarse and fine aggregates separately.

A series of tests with the reactive aggregate and different cement replacement levels may be required to determine the minimum cement replacement level necessary to mitigate expansion for a given combination of materials. Do not determine the minimum replacement level by interpolation between tested levels.

601.03.2 Batching Plants and Equipment.

- General. Ensure that batching plants meet AASHTO M 157 and are certified by the National Ready Mix Concrete Association (NRMCA). Weigh cement independently on a separate scale. Ensure that the weighing hopper is properly sealed and vented.

- Cement Silos. Provide separate silos or holding bins for each cement type and mineral admixture. Ensure that the bins protect the cement and mineral admixture from rain and moisture.

  On a weekly basis, maintain a log documenting deliveries, which will include the brand, supply, location, type, quantity, and date to document the cement on hand. Ensure that all received cement conforms to the specified quality requirements. Ensure that the log also contains data on the quantitative distribution of all cement used on both private and State projects. Submit copies of the log to the Engineer upon request, attested to by the Contractor or its representative.

- Scales. Calibrate all plant scales and water meters, including truck scales, involved in the plant operation using a registered scale company as follows:

  - Annually before use in State work
  - At intervals of not more than 180 calendar days
  - At any time ordered by the Engineer

  Note: Every 180 days, the plant owner shall submit to the Engineer a certificate from the registered scale company making the checks attesting to the accuracy of all plant scales. The certificate shall be signed by the technician or a responsible representative of the scale company making the check.

- Automation and Recordation. Ensure that plants producing Portland cement concrete for the Department conform to the following plant equipment requirements:

  - Automatic Proportioning. Produce Portland cement concrete in batch type mixing plants equipped with approved automatic proportioning devices. Ensure that the devices include equipment for accurately proportioning batches of the various components of the mixture by weight or volume in the proper sequence. Proportion cement and aggregates by weight. Proportion water and admixtures by weight or volume. Adjust the batch weights as needed when aggregate moistures change to account for the actual moisture content of the aggregates at time of use. Equip plants automatically to control the batching sequence and timing of operations. Provide an auxiliary interlock cutoff circuit to interrupt and stop the automatic cycling of the batching operations when an error in weighing occurs, when an aggregate bin becomes empty, or when there is a malfunction of any portion of the control system.

  - Recording Equipment. Equip the plant with a recording device that automatically records the required data for delivery tickets and reproduces the reading of the scale being recorded within

±0.1 percent of scale capacity.

Provide ticket information electronically in accordance with Section 941e-Ticketing. The Engineer may also request sufficient printed copies of delivery tickets to provide a copy for the plant inspector and a copy for the Construction Manager for the permanent Project record.

- Equipment Failure. If at any time the recording devices become inoperative, the plant may be allowed to batch materials for a period of not more than one workday from the time of breakdown, if approved by the Engineer. Written permission of the Engineer will be required for periods of operations without automatic proportioning facilities longer than one workday. As a condition for continued use with inoperative recording devices, manually record all required information on all delivery tickets.
- Batching Controls. Ensure that batching controls are electrically interlocked with the scales to prevent cycling or recycling of batching until scales tare zero. Ensure that the batching controls meet the following tolerances with respect to the various components weighed in each batch:

  + Coarse Aggregate:
    ±2.0 percent of required weight of the total coarse aggregate being weighed
  + Fine Aggregate:
    ±2.0 percent of required weight of the total fine aggregate being weighed
  + Portland Cement:
    ±1.0 percent of required weight of cement being weighed
  + Mineral admixtures:

    ±1.0 percent of required weight of mineral admixtures being weighed
  + Water:
    ±1.0 percent of required weight or volume of water being weighed
  + Admixtures:
    ±3.0 percent of required weight or volume of each admixture being used

  Ensure that the total weight of the batch does not vary more than ±1.0 percent from the theoretical design weight.

601.03.3 Concrete Mixing, Delivery, and Discharge.

Concrete may be mixed at the site of construction, at a central point, or in transit mixers, all according to the Specifications.

- Equipment — Mixers and Agitators. Provide mixers and agitators that meet the requirements of AASHTO M 157. When the concrete is truck-mixed, ensure that the volume of concrete mixed per batch does not exceed the mixer's nominal capacity as shown on the manufacturer's standard rating plate on the mixer. An exception is that an overload of up to 10 percent above the mixer's nominal capacity may be permitted, if the concrete test data for strength, segregation, and uniform consistency are satisfactory and if no spillage of concrete occurs.

  Equip truck mixers and agitators so that the number of revolutions of the drum, blades, or paddles may be readily verified. Ensure that truck mixers can measure the amount of water added during retempering such as a water meter or other method.

- Mixing and Delivery. Mix and deliver ready-mixed concrete according to AASHTO M 157. Ensure that ready-mix concrete delivery trucks are National Ready Mixed Concrete Association

(NRMCA) (nrmca.org) certified via a non-expired certificate affixed to the truck in a location readily visible to the inspector (see Section 5 of NRMCA Plant Inspector's Guide).

- Discharge.
  - Time and Rate. Ensure that the elapsed time from when water is added to the mix until concrete is discharged into the forms at the site of work does not exceed 90 minutes when hauled in truck-mixers or truck agitators or 30 minutes when concrete is hauled by non-agitating equipment. Waste any concrete that is not discharged into its final place within 90 minutes (30 minutes when using non- agitating equipment) after batching.

    Approved set-control admixtures may be used to extend the maximum time of discharge for ready-mixed concrete delivered in truck mixers to 120 minutes, if the Contractor submits trial mix data subject to the following conditions:

    + The concrete mixture proportions and prequalification test results have been approved according to **Subsection 601.03.1(b)**.
    + Set-control admixture usage is according to the admixture manufacturer's instructions and guidelines.
    + Trial batches of the concrete mixture without the admixture (control) and additional batches covering the anticipated range of admixture doses are conducted. Ensure that trial batch volume is a minimum of 3 cu yd and that trial batches are conducted at the maximum water content for the approved mixture.
    + For the control batch, only sample after initial mixing.
    + For batches containing the set-control admixture, sample after initial mixing and after 30, 60, 90, and 120 minutes. Keep the truck mixer in motion between sampling intervals.
    + Include for each trial batch data for plastic properties (slump, air content, unit weight, and temperature) after initial mixing and after 30, 60, 90, and 120 minutes of slow mixing. Report the number of drum rotations at each sampling interval.
    + If plastic properties are outside of the specification limits at any time interval, retesting after high-speed mixing for up to five minutes will be allowed.
    + Provide data for each trial batch that includes seven-day and 28-day (56 days for Class MC concrete) compressive strength results sampled after initial batching for the control and after initial batching and 120 minutes of slow mixing for batches containing the set-control admixture.
    + Ensure that trial batch test results that indicate the concrete properties of mixtures containing the set-control admixture meet specification requirements after 120 minutes of slow mixing.

  - Retempering. Retempering is defined as adjusting concrete properties by the addition of water or chemical admixtures after initial batching. Retempering concrete by adding water or other means may be permitted only 1) after concrete arrival and initial testing on the jobsite, 2) when delivered in truck mixers, and 3) if permitted by the Engineer. When authorized, additional water or chemical admixtures may be added to the batch materials with additional mixing to increase slump or air entrainment to meet the specified requirements, if:

+ The maximum water-cementitious materials ratio is not exceeded.

+ The admixture doses do not exceed the manufacturer's recommendations.

+ All retempering and retesting operations are completed at least 30 minutes before the maximum allowable discharge time limit.

Add all admixtures at the plant. The Engineer may approve the addition of withheld mixing water at the jobsite with a metered pressurized wand. Do not add admixture during retempering that is not present in the approved mixture.

Before allowing retempering with water-reducing admixtures on the Project, conduct trial batches to simulate the impact of delayed additions as follows:

+ Both the control and retempered batch contains the same plant-added admixture dose.

+ The retempered batch has the second dose of admixture added at least 30 minutes before the maximum discharge time.

+ The combination of plant added admixture dose and retempered admixture dose does not exceed the maximum manufacturer's recommended dose.

+ Plastic properties are sampled initially at the time of retempering and maximum discharge time.

+ Specimens for strength and time of set for both the control and retempered mixture are sampled at the maximum allowed discharge time.

No trial batches are required for retempering with air entrainment admixtures.

