Overview of the NTPEP & APEL
AASHTO Technical Service Programs

Katheryn Malusky
Associate Program Manager for NTPEP
What is APEL

Welcome to the AASHTO Product Evaluation List (APEL) web site. This site provides a repository consisting of findings from the evaluation and testing of new and/or proprietary, engineered transportation products.

**My APEL** - Please select My APEL to access your APEL account specific information. Vendors can submit new evaluation requests and check the status of requests they submitted earlier. APEL personnel can process the product evaluation requests here.

**Completed Evaluations** - Please select Completed Evaluations to see the complete list of product evaluations handled by APEL.

**Certified Products** - Please select Certified Products to see the list of certified products handled by APEL.

*Code of Federal Regulations  23 CFR 635.411(a)(2)*
APEL Council

CHAIR
Seeking Candidate

VICE CHAIR
Seeking Candidate

APEL Coordinator
Evan Rothblatt
(AASHTO)

Region 1
Doug Gayne
(ME DOT)

Region 2
Terry Swygert
(SC DOT)

Region 3
Brad Young
(OH DOT)

Region 4
Ross Metcalfe
(MT DOT)
Review

- Product applications
- Establish evaluation guidelines
  → Evaluation Coordinator
- Test facility selection
- Final report
APEL Module

To provide information about innovative or proprietary materials, products, and devices of common interest for use in highway and bridge construction.

Currently 2 Mechanisms:

- Product Evaluation Reports
- State Certifications
Product Evaluations: Types of Products

- New and innovative products or materials
- Established products or materials with new applications
- Scientifically vetted products → implementation obstacles
- No existing specification or evaluation protocol
- R&D Completed → Market Ready
Benefits of the Program

States and Manufacturers save:
Current Challenges

• Outdated module

• Lack Manufacturer Recognition

• Lack State participation
Current Efforts

- Task Force
- Outreach to Manufacturers and States
- State Involvement and Implementation
- Products being evaluated
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www.ntpep.org/Pages/APEL.aspx
http://apel.transportation.org
What is NTPEP?

- Established within AASHTO in 1994, as a technical service program, who reports to the Standing Committee on Highways (SCOH)
- Combines the professional and physical resources of the AASHTO member departments in order to evaluate materials, products and devices of common interest for use in highway and bridge construction
- Primary Goal: provide cost-effective evaluations for the state Departments of Transportation (DOT)
What NTPEP is NOT

- NTPEP does **NOT** evaluate “New Products” being introduced by industry for the first time
- NTPEP does **NOT** pass or fail products
- NTPEP does **NOT** replace the Quality Assurance activities of state DOT’s
- NTPEP does **NOT** supersede State Requirements for product approval. Any state can require additional testing of the product prior to approval. (If such additional testing is required, the state can appeal to NTPEP for inclusion into the Testing Program.)
NTPEP- In Summary

- **Simplify** the product evaluation process
- Make it more **cost-effective** for both the manufacturer and the end user.
- Reduce duplication of effort by State DOTs.
- Serve as a “One Stop Shop” for Manufacturers of engineered products.
Rapid Set Concrete Patching Materials (RSCP)
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Rapid Set Concrete Patching Materials (RSCP)
Rapid Set Concrete Patching Materials (RSCP)
AASHTO T 161, Resistance to Rapid Freezing and Thawing. Procedure A apparatus
Adhesion tests
Portland Cement Concrete Joint Sealants (JS)
Portland Cement Concrete Joint Sealants (JS)

Laboratory Tests Performed, Hot-Poured Joint Sealants, ASTM D-5329:
• Cone penetration
• Bond to concrete
• Resilience
• Asphalt incompatibility
• Softening point
• Rotational viscosity

Laboratory Tests Performed, Cold-Applied Chemically-Curing Silicone Sealants, ASTM D-5893
• Cure evaluation (tack-free time)
• Effect of heat aging
• Bond to concrete
• Hardness
• Ultimate elongation
• Tensile stress at 150% elongation
• Accelerated weathering
• Resilience
Portland Cement Concrete Joint Sealants (JS)

- Field Evaluation
  Measurements/Calculations
- Water infiltration
  - Percent of adhesive failure
  - Percent of cohesive failure
  - Percent total failure
- Stone/debris retention
- Average seal condition number
Portland Cement Concrete Joint Sealants (JS)
Portland Cement Concrete Joint Sealants (JS)
Structural Steel Coatings (SSC)
Structural Steel Coatings (SSC)

- Coating Manufacturer
  - Completes a Product Evaluation Form on DataMine 2.0
  - Submits 100% payment to AASHTO
- AASHTO notifies laboratory of submission
- Qualified Laboratory
  - Coordinates acquisition of coating materials
  - Conducts compositional analysis
  - Prepares test panels
  - Performs physical and accelerated testing
  - Enters data into DataMine 2.0 for review by Lead State & manufacturer
AASHTO R31 Compositional Analysis

