Tales from Empire State (North of the Border)

An Asphalt Discussion Session

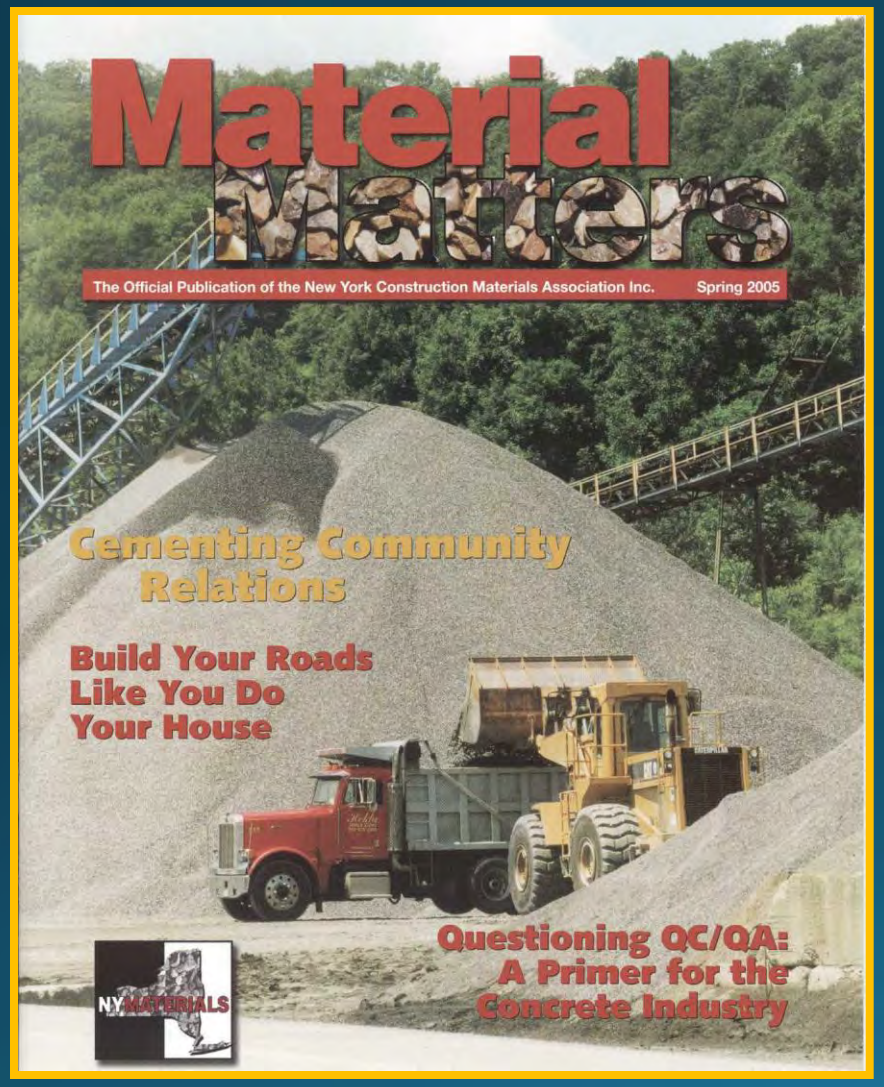
Wednesday, January 21, 2026: 9:00am – 10:00am

Bruce Barkevich, President & CEO

New York Construction Materials Association

Thank you to the NYMaterials Members for Supporting our Industry and our efforts!

Who Are We, NYMaterials?



- New York Construction Materials Association is a Trade Association representing the Aggregate, Asphalt, and Concrete Producers in New York State.
- The Association works with the State Agencies, Engineers, private owners, and other stakeholders developing specifications, initiatives, etc.

Northeast SAPA's Strong Representation!

- Maine – Tanya
- Mass – Chuck
- Connecticut – Don
- New Jersey – Kevin
- Maryland – Tim
- PA – Charlie, Mary, Steve, Martin
- NY – Bruce

Solid User Producer Group, Regional Materials Engineers, Pavement Preservation Group, Geographic Close, Environmentally Similar

Outline of Presentation

- National Focus
- EPD's and Sustainability
- SHRP & Superpave Spec's – What & Why
- NYSDOT Specs
- Recycling
- Warm Mix Asphalt (WMA)
- Performance Testing – Engineered Mixes
- And Plenty More Odds & Ends

Today's & The Last Few Year's Theme

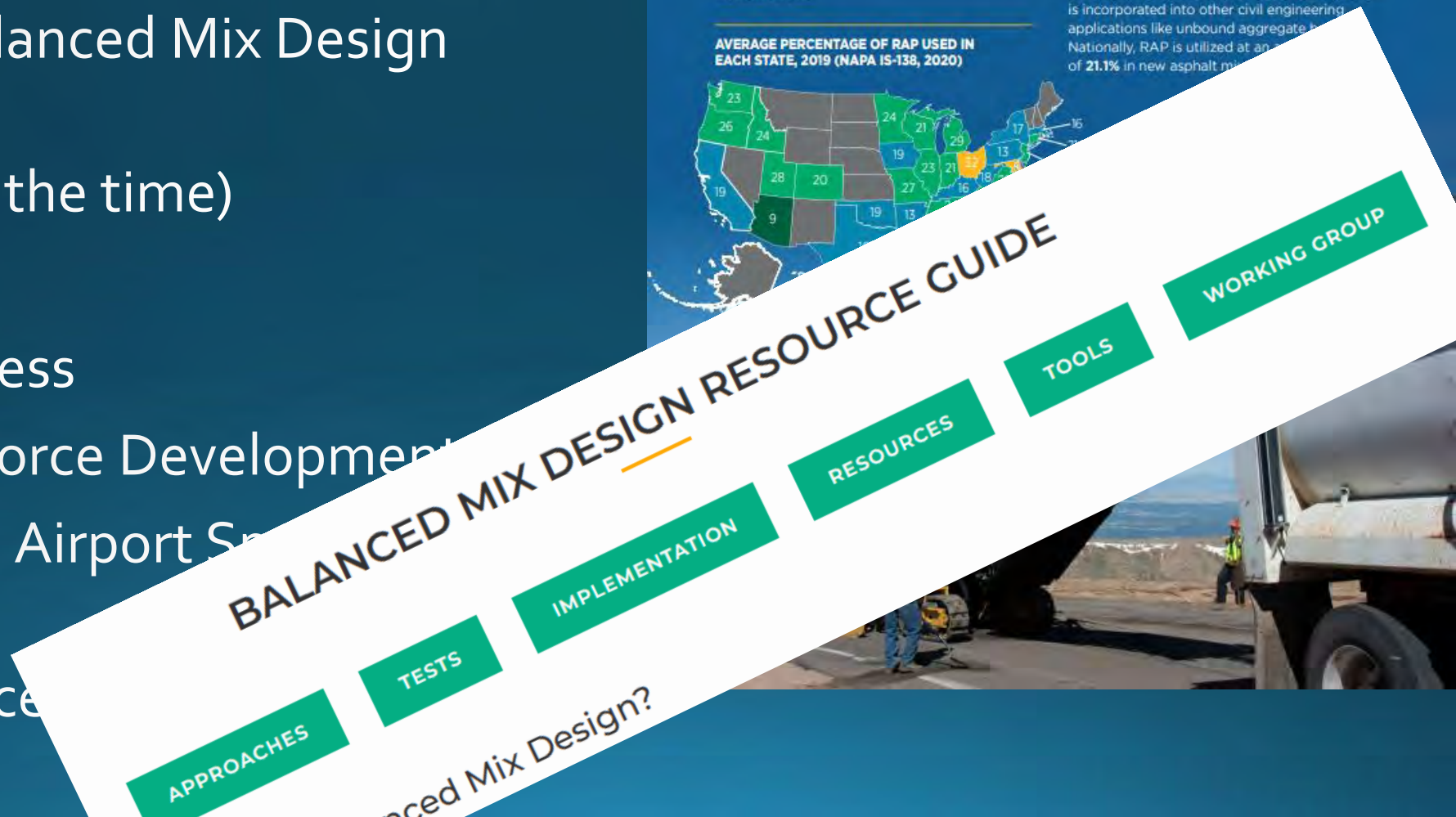
Giving our pavements the best chance for success!

Do Not Walk on the Final Course (Top Course)

National Focus

- Funding, Funding, Funding – Always #1
- Sustainability and Balanced Mix Design (BMD)

  (everywhere / all the time)
- Mental Health
- PFAS, Silica, Heat Illness
- Workforce and Workforce Development
- Recycling, Warm Mix, Airport S… Innovation, etc.
- Regulatory Compliance



Sustainability/BMD (PEM)

Ground Hog Day All Over Again

Do the Math / Solve the Problem
Science the sh*t out of this

NYS "CLCPA"
"The Climate Act"

Climate Leadership and Community Protection Act (Climate Act)

New York's Climate Act builds on almost a decade of climate leadership based on the latest climate science, the Climate Act's targets are among the most rigorous of any major economy in the world. Every New Yorker will play a key role in protecting our communities and ensuring a sustainable future. Together, we will transform New York's economy, create new jobs, and stimulate industry and innovation, while building more resilient communities to benefit, and protect, all New Yorkers.

For more information on the Climate Act, including the Climate Action Council, the Climate Justice Working Group, Advisory Panels, and meeting materials, **visit: climate.ny.gov**

EPD's – Emerald Eco-Label

- PA & NYS are the two top states with producing EPD's with many that are unpublished.

An Environmental Product Declaration for Asphalt Mixtures

TABLE 3. ENVIRONMENTAL IMPACT SUMMARY TABLE

IMPACT CATEGORY	POTENTIAL IMPACT PER METRIC TONNE ASPHALT MIXTURE (PER TON ASPHALT MIXTURE)
Global warming potential (GWP-100)	*67.07 (60.84) kg CO2 Equiv.*
Ozone depletion potential (ODP)	*4.34e-08 (3.94e-08) kg CFC-11 Equiv.*
Eutrophication potential (EP)	*1.61e-02 (1.46e-02) kg N Equiv.*
Acidification potential (AP)	*1.68e-01 (1.52e-01) kg SO2 Equiv*
Photochemical ozone creation potential (POCP)	*4.13 (3.74) kg O3 Equiv.*

Emerald ECO LABEL

An Environmental Product Declaration (EPD) for Asphalt Mixtures

Company Information

Dolomite Products Company Inc. is an asphalt mixture producer.