If additional water will be incorporated into the concrete, revolve the drum not less than 30 revolutions at the mixing speed immediately after retempering the concrete and before discharge is commenced.

If additional admixtures are incorporated into the concrete, revolve the drum between 30 to 60 revolutions at the mixing speed immediately after retempering the concrete and before discharge is commenced.

Do not use concrete that is not within the specified slump or air content limits at the time of placement. Retemper the concrete at the site as permitted by the Engineer. Retempering with admixtures will be permitted only with the approval of the Engineer or when specifically provided for in the Contract.

601.03.4 Limitations for Mixing and Placement.

Do not mix, place, or finish concrete when the natural light is insufficient, unless an adequate artificial lighting system is operational.

During and immediately after placement, protect the concrete from the adverse effects of rain.

When there is a probability of air temperature 40°F or less at the time of placement, or when there is a local forecast indicating that the temperature will be below 40°F during the five-day (cast in place masonry) or 14-day (bridge deck) curing period, cold weather concreting, as defined in **Subsection 601.03.5**, will apply. At least 24 hours before placement, submit a request for approval by the Engineer to use a cold weather concreting and curing plan detailing the methods and equipment to ensure that the concrete temperature does not fall below 50°F during the curing period after placement, which is considered the protection period. Ensure that concrete mixing operations conform to **Subsection 601.03.5.**

601.03.5 Cold Weather Concrete.

- Plant Procedures. When concreting is authorized during cold weather, the aggregates and/or water may be heated by either steam or dry heat before being placed in the mixer. Ensure that the apparatus heats the mass uniformly and is arranged to preclude the possible occurrence of overheated areas that might damage the materials. Ensure that the temperature of the mixed concrete is not less than 50°F and not more than 90°F at the time of placement in the forms. Do not use frozen aggregates in the concrete.

  Stockpiled aggregates may be heated by the use of dry heat or steam. Do not heat aggregates directly by gas or oil flame or on sheet metal over fire.

  When aggregates are heated in bins, steam-coil, water-coil heating, or other methods that will not be detrimental to the aggregates may be used. Do not use live steam on or through binned aggregates without the approval of the Engineer.

- Concrete Placement Procedures. Do not place concrete on frozen subgrade. Install sufficient heating devices under an enclosure or covering that are capable of maintaining at all times and under all weather conditions during the protection period a uniform concrete temperature of not less than 50°F. From days 8 to 14 of the concrete bridge deck curing period, maintain a minimum concrete temperature of not less than 40°F. Arrange heating devices to prevent overheating any forms or concrete. Before any concrete is placed, ensure that the enclosure and heating apparatus are as nearly complete as the placement of concrete will permit. Ensure that the minimum temperature is continuously maintained around deposited concrete for the curing period of five days (cast in place masonry) or 14 days (bridge deck) or 56 days (Class MC concrete) immediately after concrete has been placed and then reduced gradually so that the concrete will not be subjected to a sudden change in temperature. The heating period may be reduced when the concrete units will not be subjected to any appreciable bending stress from dead or live load until after seasonal conditions have permitted normal curing.

  A steam heating system may be used to supply heat during the protection period to ensure a minimum temperature of 40°F before concrete placement.

  Heat for protection may be supplied by any method that will maintain the required concrete temperature of not less than 50°F. When methods other than live steam are used, make provisions in the enclosure being heated to maintain a humid condition of sufficient vapor (maintain humidity of 100 percent) content to prevent evaporation of the moisture in the concrete.

  Provide adequate fire protection when heating is in progress and provide watchmen or other attendants to keep heating units in continuous operation. Do not use open fires.

  Maintain a daily permanent record of the concrete surface temperatures throughout the curing period with the use of a 24-hour, continuous temperature recording device. The Engineer will retain these records.

  During freezing weather, seal all keyways, anchor bolt holes, or other depressions in exposed horizontal concrete surfaces against the admission of water. Repair damage to the concrete from freezing water in the depressions if practical, or replace the concrete as directed by the Engineer.

601.03.6 Hot Weather Concrete.

Hot weather is defined in The American Concrete Institute, Standard 305. During concreting operations in hot weather, take appropriate measures to reduce the hazards of an increased rate of cement hydration, flash set, loss of water due to evaporation, high concrete ingredient temperatures, and the increased difficulty of concrete placing and finishing. Comply with the following requirements during concrete placement operations in hot

weather:

- Concrete Temperature. Ensure that the temperature of the concrete at the point of discharge does not exceed 90°F.
- Cooling Materials. The Contractor may reduce the temperature of the concrete by cooling one or more of several ingredients. Use chipped or crushed ice in the mix as a portion of the mixing water on a pound for pound basis, provided that the measurement is determined at the time of placement in the mix.

  If used, melt all ice before the batch is discharged from the mixing unit.
- Concrete Placement. Immediately before the concrete is placed, cool the forms and reinforcement steel by spraying with water. Do not allow any standing water in the concrete forms from the spraying procedures. Ensure that sufficient skilled staff and adequate equipment are available to place the concrete without delays.
- Finishing. To prevent thermal and shrinkage cracking resulting from moisture loss, use effective means to supply moisture. Ensure that finishing operations follow as closely as practical behind the placing operation so that curing may begin as soon as possible.

601.03.7 Curing.

- Curing. Ensure that the temperature on the surface of the hardened concrete does not fall below 50°F at any time during the first five days of curing.

  Initiate curing operations on all exposed surfaces immediately after the placing and finishing operations have been completed. Select a method of curing that does not damage the concrete surface before final set occurs and continue its use throughout the work, unless the Engineer determines that the curing plan results in unsatisfactory concrete curing.

  Any changes in the method of curing must be authorized in writing. When curing requires the use of water, ensure that the curing has priority for all water supply or suppliers. Failure to provide sufficient cover material or lack of water to adequately protect both curing and other requirements will result in immediate suspension of concreting operations. Do not allow the concrete to remain exposed for more than ½ hour between stages of curing and during the curing period.
- Water Method. Ensure that the concrete remains continuously wet by the application of water for a minimum period of seven days after the concrete has been placed.

  A curing medium meeting the requirements of **Subsection M02.04** may be used to retain the moisture during the curing period. When a curing medium will be used to retain the moisture, ensure that the entire surface of the concrete remains damp by applying water with a nozzle so that the flow is atomized in the form of a mist rather than a spray until the surface of the concrete is covered with the curing medium. Do not apply the moisture from the nozzle under pressure directly upon the concrete and do not allow moisture to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface.
- Curing Compound Method. Use a curing compound that complies with **Subsection M02.04**. For concrete that is treated with any additional coatings or overlays, do not cure as provided in this Section.

  Spray the surfaces of the concrete that are exposed to the air uniformly with a curing compound.

  Apply the curing compound according to the manufacturer's recommendation.

  Evaluate runs, sags, thin areas, skips, or holidays in the applied curing as evidence that the application

is not satisfactory. If a clear color curing compound is used, add a fugitive dye to the curing compound to ensure complete coverage.

Apply the curing compound to the concrete following the surface finishing operation immediately before the moisture sheen disappears from the surface, but before any drying, shrinkage, or craze cracks begin to appear. If any drying or cracking of the surface is evident, immediately apply water with an atomizing nozzle as specified above for the Water Method, and continue until application of the compound is started or resumed. However, do not apply the compound over any resulting freestanding waters. If the film of compound is damaged from any cause before the expiration of seven days after the concrete is placed for structures and 72 hours for pavement, repair the damaged portion immediately with additional compound.

Do not dilute or alter the curing compound after manufacture.

When the curing compound is shipped in tanks or tank trucks, provide a shipping invoice with each load. Ensure that the invoice contains the same information as that required for container labels.

Curing compounds may be sampled by the Engineer at the source of supply, at the job site, or at both locations.

Use the curing compound within 120 days of its manufacture.

All tests will be conducted by the Engineer according to the latest test methods of the American Society for Testing Materials.

- Waterproof Membrane Method. Spray the exposed finished surfaces of concrete with water, using a nozzle that atomizes the flow so that a mist and not a spray is formed, until the concrete has set, after which place the curing membrane. Ensure that the curing membrane remains in place for a period of not less than 72 hours.

  Use sheeting material for curing concrete that conforms to **Subsection M02.04.2**.

