

# **Pavement Preservation Training Opportunities**



***For  
Chip Seals,  
Slurry Seals &  
Micro Surfacing***

***Rocky Mountain West Pavement Preservation Partnership***

***10-7 – 10-9 2013***

***Anchorage, AK***



# Pavement Preservation Training Opportunities

(Slurry Seal, Micro Surfacing & Chip Seal Treatments)

- International Slurry Surfacing Association  
**Slurry Systems Workshop (SSWS)**
- National Center for Pavement Preservation at Michigan State University  
**Slurry Seal, Micro Surfacing, Chip Seals and Crack Treatment Classes** (additional topics available)
- Federal Highway Administration & International Slurry Surfacing Association  
**Interactive Web Based Training**



# Slurry Systems Workshop



## SLURRY SEAL NEWS

1101 CONNECTICUT AVENUE, N.W.  
WASHINGTON, D.C. 20036  
202-857-1160

MARCH/APRIL 1986



**1986 ISSA Operators School:  
Teaching the Way to Jobsite Excellence**



Inside: Convention '86  
New Guide Specifications





# ISSA

## Slurry Systems Workshop



- **Workshop topics include:**
  - ***Introduction to Slurry Seal, Micro Surfacing, Chip Seals and Crack Treatments***
  - ***Best Practices for Slurry Seal, Micro Surfacing, Chip Seals and Crack Treatments***
  - ***Pavement preservation concept/ site selection***
  - ***Mix design methods***
  - ***Hand mix sessions***
  - ***Calibration of Slurry & Micro Surfacing application equipment***
  - ***Calibration of asphalt distributors and chip spreaders***
  - ***Troubleshooting in the field***
  - ***Project management***
  - ***Combination treatments***
  - ***Equipment showcase (innovations)***
  - ***Live demonstrations (Micro Surfacing, Chip Seal and Crack Treatments)***