Dolomite Hornell 5-Ton Batch Plant, a stationary asphalt plant at 7618 Co Rd 65, Hornell, NY 14843, USA

The DOLOMITE Group
A CRH COMPANY

Product Description

This EPD reports the potential environmental impacts and additional environmental information for an asphalt mixture, which falls under the United Nations Standard Products and Services Code 30111509. Asphalt mixtures are typically incorporated as part of the structure of a roadway, parking lot, driveway, airfield, bike lane, pedestrian path, railroad track bed, or recreational surface.

Mix Name: 9.5mm 75gyr PG64V-22 095698 20 A

Specification Entity: NYSDOT

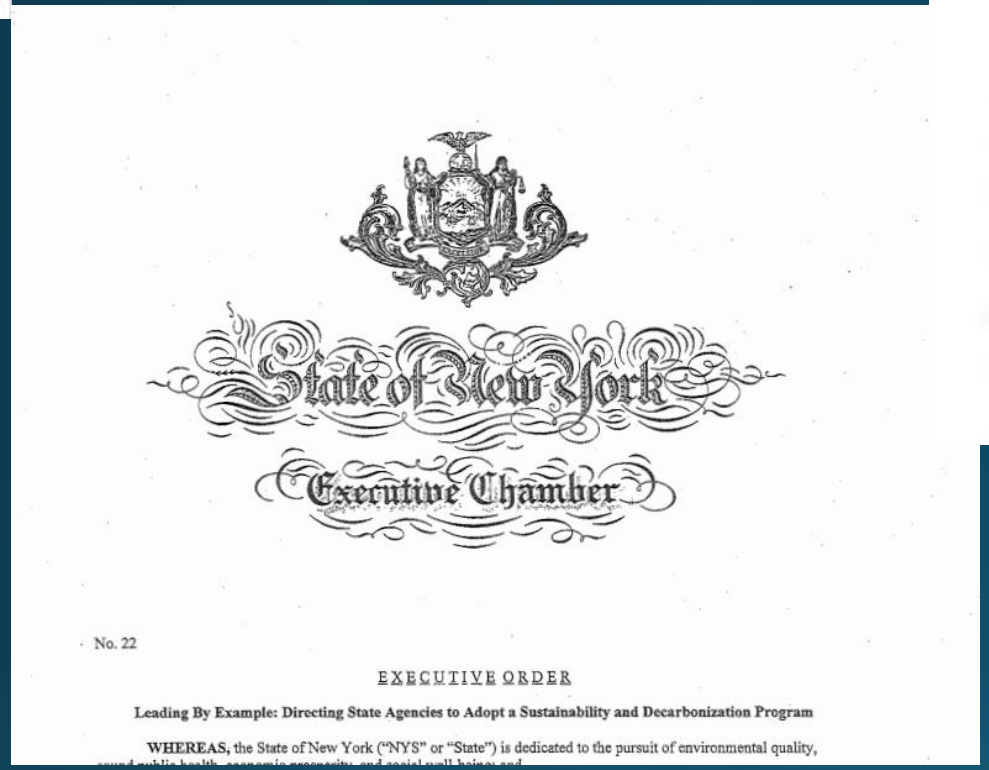
Specification: 9.5mm<30m WMA/Poly

Gradation Type: dense

Mix Design Method: superpave

Nominal Maximum Aggregate Size: 9.5 mm

Performance Grade of Asphalt Binder: PG 6464-22 22



State of New York

Executive Chamber

No. 22

EXECUTIVE ORDER

Leading By Example: Directing State Agencies to Adopt a Sustainability and Decarbonization Program

WHEREAS, the State of New York ("NYS" or "State") is dedicated to the pursuit of environmental quality,

NEW YORK STATE OF OPPORTUNITY. **Department of Transportation**

ENGINEERING BULLETIN

EB 23-046

Title: **ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS)**

Approved:

Russell Thielke, Director Office of Technical Services

12-18-2023 Date

Expires one year after issue unless replaced sooner

ADMINISTRATIVE INFORMATION:

- This Engineering Bulletin (EB) is effective beginning with projects submitted for the letting of 01/01/2024.
- This EB does not supersede any Issuances, shelf notes, or special notes.

PURPOSE: The purpose of this EB is to issue a special note pertaining to Environmental Product Declarations (EPDs) for asphalt mixtures, concrete mixtures, steel, and glass.

TECHNICAL INFORMATION: The special note included in this document informs the contractor of the need to submit EPDs. For this purpose, EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

Environmental Product Declaration (EPD) will be required for all projects over 8,000 tons of asphalt and 200 cy of concrete in 2025. If EPD's are Existing, they shall be submitted in 2024

For permanently incorporated and temporary use construction materials manufactured and supplied **after January 1st, 2024**, the contractor shall ensure that available EPDs are submitted from approved suppliers (manufacturers, plants, mills, fabricators, etc.…) for asphalt mixtures, concrete mixtures (excluding Precast), glass, and steel items supplied to the project, regardless of quantity. Suppliers are not required to develop new EPDs if one is not already available to submit.

In addition to the above listed requirement, **effective January 1st, 2025**, the contractor shall ensure that EPDs are submitted from suppliers: for asphalt mixtures, concrete mixtures (excluding Precast), glass, and steel items when the quantity supplied to the project exceeds the values listed below. Units that are given in this document may differ from units listed in pay items and therefore must be converted by the contractor.

EPDs are required for these types of construction materials when the stated quantity is met or exceeded:

- Asphalt — 8,000 Tons (per mix design)
- Concrete — 200 CY (per mix design)
- Glass — 2000 SF
- Steel (listed types)
  - Rebar (Reinforcing Steel) – 20,000 Pounds (per fabrication location)
  - Hollow Structural Sections (Structural Steel, Bridge Railing, Guiderail) – 15,000 Pounds (per fabrication location)
  - Fabricated Steel Plate (Structural Steel) – 15,000 Pounds (per fabrication location)
  - Hot-Rolled Sections (Structural Steel) – 15,000 Pounds (per fabrication location)
  - Cold-Formed and Galvanized (Structural Steel, Guiderail Posts) – 15,000 Pounds (per fabrication location)

The Contractor must ensure that suppliers submit the required EPD(s) to NYSDOT Main Office Materials Bureau. EPDs may be submitted to the Materials Bureau through an attachment by emailing materials@dot.ny.gov with the word EPD and the contract number in the subject line. Emails should contain relevant project information including, Project Name, PIN, Project Location, and the type of material the EPD is being submitted for.

2026 – All mixes are required to have an EPD

A Specifications Story

Marshall vs. Superpave

(All Spec Stories begin with this)

SHRP
Strategic Highway Research Program

- In 1987, the U.S. Congress authorized the Strategic Highway Research Program (SHRP) — a five-year, applied research initiative — to develop and evaluate techniques and technologies to combat the deteriorating conditions of the nation's highways and to improve their performance, durability, safety, and efficiency.

SHRP and Superpave

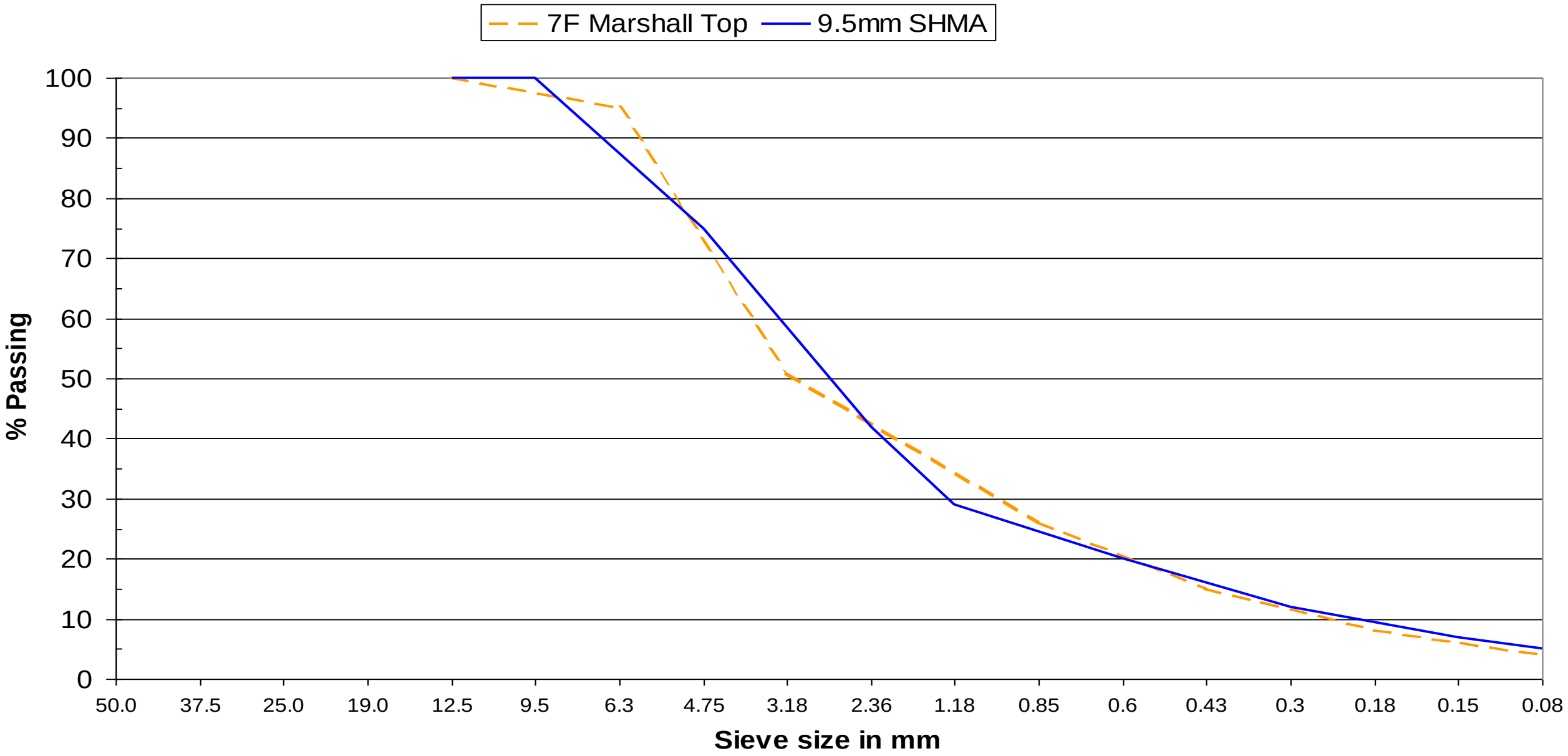
- Superpave System allows designers to select pavements based on weather and traffic conditions: 3 Components of Superpave

1. Asphalt binder specification.
2. Design and analysis system based on the volumetric properties of the asphalt mix.
3. Mix-analysis tests and performance-prediction models.

