SUPPLEMENTAL SPECIFICATION

AMENDMENT TO SECTION 401 – PLANT MIX PAVEMENTS - GENERAL

The purpose of this Supplemental Specification is to:

- *Add "winter binder" to the design control points (2.5.1, 04/05/17)*
- *Revise material requirements of allowed recycled materials to no greater than 1% TRB (2.10, 06/06/17)*
- *Revise cold feeder requirements (3.4.1, 07/06/18)*
- *Revise recycled materials weighing procedures (3.4.7.1, 07/06/18)*
- *Describe the introduction of recycled materials at a batch plant and controls minimum dry time for recycled aggregates (3.4.11-3.4.15, 07/06/18)*
- *Revise recycled materials requirements (3.5.2 & 3.5.2.1, 07/06/18)*
- *Remove the penalty for failing tack from Section 401 (3.10.10.1, 06/06/17)*
- *Allow a reduction in the use of pneumatic-tired rollers (3.12, 06/06/17)*
- *Revise HMA gradation specification limits, complete the addition of "winter binder", and Remove the allowance for Aim change after two sub-lots (3.17.3.1.1, 06/06/17)*
- *Remove all references to Night Items (4.1.1, 06/06/17)*
- *Revise NETTCP QA Technologist requirements (3.17.1.3, 11/07/18)*

Amend the Minimum Binder Content table under Section 2.5.1 as follows:

Minimum Binder Content

50 Gyration		75 Gyration
	3/8"	6.0%
5.8%	1/2"	5.5%
5.5%	Winter Binder 3/4"	5.2%
4.9%	3/4"	4.6%
4.6%	1"	4.3%

Amend Table 401-1 – Design Control Points under Section 2.5.1 as follows:

Table 401-1 –Design Control Points*

Standard	Nominal Maximum Aggregate Size											
Sieves	1"		3/4"		3/4" Winter Binder		1/2"		3/8"		No. 4	
	Max.	Min.	Max.	Min.	Max.	Min.	Max	Min.	Max.	Min.	Max.	Min.
Inch	Percentage by Weight Passing Criteria (Control Points)											
2												
1-1/2		100.0										
1	100.0	90.0		100.0		100.0						
3/4	90.0		100.0	90.0	100.0	90.0		100.0				
1/2			90.0		90.0		100.0	90.0		100.0		
3/8							90.0		100.0	90.0	100.0	99.0
No. 4									90.0		97.0	90.0
No. 8	45.0	19.0	42.0	32.0	48.0	38.0	52.0	42.0	56.0	46.0	75.0	65.0
No. 16											55.0	45.0
No. 30											36.0	26.0
No. 50											30.0	20.0
No. 100											13.0	8.0
No. 200	7.0	1.0	8.0	2.0	8.0	2.0	10.0	2.0	10.0	2.0	8.0	4.0

Amend 2.10.1 to read:

2.10.1 Reclaimed asphalt pavement (RAP) may be used in the production of hot mix asphalt. The allowed dust to asphalt ratio shall be as identified in AASHTO M 323. The maximum allowable total reused "asphalt" binder (TRB) in HMA mixes shall be 1.0%. Any changes in the combination of recycled materials shall require a new mix design unless otherwise approved by the Bureau of Materials & Research.

Delete 2.10.3.

Amend 3.4.1 to read:

3.4.1 All aggregate shall be delivered by belt driven feeders. All feeders shall provide for adjustment of the cold feed and shall be capable of being secured in any position. The cold feeder for recycled materials shall be equipped with an oversize particle scalper.

Add to 3.4.7:

3.4.7.1 Recycled materials weighed separately from the materials in the virgin weigh hopper shall be weighed on a dedicated scale with digital display at the accuracy described in 3.4.7.

Amend 3.4.11 through 3.4.15 to read:

3.4.11 Each size of hot aggregate, the mineral filler if required, recycled material if applied, and the bituminous cement shall be measured separately and accurately to the proportions in which they are to be mixed.

