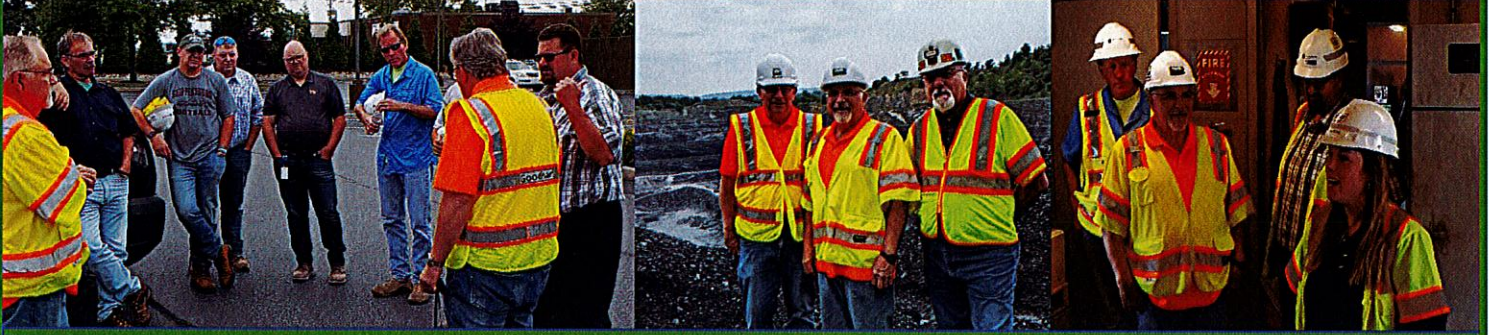


Welcome to the 2022 PAPA/PennDOT Bus Tour

**** IMPORTANT ****

You will visit an active construction site with moving equipment and traffic.

Attendees must bring their own safety shoes, hard hats, safety vests, safety glasses, ear protection, and wear them at each site.



A very special THANK YOU to the Planning Committee Members

PennDOT District 8-0

Kevin Keefe
Michael Reeder
Brian Shannon
Christopher Yonish
Glenn O. Hawbaker
Tom Abbey

PennDOT Central Office

Halley Cole
Timothy Ramirez
Joseph Robinson
Daryl St. Clair

Penssy Supply

Josie Grubb

PAPA

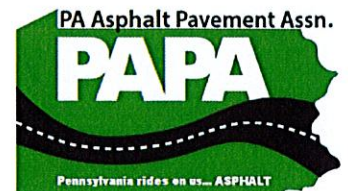
Charles Goodhart
Gary Hoffman
Donna Sweeney

We would also like to thank **Penssy Supply, New Enterprise Stone and Lime,** and **PennDOT** for opening your locations for this educational event.

July 26-27, 2022

PennDOT District 8-0

Best Western Premier, the Central Hotel
800 East Park Drive
Harrisburg PA 17111





pennsylvania
DEPARTMENT OF TRANSPORTATION

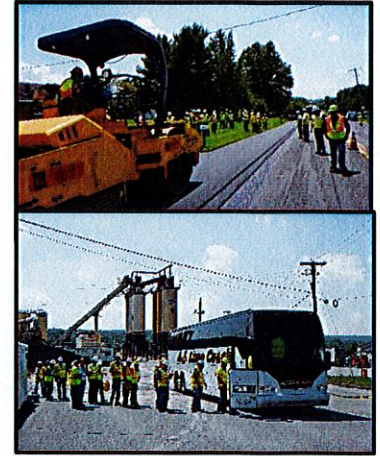
Event	PennDOT - PAPA 2022 Bus Tour
Dates	Tuesday, July 26 – Wednesday, 27, 2022
Host District	PennDOT Engineering District 8-0
Facility	Best Western Premier, The Hotel & Conference Center, Harrisburg, PA
Telephone No	(717) 561-2800

Monday, July 25, 2022

3:00 PM – 4:00 PM	Planning Committee Kick Off Meeting – Best Western
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Tuesday, July 26, 2022 *Schedule Tentative and Subject to Change*

7:00 – 8:00 AM	Registration at The Best Western Premier Hotel (USE REAR ENTRANCE) – Donna Sweeney, PAPA Office Administrator
8:00 – 8:05 AM	Introduction – Charles Goodhart, Executive Director
8:05 – 8:15 AM	Welcome Remarks – Kevin Keefe P.E., ADE-C District 8
8:15 – 8:20 AM	Tour Instructions – Charles Goodhart
8:20 – 8:30 AM	Get Box Lunches & Load Buses (2)
8:30 AM – 4:00 PM	Asphalt Plant and Paving Project Tours (boxed lunch included) PennDOT M and T Lab Tour, Demo of PennDOT Pavement Testing Equipment, PaveScan Rolling Density Meter Demo



***You Must Bring Hard Hat, Safety Vest, Hard Toed Shoes, Safety Glasses, and Ear Protection. **Attendees will be assigned to a bus at registration.**

Wednesday, July 27, 2022

7:00 AM - 8:00 AM	Hot Buffet Breakfast/Registration – Best Western Premiere Hotel
8:00 AM – 8:10 AM	Welcome/Housekeeping – Charles Goodhart, PAPA
8:10 AM – 8:30 AM	District 8 Welcome & Overview – Chris Kufro, Acting District 8-0 Executive
8:30 AM – 9:00 AM	Questions, Comments, & Discussion from Day 1 Plant and Project Tours – Halley Cole, P.E., Chief, Pavement Testing & Asset Mgt Section
9:00 AM – 9:45 AM	Goals, Objectives, and Future Direction – Michael Keiser, P.E., Acting Deputy Secretary, Highway Administration
9:45 AM – 10:15 AM	Innovations and Best Practices in District 8-0 – Chris Yonish, Assistant Materials Manager
10:15 AM - 10:30 AM	IRI Verification & Dividing Sublots – Brent Trivelpiece, Chief Construction QA Section
10:30 AM – 10:45 AM	PaveScan Rolling Density Meter Q & A – Rob Sommerfeldt, GSSI & Anthony Caito, Instrotek
10:45 AM – 11:15 AM	What is PennDOT's Pavement Testing Equipment's Testing Equipment & How can you use their services? - Halley Cole, P.E., Chief, Pavement Testing & Asset Management Section
11:15 AM – 11:50 AM	Get Ready for Balanced Mix Design! – Gary L. Hoffman, P.E., Director of Technical Services
11:50 AM – 11:55 AM	ANNOUNCEMENT – Location of 2023 PennDOT PAPA BUS TOUR – Host District Rep
11:55 AM – Noon	Wrap-Up – Charles Goodhart
12:30 PM – 2:00 PM	Tour of Pennsy Supply Central Testing Lab – Josie Grubb, Area HMA QC Manager

PDH & NECEPT Certificate will be provided for 4 Credit Hours for Day 2.