  Use sheeting material that has been fabricated into sheets of a width to provide a cover for the entire concrete surface. Securely cement together all joints in the sheets to provide a waterproof joint. Ensure that the joint seams have a minimum lap of 6 in.

  Securely weigh down the sheets by means satisfactory to the Engineer. Do not use rocks, sand, or loose debris as ballast.

  Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, repair the broken or damaged portions with new sheets properly secured into place.

  Do not use sections of membrane that have lost their waterproof qualities or have been damaged that renders them unfit for curing the concrete.

- Forms-In-Place Method. Formed surfaces of concrete may be cured by retaining the forms in place. Ensure that the forms remain in place for a minimum period of seven continuous days after the concrete has been placed, except that, for members over 20 in. in least dimension, ensure that the forms remain in place for a minimum period of five continuous days. Remove the forms no later than three weeks after the concrete has been placed.

  Ensure that all joints in the forms and the joints between the end of forms and concrete remain moisture tight during the curing period. Reseal any cracks in the forms and cracks between the forms and the concrete by methods approved by the Engineer.

601.03.8 Quality Assurance (QA).

- Concrete Manufacturing Plant Quality Control (QC).
    - General. The Concrete Producer shall establish, implement, and maintain a QC program to control all equipment, materials, and processes during concrete production. The Concrete Producer's QC program shall include sampling, testing, inspection, monitoring, documentation, and corrective action procedures during the handling, blending, and mixing operations. Develop a written Quality Control Plan (QCP) that details the Concrete Producer's QC program. Do not produce concrete without an approved QCP and a QC technician present at the plant for production. QC is not required for optionally tested items in the latest edition of the RIDOT Master Schedule of Testing. Failure to comply with the provisions of this Subsection will result in the rejection of the concrete produced until the Concrete Producer's operations comply.
    - Personnel. At a minimum, the QC staff shall include the following personnel:
        + QCP Administrator. The Concrete Producer shall employ a QCP Administrator with five years minimum of Materials QC experience and meeting one or more of the following criteria:

Professional Engineer licensed in the State of Rhode Island

Certification by the National Institute for Certification of Engineering Technologies (NICET) at Level III or above for concrete

Certification by the North-East Transportation Training and Certification Program (NETTCP) as a QA Technologist

        + For prestress concrete facilities, employ a QCP Administrator with five years minimum of prestress concrete production QC experience and meeting one or more of the following criteria:

Precast/Prestress Concrete Institute (PCI) Level III Certification for prestressed concrete production (PCI Level II for non-prestressed precast)

Certification by the National Institute for Certification of Engineering Technologies (NICET) at Level III or above for concrete

Certification by the North-East Transportation Training and Certification Program (NETTCP) as a QA Technologist

        + The QCP Administrator shall have the authority to direct all actions necessary for the successful implementation of the QCP, including administering, implementing, monitoring, and adjusting processes as necessary to ensure compliance with the Contract Documents.
        + QC Technicians. The Concrete Producer shall employ QC Technician(s) who test concrete specimens and concrete materials. QC Technicians shall possess a current certification as American Concrete Institute (ACI) Concrete Laboratory Testing Technician Level I or NETTCP Concrete Technician.

For precast/prestressed concrete facilities, employ additional QC technician(s) who sample and test concrete at the point of placement. QC technicians shall possess a current certification as ACI Concrete Field Testing Technician Grade I or NETTCP Concrete Technician.

QC technicians shall report directly to the QCP Administrator and shall be responsible for performing required QC activities and preparation of associated QC documentation.

- QC Testing Facilities and Equipment. The Concrete Producer shall maintain a separate QC laboratory and associated sampling, testing, and measuring equipment necessary to perform the required QC activities. Provide sampling, testing, and measuring devices according to specified standards and properly calibrated and verified. The Concrete Producer shall maintain records of the calibration and maintenance of all sampling, testing, and measuring equipment.

  Use back-up equipment if a device is found to be defective. Ensure that defective equipment is clearly tagged and/or removed from the site until repaired and the calibration is verified. If non-standard or alternative sampling methods, testing procedures, or equipment are proposed to be used, detail these in the QCP and approved by the Engineer before use.

- QC Activities. Implement QC activities for monitoring, inspection, sampling, and testing, which will cover all aspects that affect the quality of the concrete, including:

  + Component materials:

Fine and coarse aggregates

Portland cement

Mineral and chemical admixtures

Water

+ Production and delivery equipment
+ Mixing and transportation
+ Formwork (precast/prestress plants only)
+ Prestressing steel, reinforcement, inserts (precast/prestress plants only)
+ Tensioning prestressing steel (precast/prestress plants only)
+ Plastic and hardened concrete properties (precast/prestress plants only)
+ Placement and consolidation (precast/prestress plants only)
+ Finishing and curing (precast/prestress plants only)
+ Finished product (precast/prestress plants only)

The two following Tables provide the minimum QC activities and frequencies.

Minimum Production Equipment QC Requirements

Equipment	Control Requirement	Minimum Frequency
Plant Central Mixer Blades	Visual Inspection	Annually
Plant Scales and Meters	Calibrate	Every 180 days
Batch Plant and Mixer Trucks	NRMCA Certification	Annually
Truck Water Meters	Calibrate	Annually
Tensioning Gauges	Calibrate	Precast/Prestressed Concrete — Every 180 days
Hydraulic Jacks	Calibrate	Precast/Prestressed Concrete — Every 180 days

Minimum Materials QC Requirements

Item	Control Requirement	Minimum Frequency
Fine and Coarse Aggregates	Gradation Moisture Content Visual Inspection of stockpiles and bins for segregation and contamination	Ready Mix Concrete – Daily/before start of production and randomly every 160 cu yd of concrete.
		Precast/Prestressed Concrete – Daily/before start of production and randomly every 50 cu yd of concrete.
Portland Cement	Mill Text Report – Verify conformance to specifications	Each delivery
Mineral Admixtures	Certificate of Compliance – Verify conformance to specifications	Each delivery
Chemical Admixtures	Certificate of Compliance – Verify conformance to specifications	Each delivery
Concrete Batching	Verify Mix Proportions and Batch Weights Computer maximum allowable retempering water and maximum discharge time	Each batch

Plastic Concrete	Air Content Yield (Unit Weight) Slump/Spread Concrete Temperature Air Temperature	Precast/Prestressed Concrete — First two loads then randomly every 50 cu yd for each concrete class delivered and placed on a calendar day from a single supplier.
	*Compressive Strength Specimens	Precast/Prestressed Concrete — One set for the first 50 cu yd inclusive and one set for each additional 50 cu yd or fraction thereof and as necessary for formwork removal, stress transfer and shipping (include concrete temperature, air content and slump test results)

* *The Concrete Producer shall determine the quantity of cylinders necessary for process control of construction operations.*

- Concrete Producers Quality Control Plan (QCP). The Concrete Producer shall submit a detailed written QCP to the Engineer for approval annually, at least 60 days before the first concrete placement. Provide a QCP that details the Concrete Producer's plans, policies, procedures, and organization deemed necessary to measure and control materials, equipment, and concrete production processes.

Ensure that the QCP reflects the current status of the operations; submit proposed changes to the QCP to the Engineer. Changes must be approved by the Engineer before implementation.

At a minimum, provide a QCP that details the following:

+ Scope of QC Plan. Reference all applicable specifications, including the latest revision of the *Standard Specifications* plus all applicable compilations and supplements.

+ QC Organization. Include a QC organizational chart identifying all personnel responsible for implementing the QCP and how staff integrate and communicate within the Concrete Supplier's management structure and with the Engineer. Include a list of QC personnel and their names, qualifications, responsibilities, levels of authority, certifications, telephone contact number(s), and e-mail addresses.

+ QC Testing Facilities and Equipment. Include the location and qualifications of QC testing facilities and a list of all QC testing equipment with the frequency of calibration and verification.

+ Materials Control. Include the source(s) for all materials used in the production of Portland cement concrete and receiving, storage, and handling practices. For fine and coarse aggregates, describe stockpile management practices, including stockpile identification, separation, segregation mitigation, and loading.