Superpave – Everything flows from these changes!

- NYSDOT & Industry (NYMaterials) worked closely to address Superpave Mix Issues
- 2008 – Decreased air void requirements from 4.0 to 3.5%
- Adjusted gyration levels
- Fined up the mixes as well
- End result was more AC in the mixes – durability & crack resistance
- Latest change requires an increase of 0.2% AC with RAP mixes greater than 10% (80% RAP Binder Contribution Concept)

Top Course


7F Marshall Top
9.5mm SHMA
100
90
80
70
60
50
40
30
20
10
0
% Passing
50.0
37.5
25.0
19.0
12.5
9.5
6.3
4.75
3.18
2.36
1.18
0.85
0.6
0.43
0.3
0.18
0.15
0.08
Sieve size in mm

SHRP and Superpave

- Probably one of the biggest benefits was grading the PG binders according to weather conditions.
- 2008-09: ***A-typical flushing.*** Change from -28 state to a -22 state. And restrictions on PPA.

- Ex) PG 64-22 High temp of 64° C (147 F)

  Low Temp of -22°C (-8 F)

2005 - Preservation was a Mature Market

- Fog Seal
- Chip Seal
- Slurry Seal
- Micro-surfacing
- Nova Chip
- Local/Proprietary Mixes
- 9.5mm mix (Superpave)
- Mill & Fill Application

NYS ThinLay (6.3 mm) Mix

What we thought was a good idea 20 years ago….

A unique mix which could be easily produced with a high-quality engineered application

Great idea now!

Dealing with same issues 20 years later:

- Agency Budgets
- Liquid Prices/Supply
- Limited Resources
- Pavement Preservation

6.3 MM HMA with Polymer ThinLift Overlay

6.3 mm applications (and other considerations)

- Micro milling and thinlays are a great combination
- Drum has 3X's the teeth
- Gives finer texture which allows for thin treatments

Quantifying the Benefits of PMA

- 6.3mm was instrumental in the evolution of polymer usage in NYS
- Decreased Distress Levels
- Increased Service Life
- LCCA Can Be Utilized to Understand the True Economics of PMA (Walaa PEC Study)
- Expectation is pavements will have an increased service life of 50% with polymer in the surface course only (LCA)
- NYS DOT is 100% Polymer Modified Liquid (6 month increase in life covers cost of polymer)

New PG Grading System
(MSCR-Multiple Stress Creep Recovery)

CURRENT GRADE M320	NEW GRADE MP-19	
PG 58-34	PG 58E-34	
PG 64-22	PG 64S-22	(Standard Upstate)
PG 64-22P	PG 64V-22	(Polymer Upstate)
PG 70-22	PG 64H-22	(Standard Downstate)
PG 76-22	PG 64E-22	(Polymer Downstate)

DATA is Power!!

Spec Consistency Helps All

- NYSDOT Specs are the latest/greatest specs and Information
- Industry's goal is to get all agencies/specifiers on the same specs
- Good specs protect all: Owner/Agency, Contractor, Producer
- Specs which only protect owner/agency will drive up cost. Specs which are in favor of contractor/producer will establish risk

Index of US Customary Standard Sheet Groups

GROUP ID	SPECIFICATION SECTION
203	Excavation and Embankment
204	Controlled Low Strength Material (CLSM)
207	Geosynthetics
209	Soil Erosion and Sediment Control
212	Rock Slope Reinforcement & Catchment Systems
402	Hot Mix Asphalt (HMA) Pavements
502	Portland Cement Concrete Pavement
554	Fill Type Retaining Walls
601	Architectural Pavements and Treatments
603	Culverts and Storm Drains
604	Drainage Structures
605	Underdrains
606	Guide Railing and Concrete Barrier
607	Fences
608	Sidewalks, Driveways and Bicycle Paths
609	Curbing, Curb and Gutter
611	Planting
619	Work Zone Traffic Control
624	Paved Gutters

Why NYSDOT Spec?
Spec NYSDOT Mixes & Items

- Guarantees a certain amount of Testing & QC

  Materials Method 5.16 – Mix Design and Verification Procedure

  Materials Procedure 401 – QC & QA Procedures for HMA/WMA Production

  Many other Methods & Procedures –

  MP 402-02, MP 417-01, MP 417-02, etc.

RAP it Up

RAP Benefits for Pavement Owners

WHAT IS RAP?

Reclaimed asphalt pavement (RAP) is the terminology used for materials generated when asphalt pavements are removed for reconstruction, resurfacing, or other construction activities. RAP consists of high-quality, graded aggregates that are coated with durable asphalt binder.

AVERAGE PERCENTAGE OF RAP USED IN EACH STATE, 2019 (NAPA IS-138, 2020)

HOW AND WHERE IS RAP RECYCLED?

89.2 million tons of RAP are used annually in new asphalt pavement construction in the United States. As a fully recyclable product, RAP has many applications, and can be used over and over again, reducing the need for costly virgin materials. More than **94%** of RAP is used in new asphalt mixtures, while a small percentage is incorporated into other civil engineering applications like unbound aggregate bases. Nationally, RAP is utilized at an average rate of **21.1%** in new asphalt mixtures.

Photo by Caterpillar

Benefits of recycling asphalt pavements

SUSTAINABILITY

The net reduction of greenhouse gas emissions from the use of RAP in new asphalt mixtures from 2009 to 2019 was estimated at **21.2 million tonne** CO_2e, equivalent to the annual emissions from approximately **460,000 passenger vehicles**. In 2019, more than **97 million tons** of RAP were recycled in new asphalt pavements and other civil engineering applications, saving **58.9 million cubic yards** of landfill space.

COST SAVINGS

$3.3 billion are saved every year by using RAP – making asphalt pavement both environmentally and economically sustainable. Nationally, the average **21.1%** RAP used in new asphalt mixtures saved **$7.80 per ton**, compared to mixtures using all virgin materials.

ASPHALT PAVEMENTS CAN HELP PROJECT OWNERS EARN CREDITS UNDER THE LEED RATING SYSTEM.

PERFORMANCE

Asphalt mixtures containing high levels of RAP have been in place and performing for many decades. Researchers have conducted laboratory and field evaluations on mixtures containing high levels of RAP and have indicated that the structural performance of recycled mixes is equal and, in some instances, better than that of the conventional mixes[1]. Additionally, several studies have found that RAP stockpiles had less variability than virgin aggregate stockpiles and that using higher percentages of RAP did not lead to increased variability of the asphalt mixtures produced[2,3,4]. The completed research has also generated several best management practices to assist producers in supplying high-quality asphalt mixtures containing RAP.

ON AVERAGE, USING RAP INSTEAD OF NEW MATERIALS SAVES $7.80 PER TON.

STUDIES SHOW THAT OVERLAYS WITH ENGINEERED MIXES CONTAINING 30% RAP PERFORM JUST AS WELL AS VIRGIN ASPHALT MIXES[5].

NAPA
NATIONAL ASPHALT PAVEMENT ASSOCIATION

Do your part to recycle and reap the benefits at the same time! **Click or scan to learn more about the benefits of recycling asphalt pavements.**

NYSDOT Allowable RAP Percentages

Mix Type	Standard Mix	RAP
6.3mm	N/A	20.0%
9.5 mm	Type 7 Top	20.0%
12.5 mm	Type 6 Top	20.0%
19.0 mm	Type 3 Binder	20.0%
25.0 mm	Base/Binder	20.0%
37.5 mm	Type 1 Base	30.0%

NYC – 30%/40% minimum RAP in all mixes

Looking at increasing with Performance Testing!!!

Governors CLCPA (Climate Act) will push RAP percentages up over next few years – LCA calculations – RAP is one of top sustainable efforts

City of Yonkers – High RAP Project

- 12.5 mm NMAS, 40% RAP + Rejuvenator was used in surface mix in place of a typical 20% RAP mix.
- Success of project (appearance, compaction and workability, performance) has led to incorporation of allowance for similar designs in bids this season
- Two 40% RAP Projects were bid by NYSDOT in 2024

NYSDOT QQ CR 115 – Salt Point Turnpike

- Approx. 7 miles of Mill & Fill
  - West Road (RM 2050 +300ft) to RM 2100
  - RM 2101 to Taconic State Parkway (RM2120 +100ft)
- Approx 10,700 tons
  - 12.5 < 30 WMA 70 Series
  - PG 64E-22
  - 40% RAP
    - With High Rap/WMA additive
- Material produced out of Callanan Industries - East Kingston facility (H0282)

Other Recycling in HMA

We don't want to make our roads linear landfills, but other products have been successfully recycled into HMA as aggregate replacement and AC modifiers

- Shingles (RAS)
- Glass
- Plastic (Lots of new research)
- Concrete
- Rubber & tires (CRM)

Warm Mix Asphalt (WMA)
Or
Workability Mix Additive (WMA)

(Began in NYS in 2005)

Advantages of Lower Temperatures

- Lower fumes and emissions (~30-90%)
- Lower energy consumption (~30%)
- Lower plant wear
- Decreased binder aging
- Early site opening
- Cool weather paving
- Compaction aid for stiff mixes
- Cooler working conditions
- More sustainable / Better EPD - GWP

Yellowstone Paving

3 Categories of Warm Mixes

- Foaming
  - Water Injection
  - Material Foaming
- Chemical Additives

- Organic (Wax) Additives

Where are we today?

- On September 21, 2021, NYSDOT issued Engineering Bulletin: EB21-047 – Revisions to the Comprehensive Pavement Manual (CPDM) Chapter 6 – Section 6.2

- This revision moved NYSDOT to 100% Warm Mix Asphalt with a true temperature reduction (295 at the paver).

- NYSDOT Standard Spec Book already has "404" Items. All projects from here on out will incorporate 404 Items instead of 402 Items (Hot Mix Asphalt). As of January 1, 2023, 402 Items no longer exist in Spec Book?

- NYSDOT is now 100% Polymer Modified Asphalt and 100% Warm Mix Asphalt

NEW YORK STATE OF OPPORTUNITY. Department of Transportation | ENGINEERING BULLETIN | EB 21-047

Title: REVISIONS TO THE COMPREHENSIVE PAVEMENT DESIGN MANUAL (CPDM) CHAPTER 6 – SECTION 6.2 HOT MIX ASPHALT

Approved:

/s/ Russell D. Thielke
Russell D. Thielke, P.E.
Acting Director, Materials Bureau

09/21/2021
Date

Expires one year after issue unless replaced sooner

adhesive, and repairs of pavement, and filling of cracks will be paid separately except when the joint adhesive is applied under §402-3.01E.