2022 PENNDOT PAPA BUS TOUR

PENNSY SUPPLY CENTRAL LAB TOUR

**PENNSY
SUPPLY**

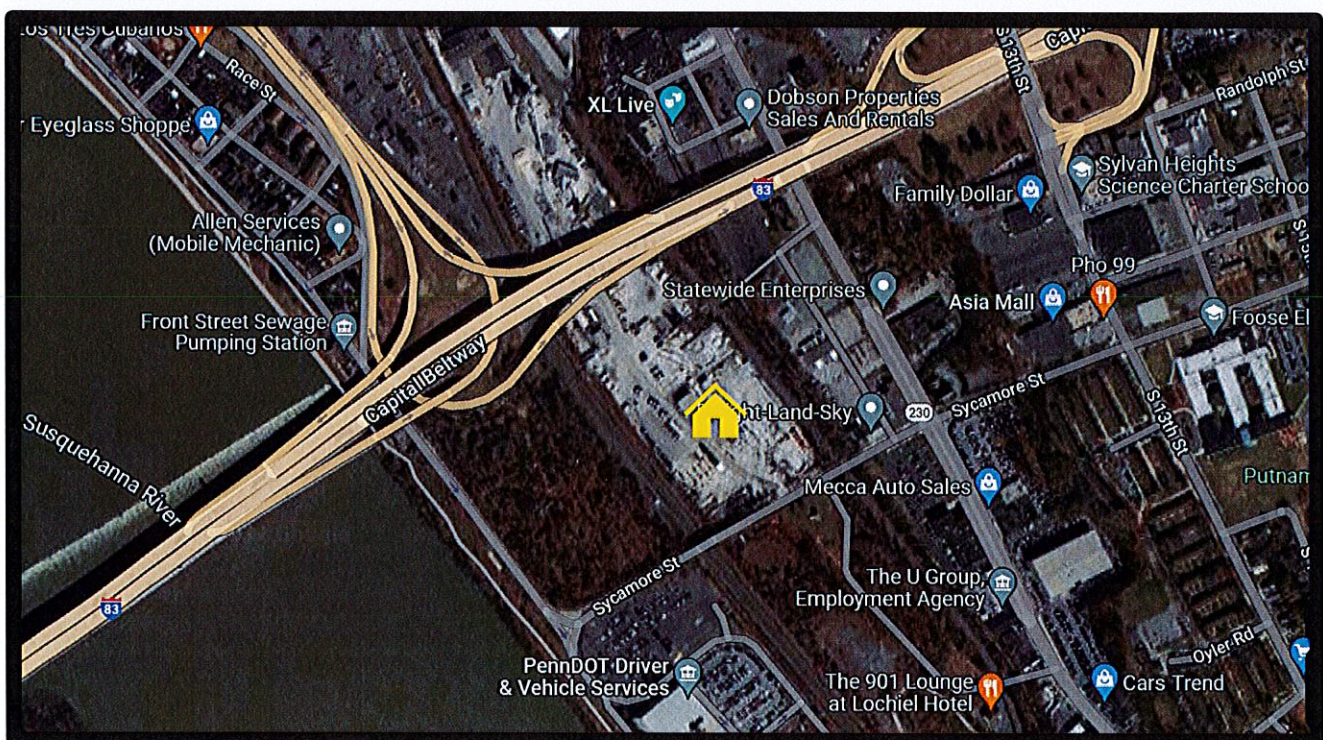


**PENNSY
SUPPLY**

Wednesday, July 27, 2022

YOU ARE INVITED AND ENCOURAGED to Tour the Pennsy Supply “NEW” Central Testing Lab with Josie Grubb, Area HMA QC Manager, from 12:30 pm – 2:00 pm. Address: 883 Paxton Street, Building D, Harrisburg, PA 17104

It is best to use the entrance on Sycamore Street, Harrisburg, PA (From the Best Western, take 83 South to Exit 42 - 2nd Street exit, turn right on Paxton Street, turn right onto Cameron Street, to Sycamore Street and turn right, then turn right into the Pennsy facility and look for the big blue building marked Building D.) Travel time from the hotel is approximately 8 minutes.





Tuesday, July 26, 2022 - PAPA / PennDOT Bus Tour

BEGIN	MINUTES	MILES	BEST WESTERN PREMIERE CONFERENCE ROOM
7:00 AM	60.00		Registration - USE HOTEL REAR ENTRANCE
8:00 AM	5.00		Introduction - Charles Goodhart
8:05 AM	10.00		Welcome Remarks - Kevin Keefe
8:15 AM	5.00		Tour Instructions - Charles Goodhart
8:20 AM	5.00		Pickup Box Lunches - Load Bus

Bus #1 Schedule

BEGIN	MINUTES	MILES	ROUTE
8:15 AM	15.00	6	Arrive at Best Western Premiere 800 East Park Drive, Harrisburg Depart Hotel & Travel to PennDOT Materials & Testing Lab
8:40 AM	120.00		Tour PennDOT Materials & Testing Lab 82 Dogwood Drive Harrisburg - Park and Unload by East Entrance
10:40 AM	30.00	23	Board Bus & Travel to US 22/322 - Active highway project Perry County - Park and Unload bus at Newport Park & Ride Lot
11:10 AM	30.00		Tour Perry County active highway Project
11:40 AM	40.00	31	Board Bus - Travel to Pennsy Supply Silver Spring Facility 6470 Carlisle Pike Mechanicsburg-Main Entrance, orange cones will be out for the bus in half roundabout - Park and unload bus.
12:20 PM	120.00		Tour Pennsy Supply Silver Spring Facility
2:20 PM	30.00	22	Board Bus (same location) & Travel to active highway project on Rt 15 Project to York Springs Exit. Meet at Southbound Jug Handle, MM 26.7
2:50 PM	30.00		Unload bus and Tour - Rt 15 active Highway Project - York & Adams Counties
3:20 PM	40.00	29	Board Bus & Return to Best Western Premiere Hotel 800 East Park Drive, Harrisburg
4:00 PM		111	Arrive at Hotel - Done by 4:15