+ Concrete Production. Provide a description of the concrete plant and concrete batching operations, including:

Plant location and layout

Production equipment

Method and sequence of batching

Mixing capacity and minimum mixing time

Method of monitoring ingredients and recording batches

Methods of delivery

+ QC Activities. Describe QC activities deemed necessary to control all aspects of concrete production. Include the locations, methods, frequency, and personnel responsible for conducting QC sampling, testing, and inspection. Identify lot/sublot sizes, the sample identification system, and sample storage/retention procedures. The minimum required QC activities are listed in the preceding Tables.

+ Pre-Placement (Precast/Prestressed Plants only). Include source, storage, and handling procedures for steel reinforcement, prestressing strand, hardware, and inserts. Describe procedures and equipment for tensioning and detensioning of prestressing steel strands.

+ Concrete Placement (Precast/Prestressed Plants only). Describe methods, equipment, and materials for placement, consolidation, finishing, and curing of concrete. Include sequencing of work and maximum discharge times. Include procedures for determination of concrete strength for formwork removal and application of load. See **Subsection 809.03.8** for the curing of precast and prestressed concrete members.

+ Post Production (Precast/Prestressed Plants only). Describe procedures for post-production inspection, including product condition assessment, measurement of product geometry, and camber (as applicable). Include procedures for handling and storage of finished products.

+ Documentation. Describe documentation and reporting procedures for all QC activities. Include samples of all QC forms, reports, and control charts.

+ Non-Conformance and Corrective Action. Establish and maintain an effective and positive system for controlling non-conforming material and products as indicated by inspection and test results. Investigate the cause of any non-conformance to prevent recurrence and take prompt corrective action to correct conditions that have resulted, or could result, in the incorporation of non-conforming materials and products into the work. Positively identify all non-conforming materials and products to prevent use, shipment, and intermingling with conforming materials and products. Provide segregated holding areas, subject to the approval of the Engineer.

Include criteria for identifying non-conforming materials and products and procedures for isolation, disposition, and documentation. Include procedures and personnel responsible for directing corrective action, including suspension of work, disposal, and reclaiming or reworking of non-conforming materials and products. Detail how the results of QC inspections and tests will be used to determine corrective actions, and define rules to gauge when a process is out of control and the associated corrective action to be taken. At a minimum, establish corrective action procedures for each control requirement listed in the preceding Tables**.**

- Records and Documentation. The Concrete Producer shall maintain complete records for all QC tests and inspections. Ensure that the QC records contain all test and inspection reports, forms and checklists, equipment calibrations, component material certificates of compliance and mill test reports, and non- conformance and corrective action reports. Ensure that the QC records will document the nature and number of observations made, the number and type of deficiencies found, the quantities of conforming and non-conforming, and the nature of corrective action taken, as appropriate. Make the QC records available to the Engineer at all times, and retain the records for the life of the Contract. The Concrete Producer's documentation procedures will be subject to approval by the

  Engineer before the start of the work and to compliance checks by the Engineer during the progress of the work.

  + Forms and Reports. Document all QC inspection and test results on NETTCP forms and reports or equivalent as approved by the Engineer. Additionally, generate a non-conformance and corrective action report for each instance where test or inspection results indicate a non-conformance. Ensure that the report indicates the nature of the non-conformance and corrective actions taken to resolve it. Prepare forms and reports that are complete and on a standardized, publicly used format, and submit to the Engineer as the work progresses (or weekly, at a minimum).

  + Control Charts. Document all conforming and non-conforming test results on control charts, and ensure that they are complete and available to the Engineer at all times during production. Present test data for Portland cement concrete on control charts, including critical gradation(s) (i.e., passing No. 4, No. 100, No. 200 sieves), air content, unit weight, and 28- day compressive strength for precast/prestressed concrete. Provide control charts that indicate lots and sub-lots, target values, and control limits, all in chronological order with a legend. The Concrete Producer may use other types of control charts as deemed appropriate and as approved by the Engineer. Complete testing and charting within 24 hours after sampling.

  + Certification. At the conclusion of the Project, the Concrete Producer shall certify to the Engineer that all Portland cement concrete and precast/prestressed products have been produced, inspected, and tested according to the requirements of the Contract specifications.

- Engineer's Acceptance Sampling, Testing, and Inspection. The Engineer is responsible for sampling, testing, and inspection for acceptance, except for furnishing the necessary materials, which shall be the Contractor's responsibility as directed by the Engineer and at no additional cost to the Department. Acceptance is based on the Engineer's inspection of the construction, monitoring of the Contractor's Quality Control Program, and acceptance test results.

Provide the Engineer with reasonable access to the records without charge.

Samples of fresh concrete for testing will be taken after all concrete retempering is performed. When sampling from within the forms is impractical, samples will be taken at the nearest accessible point in the conveyance system before placement into the forms.

Acceptance sampling and testing will meet the requirements of the Contract and the Master Schedule for the Preparation of a Project Schedule for Sampling, Testing, and Certification of Materials.

Compressive strength test specimens will be standard 4 in. × 8 in. cylinders for all placements.

- Engineer's Acceptance, Sampling, Testing, and Inspection. The following is the acceptance plan necessary to obtain samples, perform tests, and provide inspection of the work. The terms used in this acceptance plan are defined as follows:
  - Placement. For a given class of concrete, the portions of a concrete structure constructed during one continuous concrete operation.
  - Acceptance Plan. The method of taking measurements of samples to determine the acceptability of a placement of material or construction. Acceptance plans include random sampling plans.
  - Random Sample. A sample chosen so that each increment in the lot has an equal probability of being selected. The Engineer reserves the right to take more samples in addition to the samples taken according to the random sampling plan.
  - Acceptance. As defined in Para. c below.
  - Rejection. When used in this context, "rejection" means remove, dispose, and replace at no cost to the Department or, at the discretion of the Engineer, "rejection" means acceptance at a lower price determined by Pay Factors, as specified herein.
  - Lot. An isolated quantity of material from a single source or a measured amount of construction produced by the same process. For placements less than 750 cu yd, the Lot is 150 cu yd or less. For placements of 750 cu yd or greater, the Lot is 250 cu yd or less.

    Lots will be determined as follows:
    - The total cubic yards for the placement will be divided by 150 for placements less than 750 cu yd, and 250 for placements greater than or equal to 750 cu yd.
    - The result will be rounded up to the next whole number. This number is the number of Lots in the placement.
    - The total cubic yards for the placement in the first bullet will be divided by the number in the second bullet to determine Lot size.
    - Each Lot size will be adjusted by rounding to the nearest 10 cu yd (or other number representing one truck load), and this adjusted Lot size will be used to determine the number of trucks in the Lot.
    - For the acceptance plan, the total cubic yards of concrete placed for all Lots will be the placement volume.
  - Sublots. Equal divisions or portions of a Lot are as defined below. The Sublot size for each Lot will be calculated by dividing each Lot into thirds rounded to the nearest truck.
    - Cylinders will be cast for each placement less than or equal to 150 cu yd of concrete delivered for each class of concrete according to the following:

1 truck = 4 cylinders from the truck

(6 cylinders for Class MC concrete)

2 trucks = 4 cylinders from 1 randomly selected truck

(6 cylinders from 1 randomly selected truck for Class MC concrete)

3 trucks = 2 cylinders from each of 2 randomly selected trucks

(3 cylinders from each of 2 randomly selected trucks for Class MC concrete)

4 thru 10 trucks = 2 cylinders from 1 randomly selected truck from the first half of the placement and 2 cylinders from 1 randomly selected truck from the second half of the placement.

(3 cylinders from 1 randomly selected truck from the first half of the placement and 3 cylinders from 1 randomly selected truck from the second half of the placement for Class MC concrete).

11 thru 15 trucks = 2 cylinders from 1 randomly selected truck from the first third of the placement, 2 cylinders from 1 randomly selected truck from the second third of the placement and 2 cylinders from 1 randomly selected truck from the final third of the placement.

+ Cylinders will be cast for each placement greater than 150 cu yd and less than 750 cu yd of concrete delivered for each class of concrete according to the following:

2 cylinders from 1 randomly selected truck from the first third of the Lot, 2 cylinders from 1 randomly selected truck from the second third of the Lot, and 2 cylinders from 1 randomly selected truck from the final third of the Lot.

+ Cylinders will be cast for each placement greater than or equal to 750 cu yd of concrete delivered for each class of concrete according to the following:

2 cylinders from 1 randomly selected truck from the first third of the Lot, 2 cylinders from 1 randomly selected truck from the second third of the Lot, and 2 cylinders from 1 randomly selected truck from the final third of the Lot.