Payment of Quality Adjustments will be made based on the number of Quality Units multiplied by the fixed index price for Quality Adjustment to HMA items listed in the contract documents for the quantity placed on the day the Quality Units represent.

Payment will be made under:

Item No.	Item	Pay Unit
402.011904	Type 2 F9, Asphalt-Treated Permeable Base Course	Ton
402.017904	Truing & Leveling F9, HMA, 70 Series Compaction	Ton
402.018904	Truing & Leveling F9, HMA, 80 Series Compaction	Ton
402.058904	Shim Course F9, HMA	Ton
402.068104	6.3 F1 Top Course HMA, 80 Series Compaction	Ton
402.068204	6.3 F2 Top Course HMA, 80 Series Compaction	Ton
402.068304	6.3 F3 Top Course HMA, 80 Series Compaction	Ton
402.095104	9.5 F1 Top Course HMA, 50 Series Compaction	Ton
402.095204	9.5 F2 Top Course HMA, 50 Series Compaction	Ton
402.096104	9.5 F1 Top Course HMA, 60 Series Compaction	Ton
402.096204	9.5 F2 Top Course HMA, 60 Series Compaction	Ton
402.096304	9.5 F3 Top Course HMA, 60 Series Compaction	Ton
402.097104	9.5 F1 Top Course HMA, 70 Series Compaction	Ton
402.097204	9.5 F2 Top Course HMA, 70 Series Compaction	Ton
402.097304	9.5 F3 Top Course HMA, 70 Series Compaction	Ton
402.098104	9.5 F1 Top Course HMA, 80 Series Compaction	Ton
402.098204	9.5 F2 Top Course HMA, 80 Series Compaction	Ton
402.098304	9.5 F3 Top Course HMA, 80 Series Compaction	Ton
402.098904	9.5 F9 T&L or Shoulder Course HMA, 80 Series Compaction	Ton
402.125104	12.5 F1 Top Course HMA, 50 Series Compaction	Ton
402.125204	12.5 F2 Top Course HMA, 50 Series Compaction	Ton
402.126104	12.5 F1 Top Course HMA, 60 Series Compaction	Ton
402.126204	12.5 F2 Top Course HMA, 60 Series Compaction	Ton
402.126304	12.5 F3 Top Course HMA, 60 Series Compaction	Ton
402.127104	12.5 F1 Top Course HMA, 70 Series Compaction	Ton
402.127204	12.5 F2 Top Course HMA, 70 Series Compaction	Ton
402.127304	12.5 F3 Top Course HMA, 70 Series Compaction	Ton
402.128104	12.5 F1 Top Course HMA, 80 Series Compaction	Ton
402.128204	12.5 F2 Top Course HMA, 80 Series Compaction	Ton
402.128304	12.5 F3 Top Course HMA, 80 Series Compaction	Ton
402.128904	12.5 F9 T&L or Shoulder Course HMA, 80 Series Compaction	Ton
402.195904	19 F9 Binder Course HMA, 50 Series Compaction	Ton
402.196904	19 F9 Binder Course HMA, 60 Series Compaction	Ton
402.197904	19 F9 Binder Course HMA, 70 Series Compaction	Ton
402.198904	19 F9 Binder Course HMA, 80 Series Compaction	Ton
402.255904	25 F9 Binder Course HMA, 50 Series Compaction	Ton
402.256904	25 F9 Binder Course HMA, 60 Series Compaction	Ton
402.257904	25 F9 Binder Course HMA, 70 Series Compaction	Ton
402.258904	25 F9 Binder Course HMA, 80 Series Compaction	Ton
402.376904	37.5 F9 Base Course HMA, 60 Series Compaction	Ton

SECTION 404 - ~~WARM MIX~~ ASPHALT ~~(WMA)~~ PAVEMENTS

404-1 DESCRIPTION. These specifications apply to all plant mixed asphalt produced at a production facility under Section 401 *Plant Production*

This work will consist of providing, placing, and performing density monitoring of one or more courses of asphalt pavement constructed on the prepared foundation in accordance with the contract documents or as directed by the Engineer.

~~These specifications apply to all plant mixed Warm Mix Asphalt (WMA) produced at a production facility under Section 401 *Plant Production*, irrespective of aggregate gradation, type, and amount of WMA material or use. WMA is standard HMA produced using a WMA technology that can result in production mixture temperatures of 295°F or lower.~~

~~This work will consist of providing, placing, and performing density monitoring of one or more courses of WMA pavement constructed on the prepared foundation in accordance with the contract documents or as directed by the Engineer.~~

~~The words "hot mix asphalt" and "HMA" in the Standard Specifications and other documents referenced by this specification shall apply to WMA.~~

404-2 – MATERIALS. ~~Requirements of §401-2 and §402-2 shall apply except as noted herein.~~

404-2.01 General. Aggregate, Performance Graded (PG) Binder, and Warm Mix Asphalt Technology shall be from suppliers listed in the Department's Approved List for Fine and Coarse Aggregates, Performance Graded (PG) Binders and Warm Mix Asphalt Technology for Asphalt Paving, respectively. Mineral filler shall meet the requirements of §703-08.

Item No.	Item	Pay Unit
404.011901	Type 2 F9, Asphalt-Treated Permeable Base Course	Ton
404.017901	Truing & Leveling F9, Asphalt, 70 Series Compaction	Ton
404.018901	Truing & Leveling F9, Asphalt, 80 Series Compaction	Ton
404.058901	Shim Course F9, Asphalt	Ton
404.068101	6.3 F1 Top Course Asphalt, 80 Series Compaction	Ton
404.068201	6.3 F2 Top Course Asphalt, 80 Series Compaction	Ton
404.068301	6.3 F3 Top Course Asphalt, 80 Series Compaction	Ton
404.095101	9.5 F1 Top Course Asphalt, 50 Series Compaction	Ton
404.095201	9.5 F2 Top Course Asphalt, 50 Series Compaction	Ton
404.096101	9.5 F1 Top Course Asphalt, 60 Series Compaction	Ton
404.096201	9.5 F2 Top Course Asphalt, 60 Series Compaction	Ton
404.096301	9.5 F3 Top Course Asphalt, 60 Series Compaction	Ton
404.097101	9.5 F1 Top Course Asphalt, 70 Series Compaction	Ton
404.097201	9.5 F2 Top Course Asphalt, 70 Series Compaction	Ton
404.097301	9.5 F3 Top Course Asphalt, 70 Series Compaction	Ton
404.098101	9.5 F1 Top Course Asphalt, 80 Series Compaction	Ton
404.098201	9.5 F2 Top Course Asphalt, 80 Series Compaction	Ton
404.098301	9.5 F3 Top Course Asphalt, 80 Series Compaction	Ton
404.098901	9.5 F9 T&L or Shoulder Course Asphalt, 80 Series Compaction	Ton
404.125101	12.5 F1 Top Course Asphalt, 50 Series Compaction	Ton
404.125201	12.5 F2 Top Course Asphalt, 50 Series Compaction	Ton
404.126101	12.5 F1 Top Course Asphalt, 60 Series Compaction	Ton
404.126201	12.5 F2 Top Course Asphalt, 60 Series Compaction	Ton
404.126301	12.5 F3 Top Course Asphalt, 60 Series Compaction	Ton
404.127101	12.5 F1 Top Course Asphalt, 70 Series Compaction	Ton
404.127201	12.5 F2 Top Course Asphalt, 70 Series Compaction	Ton
404.127301	12.5 F3 Top Course Asphalt, 70 Series Compaction	Ton
404.128101	12.5 F1 Top Course Asphalt, 80 Series Compaction	Ton
404.128201	12.5 F2 Top Course Asphalt, 80 Series Compaction	Ton
404.128301	12.5 F3 Top Course Asphalt, 80 Series Compaction	Ton
404.128901	12.5 F9 T&L or Shoulder Course Asphalt, 80 Series Compaction	Ton
404.125901	12.5 F9 Binder Course, 50 Series Compaction	Ton
404.126901	12.5 F9 Binder Course, 60 Series Compaction	Ton
404.127901	12.5 F9 Binder Course, 70 Series Compaction	Ton
404.195901	19 F9 Binder Course Asphalt, 50 Series Compaction	Ton
404.196901	19 F9 Binder Course Asphalt, 60 Series Compaction	Ton
404.197901	19 F9 Binder Course Asphalt, 70 Series Compaction	Ton
404.198901	19 F9 Binder Course Asphalt, 80 Series Compaction	Ton
404.255901	25 F9 Binder Course Asphalt, 50 Series Compaction	Ton
404.256901	25 F9 Binder Course Asphalt, 60 Series Compaction	Ton
404.257901	25 F9 Binder Course Asphalt, 70 Series Compaction	Ton

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CHAPTER 6 – SECTION 6.2 HOT MIX ASPHALT

Approved:

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Acting Director, Materials Bureau

Expires one year after issue unless replaced sooner

- This same EB had another important change to the CPDM. Industry has pushed for this change for years.
- Revised Lift Thickness table to match the 3X to 4X the NMAS guidance: Chapter 6, Page 6-12 (4X Recommended)
- All dense graded mixes have the same structure: .44

Table 6-7 Limits on Permissible Lift Thicknesses

Maximum Nominal Aggregate Size (mm)	Minimum Lift Thickness (inches)	Maximum Lift Thickness (inches)
37.5	4	6
25.0	3	5
19.0	2½	4
12.5	2	2½
9.5	1½	2
6.3	¾	1

NYSDEC's Subpart 220-3 (Blue Smoke Capture Requirement)

- Moving from modeling to Engineering Controls on Asphalt Plants
- Warm Mix Asphalt is a potential solution to meet requirements of the new air emissions standards for asphalt facilities
- Pilots to utilize WMA to meet these requirements are beginning this year
- Asphalt Companies will be making decisions about future investments into their facilities