Bus #2 Schedule

BEGIN	MINUTES	Miles	ROUTE
8:15 AM	25.00	15	Arrive at Best Western Premier 800 East Park Drive, Harrisburg Depart Hotel & Travel to Pennsy Supply Silver Springs Facility
8:50 AM	120.00		Tour Pennsy Supply Silver Spring Facility 6470 Carlisle Pike Mechanicsburg-Main Entrance, orange cones will be out for the bus in the half roundabout - Park and unload bus
10:50 AM	30.00	22	Board Bus (same location) & Travel to active highway project Rt 15 Project to York Springs Exit. Meet at Southbound Jug Handle, MM 26.7
11:20 AM	30.00		Tour Rt 15 active highway project - York & Adams Counties
11:50 AM	55.00	55	Board Bus & Travel to US 22/322 - Active highway project Perry County - Park and Unload bus at Newport Park & Ride Lot
12:45 PM	30.00		Tour Perry County active highway Project
1:15 AM	30.00	24	Board Bus & Travel to PennDOT Materials & Testing Lab 82 Dogwood Drive Harrisburg - Park and Unload by East Entrance
1:45 PM	120.00		Tour PennDOT Materials & Testing Lab
3:45 PM	15.00	6	Board Bus & Return to Best Western Premiere Hotel 800 East Park Drive, Harrisburg
4:00 PM		122	Arrive at Hotel - Done by 4:15

2022 PENNDOT PAPA BUS TOUR

New Enterprise Stone & Lime Company



Tuesday, July 26, 2022

Thanks to the NESL TEAM for hosting a tour of the SR 15 Project!

ECMS 94950 – US 15 Resurfacing – York and Adams County

SR 0015-034

Contractor: New Enterprise Stone and Lime Company, Inc.

Original Contract Value: \$19,802,950.31

Current Contract Value: \$23,130,816.31

Notice to Proceed: 07/27/2020

Completion Date: 08/31/2023



Project Description:

The safety improvement project is located on State Route 15 south of Dillsburg to south of York Springs. The work consists of ramp acceleration and deceleration lane lengthening, intersection safety improvements, new jug handle construction at County Line Road, a 500-foot rock slope cut-back, and guiderail updates to current MASH Type 31 standards. Other work includes milling, new pavement construction (concrete and bituminous) and reconstruction, subbase, drainage improvements, R-rock, pavement base drain, mountable curb, concrete barrier, glare screen, base replacement, pavement markings, signing, ROW fence, and storm water BMP's.

The entire pavement width will be resurfaced out to out with a Superpave scratch course and wearing course. The asphalt scratch course will be PG 64S-22, 10 < 30 Million ESAL's, 9.5 MM, SRL-L. The asphalt wearing course will be PG 64E-22, 10 < 30 Million ESAL's, 12.5 MM, 2-inch depth, SRL-E.

There are various areas throughout the project where shoulders will be reconstructed. These areas will have 6 inches to 8 inches of sub-base. The asphalt base course will be 64S-22, 3 < 10 Million ESAL's, 25 MM, 8-inch depth. The asphalt binder course will be 64S-22, 10 < 30 Million ESAL's, 19 MM, 2 1/2 – inch depth. The asphalt scratch course will be PG 64S-22, 10 < 30 Million ESAL's, 9.5 MM, SRL-L. The asphalt wearing course will be PG 64E-22, 10 < 30 Million ESAL's, 12.5 MM, 2-inch depth, SRL-E.



PAPA/PennDOT Bus Tour and Information Sharing Session
July 2022

Colleagues,

It has been a long 2-year hiatus for the PAPA/PennDOT bus tour while the Department and our Industry try to get back to some sort of normalcy. But finally, District 8-0, along with our Industry partners, want to welcome you to Southcentral Pennsylvania as we host the 2022 PAPA/PennDOT Bus Tour. We are excited to share with you our past and current accomplishments and the future projects in District 8-0.

Within District 8's 8-county region, we have 316 municipalities, and we maintain 5,230 miles of State highways and an additional 267 miles of Interstate highways for a total of 11,109 lane miles. We are also responsible for maintaining 3,404 bridges. Not including our County personnel, we employ 315 employees in our District Office, of which 114 work in the Construction Unit.

Interstate 81 Runs from Lebanon County through Dauphin, Cumberland, and Franklin Counties before entering Maryland for a total of 96.6 Miles. On any given day 9.48 million daily miles are traveled along the corridor, second to only the Pennsylvania Turnpike. As many as 32,000 trucks use the corridor daily reaching as high as 40% of the total truck volume in the United States and carries 12% of the Nation's freight.

The I-81 Improvement Strategy process was started in July 2019 to evaluate the transportation needs between the Maryland border and Lebanon County which can be viewed on the Coalition's webpage, www.i-81coalition.org. Currently \$3 billion is estimated to widen I-81 to three lanes from Maryland to the I-78 split encompassing 89 total miles which currently has three lanes between Exit 57(Rt 114) and Exit 72 (Mountain Rd) accounting for 15 miles.

In 2021, District 8-0 awarded approximately 75 construction projects and currently as of June 30, 2022, and additional 44 projects have been let. As a District, we welcome new and innovative asphalt technology. District 8-0 has two projects piloting JBand (Void Reducing Asphalt Membrane, VRAM) in Perry County on SR 22/322 and a project that will be our first Post-Consumer Plastic in Asphalt on 3017-030 in Lancaster County.

The next two days we will journey through District 8-0 visiting the Department's LTS, SR 22-096 in Perry County, SR 15-034 in York County and visiting one of our business partners facilities, Pennsy Supply Inc. - Silver Springs Quarry. We strive to work with our business partner to ensure a quality product for the traveling public. But as we do so, please be aware of your surroundings and moving equipment/vehicles as we strive to have an accident-free day.

We are excited to host the PAPA bus tour and we appreciate you taking time during this busy construction season to be part of the tour. Please share your thoughts, questions, and interactions with us so we can continue to improve Pennsylvania and remain a leader in the asphalt industry.

Sincerely,

A handwritten signature in black ink that reads "Chris J. Kufro, P.E." in a cursive style.

Chris J. Kufro, P.E.
Acting District Executive
Engineering District 8-0

July 2022

Welcome to Pennsy Supply! We hope that you enjoy this visit and receive an overview of the operations we perform. Our core belief is "safety first in everything we do" and we would ask that you embrace that motto as you engage our personnel in their work areas.