Sidewalk placements will have a minimum of one set of four cylinders taken from one randomly selected truck per Project per day.

- Placement Acceptance Compressive Strength Evaluation. The 28-day or 56-day compressive strengths (f'_c) specified in the Table in **Subsection 601.03.1** are the strengths used in the design calculations. The Engineer will verify design strengths by tests made during the progress of the work according to AASHTO T23 (Standard Practice for Making and Curing Concrete Test Specimens in the Field) and AASHTO T22 (Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens). Acceptance for Class MC concrete will be based on a 56-day compressive strength test.

  Three cylinders randomly selected from each set of 4 or 6 cylinders, as determined under "Sublots," will be tested for either 28-day or 56-day compressive strengths.

Case A: Single Lot Placement.

The average 28-day or 56-day compressive strength of 3 cylinders selected from a set of 4 or 6 cylinders will be used to calculate the acceptance of the Single Lot Placement. The following formulas will be used to calculate the Placement Acceptance Test Result (PATR). The Engineer has the authority to use Formula – B for any Lot size when more than one set of 3 cylinders are tested.

Formula – A

$$PATR = \overline{X} = \frac{X_1 + X_2 + X_3}{3}$$

Symbols:

X = individual test value, which is the 28-day or 56-day compressive strength of each cylinder tested

$\overline{X}$ = the mean (average) 28-day or 56-day compressive strength of a set of 3 cylinders

PATR = Placement acceptance test result

Case B: Multiple Lot Placements

For Multiple Lot Placements, 3 cylinders from each set of 6 cylinders from each Lot will be tested for 28-day or 56-day compressive strength. The mean value of the sum of the average compressive strengths will be used to calculate the acceptance of the placement. The following formula will be used to calculate the Placement Acceptance Test Result (PATR).

Formula – B

$$PATR = \overline{X} = \frac{\overline{X}_1 + \overline{X}_2 + \cdots \overline{X_n}}{n}$$

Symbols:

$\overline{X}$ = the mean (average) 28-day or 56-day compressive strength of a set of 3 cylinders for each Lot.

X = the mean (average) of the sum of the average 28-day or 56-day compressive strength test result of each Lot.

n = number of sets

Strength Pay Factors

PATR % of (f_c')	Placement Pay Factor (PPF) (%)
95 or greater	1.00 (100)
90 to 94.9	0.90 (90)
85 to 89.9	0.85 (85)

When the PATR of structural concrete falls below f_c' submit an investigative plan stamped by a Professional Engineer holding a valid license to practice engineering in the State of Rhode Island outlining how to demonstrate that the in-place concrete's compressive strength is structurally adequate. The Engineer will approve the investigative plan before the execution of the investigation. After the investigation is completed, submit a report to the Engineer presenting the results of the Professional Engineer's analysis, testing, and conclusions and any recommended actions proposed for the concrete that did not meet the specified strength requirements.

If the Engineer's analysis demonstrates that the in-place concrete is structurally inadequate, remove the concrete and replace it at no additional cost to the Department.

The Contractor may elect to remove and dispose of any non-conforming material and replace it with new material to avoid a PPF of less than 1.00. Any such new material will be sampled, tested, and evaluated for acceptance according to the applicable requirements of **SECTION 601**.

The Engineer may reject any quantity of material that appears to be non-conforming based on visual inspection or test results. Do not use the rejected material in the work. The results of the tests on the rejected material will not be included in the calculation of the Placement Acceptance Test Results.

601.04 METHOD OF MEASUREMENT.

Portland Cement Concrete will be measured as provided for in the Contract for the specific item or items under which it is paid. If the measurement is not stipulated elsewhere in the Contract, it will be measured by the cubic yard.

601.05 BASIS OF PAYMENT.

Portland Cement Concrete, complete and accepted, will be paid for as provided in the Contract. If not stipulated elsewhere in the Contract, it is paid by the cubic yard. The payment constitutes full compensation for furnishing all labor, materials, equipment, tools, and incidentals to produce, place, and protect the concrete as specified, in addition to any requirements for specific use, except that a reduction in payment will be made for each placement of concrete not fully accepted. This reduction in payment for placement will be based on the following:

Case 1: For concrete for which a unit price is provided in the Proposal:

Unit price reduction = PPF × number of cu yd that the PATR represents × the unit bid price in the Proposal

Case 2: For concrete that is paid for as part of a lump sum item or lump sum items as listed in the Proposal:

PPF × number of cu yd that the PATR represents × the price of the various items of concrete per cubic yard as provided in the approved Contractor's lump sum breakdown.

PPF is the pay factor determined in **Subsection 601.03.8(c).**

CODE 800.9901
NONQUIT POND BRIDGE NO. 292

DESCRIPTION: Except for the excluded items of work indicated below, the work under this item shall consist of constructing the Nonquit Pond Bridge No. 292 in its entirety. This shall comprise all work pertaining to the construction of:

Superstructure: Included are all the components above the beam seats inclusive of all the bridge bearings and all embedded or attached components. Also included is all closed-cell foam placed between the precast NEXT beams and backwalls. All of the above work shall be complete in place and accepted in accordance with the Contract Documents except that the Method of Measurement and the Basis of Payment will be in accordance with these Special Provisions.

Substructure: Included are all components upward from and inclusive of the proposed pile caps, approach slabs, and wingwalls to the tops of the bridge railings, inclusive of any and all reinforcing, closed-cell foam, sealants, coatings, finishes, embedded or attached components, replacing the chain link fence, sawing and sealing joints in bituminous concrete pavement, hot mix asphalt on the approach slab, and gravel borrow subbase course on the approach slab. All of the above work shall be complete in place and accepted in accordance with the Contract Documents except that the Method of Measurement and the Basis of Payment will be in accordance with these Special Provisions.

Excluded Items of Work: The work pertaining to the following items of work are excluded from this lump sum item and instead will be measured and be paid for separately under their own appropriate unit bid or lump sum items as listed in the Proposal: Earthwork and rockwork (structural excavation and various fill materials), concrete repairs to the existing structure, and micropiles.

All work shall be in accordance with the Standard Specifications.

METHOD OF MEASUREMENT: This item will not be measured for payment.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities at the Contract unit prices as follows.

Pay Item	Pay Unit
NONQUIT POND BRIDGE NO. 292	LS

The price so stated shall constitute full compensation for all labor, materials, and equipment and for all incidentals required to finish the work, complete and accepted.

CODE 803.9901
REMOVAL AND DISPOSAL OF EXISTING BRIDGE NO. 292 SUPERSTRUCTURE

CODE 803.9902
PARTIAL REMOVAL AND DISPOSAL OF EXISTING BRIDGE NO. 292 SUBSTRUCTURE

DESCRIPTION: Except for the excluded items of work indicated below, the work under these items shall consist of the full removal and disposal of the existing Bridge No. 292 Superstructure, and the partial Removal and Disposal of Existing Bridge No. 292 Substructure.

Superstructure:
This item shall consist of the removal and disposal of the existing approach pavement (to the limits of proposed approach slab on each side of bridge), reinforced concrete slab, bituminous pavement on bridge, concrete parapets, reinforcing steel, conduits and conduit hangers, steel hardware embedded in concrete, as shown on plans and described in this Special Provision. All work shall be performed in accordance with applicable provisions of the Standard Specifications, except as modified herein and as required by the Engineer.

Substructure: This item shall consist of the removal and disposal of the roadway joint materials, concrete abutment stems, wingwall stems, concrete parapets, chain link fence, wall mounted guardrail all embedded and attached components, as shown on plans, and described in this Special Provision. Note that this includes components that will require asbestos abatement as shown on the contract plans. All work shall be performed in accordance with applicable provisions of the Standard Specifications, except as modified herein and as required by the Engineer.

Excluded Items of Work: The following items of work are excluded from this lump sum item and instead will be measured and be paid for separately under their own appropriate unit bid or lump sum items as listed in the Proposal: Earthwork and rockwork (structural excavation), and restoration work to the existing portion of the abutments to remain. Temporary shielding is excluded from this work and is paid for separately.