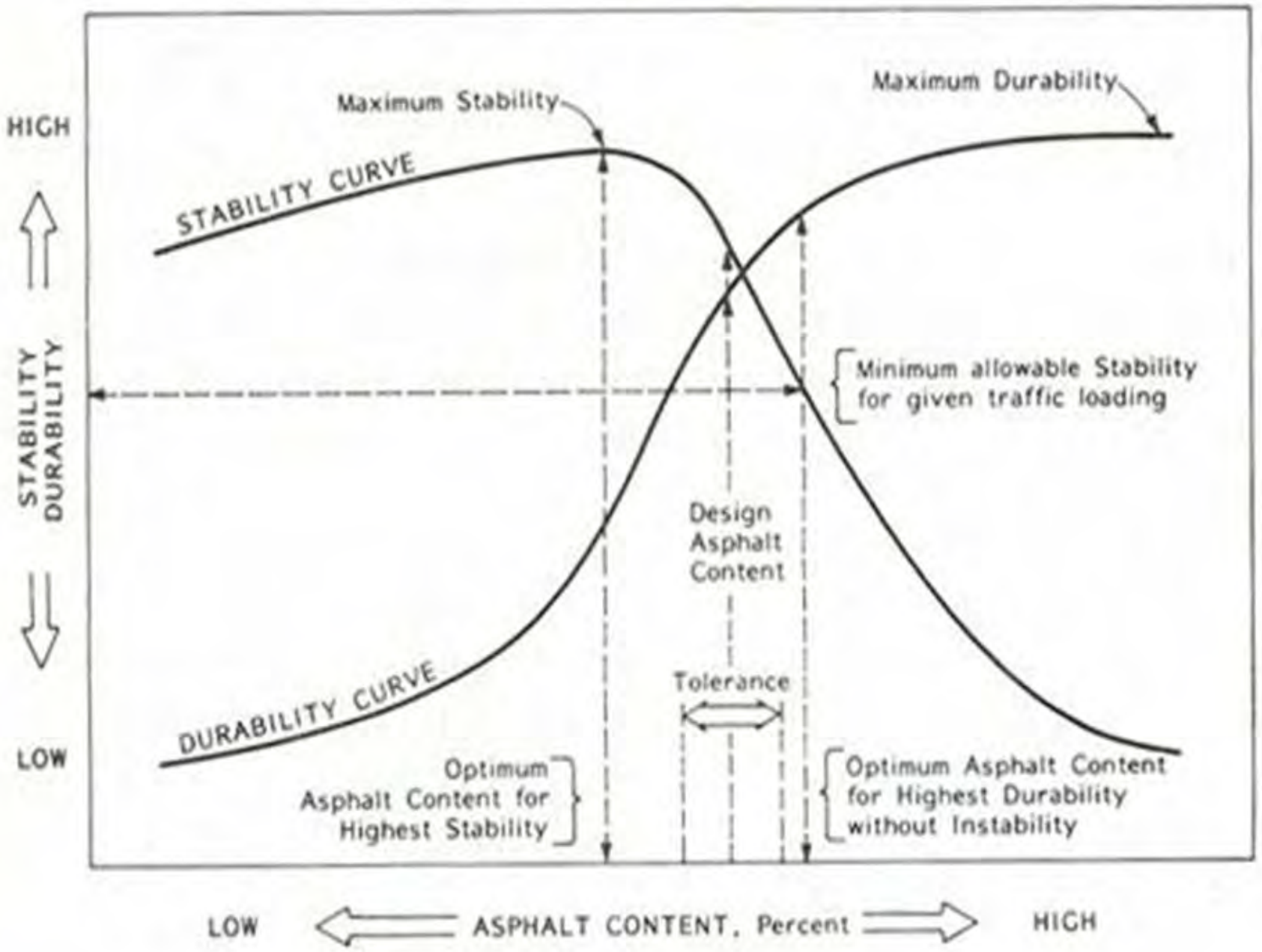
Remember: We are in NYS. Still a very progress state politically and we have CLCPA in statute.

BMD: Balanced Mix Design

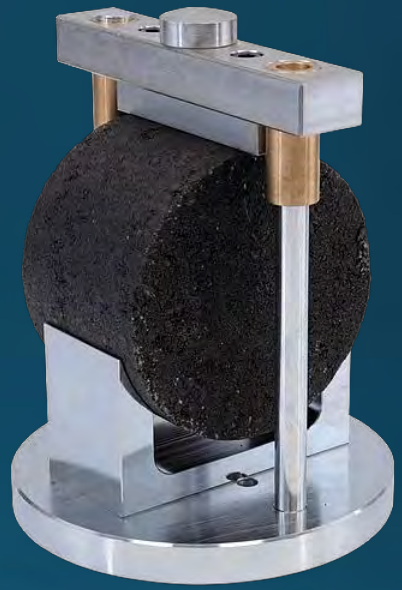
&

PEM: Performance Engineered Mixtures (NYS's Version of BMD)

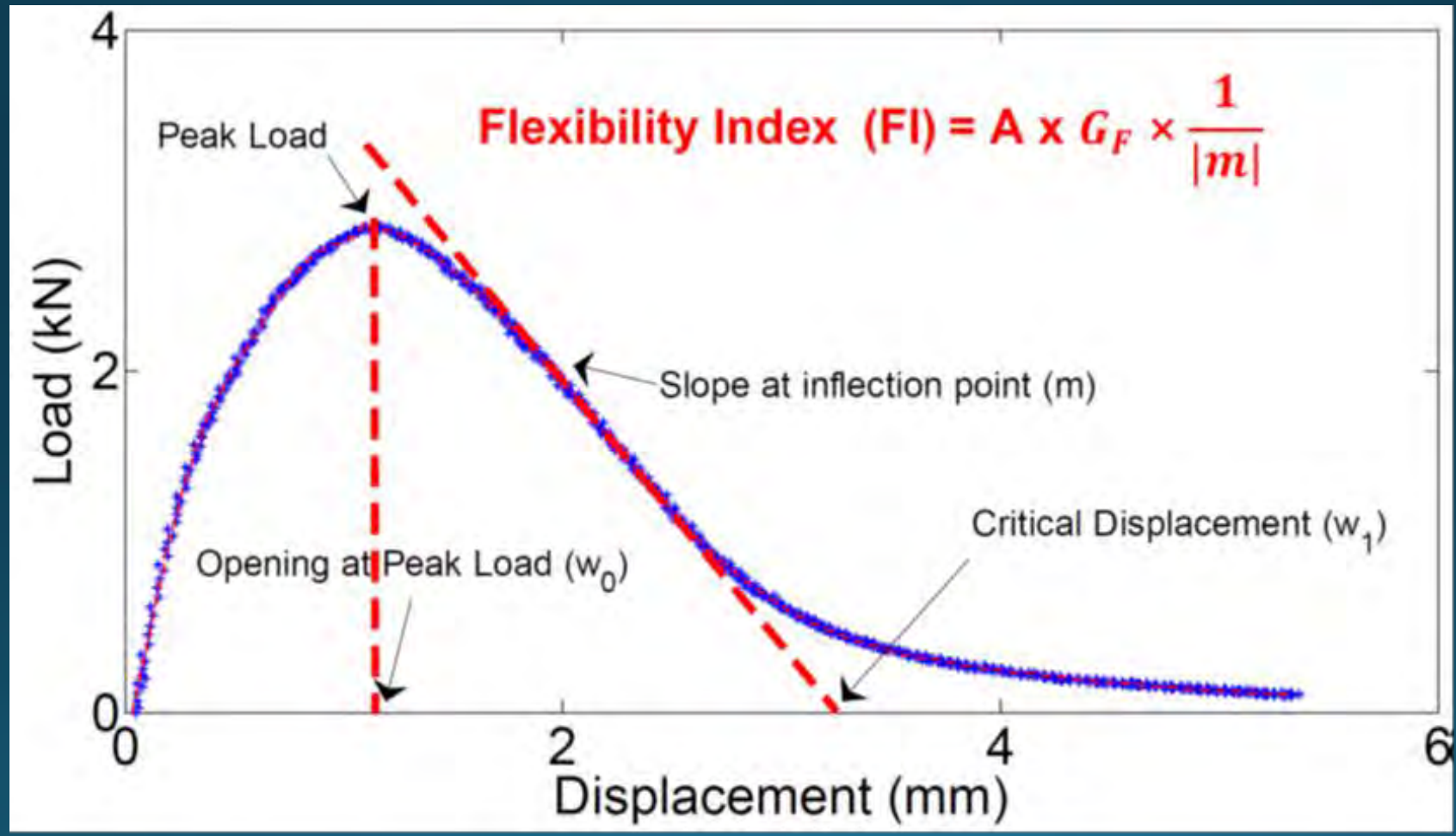
- Balanced Mix Design (BMD) Resource Guide - National Asphalt Pavement Association


Maximum Stability
Maximum Durability
HIGH
STABILITY CURVE
STABILITY
DURABILITY
Minimum allowable Stability
for given traffic loading
Design
Asphalt
Content
Tolerance
DURABILITY CURVE
LOW
Optimum
Asphalt Content for
Highest Stability
Optimum Asphalt Content
for Highest Durability
without Instability
LOW
ASPHALT CONTENT, Percent
HIGH

Rutting Test



Cracking Tests


Flexibility Index (FI) = A x G_F × $\frac{1}{|m|}$
Peak Load
Slope at inflection point (m)
Critical Displacement (w_1)
Opening at Peak Load (w_0)
Load (kN)
Displacement (mm)
0
2
4
6

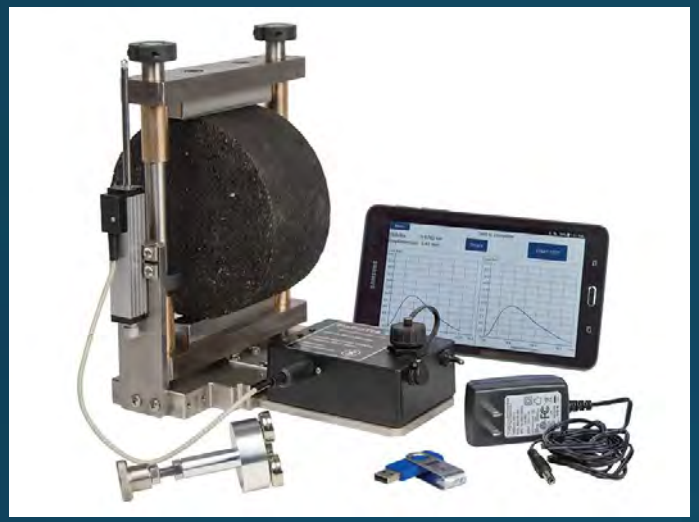
Equipment Needs

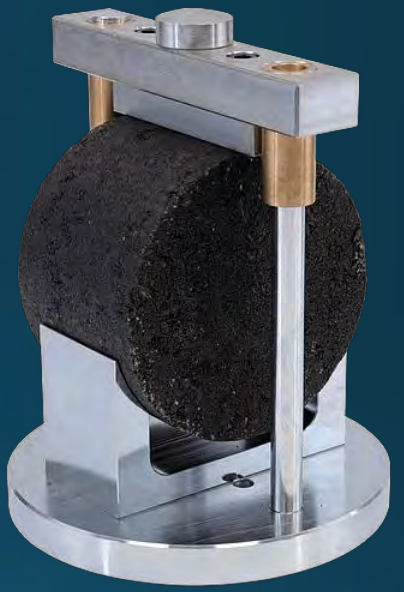
Test Press

- Capable of maintaining a constant deformation rate of 50 ± 2.0 mm/min.
- Contain and Internal or External Displacement measuring device such as a linear variable differential transformer (LVDT)
- Data acquisition system capable of collecting data at a minimum of 40 sampling data points per second to obtain a smooth load curve

Equipment Needs cont'd

Jigs





Version 1 (2019)

Task 2. Number of Specimens (Testing Lab).

The testing laboratory will make the following number of specimens for performance testing:

a. Overlay Tester – 5 specimens
b. Asphalt Pavement Analyzer (APA) or Hamburg Wheel Tracker – 6 specimens
c. Semi-circular Bend (SCB) – 4 specimens
d. Ideal-CT – 3 specimens
e. High Temperature Indirect Tension – 3 specimens
f. Gradation
g. Asphalt content using chemical extraction.

Task 3. Number of Specimens (Producer Lab).

The producer will make the following number of specimens for performance testing:

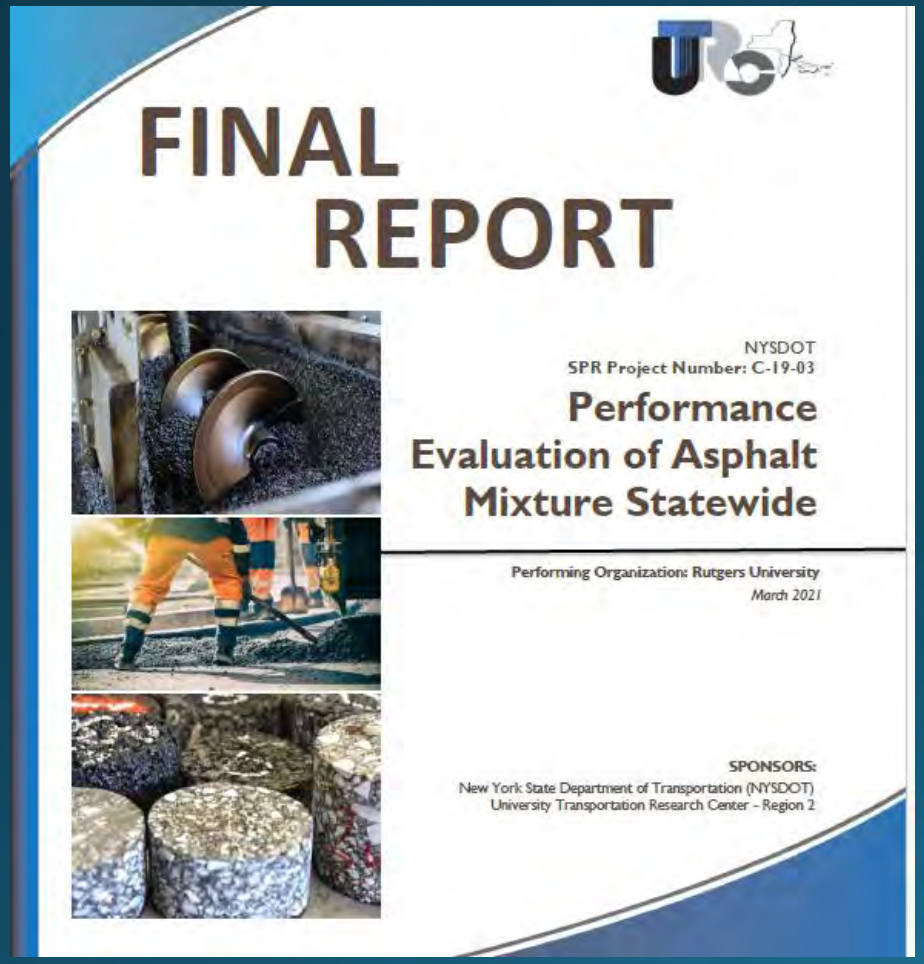
a. Semi-circular Bend (SCB) – 4 specimens
b. Ideal-CT – 3 specimens
c. High Temperature Indirect Tension – 3 specimens

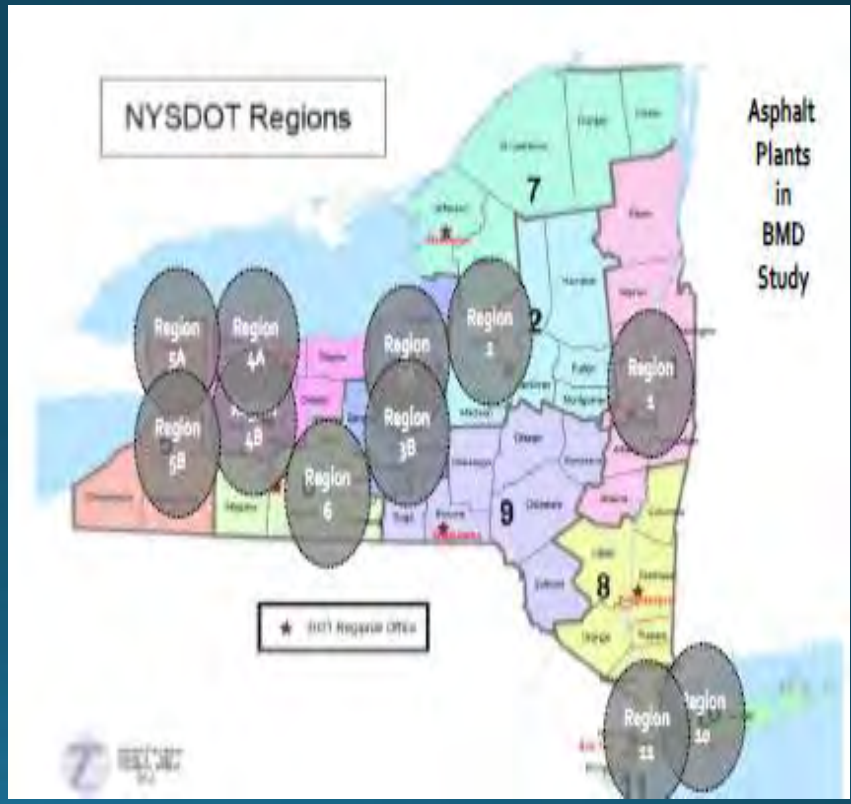
Task 4.

Test Results. The Producer will submit both the testing lab and Produce lab results to the Materials Bureau once the tests are completed. In addition, the Producer shall submit the volumetric results of the mixture during the production for the day selected. The QAF will be 1.00

Page 1 of 1

NYSDOT Research Study





Version 5 cont'd

Table 3 - Production Testing and Sampling

Plant Test Property	Test Method	Producer Testing Frequency[1]	Department Testing Frequency[2]
PG Binder Content	Automation, Ignition Oven (NY 400-13C), or AASHTO T 164 Method A or B	Every Sublot	Every Lot
Aggregate Gradation	AASHTO T27	Every Sublot	Every 3 Lots
Air Voids	MM 5.16, AASHTO T269	Every 2 Lots	Every 3 Lots
Indirect Tensile Strength	ASTM D6931-17	Every 2 Lots	Every 3 Lots
Determination of CT Index	ASTM D8225-19	Every 2 Lots	Every 3 Lots

1. All sampling at the plant
2. Sampling at the plant or paver

Mixture Production

Asphalt Mixture requirements are as follows:

Table 4 - Mixture Gradation, Absolute Difference Value

Limits (Test Value – JMF Value)	Sieve Sizes		
	#50 and Larger (300 µm and Larger)	#100 (150 µm)	#200 (75 µm)
Production	0.0 – 5.0	0.0 – 4.0	0.0 – 2.0
Evaluation	5.0 – 8.0	4.0 – 6.0	2.0 – 4.0
Action	>8.0	>6.0	>4.0

Table 5 - Mixture Performance Limits

PEM Limits	IDEAL CT	HT-IDT (psi)
Production	≥ 135.0	≥ 30.0
Evaluation	108.0 - 134.9	24.0 - 29.9
Action	< 108.0	< 24.0

Table 6 – Air Void Limits

Limits	Air Voids
Production	2%-5%
Evaluation	<2% or >5%

Version 6 (2025)

Table 1 – Performance Testing Criteria

Test Methods	Criteria	Min. Design Value	Max. COV
ASTM D6931-17 Indirect Tensile Strength Test	IDT Strength	30 psi	≤25
ASTM D8225-19 Determination of CT Index	CT Index	135	≤25

Designs may use an air void content between 2% and 5%.

Table 2 - Performance Test Sample Fabrication and Design Criteria

		High Temperature IDT	IDEAL CT index
Test Method		ASTM D6931	ASTM D8225
No. of Samples		3	
Load Rate (mm/min)		50±2	
Height (mm)		62±1[1]	
Aging	**Lab mixed**	2 hours loose mix conditioning at Compaction Temperature	
	Production Mix Sampled at Plant (Choose One Option)	2 hours **covered loose mix** conditioning at Compaction Temperature	
		If sample temperature falls below compaction temperature, Reheat loose mix to Compaction Temperature	
	Production Mix Sampled at Paver	Reheat loose mix to Compaction Temperature	
Compaction Temperature, °F		V Grade = 270°F ± 5°F E Grade = 295°F ± 5°F	
Air Voids, %		7 ± 1.0	7 ± 0.5
Test Temperature, °F		111°F ± 2.0°F	77°F ± 2.0°F
Water Bath Conditioning		111°F for 2 hrs ± 10 min.	77°F for 2 hrs ± 10 min.

[1]Modified height from ASTM D6931-17

NYSDOT Performance Engineered Mix Design Special Note
1/4/2024

Version 6 cont'd

Table 3 - Production Testing and Sampling

Plant Test Property	Test Method	Producer Testing Frequency[1]	Department Testing Frequency[2]
PG Binder Content	Automation, Ignition Oven (NY 400-13C), or AASHTO T 164 Method A or B	Every Sublot	Every Lot
Aggregate Gradation	AASHTO T27	Every Sublot	Every 3 Lots
Air Voids	MM 5.16, AASHTO T269	Every 2 Lots	Every 3 Lots
Indirect Tensile Strength	ASTM D6931-17	Every 2 Lots	Every 3 Lots
Determination of CT Index	ASTM D8225-19	Every 2 Lots	Every 3 Lots

1. All sampling at the plant
2. Sampling at the plant or paver

Table 4 - Mixture Gradation, Absolute Difference

Limits (Test Value – Daily Target Value)	Sieve Sizes		
	#50 and Larger (300 µm and Larger)	#100 (150 µm)	#200 (75 µm)
Production	0.0 – 5.0	0.0 – 4.0	0.0 – 2.0
Evaluation	5.0 – 8.0	4.0 – 6.0	2.0 – 4.0
Action	>8.0	>6.0	>4.0

Table 5 - Mixture Performance

PEM Limits	IDEAL CT Index	HT-IDT (psi)
Production	≥ 135.0	≥ 30.0
Evaluation	108.0 - 134.9	24.0 - 29.9
Action	< 108.0	< 24.0

Table 6 –Air Voids

Limits	Air Voids
Production	2%-5%
Evaluation	<2% or >5%

Why PEM (BMD)? – Asphalt (Performance Engineered Mixtures)

- SHRP and Superpave never gave us the tools to determine the quality of the mix. Volumetrics tell us things, but whether it is quality is debatable.
- PEM gives us this opportunity with as close to real time information as possible.
- Prior to PEM, we tested new ideas by putting them on the road and waiting 5 years. Or we utilized a research center which didn't always give us timely results.
- PEM will allow us to innovate as we have always done but with confidence that any changes, we try will improve the mix out of the plant. Qualify our mixes!
- **PEM will change over time as new information becomes available.**

WBDO
Waterproofing Bridge Deck Overlay

WBDO
Waterproofing Bridge Deck Overlay

ITEM 402.90710118 WATERPROOFING BRIDGE DECK OVERLAY F1, 70 SERIES COMPACTION
ITEM 402.90720118 WATERPROOFING BRIDGE DECK OVERLAY F2, 70 SERIES COMPACTION
ITEM 402.90730118 WATERPROOFING BRIDGE DECK OVERLAY F3, 70 SERIES COMPACTION

DESCRIPTION

This work shall consist of the formulation and placement of a Waterproofing Bridge Deck Overlay (WBDO) asphalt mixture. The formulation of the mixture shall use the mixture design procedure detailed in the current Materials Method 5.16, *"Hot Mix Asphalt Mixture Design and Mixture Verification Procedures"* and this specification. The Contractor shall be responsible for the compaction of this mixture to a specified density requirement.

MATERIALS

The materials, composition, and production of the Waterproofing Bridge Deck Overlay mixture shall meet the requirements specified in §401-2, *Materials*, except as noted below:

1. **Aggregate.** The aggregate gradation used shall meet the requirements in Table 1, *WBDO Design Gradations*.

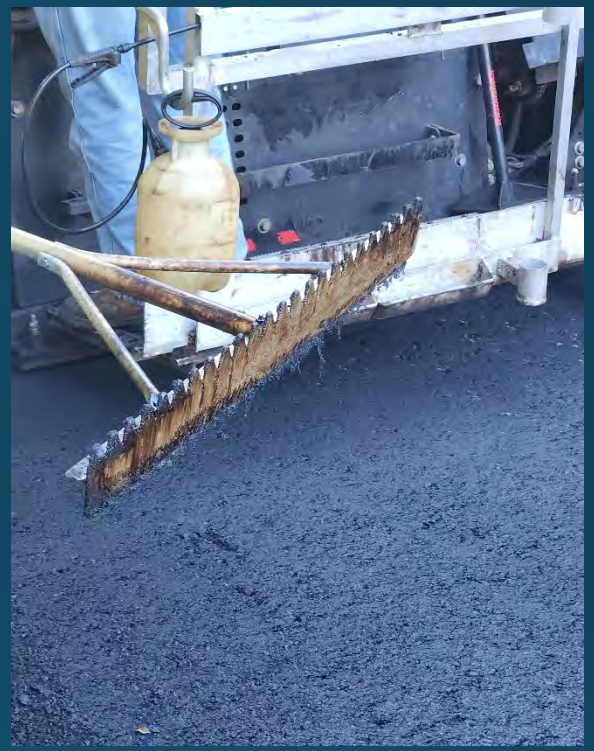
Table 1 – WBDO Design Gradations

Standard Sieves (inches)	General Limits - % Passing		[1]Production Tolerance
	Maximum	Minimum	
3/8	-	100	-
¼	100	85	± 6
#4	85	60	± 6
# 8	67	37	± 5
#16	45	25	± 4
#30	30	17	± 4
# 50	20	10	± 3
#100	16	5	± 2
#200	8	2	± 2

1. Production tolerance limits shall not exceed the design general limits.

Aramid Fiber Use

- The original intent was in composite pavement applications. Eliminate the expensive full depth and partial depth repairs to concrete pavements prior to overlays. This was the initial design guidance
- The cost/benefit was easy justification
- Use has expanded to many other applications
- We have a standard spec for the use of aramid fibers



NYSDOT Compaction Specs..

- **Series 50:** Core every day
- **Series 60:** Use Nuclear Gauge Daily. Verify the Test Strip only with Cores. Core every third day.
- **Series 70:** Use Nuclear Gauge to strive for the "Project Target Density" (Project Specific for those conditions) – New Spec will Utilize DPS
- **Series 80:** No monitoring, use rolling pattern to satisfaction, method specification
- ***NYSDOT has Superpave Item Numbers for all of these compaction methods***

ITEM 404.02000102 –DENSITY MEASUREMENT USING A DENSITY PROFILING SYSTEM

DESCRIPTION. Using a Density Profiling System (DPS), measure and evaluate the density of a compacted asphalt pavement.

DPS is a radar-based system designed to continuously measure asphalt pavement density.

EQUIPMENT. The DPS system will be a specially designed unit using Ground Penetrating Radar to measure the dielectric constant of in place asphalt and determine density. The hardware and software shall meet the requirements of AASHTO PP 98-19 except as modified herein. The unit shall consist of a minimum of 3 sensors and shall be equipped with integrated GPS capabilities. The unit shall be cart or vehicle mounted. The DPS shall provide real time measurements in percent compaction.

CONSTRUCTION DETAILS.

Pre-paving activities

For the project mix design, the Contractor shall fabricate 2 gyratory specimens at 88%, 91%, 94%, and 97% of the maximum theoretical density prior to the first day of production. The Contractor shall develop a dielectric/compaction calibration curve based on the fabricated specimens in accordance with MM99.

The Contractor shall calibrate the DPS using the dielectric/compaction curve and the corresponding air void test results prior to collecting data.

During production

The Contractor shall provide an operator certified by NYSDOT Materials Bureau to perform all activities described below.

The Contractor shall perform all the manufacturers recommended baseline calibrations (ie. Metal plate calibrations and/or air calibrations) prior to the collection of data.

The Contractor shall collect data over an area 1 mile in length or 50% of paved distance, whichever is greater per lane, daily. The data collection area shall consist of the entire width of paved area with a minimum of 6 equally spaced antenna passes per lane and shall include the area 100 feet before and after all coring locations, if any. The DPS shall collect measurements at a frequency of 1 measurement per foot or less. The antenna passes shall be laid out and labeled in accordance with MM99.

The Engineer shall identify any density core locations to the operator of the DPS after the final pass of the roller. The DPS operator shall record the GPS coordinates of the selected core locations and perform radar measurements using the "Stationary Data Collection" procedure in MM99.

For 60 series projects on non-coring days, the Contractor shall perform DPS measurements at locations where nuclear density readings are performed using the "Stationary Data Collection" procedure in MM99, at minimum of 3 locations per day.

DPS measurements shall be performed after the last pass of the finish roller and before the lane is opened to traffic. Perform DPS measurements on top course only.

DPS – Density Profiling System

Terminology

- DPS:
  - Dielectric Profiling System
  - Used by AASHTO Standard PP 98
- RDM:
  - Rolling Density Meter
  - PaveScan RDM 2.0
  - Brand Name
- GPR:
  - Ground Penetrating Radar
  - Dielectric Value
- PCF:
  - Pounds per Cubic Foot
  - Density Unit of Pavement

2

Porous Pavements in NYS
Many years of Parking Lot Applications

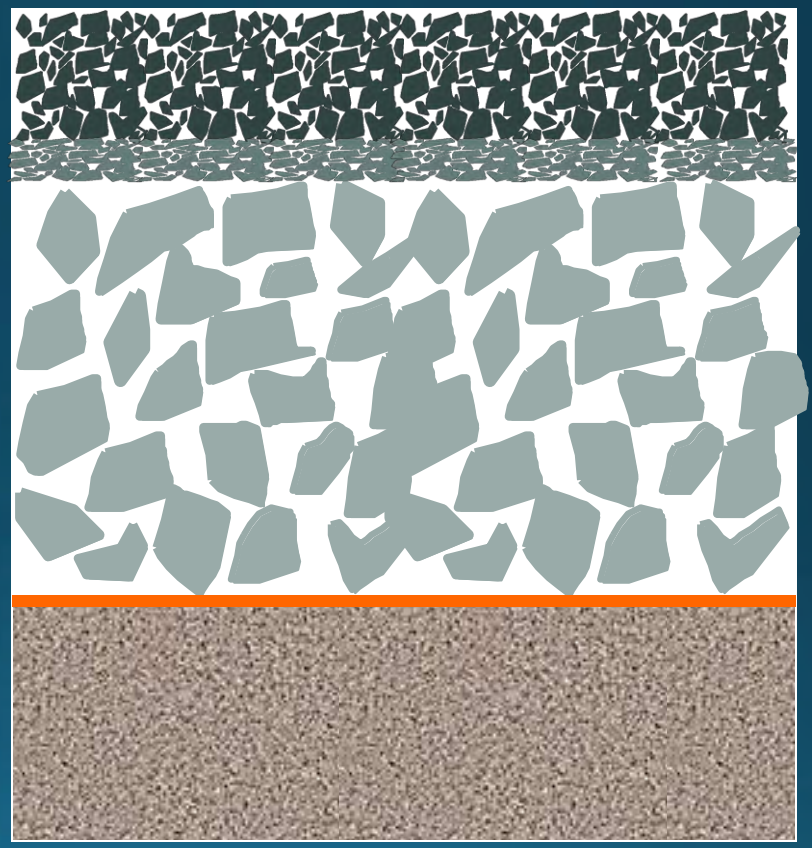
Open-Graded HMA ~ 2 ½”

½” Agg. (#57) ~ 1 – 2” Thick
(this is going away)

(used to be to frost depth, now 30% of frost)
Clean Uniformly Graded 2”-3”
Crushed Agg. (#2) – 40% Voids

Non-Woven Geotextile

Uncompacted Subgrade



If We Can …Where Can We Install Porous Pavement?

Why is the Beach Road Project Significant ?

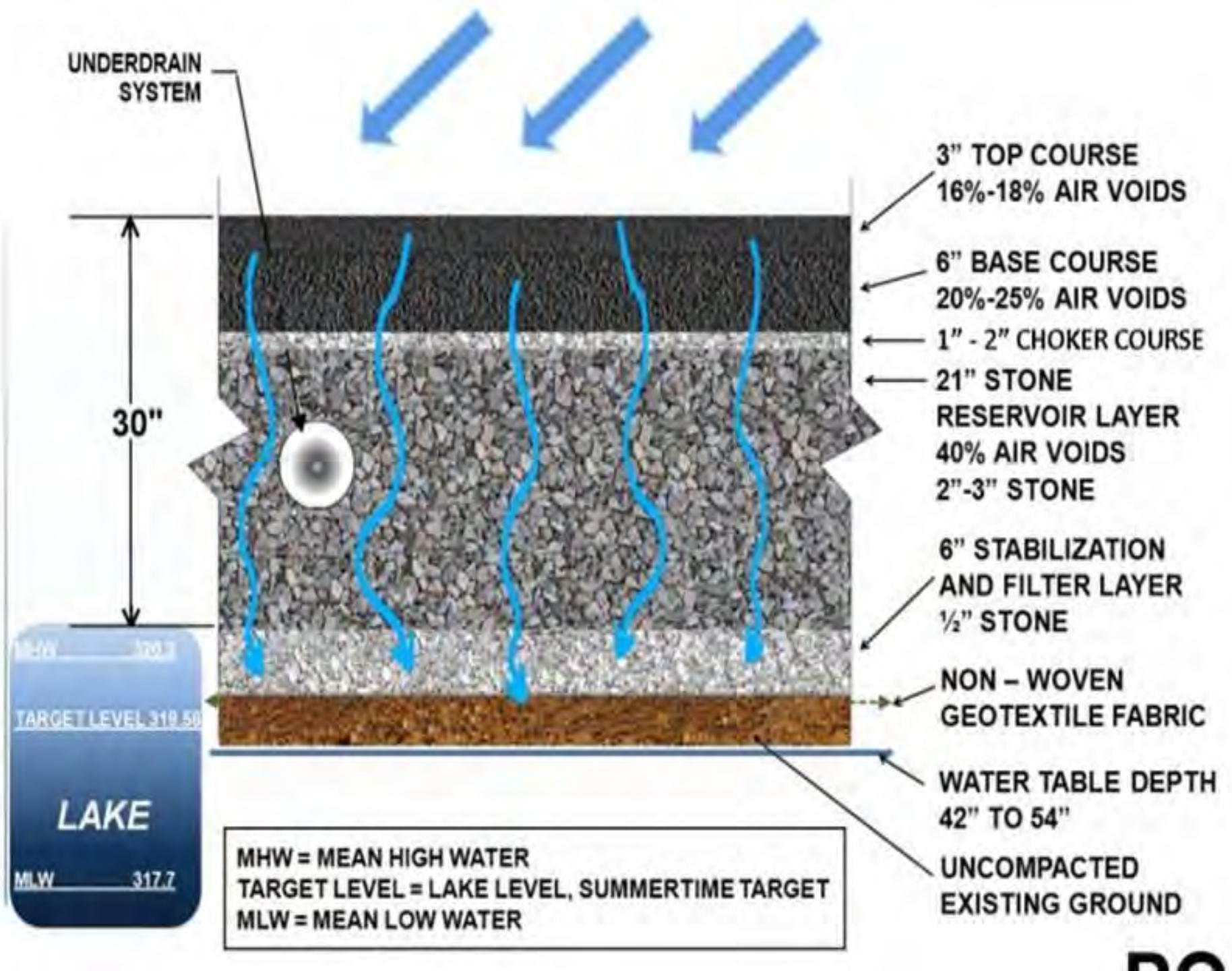
Higher Traffic and Traffic Loading Applications

Standardized Specifications – NYSDOT

Raise Awareness - Protect the Pavement

Opens up the Practice to Thousands of miles of Roadways & where HD Pavement is Needed

High Water Table Application Next to a Lake


UNDERDRAIN SYSTEM
30"
3" TOP COURSE
16%-18% AIR VOIDS
6" BASE COURSE
20%-25% AIR VOIDS
1" - 2" CHOKER COURSE
21" STONE
RESERVOIR LAYER
40% AIR VOIDS
2"-3" STONE
6" STABILIZATION
AND FILTER LAYER
½" STONE
NON – WOVEN
GEOTEXTILE FABRIC
WATER TABLE DEPTH
42" TO 54"
UNCOMPACTED
EXISTING GROUND
TARGET LEVEL 319.50
LAKE
MLW 317.7
MHW = MEAN HIGH WATER
TARGET LEVEL = LAKE LEVEL, SUMMERTIME TARGET
MLW = MEAN LOW WATER

To Tack or Not To Tack

NYSDOT tacks all courses, all the time

ITEM 407.01040009-NON-TRACKING TACK COAT

DESCRIPTION

This work shall consist of preparing and treating an existing Portland cement concrete surface or hot mix asphalt surface with a non-tracking tack coat in accordance with the Contract documents or as directed by the Engineer.

MATERIALS

Non-tracking tack coat shall be agitated or circulated to ensure a homogenous tack coat prior to sampling or application of material. The consistency of the non-tracking tack coat shall be appropriate for pumping and uniform application. Non-tracking tack coat shall not be diluted with water and must meet the physical requirements of the following table:

NON-TRACKING TACK COAT		
Test Property	**Test Method**	**Result**
Residue by Distillation,	AASHTO T59	50% minimum
Oil Distillate, Volume of Total Emulsion		2% maximum
Penetration on Residue from Distillation, @77°F, 100 g, 5s, 0.1 mm	AASHTO T49	40 maximum
Softening Point on Residue from Distillation	AASHOT T53	140°F minimum

Use an approved non-tracking tack coat or approved equal as determined by the Director of Materials Bureau.

Approved Products	Supplier	Location
EM-50-TT	Seaboard Asphalt Products Company	Baltimore, MD
CNTT	Midland Asphalt Materials Inc.	Lyons, NY
SK-TT	Suit-Kote Corporation	Cortland, NY

Other products must be submitted to the Materials Bureau for evaluation.

CONSTRUCTION DETAILS

The provisions of §407-3, Construction Details, shall apply except as modified herein:

Required spray nozzle size, distributor and nozzle settings per manufactures written recommendations.

The application rate shall be as determined in Table 407-1 *Tack Coat Application Rates*. These are recommended application rates for tack coat on various surface types and may be modified by the Engineer.

TABLE 407-1 – TACK COAT APPLICATION RATES	
Surface Type	**Application Rate (gal/yd2)**
New Hot Mix Asphalt	0.04-0.05
Milled Surfaces and Existing Hot Mix Asphalt	0.06-0.07
Portland Cement Concrete	0.06-0.07
Vertical Surfaces (curbs, drainage structures, and appurtenances)	0.07-0.08

SECTION 418 – ASPHALT PAVEMENT JOINT ADHESIVE

(New Section September, 2016)

418-1 DESCRIPTION

This work shall consist of furnishing and installing joint adhesive in accordance with the contract documents and as directed by the Engineer.

418-2 MATERIALS

Use a product which appears on the NYSDOT Approved List under ASPHALT PAVEMENT JOINT ADHESIVE (705-19) meeting the requirements of §705-19.

418-3 CONSTRUCTION DETAILS

General. Furnish all equipment that is necessary to clean the construction joint and to apply the joint adhesive. Use equipment meeting the description and/or performance requirements described herein and approved by the Engineer. Apply the joint adhesive to the construction joints.

Joint Preparation. Prepare longitudinal and transverse construction joints as discussed below and place adjacent asphalt pavement on the same day that the joint adhesive is applied.

Use a high pressure air lance to thoroughly clean the joint surface of dust, dirt, foreign material, sand and any other extraneous materials immediately prior to applying the joint adhesive. Install suitable traps or devices on the compressed air equipment to prevent moisture and oil from contaminating the joint surfaces. Maintain these devices and see that they are functioning properly. Protect the public from potentially objectionable and/or hazardous airborne debris.

Joint Adhesive. Heat and melt the joint adhesive in a melter constructed either as a double boiler filled with a heat-transfer medium between the inner and outer shells, or with internal tubes or coils carrying joint adhesive through a heated oil bath and into a heated double wall hopper. The melter will be equipped with separate thermometers to indicate the temperature of the heat transfer medium and the joint adhesive material, positive temperature controls, and with a mechanical agitator or a recirculation pump to assure a homogeneous blend of the joint adhesive.

Check the discharge temperature of the joint adhesive with a non-contact infrared thermometer or other suitable thermometer. Discharge the joint adhesive at the manufacturer's recommended application temperature and maintain the joint adhesive at ± 10°F of the application temperature indicated on the material packaging.

Applying joint adhesive is not permitted if the melter and discharge temperatures do not meet the requirements described above.

Equip the discharge hose with a thermostatically controlled heating apparatus or insulate it to maintain the proper joint adhesive application temperature. Holster the discharge hose to the melter if it is not thermostatically heat controlled. Circulate the joint adhesive from the discharge hose and the melter to maintain the proper joint adhesive application temperature.

Do not use joint adhesive material that has been heated beyond the safe heating temperature. If the manufacturer's recommendations allow the joint adhesive to be reheated or heated in excess of six hours,

Our Challenge
Another Great Quote

Russ Thielke

NYSDOT, Director of Technical Services

"The most sustainable thing we can do is make pavements which last longer"

NY MATERIALS


Send to frien

Sharks 2022 Edition (Thanks Kevin!)

Sharks - 2025 Edition

Tom's & Dad's Fishing Map
Land Based Shark Fishing
Atlantic Coast

Florida	30" Lemon Shark	11/24/21
Florida	80lb Nurse Shark	11/27/21
New York	80lb Sandbar Shark	08/28/22
New Jersey	300lb Sand Tiger Shark	09/18/22
South Carolina	30lb Sandbar Shark	08/17/23
North Carolina	12" Juvenile Shark	08/19/23
Mississippi	80lb Dusky Shark	10/01/23
Alabama	8' Hammerhead Shark	06/14/24
Delaware	8' Butterfly Ray (200lb)	07/06/25
Maryland	90lb Dusky Shark	08/29/25
Virginia	150lb Sand Tiger Shark	08/30/25

Mississippi
10/01/23

Alabama
6/14/24

Florida
11/27/21

Florida
11/24/21

New Jersey
09/18/22

Virginia
08/30/25

South Carolina
8/17/23

North Carolina
8/19/23

New York
08/28/22

Delaware
7/06/25

Maryland
08/29/25

THANK YOU!!!
Questions?????

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