At Pennsy Supply, a CRH company, we are so much more than what we do. We manufacture aggregate, asphalt, sand, and concrete products, and we provide construction services. We are a people-focused business where employees feel like family, customers feel valued, and community partners feel supported.

Founded in 1921, Pennsy Supply is a continually expanding, entrepreneurial company grounded in down-to-earth values. Founded and operated for decades as a family business, we intentionally retain the focus on building open, honest, enduring relationships that have ensured our success for more than a century.

Becoming a CRH company in 1993 made Pennsy even stronger. With 77,400 employees at 3,200 operating locations, CRH is a global leading vertically integrated supplier of asphalt, aggregates, cement, ready-mix concrete, and paving and construction services.

We have been serving our local customers for 100+ years and our current operation consists of 10 quarries, 8 asphalt plants, 6 ready mix concrete plants, 4 rail depots, 2 sand operations, and 2 industrial mineral processing facilities.

Pennsy Supply has won local, regional, and national awards for its high-quality paving services. The company is a recipient of Quality in Construction Awards from the Pennsylvania Asphalt Pavement Association (PAPA) for exemplary quality in pavement smoothness, material quality and construction.

Thank you for your interest in our company, we hope your experience is safe, informative, and provides insight into the processes of our business.



Christina Edgerton,
President



A CRH COMPANY

2021 Top Performing Asphalt Plant



In 2021, our Silver Springs Asphalt Plant was selected as the top performing high volume asphalt plant in CRH Americas Materials (AMAT).

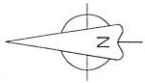
The Asphalt National Performance Committee chooses one single asphalt plant based on evaluations of all AMAT asphalt plants for their overall safety performance, environmental stewardship, material quality, energy efficiency, recycle materials use and binder replacement, cost control, production, and site appearance.

Pennsy Supply's Silver Springs plant was honored for Outstanding Asphalt Plant performance in one of the three production volume categories.



NOTES:

1. Drone aerial image taken on 06/16/2022



Plan Date: 07/06/22

Drawn By: RJM

Design By:

Check By:

Silver Spring Quarry Traffic Map

Silver Spring Twp. Cumberland County

Scale: 1" = 300' Sheet: 1 of 1



2400 THEA DRIVE SUITE 3A
HARRISBURG, PA 17110
717.235.4611
www.pennsupply.com



A CRH COMPANY

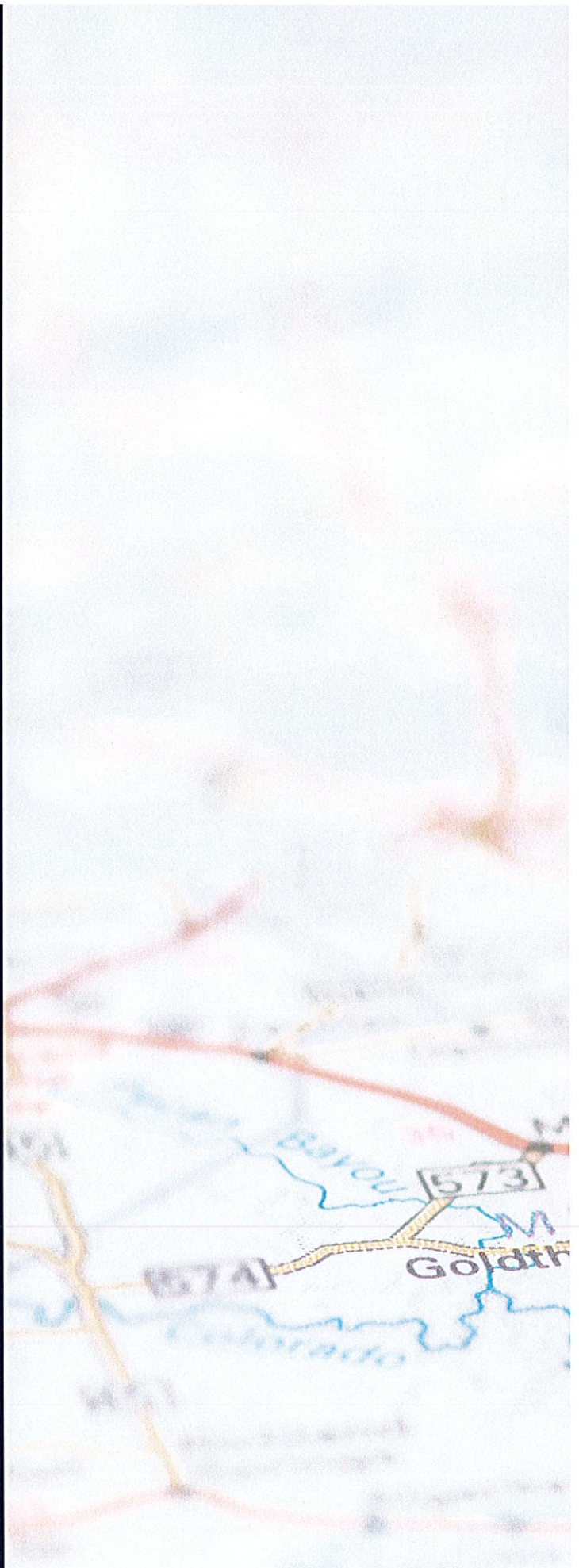


PENNSY SUPPLY



Pennsy Supply is the leading manufacturer of aggregate, sand, asphalt, and concrete across Pennsylvania and Delaware, providing materials for commercial construction, infrastructure development and residential building. In addition, Pennsy Supply provides professional paving services.

Our parent company, CRH, is the leading global diversified building materials business in the world. Operating companies, like Pennsy Supply, maintain their local brand names while leveraging the financial strength, best practices, talent base and purchasing power of a larger organization.



AGGREGATE

**PENNSY
SUPPLY** INC.

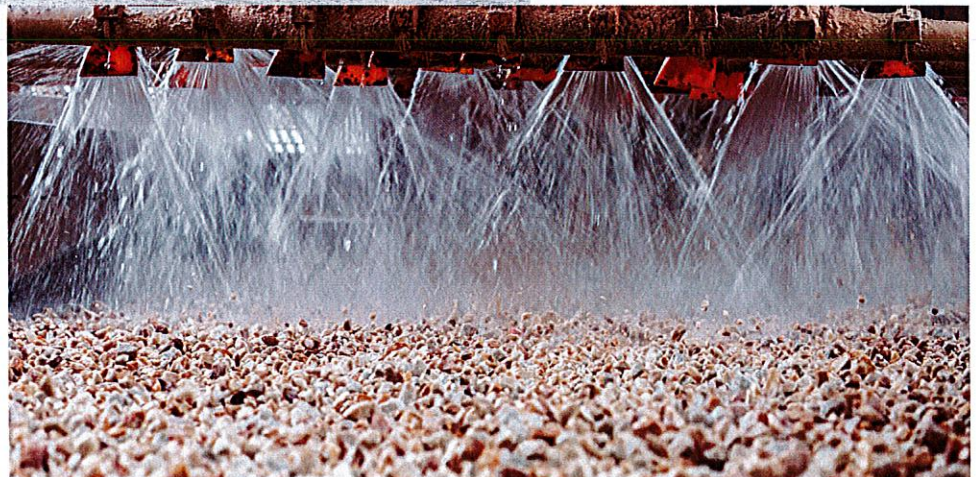
A CRH COMPANY

Pennsy Supply is the largest producer of aggregate in central Pennsylvania, producing more than nine million tons every year consisting primarily of crushed stone, sand and gravel.

Mining mostly dolomitic limestone and calcium carbonate, Pennsy is able to produce an extensive range of small to large size aggregate to meet customer specifications.

Aggregate can be used in the following applications:

- Major roadways and parking lots
- Home building
- Driveways
- Other various construction needs



ASPHALT

**PENNSY
SUPPLY**

A CRH COMPANY

Pennsy Supply offers an extensive variety of asphalt mixes, producing more than one million tons each year for customers ranging from large contractors to small paving operations.

Pennsy asphalt mixes are certified by PennDOT for use on projects from residential driveways to major highways. Specialty DOT mixes are available upon request.

- 25 MM — Base course used for parking lots and highways
- 19 MM — Base or middle asphalt used for parking lots and highways
- 9.5 MM — Top coat of asphalt for parking lots and driveways



CONCRETE

**PENNSY
SUPPLY**

A CRH COMPANY

Pennsy Supply produces concrete for commercial and residential use — major highways, bridge decks, house foundations, sidewalks, and patios. Annual production exceeds 300,000 cubic yards.

All mixers meet the requirements set by the American Concrete Institution, the American Society for Testing and Materials, and PennDOT.



HIGH-CALCIUM LIMESTONE

**PENNSY
SUPPLY**_{INC.}

A CRH COMPANY

Pennsy Supply is the premier source in South Central Pennsylvania for high calcium white aggregate, which is used in cement, water conditioning, asphalt roofing, animal feed, and more.

Pennsy also produces gray limestone and bright white limestone. Industrial-grade limestone fillers are used in carpet backing, grout, paint, caulking, cat litter, white cement, decorative stone, pelletized limestone, and more.



CONSTRUCTION SERVICES



A CRH COMPANY

In addition to being the leading supplier of construction materials, Pennsy Supply is one of the leading contractors in Pennsylvania for infrastructure, highways, roads, airports, and site development.

Our integrated offering of products and services — along with our commitment to quality, service, and safety — make Pennsy Supply a top choice to build and manage projects from concept through completion.

Pennsy Supply has won local, regional and national awards for its high-quality paving services. We received a Quality in Construction Award from the Pennsylvania Asphalt Pavement Association for exemplary quality in pavement smoothness, material quality, and construction.

Our comprehensive services include:

- Asphalt paving
- Stone base construction
- Site grading operations, pavement milling and road excavation
- Underground utility installation
- Sidewalk, curb, gutter and storm drainage construction



QUALITY CONTROL

**PENNSY
SUPPLY**

A CRH COMPANY

At Pennsy Supply, we have 11 fully staffed laboratories, 2 concrete field representatives, and 3 blacktop field technicians. Our Quality Control team currently consists of 23 agency certified technicians

Our technicians take pride in the superior quality of our products and strive to exceed customer and industry standards.

- Various certifications include:
 - PennDOT Aggregate Technician
 - PennDOT Concrete Plant Technician
 - PennDOT Concrete Field Technician
 - ACI Field Testing Technician Grade 1
 - NECEPT Bituminous Plant Technician Levels 1 & 2
 - NECEPT Bituminous Field Technician

"Quality Control ALWAYS Costs Less Than Remove and Replace."



PENNSYLVANIA

PITTSTON QUARRY

DORRANCE QUARRY

SUMMIT STATION QUARRY

CORPORATE HEADQUARTERS

MILLARD QUARRY

PRESCOTT QUARRY

SILVER SPRINGS QUARRY

FIDDLER'S ELBOW NORTH QUARRY

PAXTON ST. HARRISBURG

RHEEMS ASPHALT

NEWVILLE QUARRY

MT. HOLLY QUARRY

EAST PETERSBURG QUARRY

LANDISVILLE QUARRY

THOMASVILLE QUARRY

Locations throughout
Delaware and
Central and Eastern
Pennsylvania.

TARBURTON S&G

BAY ROAD S&G

FELTON STONE DEPOT

INDIAN RIVER STONE DEPOT

DELMAR STONE DEPOT

DELAWARE



Aggregate



Asphalt



Concrete



Industrial Minerals



Rail



Sand & Gravel



Stone Depot



A CRH COMPANY

LOCATIONS

Bay Road S & G

3700 Bay Road
Dover, DE 19901
Phone: 302-735-8547
Services:
·Stone Depot
·Sand & Gravel

Corporate Headquarters

2400 Thea Drive, Suite 3A
Harrisburg, PA 17110
Phone: 717-233-4511

Delmar Stone Depot

8788 Patton Road
Delmar, MD 21875
Phone: 410-896-3060
Services:
·Stone Depot

Dorrance Quarry

35 Small Mountain Road
Wapwallopen, PA 18660
Phone: 570-602-4675
Services:
·Aggregate
·Asphalt

East Petersburg Quarry

2742 Lancaster Road
Manheim, PA 17545
Phone: 717-898-2278
Services:
·Aggregate
·Asphalt

Felton Stone Depot

401 Lombard St
Felton, DE 19943
Phone: 302-284-3580
Services:
·Stone Depot
·Sand & Gravel

Fiddler's Elbow North Quarry

2152 N Union St
Middletown, PA 17057
Phone: 717-566-9528
Services:
·Aggregate
·Asphalt
·Concrete

Indian River Stone Depot

County Road 331
Dagsboro, DE 19939
Phone: 302-354-8952
Services:
·Stone Depot

Landisville Quarry

1591 Quarry Road
Mount Joy, PA 17552
Phone: 717-480-1230
Services:
·Aggregate
·Concrete

Millard Quarry (North and South)

155 Syner Road
Annville, PA 17003
Phone: 717-867-5950
Services:
·Aggregate
·Sand & Gravel
·Asphalt
·Industrial Minerals

Mt. Holly Quarry

400 Mountain View Road
Mt Holly Springs, PA 17065
Phone: 717-943-0238
Services:
·Sand & Gravel

Newville Quarry

20 Pennsy Drive
Newville, PA 17241
Phone: 717-648-8016
Services:
·Aggregate
·Asphalt
·Concrete

Paxton St. Harrisburg

1001 Paxton St
Harrisburg, PA 17104
Phone: 717-233-4511
Services:
·Concrete

Pittston Quarry

300 Armstrong Road
Pittston, PA 18640
Phone: 570-602-4675
Services:
·Aggregate
·Asphalt

Prescott Quarry

200 Prescott Road
Lebanon, PA 17042
Phone: 717-274-3661
Services:
·Aggregate
·Asphalt
·Concrete

Silver Spring Quarry

6470 Carlisle Pike
Mechanicsburg, PA 17050
Phone: 717-766-7676
Services:
·Aggregate
·Asphalt
·Concrete

Tarburton S & G

752 Long Point Road
Dover, DE 19901
Phone: 302-698-5510
Services:
·Sand & Gravel

Thomasville Quarry

550 S Biesecker Road
Thomasville, PA 17364
Phone: 717-792-2631
Services:
·Aggregate
·Industrial Minerals

COMMUNITY INVOLVEMENT

PENNSY SUPPLY

A CRH COMPANY

At Pennsy Supply, we recognize that the counties in which we operate contribute to the success of our business. We give back by supporting non-profit organizations serving the communities where we live and work, and by doing our part to protect the environment while working toward sustainability.

In addition to supporting non-profits providing vital community services, our Community Giving efforts have included donating materials to Eagle Scout projects and local government Parks & Recreation initiatives, and bringing themed ready-mix trucks to participate in local events. We also take an active role in providing education about our industry and the career opportunities we offer.





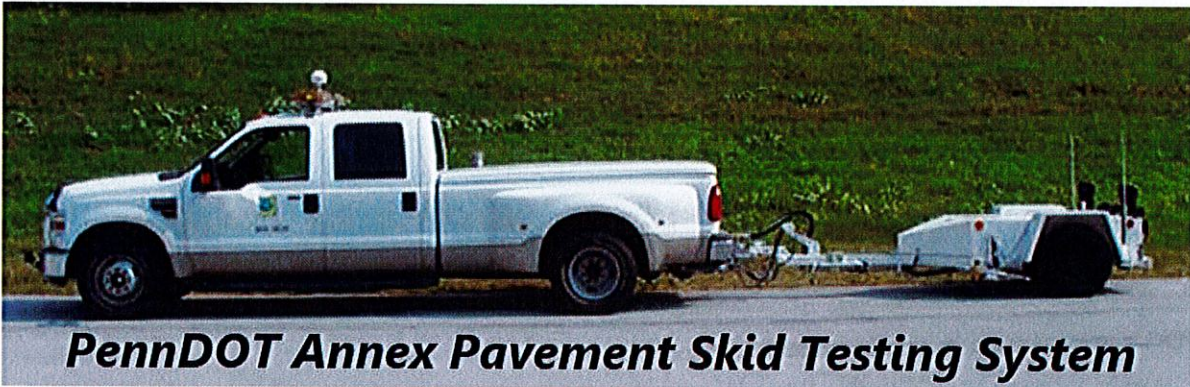
**PENNSY
SUPPLY**^{INC.}

A CRH COMPANY

Pennsy Supply, Inc.
A CRH Company
2400 Thea Drive, Suite 3A
Harrisburg PA 17110

Phone: 717-233-4511
Email: contact@pennsysupply.com
Web: pennsysupply.com

PennDOT Annex Pavement Testing Equipment



PennDOT Annex Testing Equipment

Skid Testing System – tests the friction of a roadway, provides a “skid number” for data evaluation.

Light Weight Profiler – front bumper mounted lasers collect smoothness or IRI data.

Falling Weight Deflectometer - measures joint deflection and can detect voids under the road.

Video Van – LCMS Pavement cameras and fault detection, road profiler plus 360-degree street view camera.



pennsylvania

DEPARTMENT OF TRANSPORTATION

www.penndot.pa.gov



InstroTek[®]
Inc.

innovators in instrumentation technology

PAVESCAN[™]

The FIRST Continuous Asphalt Density
Measurement System

PaveScan RDM 2.0



The on-board computer displays density, compaction, a line graph, and a contour map of the measurements.

MORE DATA, LESS CORING.

The InstroTek PaveScan[™] is the first non-nuclear rolling density system that provides real-time compaction and density data. Using multiple radar sensors, the PaveScan can continuously scan the pavement and gather data. This new technology has the potential to drastically reduce if not eliminate the need for field cores.



Meets AASHTO PP 98-19

Contact us today to find out more about the Game Changing PaveScan[™]. Please visit: www.instrotek.com email: sales@instrotek.com tel: (919) 875-8371

PAVESCAN[®]

THE FUTURE OF ZERO CORING IS WITHIN REACH

The InstroTek[®] PaveScan[™] is a highly advanced asphalt density measurement system that is revolutionizing data collection in the field. Single point core and nuclear measurements only offer limited data. The PaveScan offers a complete density map of the entire pavement project in addition to doing so much more than your traditional density gauge. Contact InstroTek today to find out more about the *Game Changing PaveScan!*



Please visit: www.instrotek.com
email: sales@instrrotek.com tel: (919) 875-8371



Operators can now simply push the cart along the lane and gather density data after the finish roller. The on-board computer displays density, compaction, a line graph, and a contour map of the measurements. This

information can be used by contractors and pavement engineers to assess the quality of the pavement. Operators can make adjustments during construction, reducing density disputes between the owner and contractor agencies.

THE PERFECT ASPHALT JOINT

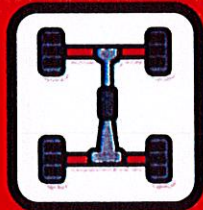
Many pavement failures occur and start at the asphalt joints. Therefore, achieving good joint density is key to producing a long-lasting pavement. The PaveScan allows the operator to take density measurements along the entire joint. A single sensor with a green laser guide ensures the sensor is positioned directly over the joint. For the first time, contractors can measure joint compaction consistency throughout the entire project.

BENEFITS & FEATURES

- Meets AASHTO PP 98-19
- Non-nuclear radar technology
- Accommodates up to 3 radar sensors for full pavement and joint coverage
- Complete density map of entire pavement project; not single-point measurements
- The most accurate and precise method of measuring asphalt joint density
- Potential for zero coring
- Capture real-time pavement density and uniformity information
- Optional GPS receiver and built-in pole adaptor
- Graphic display of data with line graph, contour map, or histogram distribution
- Rugged modular assembly; deploys in minutes and folds for ease of transport
- Easily charge and exchange batteries
- Save on coring operations and increase work crew safety



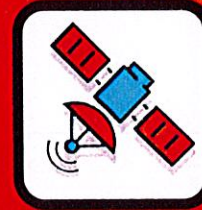
Non-nuclear technology



The first continuous rolling asphalt density measurement system



Use up to 3 sensors for full pavement and joint coverage



Optional GPS receiver and built-in pole adaptor

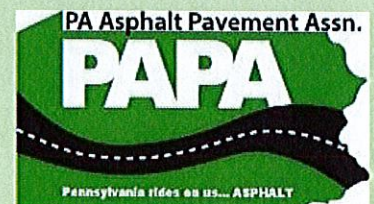


Potential for zero coring



2022 PAPA Bus Tour
July 26, 2022

**PennDOT Materials Testing Laboratory
Laboratory Testing Section (LTS) Tour**





**BUREAU OF CONSTRUCTION & MATERIALS
NEW MATERIALS TESTING LABORATORY**
81 Lab Lane, DGS Annex Complex, Harrisburg, PA

Design & Construction

- Design began in July 2005 and completed in January 2007
- Construction began in September 2007 and final inspection took place on February 24, 2009 – total construction days – 548

Costs

- Design/Construction/Contingency - \$27,100,000 (\$18 Million Bond/\$9.1 Million BOS)
- Laboratory Casework - \$1,625,275 (BOCM)
- Office/System Furniture - \$1,771,000 (BOCM)
- Move/Equipment Relocation - \$221,192 (BOS)
- Signage - \$10,000 (BOS)

Quick Facts

- 18.61 acres of property transferred to PennDOT jurisdiction at the DGS Annex Complex (former Harrisburg State Hospital)
- Gross Square Feet – 107,500
- Full Perimeter Fence and Security Card Reader System
- Building Access Security Card Reader System
- ADA Compliant – Visitor/Employee Parking and Building Access
- Secure Employee Parking
- Visitor Parking – 60 spaces
- Storage Facility Expansion completed in 2011 (2,320 Square Feet)
- HVAC Chiller capacity – Two (2) 530 ton units
- Gas Fired Boilers – Two (2)
- Generators (2) – 1000KV – Life Safety & 1750KV – Full Building Load (3 day runtime)
- Windows (149) – All employees have access to natural light
- Design Elements –
 1. Open Office Workstations
 2. Oversized Corridors
 3. Separate Work Areas from Laboratories
 4. Lab Restrooms with Locker & Showers
 5. High Density File Areas
 6. Public Area Access and Auditoriums
 7. Centralized Snack Area
 8. Smoke Free Facility
 9. Green Design – Recycled Carpet and Workstation Fabrics
 10. Loading Dock Access

PennDOT LTS – Asphalt Studies Lab

Distillation of Cut-Back Asphalt (AASHTO T 78) and Emulsified Asphalt (AASHTO T 59):

Distillation process to determine the percentage of asphalt in cut-back or emulsion. Cut-back is asphalt and oil, Emulsion is asphalt and water. Further testing on residue from distillation: penetration, viscosity, elastic recovery

PG Binder Testing:

Determine high, intermediate, and low temperature rheological properties of asphalt binders using AASHTO T 315 Dynamic Shear Rheometer and AASHTO T 313 Bending Beam Rheometer. Testing to determine the stiffness of asphalt at the temperature expected to be encountered in the field before and after simulated lab conditioning.

Tensile Strength Ratio (AASHTO T 283):

To determine the effect of the freezing and thawing on asphalt mixtures.

Crack and Joint Sealant (AASHTO D6690):

Test the properties of rubberized joint sealants: Bond test, resilience, penetration, softening point.

CT-index (ASTM D 8225):

Measure cracking resistance of asphalt mixtures.

Asphalt Extraction (AASHTO T 164 or ASTM D2172) and Recovery of Asphalt by Rotary Evaporator (ASTM D5404 or D7906):

Cold extraction of asphalt from asphalt mixtures using centrifuge and rotary evaporator to recover the asphalt binder for further testing on DSR and BBR. Used for RAP designs, Silo Storage, and pavement failure investigations to determine performance grade of asphalt binder.

Superpave Gyrotory Compactor (AASHTO T 312):

Used to compact asphalt cylinders for verification of volumetric properties of mix designs, moisture susceptibility, and performance testing.

APA Jr:

Used for AASHTO T 324 Hamburg-Wheel Track Testing and Asphalt Pavement Analyzer (AASHTO T 340). Hamburg wheel track test determines rutting susceptibility and potential moisture induced stripping of aggregate. Samples tested in water @ 50C for 20,000 passes or 12.5 mm rut depth (Balanced Mix Design = 20 mm rut depth).

APA determines rutting susceptibility. Samples are tested dry with wheel-over-rubber hose on surface of cores.

PennDOT LTS – Asphalt Testing Lab

Setup Room (Room C113):

Samples received at dock are brought to the setup room. Samples are separated by test method and dispersed to Labs where lab numbers are assigned, and tests performed.

Asphalt Ignition Furnace Lab (Room C124):

Determine Asphalt Content (AC) of asphalt mixtures by ignition of the asphalt binder in 1000°F furnaces. The results of this method are used for mixture evaluation. Samples are heated, mixed, weighed, burned, and washed in this lab.

Sieve Analysis of Extracted Aggregate (Room C123):

In this lab, we determine the particle-size distribution of fine and coarse aggregates extracted from asphalt mixtures obtained from the Ignition Furnace Test Method or the Solvent Extraction Test Method. The particle-size results are then used for mixture evaluation. 8" and 12" sieves are used to separate the aggregate by size after being placed in mechanical shakers for 7 minutes.

Asphalt Solvent Extraction Lab (Room C122):

In this room a solvent is used to find the asphalt content of asphalt mixtures. The sample material is washed by a hot solvent through refluxing. The AC content is the difference between the mass of the original sample and the mass of the extracted aggregate sample. The extracted aggregate is then used for sieve analysis, performed in Room C123.

Asphalt Density Lab (Room C118):

Determine the Bulk Specific Gravity of Compacted Asphalt Mixtures in this room. 6" core samples taken from Asphalt Roadways are tested to determine in-place density, air voids of Asphalt Pavement. Prior to testing, cores are reviewed to make sure foreign materials are removed such as soil, foundation material, paper, seal coat, and tack coat. If needed, cores are sawed to separate the test layer and/or to remove unnecessary material.

Asphalt Mixtures Lab - Maximum Theoretical Specific Gravity (Gmm) (Room C115):

The Gmm is a critical Asphalt Mixture characteristic. Gmm is used along with bulk specific gravity values from field cores to calculate percent of air voids, in-place density of the asphalt pavement. Gmm values are influenced by the composition of the asphalt mixtures. The Gmm is considered verified if it is within ± 0.030 of the supplier's Gmm QC sample test result or not verified if it is greater than the supplier's Gmm.

PennDOT LTS – Chemistry Lab

Routine tests for the Chemistry Lab's Coatings Laboratory (Room B120) for Traffic Paints and Glass Beads:

ASTM – ASTM International

AASHTO – American Association of State Highway and Transportation Officials

TRAFFIC PAINTS:

- **Degree of Settling by ASTM D869** – Determines the degree of pigment suspension and ease of remixing a shelf-aged sample of paint.
- **Viscosity by ASTM D562** – Determines the paint's resistance to flow when an external force is applied.
- **Density by ASTM D1475** – Determines the mass per unit volume (lb/gal).
- **% Solids by ASTM D2369** – Determines the weight percent non-volatile content.
- **Opacity (Contrast Ratio) by ASTM D2805** – Determines the hiding power of air-dry coatings.
- **Reflectance by ASTM E1349** – Determines reflection and color properties.

GLASS BEADS:

- **Gradation & Roundness by AASHTO R 98** – Determines the size and shape of glass beads used in traffic markings by computerized optical method.
- **Moisture Resistance Coating Test by AASHTO T 346** – Determines the water-repelling properties of coated glass beads.

PennDOT LTS – Aggregate Lab

PennDOT utilizes Superpave volumetric asphalt mixture designs which use aggregate and mixture properties to meet expected traffic loading and climate temperature requirements. Aggregates provide the critical stone framework for asphalt pavements providing strength and toughness and make up about 95% of the asphalt mixture. Their function in the overall performance of a pavement is critical. To do Superpave volumetric asphalt mixture designs, several aggregate properties need to be determined. These include:

- **Coarse Aggregate Angularity Requirements – ASTM D5821 Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate**
 - Fractured particles are needed to maximize shear strength by increasing inter-particle friction in bound aggregate mixtures also they are needed to provide stability for surface treatment aggregates and to provide increased friction and texture for aggregates used in pavement surface courses.
- **Fine Aggregate Angularity Requirements – AASHTO T 304 Uncompacted Void Content of Fine Aggregate, Method A**
 - Fine aggregate angularity is important because an excess of rounded fine aggregate can lead to HMA rutting. This test is used to ensure that the blend of fine aggregate has sufficient angularity and texture to resist permanent deformation for a given traffic level.
- **Sand Equivalent Requirements – AASHTO T 176 Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test**
 - The term “sand equivalent” expresses the concept that most fine aggregates are mixtures of desirable coarse particles (e.g., sand) and generally undesirable clay or plastic fines and dust. These materials can coat aggregate particles and prevent proper asphalt binder-aggregate bonding.
- **Flat-and-Elongated Requirements – ASTM D4791 Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate**
 - Flat or elongated particles tend to lock up more readily during compaction making compaction more difficult. They also tend to fracture during compaction along their weak, narrow dimension, which can effectively make aggregate gradation finer.
- **Specific Gravity and Absorption – AASHTO T 84 Specific Gravity and Absorption of Fine Aggregate and AASHTO T 85 Specific Gravity and Absorption of Coarse Aggregate**
 - Aggregate specific gravity is needed to determine weight-to-volume relationships and to calculate various volume-related quantities such as voids in mineral aggregate (VMA), and voids filled by asphalt (VFA). Absorption can be used as an indicator of aggregate durability as well as the volume of asphalt binder it is likely to absorb.

PennDOT LTS – Aggregate Lab (Continued)

The process for determination of Skid Resistance Level (SRL):

- **Petrographic analysis of aggregate – PTM 518 Hand Specimen Petrographic Examination**
 - Hand Sample Analysis – done on qualification and requalification samples to ensure that the quarry is providing suitable aggregate. The geologist examines the material and describes the mineralogy, grain/crystal size, fossils, colors, weathering, bedding/laminations. The geologist sorts the material into lithologies and determines the percentage of each lithology in the sample.
 - Thin-section Analysis – done on all qualification samples of Type A coarse aggregate from new sources to describe the detailed composition, grain/crystal size and fabric of the aggregate. A point count analysis is done to classify the aggregate and determine the properties that would affect the friction properties of the aggregate.

- **Acid Insoluble Residue – PTM 618 Acid Insoluble Residue in Carbonate Rocks**
 - This method of test covers the procedure for determining in the laboratory the amount of siliceous and other hard resistant mineral grains retained on the 75 µm (No.200) mesh sieve that remain after fragments of carbonate rock have been dissolved in hot hydrochloric acid. This procedure includes the identification of the retained residue primarily to distinguish hard rock fragments and mineral grains such as quartz, chert, and feldspar from relatively soft minerals and rock fragments such as shale and argillite. This method of test is intended to be applied to limestone and dolomite aggregates intended for use in the wearing surfaces of bituminous and Portland cement concrete pavements to determine the relative skid resistant properties of the coarse aggregates.

- **British Wheel – PTM 517 Determination of Accelerated Polish of Coarse Aggregate Using the British Wheel**
 - This test method describes a laboratory procedure by which an estimate may be made of the extent to which different coarse aggregates may polish under traffic. The "Polished Stone Value", (PSV) is defined as the state of polish reached by each sample when subjected to accelerated polish for ten hours in the presence of water and abrasive by means of a special machine. The state of polish reached by each sample is measured by a British Pendulum Tester and is expressed as the Polished Stone Value (PSV).