CONSTRUCTION METHODS: Limits and sequence of demolition shall be in accordance with the suggested phase construction scheme provided on the contract plans. All work to be performed in the complete or partial removal of the existing substructures shall be done in such a manner that no debris falls beyond the temporary protective shield. If any materials do fall beyond the protective shield, the contractor shall remove said materials immediately to the satisfaction of the Engineer.

Contractor shall prepare and submit to the Engineer for review, plans for falsework required for protection of traffic, utilities, and adjacent property.

The use of explosives in any manner whatsoever will not be permitted.

Prior to any other demolition activity, the Contractor shall carefully remove the existing WPA plaques from the concrete parapet so as not to damage the plaque. Refer to Job Specific specification 899.9901.

Removal of concrete shall be done in a workmanlike manner to prevent damage to the new, temporary, or existing structure to remain. If any damage to any portion of the new, temporary, or existing structure to remain does ensue due to the Contractor's operations, it shall be repaired or replaced by the Contractor at his sole expense and to the satisfaction of the Engineer.

The Contractor shall submit to the Engineer, in writing, his proposed method of demolition. Demolition operations shall not begin until his method has been approved by the Engineer. This submission shall include the following:

1. The demolition plans, equipment, sequence and methods the Contractor proposes to use, in detail.
2. The location where the Contractor intends to dispose of the demolition debris.

The demolition and falsework submittals must be stamped by a professional engineer registered in the State of Rhode Island. The furnishing of demolition and falsework submittals and plans shall not serve to relieve the Contractor of any part of his/her responsibility for the safety of the work or for the successful completion of the work.

Pavement or Concrete breakers which involve the use of a ball, or punch, dropped or swung mechanically or by gravity or any other method, or use of any equipment which, in the opinion of the Engineer would endanger the stability of the structure to remain or cause a hazard to vehicular or pedestrian traffic, will not be allowed. Concrete or masonry removal along the phase lines shall be performed in a manner such that portions of the structure to remain are in no way damaged and a neat sawcut line meeting the dimensions on the plans is produced.

All removed materials shall be taken from the site to an approved destination as the work progresses. Storing or burying of material/debris on site will not be permitted.

All work shall be in accordance with the Standard Specifications.

METHOD OF MEASUREMENT: These items will not be measured for payment.

BASIS OF PAYMENT: The Department will pay for the completed an accepted quantities at the Contract unit price as follows.

Pay Item	Pay Unit
REMOVAL AND DISPOSAL OF EXISTING BRIDGE NO. 292 SUPERSTRUCTURE	LS
PARTIAL REMOVAL AND DISPOSAL OF EXISTING BRIDGE NO. 292 SUBSTRUCTURE	LS

The price so stated shall constitute full compensation for all labor, materials, equipment, and all incidentals required to finish the work, as described above and elsewhere in the Contract Documents, complete in place and accepted.

841
PRE- AND POST-CONSTRUCTION CONDITION SURVEYS

All work shall conform to Section 841 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024, with the following additions:

Pre- and post-construction surveys shall be performed for the following and structures:

1. Nonquit Pond Dam, north of the bridge.

2. Nonquit Pond Dam Fish Ladder, adjacent to the northeast bridge wingwall.

3. Pre and Post Construction condition survey of the wetlands as described in the 208.9901 Control of Water specification.

Condition surveys are only required for the buildings and structures listed above and do not need to be conducted for other structures within 200 feet of construction activities unless directed by the Engineer.

CODE 841.9901
WATER LINE PRE AND POST CONSTRUCTION CONDITION SURVEYS

DESCRIPTION: The work includes labor, equipment, and materials necessary to conduct pre- and post-construction condition surveys of the water line within the project limits.

SUBMITTALS: The Contractor shall submit to the Engineer for approval the following:

- For both the pre- and post-construction condition surveys, submit an original report and copies with all documentation to the Engineer for review. Ensure that each report contains a DVD or CD with a complete electronic version of the report in PDF format and all video and still photography taken during the survey.
- Provide the pre-construction surveys to the Engineer a minimum of two weeks before starting work.
- Retain one copy of all results of the pre- and post-construction surveys in a suitable location on site. Ensure the availability of the documents for viewing during normal working hours. Do not produce any duplicates, other than as specified above, of any survey information without the written consent of the Engineer and the property owner.

CONSTRUCTION METHODS: The Contractor shall include the pre and post construction condition surveys in the Project Schedule.

The Contractor shall conduct the pre-construction survey before initiating construction operations and vibration inducing activities. This includes driving and removal of piles and sheeting, drilling, boring, blasting, structural demolition, and any other vibration-inducing activity resulting from the operations. The Contractor shall not initiate any work that may result in damage to the water line until the preconstruction survey report has been submitted and approved by the Engineer.

The Contractor shall perform non-destructive testing to assess the condition of the water line including leaks.

The Contractor shall document the survey through a written report that includes visual imaging, photographs, video, and sketches,

The Contractor report shall emphasize the following:

- Locations and sizes of damage, cracks and leaks in the water line
- For post-construction survey, changes from the pre-construction survey

The Contractor shall perform a post-construction survey upon substantial completion of the Contract with the consent of the Engineer, and follow the same procedures and protocols used for preconstruction survey.

The Contractor shall repair damage sustained to the water line due to construction operations to the satisfaction of the Engineer at no additional cost to the Department or property owner.

METHOD OF MEASUREMENT: This item will not be measured for payment.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities as follows.

Pay Item	Pay Unit
WATER LINE PRE AND POST CONSTRUCTION CONDITION SURVEYS	LS

The price so stated shall constitute full compensation for all labor, materials, equipment, and all incidentals required to finish the work, as described above and elsewhere in the Contract Documents, complete in place and accepted.

CODE 899.9901
REMOVE, CLEAN, RESTORE, AND RESET EXISTING WPA PLAQUE

DESCRIPTION: Work covered under this Special Provision shall consist of performing all operations in connection with the removal of existing plaques and their cleaning, restoration, and resetting in new concrete parapets. All work shall be performed in accordance with the Standard Specifications.

MATERIALS: All materials shall be in accordance with the Standard Specifications and with the recommendations of the plaque restorer, subject to the approval of the Engineer.

CONSTRUCTION METHODS: All construction methods shall be in accordance with the Standard Specifications and the following:

A. Prior to any other demolition activity, the Contractor shall carefully remove the existing WPA plaques from the concrete parapet so as not to damage the plaque.

B. The plaque shall be delivered to the restorer's facility.

C. All work shall be performed by and in conjunction with an experienced restorer and "approved by the engineer".

D. The Contractor shall submit documentation showing that the restorer has a minimum of 5 years of experience performing similar work, and shall provide documentation of at least 5 similar projects, including the name and contact information for the project owners.

E. The Contractor shall also submit a narrative plan of all removal and installation methods and cleaning/protective materials and methods for approval by the Engineer prior to the start of the work.

F. The plaque shall be cleaned and protected with a coating suitable for treatment of a historic element in consultation with the selected restorer. The coating shall be transparent without tint or sheen and shall not obstruct the original architectural features of the element.

G. The resetting of the plaque in the proposed concrete parapet shall be accomplished by fastening or grouting the plaque anchors into precast inserts or holes in the parapet. The Contractor shall submit details of the proposed anchorage method prior to resetting the plaque. Should new anchors be required, they shall be considered incidental to the work.

METHOD OF MEASUREMENT: This item will not be measured for payment.

BASIS OF PAYMENT: Remove, Clean, Restore, and Reset Existing WPA Plaque is incidental to the construction of Nonquit Pond Bridge No. 292 and is not measured separately for payment. This item shall be paid for under Item 800.9901– Nonquit Pond Bridge No. 292.

CODE 912.9901
SUPPLEMENATRY STONES FOR WALLS

DESCRIPTION: The work includes installing supplementary stones for rebuilding new or existing dry-laid stone walls as needed at the locations indicated on the Plans.

MATERIALS: Materials shall conform to Subsection 912.02 Materials and Section M14 of the Standard Specifications.

CONSTRUCTION METHODS: Construction Methods shall conform to Subsection 912.03 Construction Methods of the Standard Specifications.

METHOD OF MEASUREMENT: This item will be measured for payment by the units of "LINEAR FEET" of stone actually placed in accordance with the plans, this specification, or as directed by the Engineer.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities as follows.