- Infrared Spectroscopy*
- VOC Content
- Exempt Solvent Analysis
- Toxic Metals (Pb, Cr, Cd)
- Heavy Metals (TCLP)
- Epoxide & Amine Values
- Isocyanate content
- HALS
- Weight solids, %*
- Pigment content, %*
  *Individual components and blended components

- Metallic zinc content (dry film and in zinc powder)
- Volume solids, %*
- Density*
- Viscosity-Stormer Krebs*
- Viscosity-Brookfield
- Pot Life (via viscosity)
- Sag resistance
- Dry-to-touch
- Dry-to-handle
Structural Steel Coatings (SSC)

- Slip Coefficient Testing
- Salt Fog Exposure (ASTM B117)
- Cyclic Weathering Exposure (ASTM D5894)
- Adhesion Testing (ASTM D4541; A4)
- Thermal Cycling/Adhesion Testing
Requalification

• Prior to 2011, requalification required at 5 years
  – FT-IR
  – Density
  – Weight solids, %
  – Pigment content, %
  – Viscosity
  – Dry time

• 5-year requalification testing discontinued
• 7-year re-submission invoked (verses 10-year)
Structural Steel Coatings (SSC)
Concrete Coatings
Concrete Coatings

- Evaluate coating systems for use on bridges, walls, barriers, etc.
- Same premise as SSC
- Compositional Testing
- Test Panel Fabrication and Preparation
- Performance Testing
- Uploading to DataMine 2.0
Compositional Testing

- Fourier Transform Infrared Spectroscopy (each component)
- VOC Content (and exempt solvent analysis)
- Toxic Metals Content (Pb, Cr. Cd)
- TCLP (8 RCRA heavy metals)
- Epoxide and Amine Values (epoxy)
- Isocyanate and HALS content (urethane)
- Siloxane and acrylic content (via FT-IR as appropriate)
- Solids by weight; solids by volume; pigment by weight; density
- Viscosity
- Pot Life
- Sag Resistance
Physical Testing

- Chloride Ion Penetration (AASHTO T259)
- Permeability (free-film; ASTM E96)
- Weatherability (QUV) 2500 hours
- Adhesion (ASTM D7234)
- Resistance to Freeze-Thaw
- Crack Bridging (ASTM C1305)
- Performance over concrete defects (via weatherability and adhesion)
- Ease of application
- Overcoatability/graffiti resistance
- Two-year atmospheric testing
Polymer Concrete Overlays (PCO)
Polymer Concrete Overlays (PCO)

Evaluation

• Initial field evaluation shall be conducted between 30 to 60 working days after installation. Additional evaluations will occur at 12, 24, and 36 months from the date of installation.

• Products will be exposed to three winter seasons and may incur plowing, salting, and brining. Ambient air temperatures may vary from below 0°C in wintertime to above 35°C during summer months.
Polymer Concrete Overlays (PCO)

- **Epoxy Multi-Layer**
  - For Bridge Preservation purposes, it is good practice to require a 2 lift system. This allows the first layer of Epoxy-Aggregate to seal the deck while the second layer provides a wearing surface for maximum longevity of the application. (ACI 548.8-07)
  - Polymer Concrete Overlays can be cost effective compared to other overlay systems
  - They are highly impermeable and exhibit better chloride resistance than other concrete overlays, offering a nonskid wearing surface in addition to bridge deck and pavement protection.
  - For Bridge Preservation purposes, it is good practice to require an Epoxy Multi-Layer 2 lift system.
Elastomeric Bridge Bearings (EBB)
Elastomeric Bridge Bearings (EBB)

- QC program with audits, and very clear expectations.
- Trust in the audit program because AASHTO is a state DOT organization and should be unbiased.
- Provides a specific quality requirement as minimum qualification for all manufacturers.
- Potentially can reduce the frequency of prequalification testing because of the audit program.
- Potentially reduce the inspection responsibility for individual bearings.
Reinforcing Steel Audit Program (WWR and Rebar)
Reinforcing Steel Audit Program

- Annual Audit (desktop review every 5 years)
  - Yard Walkthrough
  - Quality Control Testing (preparation of split samples)
  - Review of Documentation
Reinforcing Steel Audit Program

- The following documents are in DataMine (http://data.ntpep.org)
  - Final Audit Report
  - Corrective Action Reports
  - Quality Manual
  - Pre-Audit Application
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Message

**Manufacturer Name: Cascade Steel Rolling Mills**

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**Manufacturer Name: CMC Steel**

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**Manufacturer Name: Engineered Wire Products**

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**Specification: A 615 / 615M**

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**Grades**

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**Specification: A 706**

**Please Select All that Apply:**

**Grades**
Metric Bar Marks - 2014

New markings

Gerdau Ameristeel (revised markings)
(Jackson, TN)

S

Bars #43 and #57 only

W

Bars #43 and #57 only
2015 Annual NTPEP Meeting

• Begins on Sunday, May 17\textsuperscript{th} and concludes on Thursday, May 21\textsuperscript{st}, 2015 in Scottsdale, Arizona

• Registration through the NTPEP website, \texttt{www.ntpep.org}
Questions?

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