3.4.12 The virgin aggregate shall be dried and heated to a minimum temperature of 260° F. The asphalt binder shall be heated to a temperature between 260º and 325º F. The weigh hopper shall be charged with the hot aggregate, coarse sizes first, unless otherwise directed.

3.4.13 Virgin Aggregates shall be dry mixed for 5 to 15 seconds.

3.4.14 Recycled materials can only be introduced to the weigh hopper or to the mixer.

3.4.14.1 Recycled materials that are introduced in the weigh hopper shall be dry mixed per 3.4.13.

3.4.14.2 When recycled materials are delivered to the mixer separately from the virgin aggregates, wet mixing time shall not begin until all recycled material is introduced to the mixer and is moisture free. The duration shall be determined based on field/plant conditions, and by agreement of the Contractor and Engineer.

3.4.15 The asphalt binder shall be added and the mixing continued until a uniform coating is obtained and all particles of the aggregate are thoroughly coated. The total dry and wet cycle shall not be less than 35 seconds for base and binder mixtures and not less than 40 seconds for the wearing course. In no case shall the total mixing period exceed 75 seconds. If the aggregate in the hot bins contains sufficient moisture to cause foaming in the mixture, such aggregate shall be removed from the bins, and production rate shall be reduced so as not to exceed the capacity of the dryer. Material having once gone through the mixing plant shall not be returned to the stockpiles.

Amend 3.5.2 to read:

3.5.2 The cold bins shall be divided in at least five compartments and shall be designed to prevent the overflow of material from one bin to another. Each cold bin shall be equipped with an orifice to feed the aggregate accurately and uniformly. The feeding orifice shall be adjustable, and indicators shall be provided to show the gate opening. An automatic plant shutoff device shall be provided to operate when any aggregate bin becomes empty or the flow from any bin gate becomes restricted. A vibrator or other suitable means may be required in order to ensure a uniform flow of materials. The order of aggregate feed onto the composite cold feed belt shall be from coarse to fine. Aggregate shall pass through a scalping screen prior to the weigh belt.

3.5.2.1 When recycled material is used, an additional bin, equipped with its own oversize particle scalper, shall be required. In event of an emergency this bin may be used to feed aggregate in an amount not to exceed 15% of material to complete the day's production.

Delete 3.10.10.1.

Amend 3.12.2.1 to read:

3.12.2.1 Immediately after the hot asphalt mix has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. The initial rolling shall be done with a static or vibratory steel-drum roller. Intermediate rolling shall be done by a pneumatic-tired roller and/or a vibratory/oscillatory roller. Pneumatic-tired rollers shall be used on all pavement leveling courses. Final rolling shall be done with a static steel-drum roller or a roller of the steel-drum three-axle type, locked. The completed course shall be free from ridges, ruts, humps, depressions, objectionable marks, visible segregation, or irregularities and in conformance with the line, grade, and cross-section shown in the Plans or as established by the Engineer. Rollers must be in good mechanical condition, free from excessive backlash, faulty steering mechanism, or worn parts. The empty weight and the ballasted weight shall be properly marked on each roller. The minimum weight of static steel-drum rollers shall be 8 tons. When a vibratory roller is being used, the vibration shall stop automatically when the roller is stopped or reversing direction of travel. A minimum of three rollers shall be used.

Amend 3.12.2.8 to read:

3.12.2.8 Unless the Engineer determines that for the weight and placement conditions a lesser number will be satisfactory to obtain the desired pavement densities, the following is the list of required compaction equipment. The output of each paver placing wearing course (Table 1) materials shall be compacted by the use of one each of the following complement of rollers as a minimum: a static or vibratory steel-wheel roller, a pneumatic-tired or vibratory/oscillatory roller and a three-axle roller or a static steel-wheeled roller. If the required density is not being obtained with the rollers supplied, the use of additional rollers of the specified type may be ordered. Paving widths in excess of 16 ft (5 m) will require additional rollers as ordered.

Amend 3.12.3.3 to read:

3.12.3.3 The type of rollers to be used and their relative position in the compaction sequence shall be the Contractor's option, provided specification densities are attained and with the following stipulations:

a) Pneumatic-tired rollers shall be used on all pavement leveling courses.

b) Vibratory rollers shall not be operated in the vibratory mode under the following conditions: When checking or cracking of the mat occurs, when fracturing of aggregate occurs, and on bridge decks.
c) A minimum of three rollers shall be used.

Amend 3.17.1.3 (A) to read:

3.17.1.3 The Plan shall include the following personnel performing the described functions and meeting the following minimum requirements and qualifications:

A. Plan Administrator shall meet one of the following qualifications:

(a) Professional Engineer licensed in the State of NH with one year of highway experience acceptable to the Department and proof of past certification as a NETTCP QA Technologist.

(b) Engineer-In-Training with two years of highway experience acceptable to the Department and hold current certification as a NETTCP QA Technologist.

(c) An individual with three years highway experience acceptable to the Department and with a Bachelor of Science Degree in Civil Engineering Technology or Construction and hold current certification as a NETTCP QA Technologist.

(d) An individual with five years of paving experience acceptable to the Department and hold current certification as a NETTCP QA Technologist.

Amend 3.17.3.1.1 to read:

3.17.3.1.1 Testing. Target values shall be as specified in the job mix formula. All sieve sizes specified in the job mix formula will be evaluated for gradation. The specification limits in Table 401-5 will be used for calculating pay factors for gradation and asphalt binder content.

Table 401-5 - Gradation and Asphalt Binder Specification Limits

Property	**Maximum Aggregate Size**				
	1”	3/4”	¾” Winter	1/2”	3/8”
		USL and LSL (Target +/- %)			
1 1/2”	0	0	0	0	0
1-1/4”	0	0	0	0	0
1”	8.0	0	0	0	0
3/4”	8.0	6.0	6.0	0	0
1/2”	7.0	6.0	6.0	5.0	0
3/8”	7.0	6.0	6.0	5.0	5.0
No. 4	4.5	4.5	4.5	4.0	4.5
No. 8	4.5	4.5	4.5	3.5	3.5
No. 16	2.5	2.5	2.5	2.5	2.5
No. 30	2.5	2.5	2.5	2.5	2.5
No. 50	2.5	2.5	2.5	2.5	2.5
No. 100	2.5	2.5	2.5	2.5	2.5
No. 200	1.0	1.0	1.0	1.0	1.0
Asphalt Binder	0.4	0.4	0.4	0.4	0.4

Any sublot with a gradation or asphalt binder content falling outside the ranges of the reject limits in Table 401-6 will be either removed and replaced at the expense of the Contractor or require corrective action to the satisfaction of the Engineer. After replacement or correction, new samples will be taken and the old test results from that sublot will be discarded.

Table 401-6 - Gradation and Asphalt Binder Content Reject Limits (Deviation from Target)

SIEVE SIZE	1”	3/4”	¾” Winter	1/2”	3/8”
		Percent Passing By Weight – Combined Aggregate			
1-1/4”					
1”					
3/4”	±12	(1)	(1)		
1/2”	(1)	±10	±10	(1)	
3/8”	(1)	(1)	(1)	±10	(1)
No. 4	±9	±9	±9	±9	±9
No. 8	±7	±7	±7	±7	±7
No. 16	±6	±6	±6	±6	±6
No. 30	(1)	(1)	(1)	(1)	(1)
No. 50	(1)	(1)	(1)	(1)	(1)
No. 100	(1)	(1)	(1)	(1)	(1)
No. 200	±3	±3	±3	±3	±3
Asphalt Binder: % of Mix	±1.0	±1.0	±1.0	±0.8	±0.8

(1) Reject limits will be waived for these sieves.

Amend 4.1.1 to read:

4.1.1 No separate measurement will be made for lighting necessary or overtime required due to night operations at the plant or at the site.

Amend 5.4 to read:

5.4 Plant or project site lighting for hot bituminous pavement, machine or hand method, or overtime required due to night operations will be subsidiary to the paving items.