Pay Item	Pay Unit
SUPPLEMENTARY STONES FOR WALLS	LF

The price so stated shall constitute full compensation for all labor, materials, equipment, and all incidentals required to finish the work, as described above and elsewhere in the Contract Documents, complete in place and accepted.

CODE 919.9901
TEST PITS AND MATERIAL TESTING

DESCRIPTION: This work includes excavating exploratory test pits in the areas of anticipated excavation, sampling the soil from these excavations, testing the soils for contamination, and classifying the soils.

MATERIALS: Materials associated with test pit excavations such as backfill, subbase, and base courses, asphalt pavements, and loam and seeding are specified in PARTS 200, 300, 400, and L of the Standard Specifications.

CONSTRUCTION METHODS: The Contractor shall identify areas of excavation and estimate the volume of soil from the excavated area. The Contractor shall perform a test pit at these areas of excavation. The Contractor shall collect representative soil samples to determine if oils and/or hazardous materials (OHM) may be present in exceedance of the Rhode Island Department of Environmental Management (RIDEM) Method 1 Criteria. For example, if the Contractor anticipates excavating 8 feet deep, then the Contractor shall sample the soil at the 4 foot mark of the test pit.

For excavation areas greater than 500 cubic yards, the Contractor shall perform a test pit for every 500 cubic yards. For example, if the Contractor anticipates excavating 2200 cubic yards, then the Contractor shall perform 5 test pits.

Test pit excavations may include any or all of the following items, the construction methods for which are specified in PARTS 200 and L of the Standard Specifications:

- Cutting pavement
- Breaking up and disposal of existing pavements
- Test pit excavation
- Backfill and compaction, where required
- Loam and seeding
- Replacement paving to match as nearly as possible the existing pavement in thickness

The Contractor shall submit the samples to an RI-accredited laboratory for a full suite of analysis, including volatile organic compounds, semivolatile organic compounds, total metals (i.e., priority pollutant 13 metals), total petroleum hydrocarbons and polychlorinated biphenyls.

Following the results of the testing, the Contractor shall classify the soils of each anticipated area of excavation in accordance with Section 202.02.3 Contaminated Soils of the Standard Specifications.

The Contractor shall identify the location of each test pits, and document, sample, and test the soil from each test pit. The Contractor shall submit the results of the test pits to the Department according to TAC-0434 Geotechnical/Environmental Subsurface Exploration Logs and GeoInfo Database.

METHOD OF MEASUREMENT: This item will be measured for payment by the units of "EACH" test pit actually performed in accordance with the plans, this specification, or as directed by the Engineer.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities as follows:

Pay Item	Pay Unit
TEST PITS AND MATERIAL TESTING	EACH

The price constitutes full compensation for labor, materials, and equipment, including cutting and matching pavement, removal and proper disposal of existing pavements, excavation, pumping and bailing, backfilling, loaming and seeding, where required, sampling, testing, classification, documentation and electronic submission of the results, and all incidentals required to finish the work, complete and accepted.

The replacement of subbase and base courses, and the replacement paving and resurfacing, will be paid for separately under the appropriate work items.

938.1000
PRICE ADJUSTMENTS

Description.

a) **Liquid Asphalt Cement.** The Base Price of Liquid Asphalt Cement as required to implement **Subsection 938.03.1** of the Standard Specifications is $ 575.00 per ton.

b) **Diesel Fuel.** The Base Price of Diesel Fuel as required to implement **Subsection 938.03.2** of the Standard Specifications is $ 2.1674 per gallon.

c) **Steel.** The Base Price of Steel as required to implement **Subsection 938.03.3** of the Standard Specifications. The following page provides the base prices for structural steel and rebar for this Contract.

11-08-2023

May 2023 Structural Steel & Rebar Base Prices for Contracts

Note 1: This list goes into effect May 1, 2023 and will remain in effect until revised.
Note 2: This list supersedes and replaces any earlier list.
Note 3: This list is based on the May 1, 2023 Worksheet.
Note 4: This list uses the BLS period price index of 461.285 for semi finished Steel Mill products (series ID# WPU101702)

ITEM NO.	DESCRIPTION		May 2023 PRICE PER POUND		May 2023 PRICE PER KILOGRAM
1	ASTM A615/A615M Grade 60 (AASHTO M31 Grade 420) Reinforcing Steel	$	0.67	$	1.47
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note (1) below.)	$	0.90	$	1.99
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	$	0.90	$	1.99
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	$	1.01	$	2.23
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 250 Structural Steel Plate	$	1.10	$	2.42
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 250 Structural Steel Shapes	$	0.78	$	1.72
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 345 Structural Steel Plate	$	0.96	$	2.12
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 345 Structural Steel Shapes	$	0.78	$	1.72
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 345WT Structural Steel Plate	$	1.14	$	2.51
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 345WT Structural Steel Shapes	$	0.86	$	1.91
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 345W Structural Steel Plate	$	1.03	$	2.28
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 345W Structural Steel Shapes	$	0.80	$	1.77
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 345W Structural Steel Plate	$	1.16	$	2.56
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 485W Structural Steel Plate	$	1.23	$	2.71
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 690W Structural Steel Plate	$	1.87	$	4.13
16	ASTM A276 Type 316 Stainless Steel	$	5.57	$	12.27
17	ASTM A240 Type 316 Stainless Steel	$	5.57	$	12.27
18	ASTM A148 Grade 80/50 Steel Castings (See Note (1) below.)	$	1.93	$	4.25
19	AASHTO M270M/M270 Grade 345W Structural Steel Plate - same as Item #11.		**Same as Item #11.**		
20	AASHTO M270M/M270 Grade HPS 345W Structural Steel Plate - same as Item #13.		**Same as Item #13.**		
21	AASHTO M270M/M270 Grade 250 Structural Steel Plate - same as Item #5.		**Same as Item #5.**		
22	ASTM A53 Grade B Structural Steel Pipe	$	1.24	$	2.73
23	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	$	1.24	$	2.73
24	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	$	0.96	$	2.11
25	ASTM 252, Grade 2 Permanent Steel Casing	$	0.96	$	2.11
26	ASTM A36 (AASHTO M183) H-piles, steel supports and sign supports	$	0.83	$	1.83
27	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	$	1.83	$	4.04
28	ASTM A572 / A572M, Grade 50 Sheetpiling	$	1.82	$	4.02
29	ASTM A36/36M, Grade 50	$	1.07	$	2.37
30	ASTM A570, Grade 50	$	1.07	$	2.35
31	ASTM A572 (AASHTO M223), Grade 50 H-Piles	$	0.79	$	1.73
32	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	$	1.25	$	2.75

NOTES:

(1) *Steel Castings* are generally used only on moveable bridges. Cast iron frames, grates and pipe are not “steel” castings and will not be considered for price adjustments.

SECTION 941
E-TICKETING

Remove Section 941 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

941.01 DESCRIPTION.

This work shall consist of providing electronic material tickets for all loads of HMA or ready mixed PCC delivered to the project. Electronic tickets for other materials supplied to a project may be submitted at the Contractor's and the Engineer's mutual agreement.

941.02 EQUIPMENT.

The Department's e-Ticketing program is web-based system, the supplier will be required to establish a live connection to the Department's ticket database.

941.03 METHODS.

Conduct a test of each supplier's integration with the Department's e-Ticketing Portal prior to shipping material. Complete test at least 14 days prior to shipping material unless otherwise approved by the engineer. The test must involve at least four calibration e-Tickets from each supplier approved for use on the project. After the engineer confirms the calibration eTickets have been entered into the Department's e-Ticket Portal, void the e-Tickets with the reason "Calibration Testing".

Uptime reliability of the material supplier's ticketing system must be 99.5% over any 30-day rolling period. Uptime is defined as the ability for the Department to receive electronic tickets within a maximum of 10 minutes from when the ticket was created.

Ensure the identifying vehicle numbers on the delivery vehicle correspond to the ticket. Place the numbers on the delivery vehicles such that at least one can be safely read from within the work area. Delivery vehicles without identifying vehicle numbers shall be rejected.