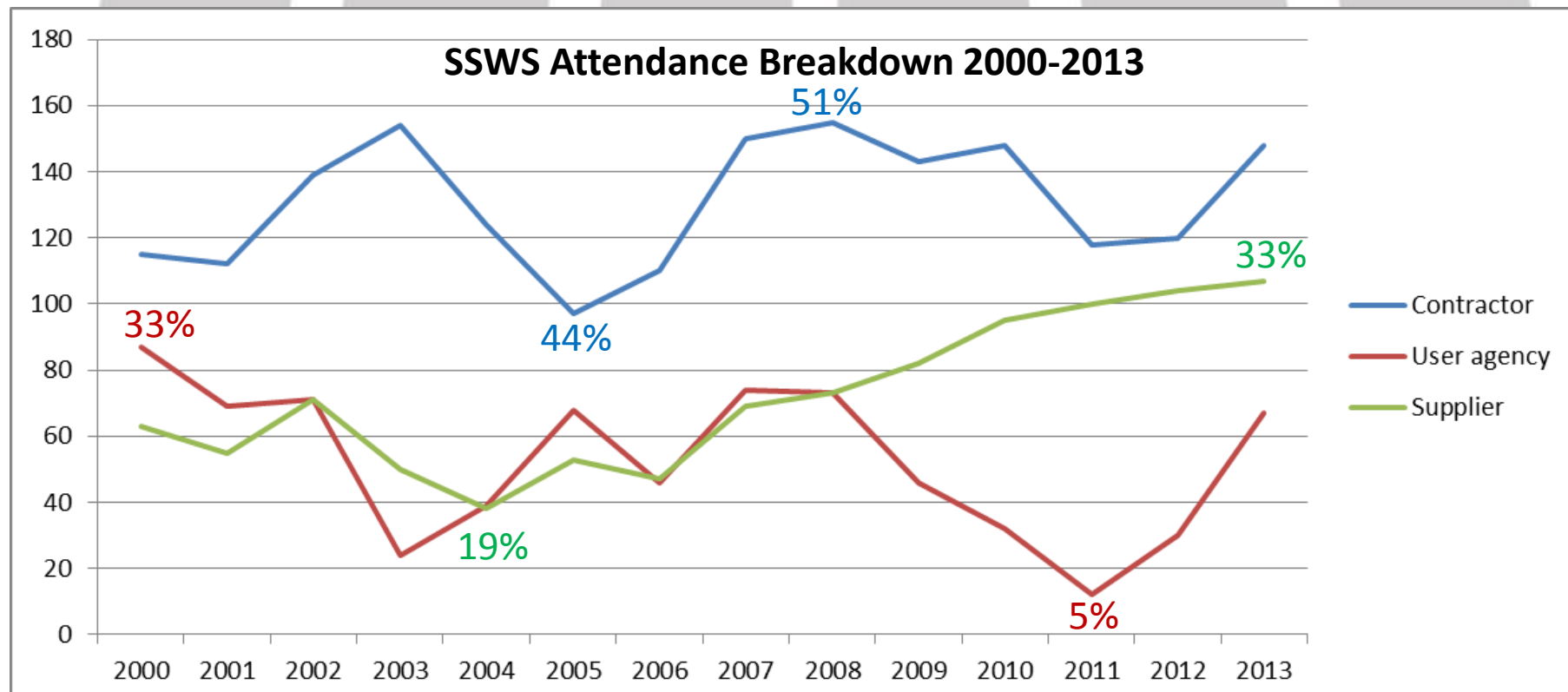


# ISSA

## Slurry Systems Workshop



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Contractor	115	112	139	154	124	97	110	150	155	143	148	118	120	148	1833
User agency	87	69	71	24	39	68	46	74	73	46	32	12	30	67	738
Supplier	63	55	71	50	38	53	47	69	73	82	95	100	104	107	1007
<b>Total</b>	<b>265</b>	<b>236</b>	<b>281</b>	<b>228</b>	<b>201</b>	<b>218</b>	<b>203</b>	<b>293</b>	<b>301</b>	<b>271</b>	<b>275</b>	<b>230</b>	<b>254</b>	<b>322</b>	<b>3578</b>



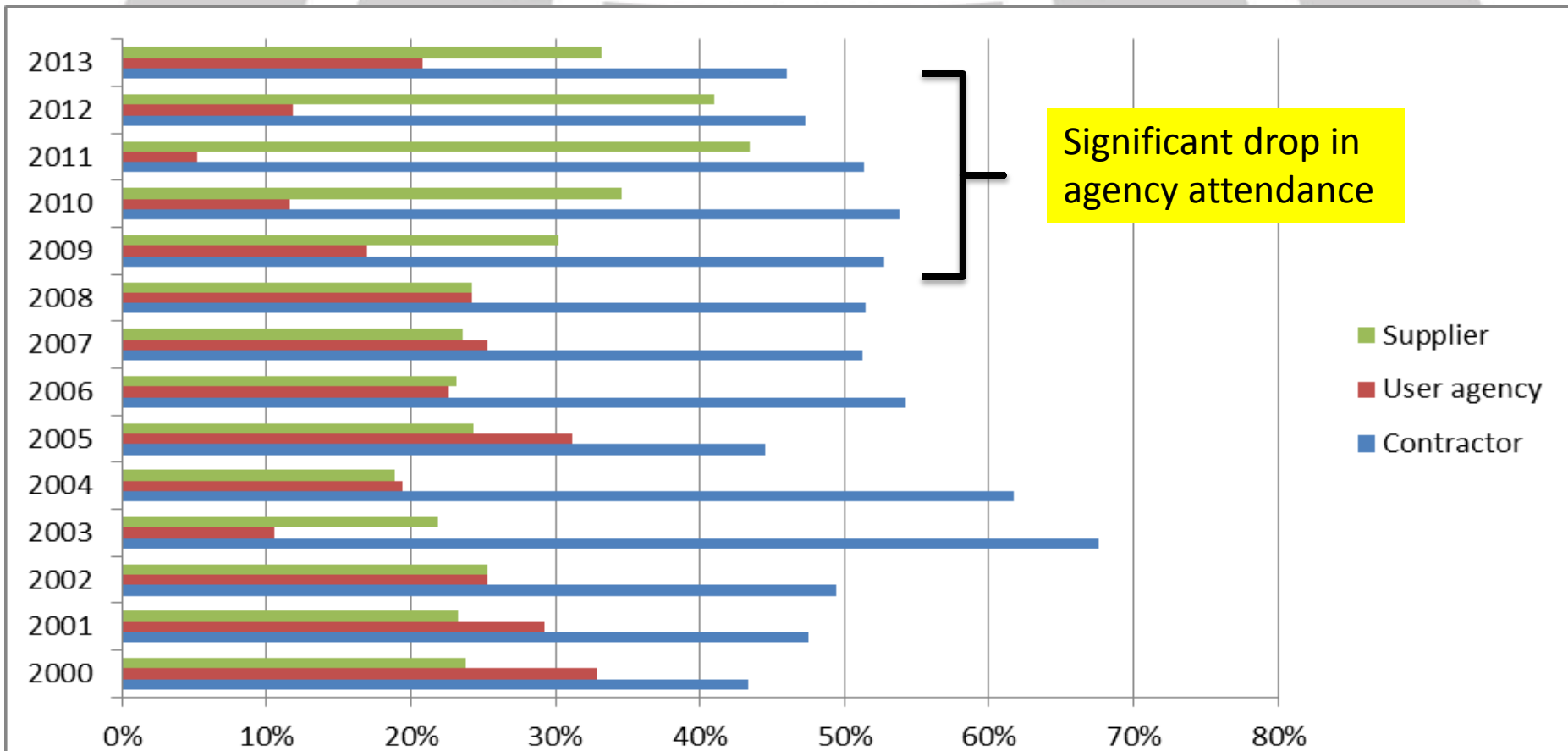


# ISSA

## Slurry Systems Workshop



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Contractor	43%	47%	49%	68%	62%	44%	54%	51%	51%	53%	54%	51%	47%	46%	51%
User Agency	33%	29%	25%	11%	19%	31%	23%	25%	24%	17%	12%	5%	12%	21%	21%
Supplier	24%	23%	25%	22%	19%	24%	23%	24%	24%	30%	35%	43%	41%	33%	28%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%





# ISSA

## Slurry Systems Workshop



### Reasons to Attend

- **SSWS/ISSA's thirty year history of training industry personnel**
- **Face to face instruction**
- **A faculty of over thirty industry experts**
- **Comprehensive topics that cover Chip Seals, Slurry Seals, Micro Surfacing and Crack Treatments**
- **Attendees include, applicators, user agencies, engineers, suppliers and equipment manufacturers from around the globe.**
- **Breaks, lunch's and receptions provide a setting for information exchange**
- **Hands on mix demonstrations (attendee participation)**
- **Offers Continuing Education Units (CEU's)**
- **All attendees receive a CD with all papers and presentations**
- **Special registration fees for ISSA members and agency personnel**
- **Live Demonstrations (chip seal, micro surfacing & crack treatments)**





# Slurry Systems Workshop

## Hand Mix Session







# Slurry Systems Workshop

## Live Demonstrations





**ISSA**

# **Slurry Systems Workshop**



**SSWS 2014**

**January 21-24, 2014**

**Caribe Royale Hotel**

**Orlando, Florida**

Phone: 410-267-0023

Fax: 410-267-7546

E-mail: [cerone@slurry.org](mailto:cerone@slurry.org)

**International Slurry Surfacing Association**


**[www.slurry.org](http://www.slurry.org)**

**ISSA is part of the Pavement  
Preservation & Recycling Alliance**

For reservation please call  
888-258-7501 and be sure  
to mention ISSA.

[www.cariberoyale.com/](http://www.cariberoyale.com/)





# Training Opportunities with the National Center for Pavement Preservation (NCPP)

We can deliver training in your area.





# One-Day Training Opportunities

## Basic Concepts for Pavement Preservation

This course is intended to provide elected officials and practitioners with an introduction to the concept of pavement preservation and its applicability within road agencies. Topics include definitions, pavement life, road networks, alternative strategies, pavement distresses, guidelines, and preservation treatments.

# SLURRY SEAL & MICRO-SURFACING



# SLURRY SEAL & MICRO-SURFACING

## Course Description

This one-day course is intended to provide a comprehensive understanding of slurry seal and micro-surfacing systems. The principal focus is to offer pavement practitioners the essential skills for selecting good candidate pavements, designing and estimating projects, and gaining awareness of good construction practices for successful projects.



# SLURRY SEAL & MICRO-SURFACING

## About the Course

- **One Day** – face to face instruction
- **Endorsed** – peer reviewed by ISSA
- **University Based** – approved by Michigan State University
- **Credits** – 6 PDH's or 0.6 CEU's
- **Book** - resource notebook containing all class materials
- **Instructor** - practical experience

# SLURRY SEAL & MICRO-SURFACING

## Course Content

- **Fundamentals** - differences between these treatment techniques
- **Materials** - understanding material components
- **Design** – mix design and test requirements
- **Equipment** - operating principles of placement machines
- **Construction** - practical best-practice methods

# One-Day Training Opportunity

## Chip Seal Best Practice

The course is intended to provide a comprehensive understanding of chip seal design, construction, equipment, and inspection. Because the primary causes of chip seal failure are poor construction practices and inappropriate roadway candidate selection, this course is designed to provide pavement practitioners with the essential skills needed to ensure success.



# **Additional One-Day Training Opportunity**

## **Top of the Curve**

**(Fog Seals, Rejuvenators, Crack Sealing  
& Filling)**

**This course is intended to provide a comprehensive understanding of treatments applied early in a pavement's life. Topics range from the perspectives of pavement performance, design, materials, equipment (including best practices), construction, and project administration.**



## **Cold In-place Recycling**

**The course will introduce various pavement recycling processes, and discuss the relative economic benefits of adopting in-place recycling methods. Topics include methods to evaluate pavements prior to selecting projects and the pavement design process for various traffic loadings. The best practices for construction inspection will also be covered.**

# NCPP Training Opportunities

- Low cost classes
- Brought to your area
- Receive class manual
- Face to face instruction
- Experienced instructors
- Accredited through MSU
- Receive Continuing Education Credits

# NCPP Training Opportunities

For more information on the Slurry Seal & Micro-Surfacing class, a detailed cost quote, or to arrange a training session for your

organization, contact:

**Patte at (517) 432-8220,**

or email [ncpp@egr.msu.edu](mailto:ncpp@egr.msu.edu).



# Interactive Web Based Training



## International Slurry Surfacing Association

*Slurry & Micro Surfacing, Chip Sealing &  
Crack Treatments*



&

U.S. Department of Transportation

**Federal Highway Administration**

# Project Scope

- **Topics:**
  - Chip Seal
  - Slurry Seal
  - Micro Surfacing
- **Objective:**
  - Develop three interactive web-based training courses
  - Provide information covering the proper use, application and inspection of Slurry Seal, Micro Surfacing & Chip Seal Treatments



U.S. Department of Transportation  
**Federal Highway Administration**

# Project Team

- ▶ Federal Highway Administration (FHWA) sponsored project
- ▶ ISSA subject matter experts provided hundreds of hours  
Larry Tomkins (Ergon A & E), Chuck Ingram (Slurry Pavers),  
Brian Horner (E D Etnyre) & Tim Harrawood (Vance Brothers, Inc.)

(98 years of combined industry experience)



**International Slurry  
Surfacing Association**  
*Slurry & Micro Surfacing, Chip Sealing & Crack Treatment*



U.S. Department of Transportation  
**Federal Highway Administration**



# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Course Titles & Descriptions

### 1) How to Construct High Quality Chip Seal Treatments

- Provide practical information to assist in the construction and inspection of various chip seal treatments
- Provide guidance relative to the appropriate materials & equipment necessary for various spray applied chip seal treatments, and the application procedures necessary to assure desired results
- Detail areas of importance from system benefits, site selection, specifications, component materials, mix designs, equipment calibration, application of treatments, troubleshooting, contract administration and special application situations





# ISSA/FHWA

## Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

### Source Documents

#### **How to Construct High Quality Chip Seal Treatments**

- Basic Asphalt Emulsion Manual, forth edition (AEMA)
- Seal Coat & Surface Treatment Manual (TXDOT)
- Minnesota Sealcoat Handbook 2006 (MNDOT)
- Maintenance Technical Advisory Guide (CALTRANS)
- Construction of Hot Mix Asphalt Pavements, second edition, (Asphalt Institute)
- NCHRP Synthesis 342, Chip Seal Best Practices 2005
- Maintenance Solutions for Bleeding & Flushed Pavements 2006 (TXDOT)



# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Course Titles & Descriptions

### 2) How to Construct High Quality Slurry Seal & Micro Surfacing Treatments, Part 1

- Provide practical information to assist in the construction and inspection of slurry system projects (slurry seal and micro surfacing)
- Provide guidance relative to the appropriate materials & equipment necessary for various applications of slurry systems, and the application procedures necessary to assure desired results
- Detail areas of importance from history of slurry systems, site selection, specifications, component materials, system mixtures, mix designs and equipment calibration



ISSA/FHWA



U.S. Department of Transportation  
Federal Highway Administration

# Web Based Training

## Course Titles & Descriptions

### 3) How to Construct High Quality Slurry Seal & Micro Surfacing Treatments, Part 2

- Provide practical information to assist in the construction and inspection of slurry system projects (slurry seal and micro surfacing)
- Provide guidance relative to the appropriate materials necessary for various applications of slurry systems, and the application procedures necessary to assure desired results
- Detail areas of importance from construction, specifications, slurry system treatments, contract administration, troubleshooting, and special application situations.





# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Source Documents

### **How to Construct a High Quality Slurry Seal & Micro Surfacing Treatment, Parts 1 & 2**

- High Performance Slurry Systems Inspectors Manual (ISSA) 2010 Edition**
- Recommended Performance Guidelines for Slurry Seal & Micro Surfacing, A-105 & A-143 (ISSA) Revised 2010**
- TB-2012 Design Technical Bulletin (ISSA) 2012 Edition**



# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Target Audience

- **Contractors and their employees, including (for example):**
  - Site manager/foreman
  - Equipment operator
  - General labor
- **Consulting and Agency Engineers**
- **Agency owner personnel responsible for implementing these types of treatments into current pavement management programs**
- **Agency representatives responsible for inspecting and approving contractor work in the field**



# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Features

- simple registration process (emails link)
- Completely interactive
- audio & text narration
- self paced
- time out mechanism (pause feature)
- knowledge checks (for each lesson)
- photo gallery (micro & slurry)
- glossary of industry terminology
- navigate through outline
- printable calibration forms w/procedures
- printable recommended performance guidelines
- Links to:
  - Technical Papers
  - ISSA publications order form (manuals & tech bulletins)
  - Source materials
- personal development hours
- certificate of completion

The screenshot shows the ISSA registration interface. At the top left is the ISSA logo. To its right is the text 'International Slurry Surfacing Association' and 'Slurry & Micro Surfacing, Chip Sealing & Crack Treatment'. Below this is a photo of workers on a road. The main content area has a header 'Event Info | Event Registration'. The event title is 'Chip Seal Treatments Test' with dates 'Friday, January 18, 2013 3:15:00 PM EST - Wednesday, January 18, 2023 4:15:00 PM EST'. A note says 'If you have registered with us before, please [click here](#)'. Below this are several mandatory fields marked with an asterisk: 'Email Id \*', 'First Name \*', 'Last Name \*', 'Password \*', 'Verify Password \*', and 'Company Name \*'. There is a 'Hints' link next to the password field.



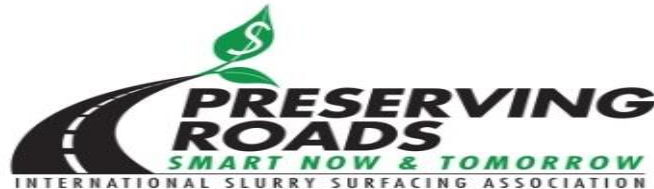


# ISSA/FHWA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

# Training Demonstration





# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment



## Slurry Seal and Micro Surfacing - Part 1

Outline Narration Search

### Slide Notes

The purpose of this module is to provide practical information to assist in the construction and inspection of slurry system projects (slurry seal and micro surfacing). The Federal Highway Administration (FHWA) and the ISSA's Board of Directors have authorized this module's development to provide an educational tool that could be used by persons possessing limited familiarity with slurry system methods.

Contractor performance along with user agency oversight both play an important role in the successful outcome of slurry system projects. This training module will address both sides of the equation.

Upon completion of this module, you will be able to:

- Describe the information provided in the Manual for Slurry Systems that is most important to successful slurry system construction;
- Explain why slurry systems are used;
- Explain why certain materials are used in slurry systems; and
- Describe slurry system design and calibration methods.

This module will take approximately 120 minutes to complete.

50 Minutes 51 Seconds Remaining

### Module Objectives

Upon completion of this module, you will be able to:

- Describe the information provided in the Manual for Slurry Systems that is most important to successful slurry system construction
- Explain why slurry systems are used
- Explain why certain materials are used in slurry systems
- Describe slurry system design and calibration methods

This module will take approximately 120 minutes to complete.



Slide 5 / 66 | Stopped

01:06 / 01:06





It is necessary to have some familiarity with aggregate properties to understand how the asphalt and the aggregate interact. The aggregate's key characteristics for suitable incorporation into a slurry system are:

- Aggregate Quality;
- Aggregate Gradation and Particle Size;
- Particle Shape;
- Particle Charge;
- Cleanliness;
- Toughness and Abrasion Resistance; and
- Durability and Soundness.

Select each key characteristic to learn more.

## Aggregate

- The aggregate's key characteristics for suitable incorporation into a slurry system are:

<b>1</b> Aggregate Quality	<b>4</b> Particle Charge
<b>2</b> Aggregate Gradation and Particle Size	<b>5</b> Cleanliness
<b>3</b> Particle Shape	<b>6</b> Toughness and Abrasion Resistance
<b>7</b> Durability and Soundness	

Select each key characteristic to learn more.







# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment



Outline

Narration

Search

Slide Notes

For a high performance slurry system, quality aggregate is mandatory. In addition to the actual properties of the parent rock, quality includes proper gradation, particle shape, and cleanliness or sand equivalent.

## Aggregate Key Characteristics

### 1) Aggregate Quality

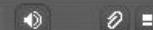
Close

- For a high performance slurry system, quality aggregate is mandatory.
- In addition to the actual properties of the parent rock, quality includes proper gradation, particle shape, and cleanliness or sand equivalent.

15 Minutes 22 Seconds Remaining



00:00 / 00:14





# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment



## Slurry Seal and Micro Surfacing Treatments - Part 2

[Outline](#) [Narration](#) [Search](#)

### Slide Notes

Concrete curbs and gutters are occasionally found on residential and arterial streets and are normally not a problem for the crew to work around. The image on the right illustrates acceptable workmanship whereas the image on the left illustrates unacceptable workmanship.

It is clear that the contractor that applied the material in the acceptable picture had good control of the slurry systems mixture, maintained the correct equipment alignment and maintained their spreader box in a professional manner.

If the application contractor cannot produce acceptable workmanship, work should stop. Furthermore, the contractor shall not be allowed to continue any work until he can exhibit acceptable workmanship.

## 4. Curbs and Gutters

### Unacceptable



### Acceptable



48 Minutes 52 Seconds Remaining



Slide 22 / 85 | Stopped

00:00 / 00:40





Slide Notes

The functions of the embedded aggregate are to resist traffic abrasion, to transmit wheel loads, and improve the surface friction and safety for vehicles.

There are several factors to consider when choosing aggregate. They are:

- Type;
- Gradation;
- Particle Shape;
- Cleanliness;
- Toughness and Soundness; and
- Absorption.

Select each factor to learn more.

63 Minutes 24 Seconds Remaining

## Aggregate – Functions and Selection Factors

- Functions of the embedded aggregate are to resist traffic abrasion, to transmit wheel loads, and improve the surface friction and safety for vehicles
- There are several factors to consider when choosing aggregate.

Type

Gradation

Particle Shape

Cleanliness

Toughness and Soundness

Absorption

Select each factor to learn more.



Slide 22 / 81 | Stopped

00:00 / 00:25





Slide Notes

Let's start with aggregate selection. The first consideration is the type of aggregate that is available in your area. There are predominantly 2 types of aggregates: natural and synthetic.

Select each picture to learn more.

62 Minutes 54 Seconds Remaining

## Aggregate – Functions and Selection Factors

Type

Close



Natural



Synthetic

Select each picture to learn more



00:00 / 00:14







# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment



## Chip Seal Treatments

Outline Narration Search

Slide Title	Duration
▶ 60. 6. Haul Truck	00:42
▶ 61. Match each piece o...	00:28
▶ 62. Match each piece o...	00:23
▶ 63. True or false? The...	00:07
▶ 64. True or false? The...	00:06
▶ 65. True or false? One...	00:06
▶ 66. True or false? One...	00:07
▶ 67. Lesson 3 Summary	00:23
▶ 68. Lesson 4 Objective...	00:26
▶ 69. Weather Considerat...	00:59
▶ 70. Traffic Control	01:57
▶ 71. Construction Seque...	00:22
▶ 72. Workmanship	00:46
▶ 73. Troubleshooting	00:15
▶ 74. Select all that ap...	00:17
▶ 75. Select all that ap...	00:11
▶ 76. List the construct...	00:17
▶ 77. List the construct...	00:21
▶ 78. Select all that ap...	00:37
▶ 79. Select all that ap...	00:19
▶ 80. Lesson 4 Summary	00:20
▶ 81. Module Summary	00:32

5 Minutes 11 Seconds Remaining

## Troubleshooting

**1**

Loss of Cover  
Aggregate

**2**

Bleeding or  
Flushing

**3**

Streaked  
Appearance

Select each topic to learn more about the problem, causes and solutions.



Slide 73 / 81 | Stopped

00:15 / 00:15





# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment



Outline	Narration	Search
Slide Title		Duration
▶ 57. 4. Cleaning Equipm...		00:21
▶ 58. 4. Cleaning Equipm...		00:37
▶ 59. 5. Front End Load...		00:08
▶ 60. 6. Haul Truck		00:42
▶ 61. Match each piece o...		00:28
▶ 62. Match each piece o...		00:23
▶ 63. True or false? The...		00:07
▶ 64. True or false? The...		00:06
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▶ 79. Select all that ap...		00:19
▶ 80. Lesson 4 Summary		00:20
▶ 81. Module Summary		00:32

4 Minutes 50 Seconds Remaining

## Troubleshooting

Close

### Problem:

Loss of cover aggregate

### Possible causes are:

- Insufficient asphalt binder
- Dusty aggregate
- Poor gradation
- Cold temperatures
- Allowing the binder to break before chips are placed and rolled
- Excessive snow plow down pressure

### Solution?

Select here

Select the solution to learn about how to avoid or fix the problem.



00:16 / 00:24





# International Slurry Surfacing Association

Slurry & Micro Surfacing, Chip Sealing & Crack Treatment

[Resources](#) [Glossary](#) [Help](#)



## Troubleshooting

Potential solutions to the loss of cover aggregate include but are not limited to:

- Increasing the binder application rate
- Removing the dust by washing the aggregate or switching aggregate all together
- Verifying that the aggregate gradation meets specifications and is consistent with the mix design results
- Applying the treatment only when weather conditions are suitable
- Making sure that the aggregate spreaders and rollers are operating closely behind the asphalt distributor

Close

Close

**Solution?**

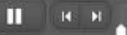
**Select here**

Select the solution to learn about how to avoid or fix the problem.

## Chip Seal Treatments

Outline	Narration	Search
Slide Title		Duration
▶ 57. 4. Cleaning Equipm...		00:21
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▶ 79. Select all that ap...		00:19
▶ 80. Lesson 4 Summary		00:20
▶ 81. Module Summary		00:32

4 Minutes 43 Seconds Remaining



00:00 / 00:44





# FHWA/ISSA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

## Summary

- **Increased usage of Chip Seals, Slurry Seal & Micro Surfacing**
- **Need for training options (contractor & agency)**
- **Travel restrictions & Budget cuts**
- **All three training options have great value**
- **Technology transfer**
- **Benefits agency & applicator (taxpayer)**
- **Available for a minimum of two years**
- **Cost of training = FREE**





# FHWA/ISSA Web Based Training



U.S. Department of Transportation  
Federal Highway Administration

**Available on the ISSA website at  
[WWW.Slurry.org](http://WWW.Slurry.org)**

## **Questions?**

# **Thank You!**

**Rusty Price**