Each material ticket shall contain the following in Department approved format:

- General Ticket information (All Material).
    - Date
    - RIDOT Project Number
    - RIDOT Project Name
    - Name of Prime Contractor
    - Name of material supplier
    - Unique truck ID
    - Ticket Number
    - Plant/scale name (source)
    - Truck Status Times:
        + Loaded time (time batched) shall be available
        + Provided other truck status times as available

        - Ticketed
        - Load time
        - Left plant
        - Arrive at project
        - Begin unload
        - Finish unload
        - Leave project
- Portland Cement Concrete.
    - Loaded time (water/cement time).
    - Wet and dry batch weights (if computer generated).
    - Water:
        + In aggregate
        + Total water
        + Water/cement ratio
        + Max water/cement ratio
        + Allowable water to add
    - Admixtures (including brand names if available):
        + Retarder and weights
        + Water reducer and weights
        + Air entrainment and weights
        + Special performance admixtures and weights
        + Concrete fibers
    - Cementitious material(s) and weights
    - CPI Name and certificate number
- Hot Mix Asphalt.
    - Mix design Number.
    - Class of Mix.
    - Modified of Unmodified
    - Gross weight.
    - Tare weight.
    - Net weight.
    - Cumulative tonnage for that paving session.

941.04 METHOD OF MEASUREMENT.

The Department will not measure electronic ticketing.

941.05 BASIS OF PAYMENT.

The cost associated with creating and maintaining an API, providing electronic ticketing data, and placing identifying vehicle numbers on the delivery vehicles is incidental to the item being placed.

The Department may reject any load that does not have a corresponding eTicket unless the cause is beyond the contractor's control. In such circumstances paper tickets may be permitted at the discretion of the Engineer. If e-Tickets cease to be issued, paving operations will be shut down upon the conclusion of an ongoing session. In such circumstances paper tickets will be permitted until the end of the paving session or placement. If, in the judgement of the Engineer, the Contractor fails to issue electronic tickets in accordance with the specification, the appropriate charges in the Table of Fines in **SECTION 110** will be deducted from monies due to the Contractor.

CODE 999.9901
MISCELLANEOUS WORK

DESCRIPTION: The intent of this provision is to ensure adequate and fair compensation for unpredictable and unforeseen items of work that are not included in the Contract.

MATERIALS: Materials shall conform to the applicable sections of the Rhode Island Standard Specifications for Road and Bridge Construction, February 2024, with all revisions.

CONSTRUCTION METHODS: Construction methods shall conform to the applicable sections of the Rhode Island Standard Specifications for Road and Bridge Construction, February 2024, with all revisions.

METHOD OF MEASUREMENT: "MISCELLANEOUS WORK" will be measured by the actual cost for performing the work as directed and approved by the Engineer.

BASIS OF PAYMENT: "MISCELLANEOUS WORK" will be paid for by agreed upon price or by force account in accordance with the provisions of Subsection 109.04 of the specifications, at a cost of $1.00 each. The estimated quantity for this item of work will be established by the Department on a project-by-project basis.

SECTION L01
LOAM, PLANTABLE SOIL, OR HIGH ORGANIC SOIL

Remove Section L01 from the RIDOT Standard Specifications for Road & Bridge Construction, February 2024 in its entirety and replace with:

L01.01 DESCRIPTION.

L01.01.1 Loam.

This work includes placing loam to the required lines, grades, limits, and depths.

L01.01.2 Plantable Soil.

This work includes furnishing and placing plantable soil to a 4-in. depth on designated areas.

L01.01.3 High Organic Soil.

This work includes furnishing and placing high organic soil to the lines, grades, and depths in detention ponds, wetland replacement, and/or wetlands restoration/reclamation areas.

L01.02 MATERIALS.

Provide loam, plantable soil, and high organic soil that is clean and free of any undesirable material and conforms to **SECTION M18.**

L01.03 CONSTRUCTION METHODS.

Place all materials on surfaces that are true to the required lines, grades, and cross sections. Place and spread the materials to the required depth and minimum thickness.

L01.03.1 Loam.

Provide the loam from sources outside the Project limits. Submit a sample for testing before the placement of loam. The Engineer will approve the sample before placement. Loam that does not meet the requirements in **SECTION M18** will be rejected.

Before placement, prepare the surface to receive the loam. Remove and dispose of all roots, sod, weeds, cobbles, or stone with any dimension greater than 1 in.

Grade the loamed surface and, in addition to the removal and disposal before placement, remove and dispose of all roots, sods, weeds, cobbles, or stones with any dimension greater than 1 in. After shaping and grading, do not allow any trucks or other equipment that is not required to perform seeding, mulching, or mowing operations on the loamed areas.

Perform this work only with permission from the Engineer. The Engineer may suspend work when it is determined that soil or weather conditions are unsuitable for spreading and/or grading loam. Resume work with the approval of the Engineer.

Seed all loamed areas within two weeks after spreading the loam. Refer to **SECTION L02** for dates and other requirements. Maintain the loamed areas free from erosion until Project acceptance.

L01.03.2 Plantable Soil.

Furnish plantable soil either from sources outside the Project limits (Plantable Soil Furnished and Spread) or from material removed and stockpiled under the excavation items (Plantable Soil Rehandled and Spread). Place plantable soil according to **Subsection L01.03.1**.

L01.03.3 High Organic Soil.

Furnish high organic soil either from sources outside the Project limits (High Organic Soil Furnished and Spread) or remove and stockpile the material under the excavation items (High Organic Soil Rehandled and Spread). Submit a sample for testing before the placement of high organic soil. The Engineer will approve the sample before placement. High organic soil that does not meet the requirements specified in **SECTION M18** will be rejected.

Use a dozer to track all slopes. Ensure that the resulting tracks are perpendicular to the flow of water. Remove and dispose of all roots, sods, weeds, cobbles, or stones with any dimension greater than 4 in. from the soil surface. Do not rake the soil.

After spreading and tracking the high organic soil, apply a wetland seed mix on the same day. Refer to **SECTION L02** for dates and other requirements.

L01.04 METHOD OF MEASUREMENT.

All materials furnished and spread or rehandled and shaped will be measured by the number of square yards for the surface area on which the loam is placed.

L01.05 BASIS OF PAYMENT.

The Department will pay for the completed and accepted quantities as follows.

Pay Item	Pay Unit
Loam 4-in. Deep	SY
Plantable Soil 4-in. Deep	SY
High Organic Soil 4-in. Deep (Slopes)	SY
High Organic Soil 6-in. Deep (Bottom)	SY

Payment at the Contract unit price is full compensation for all resources, labor, materials; removal and disposal of all roots, sod, weeds, cobbles, or stone with any dimension greater than allowed; trimming and fine grading; and equipment and incidentals required to finish the work, complete and accepted.

CODE L06.9901
WILD ROSE (ROSA VIRGINIANA)

CODE L06.9902
BAYBERRY (MORELLA PENSYLVANICA)

CODE L06.9903
MARSH ELDER (IVA FRUTESCENS)

CODE L06.9904
SMOOTH CORDGRASS (SPARTINA ALTERNIFLORA)

DESCRIPTION: The work under this item shall consist of planting the specific vegetation in accordance with the Contract Documents and/or as directed by the Engineer, for the restoration of the coastal buffer and salt marsh area to be disturbed during construction activities for access and Control of Water measures. This work includes furnishing, planting, watering, mulching, staking and guying trees, shrubs, vines, perennials, ornamental grasses, ground covers, and bulbs of the required type and size.

All work shall be in accordance with the Standard Specifications and the Special Provisions for work included in this item.

MATERIALS: Use plant materials, antidesiccant, loam, fertilizer, bone meal, mulch, water, stakes, guy webbing fabric, and herbicide that conform to SECTION M18 of the Standard Specifications.

CONSTRUCTION METHODS: Construction Methods shall conform to Subsection L.06.03 Construction Methods of the Standard Specifications.

METHOD OF MEASUREMENT: These items will be measured for payment by the units of "EACH" planting actually placed in accordance with the plans, this specification, or as directed by the Engineer.

BASIS OF PAYMENT: The Department will pay for the completed and accepted quantities at the Contract unit prices as follows.

Pay Item	Pay Unit
WILD ROSE (ROSA VIRGINIANA)	EACH
BAYBERRY (MORELLA PENSYLVANICA)	EACH
MARSH ELDER (IVA FRUTESCENS)	EACH
SMOOTH CORDGRASS (SPARTINA ALTERNIFLORA)	EACH

The price constitutes full compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the planting of the vegetation as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted.