NHI CATALOG

Improving the Performance of the Transportation Industry Through Training

This customized version was generated on February 15, 2020
These NHI category icons can assist users in identifying the course category or multiple course categories. The category icons are listed below for your reference.

<table>
<thead>
<tr>
<th>Structures</th>
<th>Pavement and Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geotechnical</td>
<td>Design and Traffic Operations</td>
</tr>
<tr>
<td>Construction and Maintenance</td>
<td>Hydraulics</td>
</tr>
<tr>
<td>Intelligent Transportation Systems (ITS)</td>
<td>Freight and Transportation Logistics</td>
</tr>
<tr>
<td>Real Estate</td>
<td>Environment</td>
</tr>
<tr>
<td>Transportation Planning</td>
<td>Business, Public Administration &amp; Quality</td>
</tr>
<tr>
<td>Highway Safety</td>
<td>Communications</td>
</tr>
<tr>
<td>Site and Personal Safety</td>
<td>Asset Management</td>
</tr>
<tr>
<td>Financial Management</td>
<td>Transportation Performance Management</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

## INFORMATION

- About NHI ................................................................. iii
- NIHI Makes Hosting Easy ................................................. 1
- Receiving Course Credit ................................................ 3
- Free Web-Conference Training ........................................ 5

## STRUCTURES

- FHWA-NHI-130081C LRFD Design of Common Bridge Elements: Decks and Bearings .................................................. 6
- FHWA-NHI-130081D LRFD Steel I-Girder Details Design .......................................................... 7
- FHWA-NHI-130081E Prestressed Concrete Girder Topics .......................................................... 8
- FHWA-NHI-130081P General Superstructure Design Considerations (Web-based) .................................................. 9
- FHWA-NHI-130093W Introduction to Earthquake Engineering .................................................. 10
- FHWA-NHI-130101A Prerequisite Assessment for Safety Inspection of In-Service Bridges - WEB-BASED .................................................. 13
- FHWA-NHI-130103 Post-Tensioning Tendon Installation and Grouting - WBT .................................................. 14
- FHWA-NHI-130105A Introduction to FRP Materials and Applications for Concrete Structures, WEB-BASED .................................................. 15
- FHWA-NHI-130105B Construction Procedures and Specifications for Bonded Repair and Retrofit of Concrete Structures .................................................. 16
- FHWA-NHI-130105C Quality Control of Repair and Retrofit of Concrete Structures Using FRP Composites .................................................. 17
- FHWA-NHI-130106A Bridge Preservation Fundamentals .................................................. 18
- FHWA-NHI-130106B Establishing a Bridge Preservation Program .................................................. 19
- FHWA-NHI-130106C Communication Strategies for Bridge Preservation .................................................. 20
- FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT .................................................. 21
- FHWA-NHI-130107B Bridge Maintenance Painting .................................................. 22
- FHWA-NHI-130107C Maintenance of Movable Bridges .................................................. 23
- FHWA-NHI-130107D Maintenance of Masonry Bridge Elements .................................................. 24
- FHWA-NHI-130109A Bridge Management Fundamentals .................................................. 25
- FHWA-NHI-130109B Performance-Based Management of Highway Bridges .................................................. 26
- FHWA-NHI-130111 Nondestructive Evaluation Fundamentals for Bridge Inspection (Web-based) .................................................. 27
- FHWA-NHI-130112A NDE for Concrete Bridge Elements (Web-based) .................................................. 28
- FHWA-NHI-130112B NDE for Steel Bridge Elements (Web-based) .................................................. 29
- FHWA-NHI-130112C NDE for Timber and Other Material Bridge Elements (Web-based) .................................................. 30
- FHWA-NHI-130124 Tunnel Safety Inspection refresher WBT Prerequisite .................................................. 31

## PAVEMENTS AND MATERIALS

- FHWA-NHI-131105A (Introduction to) Asphalt Pavement In-Place Recycling Techniques .................................................. 32
- FHWA-NHI-131110 Asphalt Pavement Preservation Treatment Series (Modules A-K) .................................................. 33
- FHWA-NHI-131110A Asphalt Pavement Preservation Treatment Series: Introduction to Pavement Preservation .................................................. 35
- FHWA-NHI-131110B Asphalt Pavement Preservation Treatment Series: Materials .................................................. 36
- FHWA-NHI-131110C Asphalt Pavement Preservation Treatment: Crack Sealing & Filling, and Joint Sealing .................................................. 37
- FHWA-NHI-131110D Asphalt Pavement Preservation Treatment Series: Localized Pavement Repair .................................................. 38
- FHWA-NHI-131110E Asphalt Pavement Preservation Treatment Series: Chip Seals .................................................. 39
- FHWA-NHI-131110F Asphalt Pavement Preservation Treatment Series: Fog Seals .................................................. 40
- FHWA-NHI-131110G Asphalt Pavement Preservation Treatment Series: Slurry Seals .................................................. 41
- FHWA-NHI-131110H Asphalt Pavement Preservation Treatment Series: Micro-Surfacing .................................................. 42
- FHWA-NHI-131110I Asphalt Pavement Preservation Treatment Series: Thin Functional HMA Overlay .................................................. 43
- FHWA-NHI-131110J Asphalt Pavement Preservation Treatment Series: Ultra Thin HMA Bonded Wearing Course .................................................. 44
- FHWA-NHI-131110K Asphalt Pavement Preservation Treatment Series: Selecting the Right Treatment .................................................. 45
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHW A-NHI-131117</td>
<td>Basic Materials for Highway and Structure Construction and Maintenance</td>
<td>46</td>
</tr>
<tr>
<td>FHW A-NHI-131121</td>
<td>Construction of Portland Cement Concrete Pavements</td>
<td>47</td>
</tr>
<tr>
<td>FHW A-NHI-131122</td>
<td>Portland Cement Concrete Paving Inspection</td>
<td>48</td>
</tr>
<tr>
<td>FHW A-NHI-131126</td>
<td>Concrete Pavement Preservation Series (Modules A-K)</td>
<td>49</td>
</tr>
<tr>
<td>FHW A-NHI-131126A</td>
<td>Concrete Pavement Preservation Series: Pavement Preservation Concepts</td>
<td>51</td>
</tr>
<tr>
<td>FHW A-NHI-131126B</td>
<td>Concrete Pavement Preservation Series: Concrete Pavement Evaluation</td>
<td>53</td>
</tr>
<tr>
<td>FHW A-NHI-131126C</td>
<td>Concrete Pavement Preservation Series: Slab Stabilization</td>
<td>55</td>
</tr>
<tr>
<td>FHW A-NHI-131126D</td>
<td>Concrete Pavement Preservation Series: Partial-depth Repairs</td>
<td>57</td>
</tr>
<tr>
<td>FHW A-NHI-131126E</td>
<td>Concrete Pavement Preservation Series: Full-depth Repairs</td>
<td>59</td>
</tr>
<tr>
<td>FHW A-NHI-131126F</td>
<td>Concrete Pavement Preservation Series: Retrofitted Edge Drains</td>
<td>61</td>
</tr>
<tr>
<td>FHW A-NHI-131126G</td>
<td>Concrete Pavement Preservation Series: Dowel Bar Retrofit</td>
<td>63</td>
</tr>
<tr>
<td>FHW A-NHI-131126H</td>
<td>Concrete Pavement Preservation Series: Diamond Grinding and Grooving</td>
<td>65</td>
</tr>
<tr>
<td>FHW A-NHI-131126I</td>
<td>Concrete Pavement Preservation Series: Joint Sealing and Crack Resealing</td>
<td>67</td>
</tr>
<tr>
<td>FHW A-NHI-131126J</td>
<td>Concrete Pavement Preservation Series: Concrete Overlays</td>
<td>69</td>
</tr>
<tr>
<td>FHW A-NHI-131127</td>
<td>Concrete Series</td>
<td>71</td>
</tr>
<tr>
<td>FHW A-NHI-131127C</td>
<td>HMA Paving Field Inspection</td>
<td>74</td>
</tr>
<tr>
<td>FHW A-NHI-131128</td>
<td>Testing Self-Consolidating Concrete</td>
<td>75</td>
</tr>
<tr>
<td>FHW A-NHI-131129</td>
<td>Advanced Self-Consolidating Concrete</td>
<td>76</td>
</tr>
<tr>
<td>FHW A-NHI-131130</td>
<td>Chip Seal Best Practices</td>
<td>77</td>
</tr>
<tr>
<td>FHW A-NHI-131131</td>
<td>Roller Compacted Concrete Pavements</td>
<td>78</td>
</tr>
<tr>
<td>FHW A-NHI-131132</td>
<td>Superpave for Construction</td>
<td>79</td>
</tr>
<tr>
<td>FHW A-NHI-131133</td>
<td>Aggregate Sampling Basics</td>
<td>80</td>
</tr>
<tr>
<td>FHW A-NHI-131134</td>
<td>Materials Testing: Reducing Aggregate Samples</td>
<td>81</td>
</tr>
<tr>
<td>FHW A-NHI-131135</td>
<td>Special Mixture Design Considerations and Methods for Warm Mix Asphalt</td>
<td>82</td>
</tr>
<tr>
<td>FHW A-NHI-131136</td>
<td>AASHTO Designation: T 308</td>
<td>83</td>
</tr>
<tr>
<td>FHW A-NHI-131137</td>
<td>Hot In-place Recycling</td>
<td>84</td>
</tr>
<tr>
<td>FHW A-NHI-131138</td>
<td>Full Depth Reclamation (FDR)</td>
<td>85</td>
</tr>
<tr>
<td>FHW A-NHI-131407</td>
<td>SpecRisk Quality Assurance Specification Development and Validation Course</td>
<td>87</td>
</tr>
<tr>
<td>FHW A-NHI-131407C</td>
<td>Hardened Concrete Properties - Durability</td>
<td>88</td>
</tr>
<tr>
<td>FHW A-NHI-131408C</td>
<td>Fundamentals of Materials Used for Concrete Pavements</td>
<td>89</td>
</tr>
<tr>
<td>FHW A-NHI-131408S</td>
<td>Incompatibility in Concrete Pavement Systems</td>
<td>90</td>
</tr>
<tr>
<td>FHW A-NHI-131408R</td>
<td>Mix Design Principles</td>
<td>91</td>
</tr>
<tr>
<td>FHW A-NHI-131409</td>
<td>Early Age Cracking</td>
<td>92</td>
</tr>
<tr>
<td>FHW A-NHI-131409</td>
<td>Basics of Cement Hydration</td>
<td>94</td>
</tr>
<tr>
<td>FHW A-NHI-131409</td>
<td>Fresh Concrete Properties</td>
<td>95</td>
</tr>
<tr>
<td>FHW A-NHI-131409</td>
<td>Design of Pavement</td>
<td>96</td>
</tr>
<tr>
<td>FHW A-NHI-131409B</td>
<td>Maintenance Training Series: Shaping and Shoulders</td>
<td>97</td>
</tr>
<tr>
<td>FHW A-NHI-131409C</td>
<td>Maintenance Training Series: Thin HMA Overlays and Leveling</td>
<td>98</td>
</tr>
<tr>
<td>FHW A-NHI-131409D</td>
<td>Maintenance Training Series: Base and Subbase Stabilization and Repair</td>
<td>99</td>
</tr>
<tr>
<td>FHW A-NHI-131409E</td>
<td>Maintenance Training Series: Roadway Drainage</td>
<td>100</td>
</tr>
<tr>
<td>FHW A-NHI-131411</td>
<td>Inspector Training for Cold In-Place Recycling (CIR)</td>
<td>101</td>
</tr>
<tr>
<td>FHW A-NHI-131420</td>
<td>Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series</td>
<td>102</td>
</tr>
<tr>
<td>FHW A-NHI-131420A</td>
<td>How to Construct Durable Full-Depth Repairs in Concrete Pavements</td>
<td>104</td>
</tr>
<tr>
<td>FHW A-NHI-131420B</td>
<td>How to Construct Durable Partial-Depth Repairs in Concrete Pavements</td>
<td>106</td>
</tr>
<tr>
<td>FHW A-NHI-131420C</td>
<td>Proper Diamond Grinding Techniques for Pavement Preservation</td>
<td>108</td>
</tr>
<tr>
<td>FHW A-NHI-131420D</td>
<td>Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching</td>
<td>110</td>
</tr>
<tr>
<td>FHW A-NHI-131420E</td>
<td>Proper Joint Sealing Techniques for Pavement Preservation</td>
<td>111</td>
</tr>
<tr>
<td>FHW A-NHI-131420F</td>
<td>How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)</td>
<td>113</td>
</tr>
<tr>
<td>FHW A-NHI-131420G</td>
<td>How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)</td>
<td>115</td>
</tr>
<tr>
<td>FHW A-NHI-131420H</td>
<td>Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)</td>
<td>117</td>
</tr>
<tr>
<td>FHW A-NHI-131420I</td>
<td>Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)</td>
<td>119</td>
</tr>
<tr>
<td>FHW A-NHI-131420J</td>
<td>Proper Joint Sealing Techniques for Pavement Preservation (Spanish)</td>
<td>121</td>
</tr>
<tr>
<td>FHW A-NHI-131420S</td>
<td>Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series (Spanish)</td>
<td>122</td>
</tr>
</tbody>
</table>
### DESIGN AND TRAFFIC OPERATIONS
- FHWA-NHI-133107 Principles of Evacuation Planning Tutorial (Web-Based) ..................................................... 135
- FHWA-NHI-133110 Strategies for Developing Work Zone Traffic Analyses (Web-Based) ..................................... 136
- FHWA-NHI-133116 Maintenance of Traffic for Technicians - WEB BASED ...................................................... 137
- FHWA-NHI-133117 Maintenance of Traffic for Supervisors - WEB BASED ...................................................... 138
- FHWA-NHI-133118 Flagger Training - WEB-BASED ....................................................................................... 139
- FHWA-NHI-133119 Safe and Effective Use of Law Enforcement Personnel in Work Zones - WEB-BASED ........... 140
- FHWA-NHI-133126A National Traffic Incident Management Responder Training - Web-Based ..................... 141
- FHWA-NHI-134005A Introduction to Value Engineering .................................................................................. 143
- FHWA-NHI-134109I Maintenance Training Series: Basics of Work Zone Traffic Control .............................. 144

### CONSTRUCTION AND MAINTENANCE
- FHWA-NHI-130106A Bridge Preservation Fundamentals .................................................................................. 145
- FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT ................................................................. 146
- FHWA-NHI-130109A Bridge Management Fundamentals .............................................................................. 147
- FHWA-NHI-130124 Tunnel Safety Inspection Refresher WBT Prerequisite ...................................................... 148
- FHWA-NHI-131050A (Introduction to) Asphalt Pavement In-Place Recycling Techniques ........................... 149
- FHWA-NHI-131110 Asphalt Pavement Preservation Treatment Series (Modules A-K) ............................. 150
- FHWA-NHI-131110A Asphalt Pavement Preservation Treatment Series: Introduction to Pavement Preservation .... 152
- FHWA-NHI-131110B Asphalt Pavement Preservation Treatment Series: Materials ..................................... 153
- FHWA-NHI-131110C Asphalt Pavement Preservation Treatment: Crack Sealing & Filling, and Joint Sealing .... 154
- FHWA-NHI-131110D Asphalt Pavement Preservation Treatment Series: Localized Pavement Repair ........... 155
- FHWA-NHI-131110E Asphalt Pavement Preservation Treatment Series: Chip Seals ..................................... 156
- FHWA-NHI-131110F Asphalt Pavement Preservation Treatment Series: Fog Seals ....................................... 157
- FHWA-NHI-131110G Asphalt Pavement Preservation Treatment Series: Slurry Seals ................................... 158
- FHWA-NHI-131110H Asphalt Pavement Preservation Treatment Series: Micro-Surfacing .......................... 159
- FHWA-NHI-131110I Asphalt Pavement Preservation Treatment Series: Thin Functional HMA Overlay ........... 160
- FHWA-NHI-131110J Asphalt Pavement Preservation Treatment Series: Ultra Thin HMA Bonded Wearing Course ..... 161
- FHWA-NHI-131110K Asphalt Pavement Preservation Treatment Series: Selecting the Right Treatment ........ 162
- FHWA-NHI-131117 Basic Materials for Highway and Structure Construction and Maintenance .................... 163
- FHWA-NHI-131121 Construction of Portland Cement Concrete Pavements .................................................. 164
- FHWA-NHI-131122 Portland Cement Concrete Paving Inspection ............................................................... 165
- FHWA-NHI-131126 Concrete Pavement Preservation Series (Modules A-K) .................................................. 166
- FHWA-NHI-131126A Concrete Pavement Preservation Series: Pavement Preservation Concepts .............. 168
- FHWA-NHI-131126B Concrete Pavement Preservation Series: Concrete Pavement Evaluation ................. 170
- FHWA-NHI-131126C Concrete Pavement Preservation Series: Slab Stabilization ......................................... 172
- FHWA-NHI-131126D Concrete Pavement Preservation Series: Partial-depth Repairs ................................ 174
- FHWA-NHI-131126E Concrete Pavement Preservation Series: Full-depth Repairs ...................................... 176
- FHWA-NHI-131126F Concrete Pavement Preservation Series: Retrofitted Edge Drains ............................. 178
- FHWA-NHI-131126G Concrete Pavement Preservation Series: Dowel Bar Retrofit ..................................... 180
- FHWA-NHI-131126H Concrete Pavement Preservation Series: Diamond Grinding and Grooving .................. 182
- FHWA-NHI-131126I Concrete Pavement Preservation Series: Joint Sealing and Crack Resealing ............... 184
- FHWA-NHI-131126J Concrete Pavement Preservation Series: Concrete Overlays ........................................ 186
- FHWA-NHI-131126K Concrete Pavement Preservation Series: Strategic Selection ..................................... 188
- FHWA-NHI-131127 Concrete Series .............................................................................................................. 190
- FHWA-NHI-131129 HMA Paving Field Inspection ......................................................................................... 191
- FHWA-NHI-131132 Chip Seal Best Practices ................................................................................................. 192
- FHWA-NHI-131133 Roller Compacted Concrete Pavements ........................................................................... 193
- FHWA-NHI-131134 Superpave for Construction ............................................................................................. 194
- FHWA-NHI-131142 Full Depth Reclamation (FDR) ....................................................................................... 195
- FHWA-NHI-133116 Maintenance of Traffic for Technicians - WEB BASED ................................................. 197
- FHWA-NHI-133117 Maintenance of Traffic for Supervisors - WEB BASED .................................................. 198
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHW A-NHI-133118 Flagger Training - WEB-BASED</td>
<td>199</td>
</tr>
<tr>
<td>FHW A-NHI-134005A Introduction to Value Engineering</td>
<td>200</td>
</tr>
<tr>
<td>FHW A-NHI-134006A Introduction to Utility Coordination for Highway Projects</td>
<td>201</td>
</tr>
<tr>
<td>FHW A-NHI-134063G Maintenance Leadership Academy - Web-based Curriculum</td>
<td>202</td>
</tr>
<tr>
<td>FHW A-NHI-134069 Ethics Awareness for the Transportation Industry</td>
<td>204</td>
</tr>
<tr>
<td>FHW A-NHI-134070 SpecRisk Quality Assurance Specification Development and Validation Course</td>
<td>205</td>
</tr>
<tr>
<td>FHW A-NHI-134071 Basic Construction and Maintenance Documentation - Improving the Daily Diary</td>
<td>206</td>
</tr>
<tr>
<td>FHW A-NHI-134072 Math Module</td>
<td>207</td>
</tr>
<tr>
<td>FHW A-NHI-134074 Bolted Connections</td>
<td>208</td>
</tr>
<tr>
<td>FHW A-NHI-134075 Hardened Concrete Properties - Durability</td>
<td>209</td>
</tr>
<tr>
<td>FHW A-NHI-134084 Fundamentals of Materials Used for Concrete Pavements</td>
<td>210</td>
</tr>
<tr>
<td>FHW A-NHI-134085 Incompatibility in Concrete Pavement Systems</td>
<td>211</td>
</tr>
<tr>
<td>FHW A-NHI-134087 Mix Design Principles</td>
<td>212</td>
</tr>
<tr>
<td>FHW A-NHI-134095 Early Age Cracking</td>
<td>213</td>
</tr>
<tr>
<td>FHW A-NHI-134096 Basics of Cement Hydration</td>
<td>215</td>
</tr>
<tr>
<td>FHW A-NHI-134097 Fresh Concrete Properties</td>
<td>216</td>
</tr>
<tr>
<td>FHW A-NHI-134101 Design of Pavement</td>
<td>217</td>
</tr>
<tr>
<td>FHW A-NHI-134105 Pipe Installation, Inspection, and Quality</td>
<td>218</td>
</tr>
<tr>
<td>FHW A-NHI-134106 Basic Construction Surveying</td>
<td>219</td>
</tr>
<tr>
<td>FHW A-NHI-134107 Recognizing Roadside Weeds (Southeastern States)</td>
<td>220</td>
</tr>
<tr>
<td>FHW A-NHI-134108 Plan Reading Series</td>
<td>221</td>
</tr>
<tr>
<td>FHW A-NHI-134108A Plan Reading: Highway Plan Reading Basics</td>
<td>223</td>
</tr>
<tr>
<td>FHW A-NHI-134108B Plan Reading: Grading Plans</td>
<td>224</td>
</tr>
<tr>
<td>FHW A-NHI-134108C Plan Reading: Traffic Control Plans</td>
<td>225</td>
</tr>
<tr>
<td>FHW A-NHI-134108D Plan Reading: Erosion and Sediment Control Plans</td>
<td>226</td>
</tr>
<tr>
<td>FHW A-NHI-134108E Plan Reading: Right-of-Way Plans</td>
<td>227</td>
</tr>
<tr>
<td>FHW A-NHI-134108F Plan Reading: County Plans</td>
<td>228</td>
</tr>
<tr>
<td>FHW A-NHI-134108G Plan Reading: Bridge Plans</td>
<td>229</td>
</tr>
<tr>
<td>FHW A-NHI-134108H Plan Reading: Culvert Plans</td>
<td>230</td>
</tr>
<tr>
<td>FHW A-NHI-134109 Maintenance Training Series</td>
<td>231</td>
</tr>
<tr>
<td>FHW A-NHI-134109B Maintenance Training Series: Shaping and Shoulders</td>
<td>233</td>
</tr>
<tr>
<td>FHW A-NHI-134109C Maintenance Training Series: Thin HMA Overlays and Leveling</td>
<td>234</td>
</tr>
<tr>
<td>FHW A-NHI-134109D Maintenance Training Series: Base and Subbase Stabilization and Repair</td>
<td>235</td>
</tr>
<tr>
<td>FHW A-NHI-134109E Maintenance Training Series: Roadway Drainage</td>
<td>236</td>
</tr>
<tr>
<td>FHW A-NHI-134109F Maintenance Training Series: Outdoor Advertising and Litter Control</td>
<td>237</td>
</tr>
<tr>
<td>FHW A-NHI-134109G Maintenance Training Series: Roadside Vegetation Management</td>
<td>238</td>
</tr>
<tr>
<td>FHW A-NHI-134109H Maintenance Training Series: Weather-related Operations</td>
<td>239</td>
</tr>
<tr>
<td>FHW A-NHI-134109I Maintenance Training Series: Basics of Work Zone Traffic Control</td>
<td>240</td>
</tr>
<tr>
<td>FHW A-NHI-134109J Maintenance Training Series: Underground Storage Tanks</td>
<td>241</td>
</tr>
<tr>
<td>FHW A-NHI-134109K Maintenance Training Series: Cultural and Historic Preservation</td>
<td>242</td>
</tr>
<tr>
<td>FHW A-NHI-134114 Inspector Training for Cold In-Place Recycling (CIR)</td>
<td>243</td>
</tr>
<tr>
<td>FHW A-NHI-134204 Construction of Mechanically Stabilized Earth (MSE) Walls</td>
<td>244</td>
</tr>
<tr>
<td>FHW A-NHI-134206 Rockfall Stabilization</td>
<td>246</td>
</tr>
<tr>
<td>FHW A-NHI-134207 Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series</td>
<td>247</td>
</tr>
<tr>
<td>FHW A-NHI-134207A How to Construct Durable Full-Depth Repairs in Concrete Pavements</td>
<td>249</td>
</tr>
<tr>
<td>FHW A-NHI-134207C Proper Joint Sealing Techniques for Pavement Preservation</td>
<td>253</td>
</tr>
<tr>
<td>FHW A-NHI-134207D Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching</td>
<td>255</td>
</tr>
<tr>
<td>FHW A-NHI-134207E Proper Diamond Grinding Techniques for Pavement Preservation</td>
<td>256</td>
</tr>
<tr>
<td>FHW A-NHI-134207F How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)</td>
<td>258</td>
</tr>
<tr>
<td>FHW A-NHI-134207G How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)</td>
<td>260</td>
</tr>
<tr>
<td>FHW A-NHI-134207H Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)</td>
<td>262</td>
</tr>
<tr>
<td>FHW A-NHI-134207J Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)</td>
<td>264</td>
</tr>
<tr>
<td>FHW A-NHI-134207P Proper Joint Sealing Techniques for Pavement Preservation (Spanish)</td>
<td>266</td>
</tr>
<tr>
<td>FHW A-NHI-134207S Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series (Spanish)</td>
<td>267</td>
</tr>
<tr>
<td>FHW A-NHI-380108 Maintenance of Drainage Features for Safety - WEB-BASED</td>
<td>269</td>
</tr>
</tbody>
</table>

**HYDRAULICS**
FHWA-NHI-135085 Plan of Action (POA) for Scour Critical Bridges - WEB-BASED .......................................................... 270
FHWA-NHI-135086 Stream Stability Factors and Concepts (Prerequisite) WEB-BASED .......................................................... 271
FHWA-NHI-135087 Scour at Highway Bridges: Concepts and Definitions (Prerequisite) WEB-BASED ........................................... 272
FHWA-NHI-135091 Basic Hydraulic Principles Review (WBT) ........................................................................................................ 273
FHWA-NHI-135092 Highway Hydrology: Basic Concepts and Methods Web-Based .......................................................... 274
FHWA-NHI-135093 Hydraulic Toolbox (Web-Based) .................................................................................................................. 275
FHWA-NHI-135094 Culvert Hydraulic Analysis and Design Program (HY-8) Web-Based .......................................................... 276

ASSET MANAGEMENT
FHWA-NHI-130109A Bridge Management Fundamentals ........................................................................................................ 278
FHWA-NHI-130109B Performance-Based Management of Highway Bridges .................................................................................. 279
FHWA-NHI-134207 Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series ................................... 280
FHWA-NHI-134207S Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series (Spanish) ................... 282
FHWA-NHI-136002A Introduction to Financial Planning for Transportation Asset Management ................................................................ 284
FHWA-NHI-136113 Transportation Asset management overview ................................................................................................... 286

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)
FHWA-NHI-137046 ITS Deployment Analysis System (IDAS) - WEB-BASED ........................................................................ 287
FHWA-NHI-137048 Turbo Architecture Version 5.0 - Web-Based ......................................................................................... 288
FHWA-NHI-137049 ITS Procurement - WEB-BASED .................................................................................................................. 289
FHWA-NHI-137050 ITS Awareness WBT .................................................................................................................................. 290
FHWA-NHI-137051 Systems Engineering Fundamentals for ITS .................................................................................................. 291
FHWA-NHI-137055 Transportation Cyber Security .................................................................................................................... 292
FHWA-NHI-137056 Data Archiving and Analytics for Planning, Operations, and Safety ............................................................ 293
FHWA-NHI-137057 OPM 01: Introduction to Operations Performance Measures and Management ............................................. 294
FHWA-NHI-137058 OPM 02: Nuts and Bolts of Operations Performance Measurement ............................................................. 295
FHWA-NHI-137059 OPM 03: Operations Performance Management .......................................................................................... 296
FHWA-NHI-137060 Introduction to Connected Vehicles and Automated Vehicles ................................................................ 297
FHWA-NHI-137070 Improving Highway Safety with ITS ........................................................................................................... 299
FHWA-NHI-137072 Weather Responsive Traffic Management (WRTM) ...................................................................................... 300
FHWA-NHI-137074 Road Weather Information Systems (RWIS) Equipment and Operations ......................................................... 301

TRANSPORTATION PERFORMANCE MANAGEMENT
FHWA-NHI-130109B Performance-Based Management of Highway Bridges .................................................................................. 302
FHWA-NHI-138001 Transportation Performance Management Awareness - Federal Aid Version .................................................. 303
FHWA-NHI-138003 Introduction to Performance Measurement ................................................................................................... 304
FHWA-NHI-138005 Transportation Performance Management Overview for the MAP-21 and FAST Acts ........................................ 305
FHWA-NHI-138013 Effective Target Setting for Transportation Performance Management ..................................................... 306
FHWA-NHI-138014 Getting Started on Effective TPM for Pavements .......................................................................................... 308
FHWA-NHI-138015 Getting Started on Effective TPM for Bridges .................................................................................................. 310
FHWA-NHI-138016 Implementing Performance-Based Planning and Programming ................................................................ 312
FHWA-NHI-138017 Introduction to Highway Performance Monitoring System (HPMS) ........................................................... 314
FHWA-NHI-138018 Getting Started on Effective TPM for Freight .................................................................................................. 315
FHWA-NHI-138019 Transportation Performance Management for Congestion including Freight, Self-Study .................................. 317
FHWA-NHI-138020 Getting Started on Effective TPM for the On-Road Mobile Source Emissions Reduction Measure .................. 319
FHWA-NHI-138021 Data for TPM .................................................................................................................................................. 321
FHWA-NHI-138022 Making the Connection between HPMS Data Items and TPM ......................................................................... 323
FHWA-NHI-138023 Communicating and Reporting on Transportation Performance Management .................................................. 325
FHWA-NHI-138024 Monitoring and Adjustment for TPM ........................................................................................................... 327
FHWA-NHI-138025 Investment Decision Making and TPM .......................................................................................................... 329

FREIGHT AND TRANSPORTATION LOGISTICS
FHWA-NHI-139006 Integrating Freight in the Transportation Planning Process - WBT-Standard Version ..................................... 331
FHWA-NHI-139006W Integrating Freight in the Transportation Planning Process - WBT-Accessible 508 Version .............................. 332

REAL ESTATE
ABOUT NHI

WHO WE ARE
The National Highway Institute (NHI) provides technical training to the highway transportation workforce to build skills and enhance job performance to improve the conditions and safety of our nations’ roads, highways, and bridges.

As part of Federal Highway Administration’s (FHWA) Office of Technical Services (OTS), NHI courses complement the targeted training and technical assistance of FHWA program offices, Resource Center, and Local and Tribal Technical Assistance Programs (LTAP/TTAP).

OUR TRAINING
NHI courses are instrumental in developing core competencies and new skills, as well as learning about leading technologies and current policies. Our instructors strive to ensure that participants leave training not only with additional knowledge, but also the ability to apply that knowledge directly to their work. NHI is an accredited training provider by the International Association of Continuing Education and Training (IACET), allowing participants to earn Continuing Education Units (CEUs) for completed coursework. NHI also is an approved provider of the American Institute of Certified Planners (AICP) certification maintenance (CM) credits.

NHI offers three types of training.

Instructor-led Training (ILT): These courses are held in-person and led by an instructor when an organization is available to host the session. Any organization may host a session by submitting a Host Request form on the NHI Web site.

Web-conference Training (WCT): These are live, online training sessions that take place at a set time. Web-conference Training sessions also require a host.

Web-based Training (WBT): These online courses are available 24/7 for six months after purchase by the registrant. Participants can control the pace at which they complete the course and may return to it as many times as they wish within the six-month access period.

LEARN MORE
For more information or to subscribe to our mailing list, please visit the NHI Web site at www.nhi.fhwa.dot.gov.

Customers with additional questions may also contact NHI Customer Service at NHICustomerService@dot.gov, or by phone during regular business hours, 7:30AM – 4:30PM Eastern Time, at (877) 558-6873.
NHI MAKES HOSTING EASY

HOSTING A COURSE
NHI partners with host organizations across the country to deliver training where it is needed most. NHI provides top-notch instructors and course materials, while hosting organizations provide the facilities and equipment.

WHO CAN HOST
Any United States-based organization can host Instructor-led Trainings (ILT), which are taught in classrooms, and/or Web-conference Trainings (WCT), which are taught online.

Our instructors may tailor individual sessions to meet the unique needs and array of experiences of the hosting organization, including covering local issues and topics of special interest. Instructors also may modify case studies and exercises based on their subject matter expertise to make them pertinent to the participant's experiences.

REQUESTING TO HOST
To host a course, domestic customers can go to the NHI Web site and complete the appropriate Host Request form (ILT or WCT). The process takes just a few minutes. First-time users will need to create a user profile and check the INSTRUCTOR/HOST BOX.

If you run into any difficulty when you are logging in, filling out a Host Request form, or navigating the NHI Web site, please contact NHI Customer Service for help at (877) 558-6873 during normal business hours, 7:30am – 4:30pm Eastern time. Customers may also email NHI Customer Service at nhicustomerservice@dot.gov.

To assist the host in preparation for and coordination of the session, a hosting checklist is provided on the NHI Web site. This checklist includes important information about hosting your NHI training session, as well as valuable “best-practice” information based on NHI’s 40 years of experience with our hosting partners.

CONFIRMING SESSION DATES/LOCATIONS/TIMES
After the Host Request form is received, an Instructor or a member of the NHI team will contact the host to discuss scheduling options. While preferred dates may be specified on the Host Request form, sessions are not official until the hosting organization receives formal confirmation from NHI. Once official, NHI will list the session publicly on its Web site.

Enrollment Options
The host’s contact information is listed with the scheduled session. Interested participants from outside the host’s organization may contact the host to enroll. Alternatively, the host may ask NHI to open public seats, which allow outside participants to enroll through NHI.

The NHI Scheduler will email all participant information to the host and instructor prior to the session start date.

HOSTING EXPENSES
To host a session, hosts are charged the per-participant price multiplied by the class-size minimum, or the host is charged per participant if the session class size exceeds the minimum. Pricing cannot be reduced if the minimum class size is not met. Therefore, if registration for a course is lower than anticipated, it is important for the host to contact NHI prior to the cancellation period (15 business days) to discuss a remedy. Please note that with sufficient notice, NHI may be able to offer marketing support for the session.

Three seats in every session are reserved for Federal Highway Administration (FHWA) employees until 15 days before the course begins. FHWA participants do not count toward the participant minimum, but should be considered in the course maximum. Hosts are not charged for FHWA personnel or participants who have paid via the NHI Web site. Hosts are not charged for any instructor expenses.

Course hosts may charge participants an additional fee to recover all or part of costs associated with hosting the course. However, we ask hosts to contact the NHI Scheduler at (703) 235-0534 with this information prior to the confirmation of the session.

Course fees, which include the cost of materials for each participant, are listed with every course description.
RECEIVING COURSE MATERIALS
NHI will ship course material to the host approximately three weeks prior to the session start date.

PROVIDING PAYMENT
Payment may be made to NHI by check, money order, or credit card. Checks and money orders must be made payable to the National Highway Institute. To make credit card payments, contact NHI Customer Service at NHIcustomerService@dot.gov or 1-877-558-6873. You are not charged for any FHWA participants or for participants who paid via the NHI Web site.

CANCELLATION POLICY/REFUNDS
To avoid incurring the $1,500 cancellation fee, cancellation must be requested no later than 15 business days prior to the course start date. If a course must be cancelled, the host is required to contact NHI Customer Service at 1-877-558-6873 during normal business hours, 7:30AM – 4:30PM Eastern Time, or email NHIcustomerService@dot.gov. If the course materials have been sent, the host must contact NHI Customer Service.

In the event of cancellation, it is the host’s responsibility to contact all participants (including those registered for public seats). There must be verification that the registrants received the cancellation notice. Notice to out-of-state participants is especially important so that they may alter or cancel any travel arrangements.

In the case of an emergency or weather-related closing, the cancellation fee will not apply. NHI follows the host office’s policy regarding weather and emergency closings.
RECEIVING COURSE CREDIT
Many of the courses offered at NHI can be used toward obtaining Continuing Education Units (CEUs), Certification Maintenance (CM) credits, and Professional Development Hours (PDHs). Please select the headers below for more information about receiving credits.

CONTINUING EDUCATION UNITS
NHI has been recognized as an Accredited Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, NHI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of this Accredited Provider status, NHI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard. IACET is an independent, non-profit association whose goal is to ensure quality continuing education for professionals. For an organization to become an IACET approved CEU Accredited Provider, it must demonstrate that it designs, develops, and delivers training in accordance with proven adult learning theory and recognizes instructional systems design practices. Each course description in the NHI catalog includes the number of CEUs offered upon successful completion of the course.

One CEU is offered for every ten contact hours of training led by a qualified instructor and qualified instruction. In order to be offered CEUs, a course participant must attend 100% of the course and must pass the course examination with a score of 70% or greater.

CEUs are offered to each course participant who fulfills the above stated requirement. NHI will maintain individual training records for seven years for the CEUs offered. Individuals and their employers are also encouraged to maintain their own training records including course name, class date(s), instructor name, class roster, and CEUs offered.

For proof of your CEU record, please contact NHI at NHICustomerService@dot.gov or 1-877-558-6873 and request your official transcript. Your official transcript displays a record of your NHI course history as well as the CEUs offered for each CEU-accredited course. Please allow at least one month after the completion of your course before requesting your official transcript.

CERTIFICATION MAINTENANCE CREDITS
NHI provides Certification Maintenance (CM) credits to assist professional planners become and maintain their membership as certified planners through the American Planning Association (APA).

American Institute of Certified Planners (AICP) is APA’s professional institute. Certified Planners have demonstrated a commitment to high standards of professional practice and a mastery of theories and tools of planning.

NHI recognizes that the certification carries a high mark of distinction and requires planners to meet rigorous standards and maintain their expertise through continuing education. Planners must earn 32 CM continuing education credits every two years in order to stay up to date on the latest trends, technologies, and best practices. NHI courses will now help them achieve that requirement.

CM credits are measured in contact hours, so that 30 minutes of instructional time equals 30 minutes of CM credit (30 minutes contact = 0.5 CM credits; 1.0 contact hours = 1.0 CM credits). An event must be at least 30 minutes in duration to be eligible for CM credit.

Contact NHI Customer Service at NHICustomerService@dot.gov or 877-558-6873 to ask for an official transcript to be used by AICP to calculate CM credits. Please allow at least one month after the completion of your course before requesting your official transcript.

PROFESSIONAL DEVELOPMENT HOURS (PDHs)
NHI does not officially offer PDHs; however, it is possible to receive PDHs for your completed NHI training courses. To receive PDHs, please submit your course certificate (which indicates the contact hours assigned to the course) and/or your official transcript (which indicates the CEUs granted for a course) to the respective licensing agency. Upon consent, the licensing agency may convert your hours and/or CEUs into PDHs and proceed with the PDH awarding process.

PDHs are offered on a ratio of one contact hour to one PDH. When converting from CEU to PDH, please note that one CEU is equal to ten PDHs (or one PDH is equal to one-tenth of a CEU).

To request your official transcript with proof of CEU record and/or contact hours, please contact NHI at NHICustomerService@dot.gov or 1-877-558-6873. Your official transcript displays a record of your NHI course history as well as
the CEUs offered for each CEU-accredited course. Please allow at least one month after the completion of your course before requesting your official transcript.

**NHI CERTIFICATES OF ACCOMPLISHMENT**

NHI's Certificates of Accomplishment program was designed to recognize individuals who have successfully enhanced their depth and breadth of knowledge and expertise in specific disciplines or topic areas. Students would be eligible for the Certificate of Accomplishment when they have completed and passed a suite of related NHI course offerings. Currently, this program has been put on hold, although it is expected to be re-initiated in the near future.

More Information will be released as soon as it is available.
FREE WEB-CONFERENCE TRAINING

NHI is excited to offer FREE Web-conference training. These trainings save both time and money, while covering the latest topics and techniques within the transportation industry. All transportation professionals in the public and private sectors are invited to participate in these trainings.

REAL SOLUTIONS SEMINAR SERIES

This series of free monthly Webinars features a guest speaker who presents problems or issues faced in the field and what steps were taken to solve them. In some sessions, additional panelists join the guest speaker to further discuss that seminar’s topic.

Some past topics include:

- Best Practices for Integrating Climate Change Considerations in the Transportation Planning Process
- eLearning and Distance Learning within the Transportation Industry
- Smart Corridors and Complete Streets: A Look at Some Situations and Strategies
- Solving Old Traffic Noise Ills: Tennessee Type II Noise Abatement Program

Visit the Real Solutions Seminar Series section of the Web site to register for the next Real Solutions Web conference or to listen to past Web conferences.

LEARN MORE

For more information, please visit the NHI Web site at www.nhi.fhwa.dot.gov.

Want to be notified when a free Web conference is scheduled? Email nhimarketing@dot.gov.
COURSE NUMBER
FHWA-NHI-130081C

COURSE TITLE
LRFD Design of Common Bridge Elements: Decks and Bearings
This course provides training to explain the design considerations for decks and bearings. It provides a summary of general deck design procedures, including an introduction to different types of bridge bearings, and provides specific design steps for the design of elastomeric bearings and High-Load Multi-Rotational Bearings (HLMRBs).

OUTCOMES
Upon completion of the course, participants will be able to:
• Summarize deck design procedures, including the strip width and empirical design methods, and deck overhang design
• Identify different types of bridge bearings and their primary applications
• Identify elastomeric bearing components and list the steps required for their design
• Identify High-Load Multi-Rotational Bearing (or HLMRB) components and list the steps required for their design

TARGET AUDIENCE
The target audience for this course is practicing public and private sector structural and bridge engineers with 0 to 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 3 HOURS (CEU: .3 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130081D

COURSE TITLE
LRFD Steel I-Girder Details Design

This course provides training to apply the key LRFD limit state verifications for specific details associated with steel girders. This includes a description of the LRFD design requirements for stiffeners, shear connectors, cross-frames, diaphragms, welded connections, and bolted field splices.

OUTCOMES
Upon completion of the course, participants will be able to:

- Describe the function, behavior, and LRFD design requirements for transverse and bearing stiffeners and shear connectors
- Describe the function, behavior, and LRFD design requirements for cross-frames, diaphragms, and both bolted and welded connections
- Describe the function, behavior, and LRFD design requirements for bolted field splices

TARGET AUDIENCE
The target audience for this course is practicing public and private sector structural and bridge engineers with 0 to 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: .3 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130081E

COURSE TITLE
Prestressed Concrete Girder Topics
This course provides training to apply the key LRFD limit state verifications for prestressed concrete girders made continuous. It describes prestressed concrete bridge materials and prestressing losses and also design considerations for prestressed girders made continuous.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe prestressed concrete bridge materials and the causes of prestressing force losses
• Describe design considerations and required computations for prestressed girders made continuous

TARGET AUDIENCE
The target audience for this course is practicing public and private sector structural and bridge engineers with 0 to 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: .2 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130081P

Course Title
General Superstructure Design Considerations (Web-based)

Disregard the class seat size noted in the course description for this specific course since as this is a self-paced web-based training (WBT). This course, 130081P, serves as a WBT prerequisite to the following ILTs:
130081,
130081A, and
130081B

This course provides training on the fundamentals for LRFD highway superstructure design. This includes a basic understanding of LRFD development and implementation, general design and location features related to superstructure design, and the primary loads and load combinations used for superstructure design. This course is a prerequisite to the Instructor-Led Training (ILT) Courses 130081 LRFD for Highway Bridge Superstructures - Steel and Concrete (4-Day ILT), 130081A LRFD for Highway Bridge Superstructures - Steel (2-Day ILT), and 130081B LRFD for Highway Bridge Superstructures - Concrete (2-Day ILT), and it covers only general sections of the LRFD Specifications.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the fundamentals of LRFD, the historical background of LRFD, and the basic components of LRFD for superstructure design
• Describe location features, basic design objectives, principles of bridge aesthetics, and constructability issues for superstructure design
• Describe the primary loads, load combinations, and load factors used for steel and concrete superstructure design

Target Audience
The target audience for this course is practicing public and private sector structural and bridge engineers with 0 to 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking this course should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates. Additionally, participants wishing to take 130081, 130081A, or 130081B should have taken this WBT in advance of the first day of the ILT.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 Hours (CEU: .3 Units)

Class Size: Minimum: 20; Maximum: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130093W

COURSE TITLE
Introduction to Earthquake Engineering

130093W Introduction to Earthquake Engineering is a Web-based Training (WBT) prerequisite to the 3-day 130093A Displacement-Based LRFD Seismic Analysis and Design of Bridges Instructor-led Training (ILT). The participants will generally be notified to take the WBT about 1 month before the 130093A ILT session and must complete it before the start of Day 1 of the ILT. This WBT consists of 5 lessons including: Introduction to Earthquake Seismology (Lesson 1); Damages to Bridges due to Strong Motion (Lesson 2); Single Degree-of-Freedom (SDOF) Systems and Response Spectra (Lesson 3); AASHTO Design Ground Motion Characterization (Lesson 4); and Introduction to Geotechnical Hazards (Lesson 5).

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe basic concepts of plate tectonics and seismology
• Explain fundamental concepts of modern seismic design
• Identify parameters used to characterize earthquake ground motions
• Recognize the steps employed in a probabilistic seismic hazard analysis
• Characterize design ground motions in accordance with AASHTO
• List the different types of geotechnical hazards

TARGET AUDIENCE
The target audience for this course includes bridge and geotechnical engineers with 0 to 20 years of experience that are preparing to attend the 130093A Instructor-led Training.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 DAYS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130101

COURSE TITLE
Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

This training is a prerequisite of another NHI training and is offered at no cost.

Introduction to Safety Inspection of In-Service Bridges is designed to prepare participants with the necessary fundamentals required for a more intensive course in bridge inspection. This WBT introduces the elementary concepts of bridge inspection, bridge functions, and bridge inspection terminology. Participants who complete this WBT will be prepared for more intensive courses in bridge inspection, which focus on documentation, rating, assessment, and field inspection.

Introduction to Safety Inspection of In-Service Bridges covers bridge components and elements, bridge mechanics, design features, bridge materials, decks, superstructures, bearings, substructures, channels, inspection preparations, inspection reporting activities, and work area safety.

This course prepares participants for the 2-week, intensive Instructor-led course in bridge inspection, 130055 Safety Inspection of In-Service Bridges.

Upon successful completion of 130101, participants will have met the prerequisite requirement for participation in the 130055 course (for sessions beginning March 5, 2012 or later).* If participants would like to enroll in the 130055 course, they will be required to demonstrate their certificate of completion for 130101 as proof that the prerequisite requirement has been fulfilled.

Participation in 130101 is not the only option to fulfill the prerequisite requirement for 130055.* Individuals have the option to 1) successfully complete NHI-130054 Engineering Concepts for Bridge Inspectors (Instructor-led course) or 2) for those with engineering backgrounds or prior knowledge and experience in the field of bridge inspection may “test-out” through a Web-based assessment (130101A Introduction to Safety Inspection of In-Service Bridges).

*Please note: Upon successful completion of this prerequisite course, you will be eligible to take the 130055 training course for up to 2 years.

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe the basis for bridge inspection
- Identify the three major bridge components and various culvert types
- Identify the various elements that comprise bridge components
- Describe standard highway bridge loadings
- Describe the basic concepts of elasticity of materials, response of materials to an applied force, response of structural members to a variety of loadings, the relationship between stresses and strains, and load rating
- Describe span arrangements, deck-superstructure interaction, and redundancy
- Describe the basic properties, strengths and weaknesses of steel, concrete, and timber
- Describe the types, signs and causes of structural distress in steel, concrete, and timber
- Describe the general purpose of decks, superstructures, and bearings
- Describe the general purpose and function of substructure units
- Describe waterway features and the effect of scour
- Describe the requirements for preparing for an inspection
- Describe the basic bridge inspection reporting requirements
- Name protective measurements to mitigate the hazards involved when working in the field performing bridge inspection

TARGET AUDIENCE

This training has been developed for Federal, State, and local highway agency employees and consultants involved in inspecting bridges or in charge of a bridge inspection unit. A background in bridge engineering is strongly recommended.
**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 14 HOURS (CEU: 1.4 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-130101A

**Course Title**
Prerequisite Assessment for Safety Inspection of In-Service Bridges - WEB-BASED

This training is a prerequisite of another NHI training and is offered at no cost.

Prerequisite Assessment for Safety Inspection of In-Service Bridges (FHWA-NHI-130101A) is a required prerequisite necessary for those interested in taking the course Safety Inspection of In-Service Bridges (FHWA-NHI-130055). The assessment is divided into three sections; participants are given three opportunities to pass each section with a score of 70% or better. Passing all three assessment sections signifies successful completion.

The assessment covers a range of topics that includes the bridge inspection program, bridge components and elements, bridge mechanics, design features, bridge materials, decks, superstructures, bearings, substructures, channels, inspection preparations, inspection reporting activities, and work area safety. To access this online assessment, enroll in NHI 130101A “Prerequisite Assessment for Safety Inspection of In-Service Bridges” via the NHI Web site.

Upon successful completion of 130101A, participants will have met the prerequisite requirement for participation in the 130055 Safety Inspection of In-Service Bridges course (for sessions beginning March 5, 2012 or later).* If participants would like to enroll in the 130055 course, they will be required to demonstrate their certificate of completion for 130101A as proof that the prerequisite requirement has been fulfilled.

Participation in 130101A is not the only option to fulfill the prerequisite requirement for 130055.* Individuals have the option to 1) successfully complete NHI-130054 Engineering Concepts for Bridge Inspectors (Instructor-led course) or 2) successfully complete the Web-based training and assessment (130101 Introduction to Safety of In-Service Bridges)

*Please note: Upon successful completion of this prerequisite course, you will be eligible to take the 130055 training course for up to 2 years.

**Outcomes**
Upon completion of the course, participants will be able to:

- There are no course outcomes associated with this prerequisite assessment.

**Target Audience**
This assessment has been developed for Federal, State, and local highway agency employees and consultants involved in inspecting bridges or in charge of a bridge inspection unit. A background in bridge engineering is strongly recommended.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 1 HOURS (CEU: 0 UNITS)

**Class Size:** Minimum: 0; Maximum: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130103

Course Title
Post-Tensioning Tendon Installation and Grouting - WBT

Post-Tensioning Tendon Installation and Grouting Web-based Training (WBT) delivers content on post-tensioning principles, system components, and installation procedures - including quality control procedures - which will assist supervisors, inspectors, and construction inspectors in the performance of their job. This WBT provides guidance to individuals involved in the design, installation, grouting, and inspection of post-tensioning tendons for prestressed concrete bridges and is intended to be an online complement to the Post-Tensioning Tendon Installation and Grouting Manual. Participants who complete this WBT will have a general understanding of post-tensioning components, construction, as well as testing and acceptance procedures. This WBT will better prepare individuals for more intensive certification courses in post-tensioning installation and grouting (PTI Level 1 & 2 PT Field Specialist and ASBI Grouting Certification Training).

Outcomes
Upon completion of the course, participants will be able to:

• Describe the use of post-tensioning to prestress concrete bridges
• Describe the composition and essential features of prestressing steel and anchorages
• Describe the composition and essential features of ducts and grout
• Describe the testing and acceptance procedures for post-tensioning system materials and components
• Describe post-tensioning tendon component installation, including the role of post-tensioning shop drawings in the construction process
• Describe the operations required to stress post-tensioning tendons
• Describe the importance and proper methods for calibrating jacks and their role in on-site testing for friction and modulus of elasticity
• Describe the elements of grouting operations
• Identify the methods, materials, and details that provide satisfactory corrosion protection

Target Audience
This training is targeted at owners and private company personnel that may be involved in the design, inspection, and construction of bridges that contain PT tendons. This course is intended for those with beginner to intermediate knowledge and/or skills in the area post-tensioning tendon installation and grouting principles and practices.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 Hours (CEU: .6 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130105A

COURSE TITLE
Introduction to FRP Materials and Applications for Concrete Structures, WEB-BASED

Introduction to FRP Materials and Applications for Concrete Structures is designed to assist State Department of Transportation (DOT) construction and maintenance operation staff develop knowledge of the types of FRP Composite material, form, and properties used in the repair and retrofit of concrete structures, as well as versatility in applications of FRP in the repair of concrete structures.

Topics covered in this course include:
- Background of FRP material development in bridge applications
- Different types of FRP Composite material (Fiber and Resin)
- Common concrete superstructure and substructure defects that are candidates for FRP repair and retrofit
- Versatility in the application of FRP in the repair and retrofit of common concrete structure defects
- Benefits of FRP repairs and retrofits for concrete structures over traditional methods

The success of repairs of concrete structures using FRP Composites is dependent on choosing FRP material suitable for the application. It is essential to develop knowledge of FRP material, properties, and suitable application.

OUTCOMES
Upon completion of the course, participants will be able to:
- Describe the application of FRP materials for concrete structures.
- Describe the different methods of repairing and retrofitting concrete structures using FRP materials.

TARGET AUDIENCE
This training is appropriate for persons with minimal or no experience in bonded repair and retrofit of concrete structures using FRP Composites, as well as those experienced with using FRP Composite. The course focuses on construction areas, however, bridge designers as well as field personnel will benefit from the content.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: .3 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130105B

Course Title
Construction Procedures and Specifications for Bonded Repair and Retrofit of Concrete Structures

Construction Procedures and Specifications for Bonded Repair and Retrofit of Concrete Structures using FRP Composites is designed to assist State Department of Transportation (DOT) construction and maintenance operation staff develop knowledge of project requirements of FRP repairs, substrate surface preparation methods, and procedures and steps for installation of FRP systems.

Topics covered in this course include:
- Specifications, including scope, definitions, tolerances, and site considerations
- Submittal requirements, including working drawings and quality control/quality assurance plans
- Storage, handling, and disposal requirements, including shelf life, safety hazards, personnel and work place protection, and clean up
- Various aspects of substrate repairs and surface preparation of concrete structures
- Use of externally-bonded and near-surface mounted FRP systems for repairs
- Procedures and steps for installation of externally bonded FRP systems
- Procedures and steps for installation of near-surface mounted FRP systems
- Environmental considerations for FRP installation
- Identification of defects and appropriate solutions of FRP applications

The success of repairs and retrofit of concrete structures using FRP Composite is dependent on State Department of Transportation (DOT) construction personnel taking an active role in ensuring construction procedures and specifications are adhered to. Hence, knowledge of proper construction procedures and specifications for FRP projects is necessary to control quality of work.

Outcomes
Upon completion of the course, participants will be able to:
- Identify the general project requirements for FRP repair and retrofit of concrete structures.
- Explain the general procedures for FRP repair and retrofit of concrete structures.
- Describe the general installation procedures of FRP systems for repair and retrofit of concrete structures.

Target Audience
This training is appropriate for persons with minimal or no experience in bonded repair and retrofit of concrete structures using FRP Composites, as well as those experienced with using FRP Composite. The course focuses on construction areas, however, bridge designers as well as field personnel will benefit from the content.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 5 Hours (CEU: .5 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Quality Control and Repair of Concrete Structures Using FRP Composites

Quality Assurance and Construction Process Control of Bonded Repair and Retrofit of Concrete Structures Using FRP Composites is designed to assist State Department of Transportation (DOT) construction and maintenance operation staff develop knowledge of the requirements of quality assurance and quality control during construction, and equip them with the necessary means to control the application of the repair system and the adequacy of the construction process.

This course covers the following topics:

- Responsibilities and qualifications of personnel implementing Quality Control and Quality Assurance (QC/QA) program for FRP application
- Requirements of Quality control and Quality Assurance (QC/QA) for FRP applications
- Application of Quality Control and Quality Assurance (QC/QA) for FRP application
- Inspection methods and acceptance criteria for FRP application
- Threshold values of concrete surface preparations and construction tolerances
- Key elements of Process Control Manual and checklists for inspection of FRP systems
- Examples of defective work, repair for defects, and acceptance criteria for repairs

The success of repairs of concrete structures using FRP Composite is dependent on quality control of materials and workmanship, secured by quality assurances processes.

OUTCOMES

Upon completion of the course, participants will be able to:

- Explain the quality assurance methods of FRP repair and retrofit of concrete structures.
- Explain the inspection methods for FRP repair and retrofit of concrete structures.
- Describe the procedures for repairs of defective FRP work.

TARGET AUDIENCE

This training is appropriate for persons with minimal or no experience in bonded repair and retrofit of concrete structures using FRP Composites, as well as those experienced with using FRP Composite. The course focuses on construction areas, however, bridge designers as well as field personnel will benefit from the content.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI CUSTOMER SERVICE: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130106A

Course Title
Bridge Preservation Fundamentals

Bridge Preservation Fundamentals (130106A) provides the participant key bridge preservation strategies that can help assist in the planning and implementation of their own bridge preservation program. It is a six lesson course that starts off with introducing definitions, terminology, and categories of bridge action. It also shares details on the benefits of timely bridge preservation and the consequences of deferred maintenance. This course discusses at length user best practices and activities related to deck preservation, superstructure preservation, and substructure preservation. This course also includes a lesson with detail on cost-effective culvert preservation practices.

This course is the first course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Establishing a Bridge Preservation Program (130106B) and Communication Strategies for Bridge Preservation (130106C). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.

Outcomes
Upon completion of the course, participants will be able to:

• Define activities and classifications related to bridge preservation, and associated work categories of rehabilitation, preventive maintenance, and systematic preventive maintenance
• Identify the benefits of timely bridge preservation activities, consequences of deferred maintenance, and strategies to transition bridge programs from reactive to proactive
• Determine cost-effective deck preservation practices and activities
• Determine cost-effective superstructure preservation practices and activities
• Determine cost-effective substructure preservation practices and activities
• Determine cost-effective culvert preservation practices and activities

Target Audience
The target audience for the Bridge Preservation Fundamentals WBT course is individuals involved in the development, implementation, and delivery of a bridge preservation program. This course is intended for those with general knowledge and/or skills in the area of bridge maintenance and management principles and practices.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 5 HOURS (CEU: .5 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-130106B

**Course Title**
Establishing a Bridge Preservation Program

Establishing a Bridge Preservation Program (130106B) focuses on efforts in developing a bridge preservation program. This course includes a lesson on the establishment of goals, objective and performance measures in a bridge preservation program. The course goes in-depth into the needs assessment and data management process, including the creation of a bridge preservation strategy, and it outlines the prioritization process. A lesson on budgeting and resource allocation describes the linkage between data to budgeting and resource allocation activities. The course also includes a lesson on work plan development and implementation with specific details on implementing network, corridor, and site specific strategies. The course concludes with a lesson on program monitoring.

This course is the second course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Bridge Preservation Fundamentals (130106A) and Communication Strategies for Bridge Preservation (130106C). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.

**Outcomes**
Upon completion of the course, participants will be able to:

- Summarize the process of forming goals, objectives and performance measures for a bridge preservation program
- Determine the condition and needs assessment activities involved in a bridge preservation program
- Determine the budgeting and resource allocation activities involved in a bridge preservation program
- Determine the work plan development and implementation strategies involved in a bridge preservation program
- Determine program monitoring activities that are part of an effective bridge preservation program

**Target Audience**
The target audience for the Establishing a Bridge Preservation Program WBT course is key individuals involved in managing the development, implementation, and delivery of a bridge preservation program within a transportation agency. This course is intended for those with working knowledge and/or skills in the area of highway bridge infrastructure program management principles.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 4 HOURS (CEU: .4 UNITS)

**Class Size:** Minimum: 0; Maximum: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Communication Strategies for Bridge Preservation

Communication Strategies for Bridge Preservation (130106C) is a course that shares details on communication of bridge preservation program values, benefits and needs to stakeholders and the general public. This course starts with a lesson on identifying customers and stakeholders, specifically the identification of potential audience members and dividing these members into segments and the identifying what motivates them to action and assessing these segments. A lesson shares details on developing the message with a breakdown of the process into identifying critical activities in message design, the steps involved in designing a message, and strategies on avoiding common message design mistakes. In the lesson on communicating the message, critical activities in message delivery are identified, specifically the four steps in delivering a message and identifying common mistakes in message delivery. In the final lesson on performing market research, it shares typical methods transportation agencies use to track stakeholder opinions, details the phases in market research, and identifies effective marketing research techniques.

This course is the third course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Bridge Preservation Fundamentals (130106A) and Establishing a Bridge Preservation Program (130106B). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.

OUTCOMES

Upon completion of the course, participants will be able to:

• Determine the strategies required to identify an agency champion and the target customers and stakeholders for a bridge preservation program
• Recognize strategies for developing bridge preservation messages that capture values, benefits and needs, intended for highway infrastructure stakeholders and the general public
• Determine strategies for communicating bridge preservation messages that capture values, benefits and needs, intended for highway infrastructure stakeholders and the general public
• Summarize key activities involved in performing market research, as it applies to a bridge preservation program

TARGET AUDIENCE

The target audience for the Communication Strategies for Bridge Preservation WBT course is individuals involved in communications with highway infrastructure stakeholders and the general public.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: .3 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130107A

Course Title
Fundamentals of Bridge Maintenance WBT

Fundamentals of Bridge Maintenance (NHI-130107A) teaches the participant the fundamental aspects of an effective bridge maintenance program. Module 1 - Introduction to Bridge Maintenance explains the importance of a balanced bridge maintenance program and the organizational structure, roles, and responsibilities of a bridge maintenance unit. Module 2 - Bridge Maintenance Management provides basic information about bridge inspections, reviews the general concept of Maintenance Management Systems (MMS) and Bridge Management Systems (BMS), reviews the various steps and activities involved in the proper planning and implementation of bridge maintenance program activities, discusses commonly used contracting bridge maintenance methods, and describes the principles of quality assurance and quality control measures used in bridge maintenance. Module 3 - Bridge Anatomy introduces bridge components, associated elements, and their intended functions, and also reviews common bridge types. Module 4 - Bridge Mechanics explains the bridge mechanics as it relates to different bridge components, introduces concepts such as redundancy and fracture critical details, and reviews basic hydraulic, scour and channel erosion concepts. Module 5 - Concrete Basics addresses the basic material properties of concrete; describes proper concrete mixing and testing processes; summarizes proper concrete placement, finishing and curing processes; and reviews proper methods for locating and removing unsound concrete. Module 6 - Maintenance of Bridge Ancillary Items examines general maintenance considerations and practices related to ancillary items often attached to bridges, such as utilities, and sign and lighting structures. This web-based training serves as a prerequisite to the 4-day instructor-led training NHI-130108 Bridge Maintenance.

Outcomes
Upon completion of the course, participants will be able to:

- Describe common organizational structures of transportation agencies, the role of the bridge maintenance unit and where it fits within such organizations, and the various cost-effective maintenance and preservation activities that these units perform
- Review various bridge maintenance program management activities and tools used to facilitate the accomplishment of these activities
- Classify bridge components, associated elements, and their intended function for commonly used materials
- Review the fundamentals of bridge mechanics and behaviors
- Review the fundamental steps involved in using concrete as a repair material
- Describe general maintenance practices associated with bridge mounted sign and lighting structures

Target Audience
The target audience for course 130107A, Fundamentals of Bridge Maintenance Web-Based Training is primarily members of Federal, State, and Local Departments of Transportation, as well as those contractors that perform work on behalf of these agencies. This training is primarily geared for individuals involved in onsite bridge maintenance activities and those that supervise the activities. This training is appropriate for those with basic knowledge of bridge maintenance and repair activities.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 7 HOURS (CEU: .7 UNITS)

Class Size: Minimum: 500; Maximum: 500

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number  
FHWA-NHI-130107B

Course Title  
Bridge Maintenance Painting

NHI-130107B Maintenance Practices of Bridge Painting will support a geographically dispersed audience with varying amounts of experience and education who have responsibility for maintaining coatings of in-service bridges. Learners will gain basic knowledge of the corrosion process, paint and corrosion evaluations, maintenance coating design options, and the most frequently used methods for surface preparation and application of maintenance painting materials.

Outcomes  
Upon completion of the course, participants will be able to:
• Explain the importance of bridge painting as a bridge preservation activity
• Describe preventive maintenance coating systems used on bridges
• Describe current preventive maintenance bridge painting practices

Target Audience  
The target audience for course NHI-130107B Maintenance Practices of Bridge Painting is primarily members of Federal, State, and Local Departments of Transportation, as well as contractors performing work on behalf of these agencies. This training is primarily geared for individuals involved in onsite bridge maintenance activities and those that supervise and manage these activities. This training is appropriate for those who possess basic knowledge of bridge maintenance activities and wish to gain specific expertise in bridge painting practices. Participants should possess basic knowledge of bridge maintenance and repair activities at a minimum before taking this course.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130107C

COURSE TITLE
Maintenance of Movable Bridges

NHI-130107C Maintenance of Movable Bridges will support a geographically dispersed audience with varying amounts of experience and education who have responsibility for maintaining in-service movable bridges. Learners will gain basic knowledge of the common types and terms related to movable bridges, as well as the various operational components they need to be familiar with in order to maintain them. Further, this course will emphasize the lubrication of movable bridge components, including the types of lubricants used and special considerations in regards to their selection as this one of the most important preventive maintenance activities associated with movable bridges. Finally, this course will provide basic knowledge on the most frequently used preventive maintenance activities associated with the various components and systems encountered on movable bridges.

OUTCOMES
Upon completion of the course, participants will be able to:

• Review common types of movable bridges and their operational components
• Recognize the importance of lubrication of movable bridge components
• Describe maintenance considerations of movable bridge operational components and systems
• Emphasize the importance of an Operation & Maintenance (O&M) Manual for each movable bridge

TARGET AUDIENCE
The target audience for this course is primarily members of Federal, State, and Local Departments of Transportation, as well as contractors performing work on behalf of these agencies. This training is primarily geared toward individuals involved in onsite bridge maintenance activities and those that supervise and manage these activities. This training is appropriate for those who possess basic knowledge of bridge maintenance activities and wish to gain specific expertise in bridge painting practices. Participants should possess basic knowledge of bridge maintenance and repair activities at a minimum before taking this course.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130107D

COURSE TITLE
Maintenance of Masonry Bridge Elements

NHI-130107D Maintenance of Masonry Bridges supports a geographically dispersed audience with varying amounts of experience and education who are responsible for maintaining in-service bridges constructed of masonry. Learners will gain basic knowledge of the materials and defects associated with masonry bridges, as well as the preventive maintenance activities and repair techniques used to address deterioration.

OUTCOMES
Upon completion of the course, participants will be able to:

• Review common materials used in masonry bridges and their associated defects
• Describe preventive maintenance and repair techniques for masonry bridges

TARGET AUDIENCE
The target audience for course NHI-130107D Maintenance of Masonry Bridges is primarily members of Federal, State, and Local Departments of Transportation, as well as contractors performing work on behalf of these agencies. This training is primarily geared toward individuals involved in onsite bridge maintenance activities and those that supervise and manage these activities. This training is appropriate for those who possess basic knowledge of bridge maintenance activities and wish to gain specific expertise in the maintenance and repair of masonry bridges. Participants should possess basic knowledge of bridge maintenance and repair activities at a minimum before taking this course.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: .2 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**COURSE NUMBER**
FHWA-NHI-130109A

**COURSE TITLE**
Bridge Management Fundamentals

When the average citizen commutes to work or runs errands, they are relying on us, public transportation agencies, to keep their bridges safe and available for use. It is their expectation that we keep their bridges serviceable and at the lowest life-cycle cost possible. Bridge management systems will help your agency to efficiently balance the various bridge needs against available resources. The Bridge Management Fundamentals course describes a bridge management system and walks through the process of selecting and implementing the right bridge management software for your agency. Throughout the course, you will learn direct from agencies with mature and successful bridge management systems about how they get the most utility from their system.

**OUTCOMES**
Upon completion of the course, participants will be able to:

• Explain the need for a BMS
• Describe a typical BMS organizational structure
• Describe the seven components of a BMS
• Describe tools that are used as part of the bridge management process
• Describe an implementation plan for a comprehensive BMS
• Describe effective practices when using BMSs
• Identify successful applications of BMS components by agencies
• Describe the bridge management process as it relates to an agency business model
• Describe how to address risk

**TARGET AUDIENCE**
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 4 HOURS (CEU: .4 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130109B

Course Title
Performance-Based Management of Highway Bridges

The traditional approach to bridge management has focused on identifying the worst performing structures in the inventory and addressing their deficiencies before anything else. But as inventories expand and age and as budgets shrink, most agencies discover that even as they address the worst bridges in the inventory, other bridges that could have been saved through preservation activities slip into deficiency. Today, the public expects transportation agencies to adopt a performance-based management approach that will achieve the highest level of performance possible and make the most effective use of available funds. The Performance-based Management of Bridges course uses video-based testimonies from transportation professionals to illustrate the ways in which their agencies have used performance-based management to estimate the cost-effectiveness of decisions and assess risk.

Outcomes
Upon completion of the course, participants will be able to:

• Describe how a bridge management system supports a performance-based bridge program.
• Identify framework for a performance-based management business model;
• Describe the development of performance measures;
• Describe methods for determining cost-effectiveness of actions;
• Describe considerations when assessing risk; and
• Describe strategies for communicating and reporting highway bridge performance-based management actions and results to other agency stakeholders and the public.

Target Audience
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130111

Course Title
Nondestructive Evaluation Fundamentals for Bridge Inspection (Web-based)

130111 Nondestructive Evaluation (NDE) Fundamentals for Bridge Inspection is an introductory course that exposes bridge inspectors to NDE technologies. This course defines and describes the progression of nondestructive evaluation bridge inspection, overview explanations of NDE techniques, and descriptions of the NDE approaches in terms of their applicability to the primary bridge materials of concrete, steel, and timber. The goal of 130111 Nondestructive Evaluation Fundamentals for Bridge Inspection is to provide learners with the necessary background to identify the primary NDE technologies to supplement bridge inspection, and the materials for which they are best suited. A secondary goal of this course is to provide a foundation for more in-depth study of the NDE topics covered in the WBT Course Series, Practical Applications of Nondestructive Evaluation for Bridge Inspection, which includes 130112A NDE for Concrete Bridge Elements, 130112B NDE for Steel Bridge Elements, and 130112C NDE for Timber and Other Bridge Elements.

Outcomes
Upon completion of the course, participants will be able to:
• Describe the application of NDE technology to corrosion and related flaws.
• Describe the application of NDE technology to construction flaws including honeycombing, voids, and inadequate rebar cover
• Explain NDE investigation techniques of concrete bridge elements

Target Audience
The target audience for course 130111 includes public and private sector bridge inspectors, supervisors, project engineers, and others responsible for field inspection of in-service bridges. This will include personnel who may be engineers or technicians in positions such as bridge inspection program manager, bridge inspection project manager, bridge inspection team leader, bridge inspection team member, and FHWA Structural/Bridge Engineers.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 6 HOURS (CEU: .6 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**COURSE NUMBER**
FHWA-NHI-130112A

**COURSE TITLE**
NDE for Concrete Bridge Elements (Web-based)

130112A Nondestructive Evaluation (NDE) for Concrete Bridge Elements explains the “why” behind the approaches with theoretical explanations of the techniques, comparative costs of each approach, and their applicability to concrete as a primary bridge material. This course is the first of three courses in the WBT Course Series, Practical Applications of Nondestructive Evaluation for Bridge Inspection, which also includes 130112B NDE for Steel Bridge Elements and 130112C NDE for Timber and Other Bridge Elements. This Course Series (130112A, 130112B, 130112C) is a follow up to introductory course 130111 providing a more in-depth study of NDE topics.

**OUTCOMES**
Upon completion of the course, participants will be able to:
- Describe the application of NDE technology to corrosion and related flaws
- Describe the application of NDE technology to construction flaws including honeycombing, voids, and inadequate rebar cover
- Explain NDE investigation techniques of concrete bridge elements

**TARGET AUDIENCE**
The target audience for course 130112A includes public and private sector bridge inspectors, supervisors, project engineers, and others responsible for field inspection of in-service bridges. This will include personnel who may be engineers or technicians in positions such as bridge inspection program manager, bridge inspection project manager, bridge inspection team leader, bridge inspection team member, and FHWA Structural/Bridge Engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 5 HOURS (CEU: .5 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130112B

COURSE TITLE
NDE for Steel Bridge Elements (Web-based)

130112B Nondestructive Evaluation (NDE) for Steel Bridge Elements explains the “why” behind the approaches with theoretical explanations of the techniques, comparative costs of each approach, and their applicability to steel as a primary bridge material. This course is the second of three courses in the WBT Course Series, Practical Applications of Nondestructive Evaluation for Bridge Inspection, which also includes 130112B NDE for Steel Bridge Elements and 130112C NDE for Timber and Other Bridge Elements. This Course Series (130112A, 130112B, 130112C) is a follow up to introductory course 130111 providing a more in-depth study of NDE topics.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the application of NDE technology to evaluate the remaining section of steel
• Describe the application of NDE technology to detect cracks in steel
• Explain NDE investigation techniques of steel bridge elements

TARGET AUDIENCE
The target audience for course 130112B includes public and private sector bridge inspectors, supervisors, project engineers, and others responsible for field inspection of in-service bridges. This will include personnel who may be engineers or technicians in positions such as bridge inspection program manager, bridge inspection project manager, bridge inspection team leader, bridge inspection team member, and FHWA Structural/Bridge Engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130112C

COURSE TITLE
NDE for Timber and Other Material Bridge Elements (Web-based)

130112C Nondestructive Evaluation (NDE) for Timber and other Material Bridge Elements explains the “why” behind the approaches with theoretical explanations of the techniques, comparative costs of each approach, and their applicability to timber and other bridge materials. This course is the third of three WBTs in the WBT Course Series, Practical Applications of Nondestructive Evaluation for Bridge Inspection, which also includes 130112A NDE for Concrete Bridge Elements and 130112B NDE for Steel Bridge Elements. This Course Series (130112A, 130112B, 130112C) is a follow up to introductory course 130111 providing a more in-depth study of NDE topics.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the application of NDE technology to decay and other voids of timber bridge elements
• Describe the application of NDE technology to delamination and cracks of FRP bridge elements

TARGET AUDIENCE
The target audience for course 130112C includes public and private sector bridge inspectors, supervisors, project engineers, and others responsible for field inspection of in-service bridges. This will include personnel who may be engineers or technicians in positions such as bridge inspection program manager, bridge inspection project manager, bridge inspection team leader, bridge inspection team member, and FHWA Structural/Bridge Engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 4 HOURS (CEU: .4 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130124

COURSE TITLE
Tunnel Safety Inspection Refresher WBT Prerequisite

This new web-based prerequisite training provides basic concepts with regards to tunnel inspection and safety prior to taking 130125 Tunnel Safety Inspection Refresher. This course (in addition to 130125 Tunnel Safety Inspection Refresher) comprises of a total of 18 hours, and must be completed every 5 years to satisfy regulatory requirements for tunnel inspection refresher training. With recurring refresher training, these courses help maintain the consistency of the tunnel inspection program. The course is based on the FHWA National Tunnel Inspection Standards (NTIS), the FHWA Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) manual, and the FHWA Specifications for the National Tunnel Inventory (SNTI).

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe the current overall condition and condition trends for the nation's tunnels
• Describe the National Tunnel Inspection Standards (NTIS)
• Describe the FHWA’s “Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual”
• Describe the FHWA’s “Specifications for the National Tunnel Inventory (SNTI)”
• Identify keys to ensuring a safe work environment
• Identify tunnel inspection documentation methods
• Define a critical finding
• Identify National Tunnel Inventory (NTI) items
• Identify tunnel structural, civil, mechanical, electrical/lighting, signage, & fire/life safety/security elements

TARGET AUDIENCE
The target audience for the Tunnel Safety Inspection Refresher WBT is primarily members of Federal, State, local and Tribal highway agency employees, specifically program managers, tunnel owners, and tunnel inspectors. A secondary target audience may include maintainers, such as operations and maintenance staff, as well as designers, load rating engineers, and asset managers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131050A

Course Title
(Introduction to) Asphalt Pavement In-Place Recycling Techniques

This training is a prerequisite of another NHI training and is offered at no cost.

Transportation agencies focusing on the use of sustainable, cost-effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes
Upon completion of the course, participants will be able to:
• Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
• Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
• Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
• Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
• List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience
This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency’s asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 20; Maximum: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110

COURSE TITLE
Asphalt Pavement Preservation Treatment Series (Modules A-K)

FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) created the Pavement Preservation Treatment Construction Guide (PPTCG) as a resource for agency and industry pavement preservation practitioners. The guide covers basic pavement preservation concepts, as well as information on specific treatments to extend the life of asphalt pavements.

This course includes a series of modules designed to provide participants with an introduction to the PPTCG, so that they can better use it to familiarize themselves with general information on pavement preservation concepts and techniques. The module topics include:

1. Introduction to Pavement Preservation (NHI-131110A)
2. Materials (NHI-131110B)
3. Crack Sealing, Crack Filling and Joint Sealing of Flexible and Rigid Pavements (NHI-131110C)
4. Patching and Edge Repairs (NHI-131110D)
5. Chip Seals (NHI-131110E)
6. Fog Seals (NHI-131110F)
7. Slurry Seals (NHI-131110G)
8. Micro-surfacing Projects (NHI-131110H)
9. Thin Functional and Maintenance Overlay Projects (NHI-131110I)
10. Ultra Thin, Hot-Mixed, Bonded Overlay Projects (NHI-131110J)
11. Selecting a Pavement Preservation Treatment (NHI-131110K)

Each of the modules is also offered as individual trainings and can be accessed by registering for the course number listed with each module.

OUTCOMES

Upon completion of the course, participants will be able to:

- Identify the components and value of a Pavement Preventive Maintenance (PPM) program
- Identify pavement conditions and other attributes that suggest whether preventive maintenance is appropriate
- Identify various pavement preservation strategies, techniques and materials
- State the performance characteristics of various pavement preservation strategies, techniques and materials
- Select the appropriate strategy(ies), technique(s) and material to extend the service life and retard the development of pavement distress

TARGET AUDIENCE

The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.
Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 10 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110A

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Introduction to Pavement Preservation

This training is part of the “Asphalt Pavement Preservation Treatment” series which provides participants with an introduction to the Pavement Preservation Treatment Construction Guide (PPTCG) and the basics of pavement preservation. The PPTCG was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners.

This module provides an introduction to basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. Topics include: pavement structure, distresses, and differentiating pavement preservation from preventive maintenance.

The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information. To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify common surface distresses in pavements.
• Distinguish between distresses caused by surface failure and those caused by subsurface layer failure.
• Recognize the difference between pavement preservation and pavement maintenance.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: .5 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110B

Course Title
Asphalt Pavement Preservation Treatment Series: Materials

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on the materials used for preventive maintenance treatments. Topics include: materials comprising maintenance treatments, emulsions, and aggregates. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• List the materials used in preventive maintenance treatments for flexible and rigid pavements.
• Recognize the differences between asphalt cement and emulsions and their use in pavement preservation treatments.
• List the six physical properties of aggregates that affect the performance of preservation treatments.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110C

Course Title
Asphalt Pavement Preservation Treatment: Crack Sealing & Filling, and Joint Sealing

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on crack sealing, crack filling, and joint sealing of flexible and rigid pavements. Topics include: working and non-working cracks, fatigue and longitudinal cracks, correct temperatures for crack sealant, crack repair sequence, hot sealant, and crack sealing or filling criteria. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes

Upon completion of the course, participants will be able to:

• Describe the difference between a working crack and a nonworking crack.
• List the types of distresses that crack sealing, crack filling, and joint sealing treatments will repair.
• Describe how proper storage and handling of sealants and fillers affect their constructability and performance.
• Describe the procedure of repairing surface cracks and rigid joints.
• Identify common problems associated with crack sealing, crack filling, and joint sealing treatments and recognize their solutions.
• List the capabilities and limitations of crack sealing, crack filling, and joint sealing treatments.

Target Audience

The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A
Length: 1 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
 COURSE NUMBER
FHWA-NHI-131110D

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Localized Pavement Repair

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on localized pavement repair. Topics include: pothole formation and edge failure, seal or fill decisions, construction of, and problems with, pothole patching, dig outs, edge repairs, and skin patching, and capabilities and limitations of localized repairs. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the mechanisms of pothole formation and edge failure.
• Select the type of localized pavement repair best suited to a given condition.
• Describe the process of pothole patching, dig outs, edge repairs, and skin patching.
• Identify common problems associated with pothole patching, dig outs, edge repairs, and skin patching and recognize their solutions.
• List the key capabilities and limitations of localized pavement repairs.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110E

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Chip Seals

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on chip seals. Topics include: project selection, pavement and weather condition requirements, storage, traffic control, construction sequence, aggregate spreading distance, brooming, chip spreading process, distributor preparation, and troubleshooting.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:

• Recognize pavement conditions best suited to the chip seal treatment.
• Identify how proper storage and handling of chip seal materials affect their constructability and performance.
• Describe the construction of chip seals.
• Identify common problems associated with chip seals and recognize their solutions.
• Recognize key capabilities and limitations of chip seals.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110F

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Fog Seals
This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on fog seals. Topics include: uses of fog seals, suitable pavement surfaces, storage and handling of materials, application process, and problems and causation. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Recognize pavement conditions most suitable for a fog seal.
• Describe how proper storage and handling of fog seal materials affect their constructability and performance.
• Describe the construction of a fog seal.
• Identify common problems associated with fog seals and recognize their solutions.
• List the key capabilities and limitations of fog seal treatments.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110G

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Slurry Seals
This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on slurry seals. Topics include: reasons to use slurry seals, gradations of slurry seal aggregate, preparation and application process, and problems and solutions. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the type of slurry seal appropriate to various traffic conditions.
• Describe the construction of slurry seals.
• Identify common problems associated with slurry seals and recognize their solutions.
• List the key capabilities and limitations of slurry seals.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate
FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110H

Course Title
Asphalt Pavement Preservation Treatment Series: Micro-Surfacing

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on micro-surfacing. Topics include: pavement and traffic condition considerations, construction, and troubleshooting.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• Identify pavement conditions most suitable for a micro-surfacing treatment.
• Describe the construction of micro-surfacing.
• Identify common problems associated with micro-surfacing and recognize their solutions.
• List the key capabilities and limitations of micro-surfacing relative to various traffic conditions.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110I

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Thin Functional HMA Overlay

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on thin functional hot-mix asphalt overlays. Topics include: proper usage, suitable pavement conditions, construction, and troubleshooting. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify pavement conditions best suited for a thin hot mix asphalt overlay.
• Describe the construction process for a thin hot mix asphalt overlay.
• Identify common problems associated with a thin hot mix asphalt overlay and recognize their solutions.
• List the key capabilities and benefits of a thin hot mix asphalt overlay relative to various traffic conditions.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110J

Course Title
Asphalt Pavement Preservation Treatment Series: Ultra Thin HMA Bonded Wearing Course

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on ultra thin, hot-mixed asphalt bonded wearing course. Topics include: usage, distresses and application considerations, construction, and troubleshooting. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• Identify pavement conditions best suited to ultra thin, hot-mixed asphalt bonded wearing course.
• Describe the construction of ultra thin, hot-mixed, asphalt bonded wearing course.
• Identify common problems associated with ultra thin, hot-mixed, asphalt bonded wearing course and recognize their solutions.
• List key capabilities and benefits of ultra thin, hot-mixed, asphalt bonded wearing course relative to various traffic conditions.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A
Length: 1 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110K

Course Title
Asphalt Pavement Preservation Treatment Series: Selecting the Right Treatment

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on preservation treatment selection. This course is primarily intended for inspectors and technicians.

The training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• Select the appropriate pavement preservation treatment(s) after analyzing given pavement and traffic conditions.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: .5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131117

COURSE TITLE
Basic Materials for Highway and Structure Construction and Maintenance

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review basic materials for highway and structure construction and maintenance. The training was prepared by State DOT personnel for State DOT personnel. It contains good practices from various agencies. Each State agency/company has its own specifications, which the viewer needs to review and follow. This course is primarily intended for inspectors and technicians.

Although there are a number of materials used in the construction and maintenance process for both highways and structures, this course is focused on the three basic materials. They are Aggregate, Portland Cement Concrete (referred to as PCC), and Hot Mix Asphalt (referred to as HMA).

This training is directed toward entry level technicians, to give them a general view of the basic materials used in construction and maintenance. The course modules will address the procedures used in the production and sampling of aggregates.

Module 1 is called Basic Aggregates and includes quarry inspection, sand operation, stockpiling, and sampling. Module 2 covers Portland Cement, including the production of Portland Cement, the hydration process, as well as other cementing materials used in concrete such as water, admixtures, and aggregates. Module 3 reviews Hot Mix Asphalt, including the asphalt binder and aggregates used in the production.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify aggregate production and sampling procedures
• Recognize the ingredients of PCC and the part each plays in concrete production
• Recognize the ingredients of HMA and the part each plays in hot mix asphalt production

TARGET AUDIENCE
This training is designed for Level I and Level II State/local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131121

Course Title
Construction of Portland Cement Concrete Pavements

Improving and maintaining the quality of concrete is an important aspect of keeping pavements safe and long lasting. This training provides participants with an overview of the entire Portland cement concrete (PCC) paving and restoration process: setting forms, mixing, hauling, curing and applicable repair techniques. This training is presented in several modules:

1. Construction Quality
2. PCC Production Overview
3. Slipform Paving
4. Fixed Form Paving
5. Pavement Curing, Sawing, and Joint Sealing Operations
6. Concrete Pavement Restoration

This self-paced, Web-based training is designed for participants to progress at their own pace. The training focuses on the proper methods for construction of concrete paving and pavement restoration techniques with an emphasis on cause and effect.

Outcomes
Upon completion of the course, participants will be able to:
- Describe the differences between truck-mixed and ready-mixed concrete
- Identify factors in production and paving operations that contribute to achieving a smooth ride
- Describe the differences between slip-form and fixed-form paving
- Identify the factors that impact saw timing and crack control
- Recognize the importance and key factors in placing joint sealant materials
- Identify the components of concrete pavement restoration application and construction techniques
- Describe the purpose and appropriate use of full depth and partial depth repairs
- Identify critical factors for curing and sawing operations that affect pavement performance
- Describe the purpose of grinding and dowel bar retrofit
- Identify applicable repair techniques for concrete pavement restoration
- Describe purpose of slab stabilization and joint and crack resealing

Target Audience
This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement and restoration of PCC pavements. Participants should have some working knowledge of concrete pavement construction.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 10 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131122

COURSE TITLE
Portland Cement Concrete Paving Inspection

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review inspection practices for Portland cement concrete paving projects. The training was originally developed by the Iowa Department of Transportation and more currently updated and reviewed by the TCCC and NHI. This course is recommended for the Transportation Curriculum Coordination Council levels I and II. This course is primarily intended for inspectors and technicians.

This training course has been prepared to provide guidance and instruction to inspectors involved in the construction of Portland cement concrete (PCC) pavements. The important tasks involved in this work are explained and proper procedures are described. The material is targeted for those who have not had experience in PCC paving construction.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify the materials in a PCC mixture and the concrete properties
• Comprehend Design Project Plans and recognize the joints types and saw cuts
• Identify the safety requirements and recognize safe Traffic Control practices
• Recognize and comprehend the use of the equipment in a PCC Paving project
• Recognize various sub grade treatments
• Inspect project tasks for compliance with pre-paving requirements, i.e., survey stakes, proof rolling, subgrade, and dowel baskets
• Inspect project tasks for compliance with PCC Paving requirements, i.e., string line, place and consolidate, finish, and texture
• Perform post-construction checks

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process of placement and inspection of Portland cement concrete paving. It is applicable to anyone desiring a better understanding of activities and inspection procedures on Portland cement concrete paving projects.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126

Course Title
Concrete Pavement Preservation Series (Modules A-K)

NHI in partnership with the Transportation Curriculum Coordination Council (TCCC) is pleased to offer this comprehensive training series for concrete pavement preservation. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

The NHI-131126 Concrete Pavement Preservation Series presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. It concentrates primarily on strategies and methods that are applicable at the project level, and not at the network level, where pavement management activities function and address such issues as prioritizing and budgeting.

Registration in NHI-131126 enrolls you in all 11 courses in the Concrete Pavement Preservation Series (NHI-131126A-K) plus gives you access to a downloadable version of the FHWA Concrete Pavement Preservation Guide! You can take some or all of these courses when it best suits your schedule.

NHI-131126 includes:
- Introduction module with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:

• Define pavement preservation
• List the major components of a pavement evaluation and the types of information gained from each
• Identify the purpose and suitable application of various concrete pavement preservation treatments
• Describe recommended materials and construction/installation practices for each treatment
• List factors to consider in the selection of concrete pavement preservation treatments

Target Audience
The Concrete Pavement Preservation Series meets the needs of a diverse audience to include design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 11 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126A

COURSE TITLE
Concrete Pavement Preservation Series: Pavement Preservation Concepts

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

• Define pavement preservation and preventive maintenance
• Describe characteristics of suitable pavements for preventive maintenance
• Describe the importance of selecting and placing the “right” treatment and placing it at the “right” time
• List the benefits of pavement preservation

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126B

COURSE TITLE
Concrete Pavement Preservation Series: Concrete Pavement Evaluation

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was sponsored by the FHWA and developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation. This module also describes the common procedures associated with conducting thorough pavement evaluations.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe the need for a thorough pavement evaluation
• Name the common pavement evaluation components
• Describe what information is obtained from each pavement evaluation component

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126C

COURSE TITLE
Concrete Pavement Preservation Series: Slab Stabilization

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the use of slab stabilization (also known as undersealing) and slab jacking of concrete pavements. Slab stabilization restores support beneath slabs where voids have been detected, and slab jacking is used to raise depressed or settled slabs.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:
• List benefits of slab stabilization and slab jacking
• Describe recommended materials and mixtures
• Describe recommended construction steps for both procedures
• Identify typical construction problems and remedies for slab stabilization

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126D

Course Title
Concrete Pavement Preservation Series: Partial-depth Repairs

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the procedures for partial-depth repairs (PDR) on PCC pavements. PDR is the removal and replacement of small, shallow areas of deteriorated PCC at spalled or distressed joints.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
• List benefits and appropriateness of partial-depth repairs
• List the advantages and disadvantages of different available repair materials
• Describe recommended construction procedures
• Identify typical construction problems and appropriate remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Concrete Pavement Preservation Series: Full-depth Repairs

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the procedures for cast-in-place Portland cement concrete (PCC) full-depth repair (FDR) of jointed concrete pavements (JCP) including jointed plain (JPCP) and jointed reinforced concrete pavements (JRCP). FDR techniques for continuously reinforced concrete pavements (CRCP) are discussed separately toward the end of the presentation. FDR is the cast-in-place concrete repairs that extend the full-depth of the existing slab.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES

Upon completion of the course, participants will be able to:

- List the benefits of full-depth repairs
- Describe primary design considerations in terms of dimensions, load transfer, and materials
- Describe recommended construction activities
- Identify typical construction problems and remedies

TARGET AUDIENCE

The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
**TRAINING LEVEL:** Intermediate

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 2 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126F

Course Title
Concrete Pavement Preservation Series: Retrofitted Edge Drains

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module presents design and construction information on retrofitted edge drains. This treatment is not as widely used as it once was, largely because it has limited applicability. Specifically, it must be targeted to those pavements that are 1) in good structural condition and 2) have bases with some degree of permeability that would allow water to be drained from beneath the pavement and to the edge drain.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
- List benefits of drainage
- List components of edge drain systems
- Describe recommended installation procedures
- Identify typical construction problems and remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126G

Course Title
Concrete Pavement Preservation Series: Dowel Bar Retrofit

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module presents design and construction information on load transfer restoration (LTR), sometimes referred to as retrofitted load transfer. In the introduction we will describe the difference between load transfer restoration (generic term) and dowel bar retrofitting (DBR) which is a specific means of achieving LTR. There are other methods available, but DBR is the most proven.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:

- List benefits and applications of load transfer restoration
- Describe recommended materials and mixtures
- Describe recommended construction procedures
- Identify typical construction problems and remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126H

COURSE TITLE
Concrete Pavement Preservation Series: Diamond Grinding and Grooving

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module describes recommended procedures for surface restoration of Portland cement concrete (PCC) pavements, specifically diamond grinding and diamond grooving operations.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

- Differentiate between diamond grinding and diamond grooving and list the benefits of each
- Identify appropriate blade spacing dimensions for grinding and grooving
- Describe recommended construction procedures
- Identify typical construction problems and remedies

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126I

Course Title
Concrete Pavement Preservation Series: Joint Sealing and Crack Resealing

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers joint resealing and crack sealing for concrete pavements. Joint resealing and crack sealing is defined as placement of an approved sealant material in an existing joint or crack to reduce moisture infiltration and prevent intrusion of incompressibles.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
- List the benefits of joint resealing
- Describe desirable sealant properties and characteristics
- Describe recommended installation procedures
- Identify typical construction problems and appropriate remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
**TRAINING LEVEL:** Intermediate

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 1 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126J

Course Title
Concrete Pavement Preservation Series: Concrete Overlays

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven step process that can be used to determine the most appropriate treatment (or combination of treatments) for a PCC pavement.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
- Describe the treatment selection process
- List the components of a life-cycle cost analysis
- List other factors that may enter the selection process

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate
FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126K

Course Title
Concrete Pavement Preservation Series: Strategy Selection

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven step process that can be used to determine the most appropriate treatment (or combination of treatments) for a PCC pavement.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
• Describe the treatment selection process
• List factors that might enter into the selection process
• Describe pavement deficiencies addressed by the different preservation treatments
• Describe how the benefits and costs of alternative treatment strategies are computed in a cost-effectiveness analysis
• Describe a process used to select the preferred treatment strategy

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: .3 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131127

Course Title
Concrete Series

The Transportation Curriculum Coordination Council (TCCC) in partnership with NHI is pleased to offer this comprehensive training series (FHWA-NHI-131127) for any engineer or supervisor working with Portland cement. The series is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University.

This course is recommended for the Transportation Curriculum Coordination Council levels II - IV.

To streamline registration and enable you to take some or all of these courses when it best suits your schedule, we have created this new series option which automatically registers you for all 11 modules—it’s that easy. They are as follows:

Module 1 - TCCC Design of Pavement (FHWA-NHI-134101)
Module 2 - TCCC Fundamentals of Materials Used for Concrete Pavements (FHWA-NHI-134084)
Module 3 - TCCC Mix Design Principles (FHWA-NHI-134087)
Module 4 - TCCC Fresh Concrete Properties (FHWA-NHI-134097)
Module 5 - TCCC Basics of Cement Hydration (FHWA-NHI-134096)
Module 6 - TCCC Incompatibility in Concrete Pavement Systems (FHWA-NHI-134085)
Module 7 - TCCC Early Age Cracking (FHWA-NHI-134095)
Module 8 - TCCC Hardened Concrete Properties- Durability (FHWA-NHI-134075)
Module 9 - TCCC Construction of Concrete Pavements (FHWA-NHI-134098)
Module 10 - TCCC QCQA for Concrete Pavements (FHWA-NHI-134100)
Module 11 - TCCC Troubleshooting for Concrete Pavements (FHWA-NHI-134102)

Outcomes

Upon completion of the course, participants will be able to:

- Explain concrete pavement construction as a complex, integrated system involving several discrete practices that interrelate and affect one another in various ways
- Recognize and implement technologies, tests, and best practices to identify materials, concrete properties, and construction practices that are known to optimize concrete performance
- Identify factors that lead to premature distress in concrete, and learn how to avoid or reduce those factors
- Apply appropriate how-to and troubleshooting information

Target Audience

This training is intended as both a training tool and a reference to help concrete paving engineers, quality control personnel, specifiers, contractors, suppliers, technicians, and tradespeople bridge the gap between recent research and practice regarding optimizing the performance of concrete for pavements.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 12 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131128

COURSE TITLE
Testing Self-Consolidating Concrete

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the properties and applications of self-consolidating concrete as well as the test methods used for measuring SCC properties according to ASTM test methods. This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III. This course is primarily intended for inspectors and technicians.

This training includes an overview of the fresh properties of self-consolidating concrete including terminology, target guidelines and quality control. In addition, ASTM test methods for slump flow and flow rate, passing ability using the j-ring, column segregation, static segregation and making self consolidated concrete test cylinders are reviewed.

OUTCOMES
Upon completion of the course, participants will be able to:
• Define self-consolidating concrete
• Understand the terminology associated with self-consolidating concrete
• Perform the tests associated with SCC
• Report the test results

TARGET AUDIENCE
This course is designed for anyone who would like to understand more about self-consolidating concrete, including personnel running self-consolidating concrete tests in the field along with supervisors in charge of field testing technicians.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131129

COURSE TITLE
HMA Paving Field Inspection

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance and instruction to inspectors involved in the construction of hot mix asphalt (HMA) pavements. The important tasks involved in this work are explained and proper procedures are described. This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III. This course is primarily intended for inspectors and technicians.

This training is arranged in a fashion to help the inspector first learn the various aspects of what is involved in a HMA paving operation and then become familiar with the duties that are a part of the HMA pavement grade inspection responsibilities. It also explains how to recognize the mix properties of a HMA mixture. The information included will assist the inspector in recognizing problems during a project and offering solutions to the problems. This training is not intended to cover every aspect of HMA paving.

OUTCOMES
Upon completion of the course, participants will be able to:
- Know various aspects of what is involved in a HMA paving operation
- Understand the duties of a HMA paving inspector
- Recognize the mix properties of a HMA mixture
- Recognize the problems that may occur on HMA paving projects
- Understand the product and project so solutions can be recommended

TARGET AUDIENCE
This training would be beneficial to anyone that is involved with an HMA paving project, but focuses on technicians/inspectors that are involved with the production, placement, and inspection of HMA paving projects.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131130

COURSE TITLE
Advanced Self-Consolidating Concrete

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to reviews advanced concepts, properties, and applications of self-consolidating concrete. This training is recommended for the Transportation Curriculum Coordination Council levels II, III, and IV. This course is primarily intended for inspectors and technicians.

This training will cover the basic characteristics of self-consolidating concrete as well as advantages of using SCC as compared to conventional concrete. In addition, it will discuss SCC's composition and proportioning as well as fresh and hardened properties. Finally, we will review specific examples where SCC has been used as well as the details of SCC use in slipform paving.

OUTCOMES
Upon completion of the course, participants will be able to:

• Define self-consolidating concrete
• List procedures for creating SCC
• Identify SCC performance characteristics
• Compare SCC and conventional concrete
• Recognize SCC applications

TARGET AUDIENCE
Anyone who would like to understand more about self-consolidating concrete, including personnel running self-consolidating concrete tests in the field along with supervisors in charge of field testing technicians.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131132

Course Title
Chip Seal Best Practices

The Chip Seal Best Practices course presents ways to assist in the development and implementation of pavement preservation programs by identifying the benefits of using chip seal as part of a preventive maintenance program.

This course has six modules. Module 1 is an introduction into chip seals, module 2 covers designing chip seal mixes, module 3 is selecting the proper materials for the chip seal mix, module 4 focuses on the use of the equipment, module 5 covers proper construction practices, and module 6 rounds out the course with performance measures of chip seals. The combination of all this information provides an excellent overview of successful chip seal practices worldwide.

Outcomes
Upon completion of the course, participants will be able to:
- Define chip seal
- Describe how chip seals are used as a preventive maintenance treatment for pavement
- Identify materials used in chip seals
- Describe the characteristics of chip seal design
- Identify types of chip seal
- Identify the important considerations of aggregate and binder selection
- Describe aggregate-binder compatibility
- Describe equipments used in chip seal practices
- Identify important variables in construction practice
- Define the measures of control implemented over the quality of materials and construction
- Identify construction best practices
- Describe the components of engineering-based performance measures
- Identify qualitative performance indicators for chip seal
- Define common visible chip seal distresses

Target Audience
This training is recommended for the Transportation Curriculum Coordination Council levels I, II and III. This training would benefit entry level construction inspectors, maintenance employees and contractor personnel as well as serve as refresher training for those already well versed in the selection and application of a chip seal as a preventive maintenance treatment.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131133

Course Title
Roller Compacted Concrete Pavements

The Roller Compacted Concrete (RCC) Pavements course provides detailed overviews of RCC properties and materials, mixture proportioning, structural design issues, and production and construction considerations, plus troubleshooting guidelines and an extensive reference list for more comprehensive information.

This course contains six modules. Module 1 is an introduction in RCC covering the characteristics, benefits, limitations, selection considerations, and typical uses. Module 2 discusses the property differences between RCC and conventional mixes, material requirements and testing. Module 3 covers mix proportioning of RCC, while Module 4 gets into structural design of RCC pavements. Module 5 acquaints the student with production and the proper handling and storage of materials, mixing and batching, and production planning. Module 6 covers the actual construction of a RCC pavement. All of the modules for this training were developed from the August 2010 “Guide for Roller-Compacted Concrete Pavements” which is available from the Portland Cement Association website www.cement.org/pavements.

Outcomes
Upon completion of the course, participants will be able to:

• Define RCC key elements and common uses
• Define RCC properties and materials
• Describe RCC mix proportioning
• Describe structural design of RCC pavement
• Identify RCC production
• Identify RCC pavement construction

Target Audience
This training provides agencies, contractors, materials suppliers, and others with a thorough introduction to and updated review of RCC and its many paving applications. This training is recommended for the Transportation Curriculum Coordination Council levels II through IV.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131134

COURSE TITLE
Superpave for Construction

The Superpave for Construction Course contains information for field construction personnel on the Superpave mix
design system and the control of field produced Hot Mix Asphalt.

There are two modules in this course. The first module introduces the Superpave Hot Mix Asphalt design testing and
analysis. It will cover design testing procedures, design analysis methods, and will include calculations to analyze the
volumetrics of paving samples. Module two includes relevant volumetric examples including the use of phase diagrams
to calculate volumetric properties. Example problems are included. This course is an excellent learning tool to assist in
understanding corrective actions for volumetric parameters.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the benefits of Superpave over previous mix design methodologies
• Understand Superpave mix design procedures and testing
• Understand mix design analysis methods
• Perform the calculation necessary to analyze the volumetrics of paving samples for comparison
• Describe how to use phase diagrams to calculate volumetric properties
• Describe factors which can influence key mass-volume relationships and calculations
• Understand corrective action for volumetric parameters
• Calculate and evaluate volumetric properties through example problems

TARGET AUDIENCE
This training is targeted to intermediate and advanced technicians from both contractor and agency employment, which
will be involved in construction of pavements using Superpave. This training is recommended for the Transportation
Curriculum Coordination Council levels II and III.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131135

Course Title
Aggregate Sampling Basics

The Aggregate Sampling Basics course will cover the importance of proper sampling, why we need to sample aggregate, and why we need special procedures to do so. We will cover how to obtain a proper sample that will accurately represent the materials by utilizing sampling principles and preferred methods.

The specifications covered in the course are from the American Association of State Highway and Transportation Officials or AASHTO. The course starts at the beginning with what are aggregates, what are aggregate uses, and continues through proper sampling. It also has information on aggregate processing and sieving. The course contains interaction with the student and quizzes to make sure the material was understood.

Outcomes
Upon completion of the course, participants will be able to:
• Define aggregates
• Describe aggregate processing
• Describe aggregate sampling

Target Audience
This training is targeted to the beginning technician that will be obtaining aggregate samples for testing during production or on a project for agency, industry or consultant. This training is recommended for the Transportation Curriculum Coordination Council levels I and II.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131136

Course Title
Materials Testing: Reducing Aggregate Samples

The Materials Testing and Reducing Aggregate Samples course will cover the two methods for splitting a sample: using a mechanical splitter and quartering. The purpose of these procedures is to reduce large samples of aggregate to the appropriate size for testing. The end product should be a sample that is representative of the source.

The American Association of State Highway and Transportation Officials or AASHTO procedures and specifications are used throughout the course. The course covers two methods used for splitting, the mechanical method and the quartering method. Both of these processes are covered in detail. There are questions for the students as a review of the material. References are given for further information.

Outcomes
Upon completion of the course, participants will be able to:

- Define aggregate reducing
- Describe the aggregate reducing method using mechanical splitter
- Describe the aggregate reducing method using quartering

Target Audience
This training is targeted to the beginning technician that will be reducing samples for testing using mechanical splitting and/or quartering for a contractor, producer, agency, or consultant. This training is recommended for the Transportation Curriculum Coordination Council levels I and II.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 1 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131137

Course Title
Special Mixture Design Considerations and Methods for Warm Mix Asphalt

Highway transportation agencies are exploring the use of warm mix asphalt (WMA) for pavement projects. Because of the potential environmental and engineering benefits that WMA provides, agency and industry personnel want to learn the proper design considerations for a quality WMA mixture design. Mixture design technicians and engineers are particularly interested in design differences between WMA and HMA.

The Special Mixture Design Considerations and Methods for Warm Mix Asphalt course explains the key differences between WMA and HMA design procedures. Participants in this course compare important elements of the mixtures and review the effects of those elements on the final WMA product. Learners also have an opportunity to apply AASHTO R35 standard practice to a WMA design modification, converting an HMA mixture design to WMA.

Outcomes
Upon completion of the course, participants will be able to:

• Describe differences between warm mix asphalt (WMA) and hot mix asphalt (HMA) mixture design processes.
• Convert HMA mixtures to WMA mixtures.

Target Audience
This training was developed for experienced HMA mixture design technicians and engineers who are interested in using WMA. Participants should have basic computer skills, such as manipulating windows, using directories, and opening Web browsers.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 2 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131138

COURSE TITLE
AASHTO Designation: T 308
The TCCC AASHTO Designation: T308 course explains the importance of asphalt content, describes the equipment needed to perform the test procedure, shows how to perform the ignition furnace test procedure (both Method A - internal balance and Method B - external balance), and instructs how to calculate and apply the correction factors.

Some of the topics covered in this training include, background and purpose of asphalt content, apparatus, correction factors determination, test procedure, calculations, and wrap-up of the test procedure which includes reporting.

Upon completion of this course, participants will know why performing AASHTO T-308 is necessary, will know how to perform the test procedure, and can accurately calculate and apply the correction factors. This course is an excellent learning tool to demonstrate Asphalt Content by Ignition Oven to new technicians.

OUTCOMES
Upon completion of the course, participants will be able to:
• Explain the impact that asphalt binder content can have on a pavement
• Define the purpose of the ignition method, as well as the benefits and limitations of the test procedure
• Understand the basic concepts behind the test procedure
• Identify the equipment needed to perform the test procedure for both Method A and Method B
• Understand why correction factors must be determined
• Explain how to determine the asphalt binder correction factor
• Explain how to determine the aggregate correction factor
• Describe how the ignition test is performed for either Method A, Internal Balance Method or Method B, External Balance Method
• Calculate the measured (corrected) asphalt binder content percent for both Method A and Method B
• Reporting the test results
• Preparing sample for a gradation analysis according to AASHTO T 30

TARGET AUDIENCE
This training is designed for plant technicians, private lab, or contractor employees who are qualified to sample hot mix, aggregate or asphalt cement, and perform acceptance tests including Asphalt Content by Ignition Oven (AASHTO Designation: T 308-10). It is also useful for laboratory and personnel assessment technicians.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131140

Course Title
Hot In-place Recycling

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI. Hot in-place recycling (HIR) is a pavement preservation and corrective maintenance technique that consists of heating and softening the existing asphalt pavement. When combined with an asphalt overlay, HIR can be classified as structural rehabilitation.

The HIR techniques described in this training provide owner agencies with cost-effective and sustainable methods to repair their aging pavements. HIR processes have been used on all functional classes of roadways. When properly designed, specified, and constructed, HIR methods can result in significant cost savings as compared to conventional maintenance operations, while reducing carbon dioxide emissions.

This course contains three modules:
1. Introduction to Hot In-Place Recycling
2. Pre-Production Inspection
3. Full Production Pavement Recycling

Outcomes
Upon completion of the course, participants will be able to:
• Explain the purpose, benefits, and use of HIR;
• Identify the purpose and use of HIR designs and the equipment used for its applications;
• Identify the preparation and planning steps necessary for an HIR application; and
• Describe the production, evaluation, steps necessary for an HIR application.

Target Audience
This course is intended for local, county, and State owner agency technicians and inspectors. It is also useful for individuals who need awareness or basic understanding of hot in-place recycling. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2.5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
Full Depth Reclamation (FDR)
Full Depth Reclamation, or FDR, is a rehabilitation technique in which the full thickness of the asphalt pavement and a predetermined portion of the underlying materials (that is, the base, the subbase, and/or subgrade) is uniformly pulverized and blended to provide an upgraded, homogeneous material.

FDR was originally limited to low to medium traffic volume roadways; however, newer and larger equipment options means that FDR now can be used on high traffic volume roadways. There is no upper limit to roadway traffic volumes if a pavement structural design is undertaken as part of the rehabilitation process and traffic control allows for diversion of traffic or travel on a pulverized or stabilized surface without damage.

This Web-based training contains four modules. Module 1 introduces full depth reclamation of pavements. Module 2 presents pre-production activities associated with FDR, including the pre-production meeting, roadway preparation, and FDR equipment. Module 3 covers establishing a control strip and pulverizing material, and explores various methods and agents used for stabilizing reclaimed materials. Module 4 reviews post-production actions following reclamation. It takes approximately 4.5 hours to complete the four modules.

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe why a pre-production meeting is important
• Describe what preparation is needed for a full depth reclamation project
• List the equipment needed for a full depth reclamation project
• Identify the purposes of a control strip
• Describe the process used to pulverize existing pavement material for FDR
• List methods used to stabilize reclaimed materials
• Describe the stabilizing agents and additives used for stabilization of reclaimed materials
• Describe the finishing steps involved in full-depth reclamation
• Identify factors and actions that can affect yield and gradation result
• Describe the different methods of measuring compaction and the effect stabilizing agents may have on the results
• List factors affecting how various FDR mixtures should be cured
• Describe the steps involved in placing the final surface on a pavement
• List criteria for acceptance and payment for FDR pavements

TARGET AUDIENCE
This training is designed for local, county, and state owner agency technicians and inspectors. It is also useful for individuals seeking awareness or basic understanding of the topic. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI, and is recommended for TCCC levels II through IV.
**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 4.5 Hours (CEU: 0 Units)

**Class Size:** Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134070

COURSE TITLE
SpecRisk Quality Assurance Specification Development and Validation Course

This course will provide an introduction to statistical analysis and the development of statistically valid quality assurance specifications, introducing general guidelines established and put forth by the Federal Government and FHWA policy. The course also provides participants with an introduction to SpecRisk, the resource that is necessary to successfully develop statistically valid specifications. The course is designed and delivered to motivate members of the target audience to use SpecRisk software to develop their specifications. Although the course demonstrates basic functions of the software, it is not intended to be an in-depth training on how to use SpecRisk.

This course requires a prerequisite solid foundation in basic statistics. Minimum knowledge includes methods of organizing data and how to plot frequency histograms; understanding how a sample relates to the population, the relationship between single and multiple samples, and the use of random stratified sampling tables.

OUTCOMES
Upon completion of the course, participants will be able to:

- Recognize key concepts to develop an effective, statistically valid Quality Assurance (QA) specification.
- Make an informed selection among available options when developing an acceptance plan.
- Develop QA specifications in alignment with best practices, Federal regulations, and FHWA policy.
- Apply SpecRisk software to understand risks and develop statistically valid specifications.

TARGET AUDIENCE
Personnel involved in specification development: Federal, State, and local highway agency engineers and technicians in materials, construction, and research. The training is also appropriate for industry personnel that are involved in reviewing and providing input to the specification development process.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 8 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134075

Course Title
Hardened Concrete Properties - Durability

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

Durability as a property of hardened concrete is essential for long-lasting pavements. This workshop discusses factors that contribute to durable concrete and covers permeability, frost resistance, sulfate resistance, alkali silica attack, and a brief look at abrasion resistance.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:

- Recognize factors contribute to durable concrete
- Explain the importance of permeability, alkali-silica reaction, abrasion resistance and, in certain regions in the country, frost resistance and sulfate resistance of hardened concrete
- Identify tests that can be performed to determine the variables affecting the durability of hardened concrete

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements for durability. It is applicable to anyone desiring a better understanding of the factors of durability.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134084

Course Title
Fundamentals of Materials Used for Concrete Pavements

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The materials used in Portland cement concrete play an extremely valuable role in the performance of the concrete. This training covers both the non-reactive and reactive materials used in Portland cement concrete. This would include the aggregates, curing compound, reinforcement, and the materials that are chemically reactive.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes

Upon completion of the course, participants will be able to:

- Identify materials used in Portland cement concrete
- Describe the importance of each material and the role it plays in the performance of the concrete
- Describe how each material reacts with the other materials to obtain strength, permeability, workability, etc.

Target Audience

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the materials used in Portland cement concrete meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in Portland cement concrete.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Incompatibility in Concrete Pavement Systems

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV.

The materials used in Portland cement concrete play an extremely valuable role in the performance of the concrete. This training covers the incompatibilities of materials used in Portland cement concrete. Although certain materials may be perfectly acceptable on their own, when they are combined they are not compatible with each other. This can cause early stiffening, retardation, cracking, and the lack of a quality of air void system.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES

Upon completion of the course, participants will be able to:

- Identify the causes of incompatible conditions leading to early stiffening or setting and occasional early age cracking
- Recognize the importance to use the correct air void system
- Describe test methods used to identify incompatibilities

TARGET AUDIENCE

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the materials used in Portland cement concrete meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134087

COURSE TITLE
Mix Design Principles

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV.

This module discusses mix design and mix proportioning. Mix design is the process of choosing the characteristics we are looking for in the concrete mixture. Mix proportioning, on the other hand, involves taking the information provided by the mix design process and using that information to determine the actual proportions of ingredients in the mixture. This course discusses theoretical, laboratory, and field testing to determine the Portland cement concrete mix that will achieve the best possible durability, strength, constructability, economy, and uniformity.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES
Upon completion of the course, participants will be able to:

- Describe the overall goal of mix design
- Define the difference between mix design and mix proportioning
- Recognize field and laboratory testing plans
- Describe test methods used to identify incompatibilities

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of Portland cement concrete materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134095

Course Title
Early Age Cracking

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

Cracks are not a problem as long as they are controlled through jointing; ideally the concrete will crack below the saw joint to relieve the stress. Uncontrolled random cracks are not aesthetically acceptable and can reduce ride quality, durability, and particularly load transfer. Early cracking in this module is defined as those cracks that occur before the concrete is open to public traffic. In this module, we will be talking about early age cracking. Primarily, why does it occur and how can it be eliminated or at least controlled?

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:

- Describe the various mechanisms that can lead to early age cracking
- Define and understand why curling and warping occur
- Recognize how curling and warping affect early age cracking
- Recognize the proper use of the materials and maintaining good construction practices can control early age cracking
- Describe how certain material properties and construction methods can affect early age cracking and can help prevent the cracking from occurring

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements to prevent early age cracking. It is applicable to anyone desiring a better understanding of the causes and prevention of early age cracking.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134096

Course Title
Basics of Cement Hydration

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily intended for inspectors and technicians.

This module covers how a concrete mixture changes from a plastic state to become a solid concrete slab in a relatively short period of time. Central to this transformation is a complex process called hydration, an irreversible series of chemical reactions between water and cement.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:

- Knowledge of physical and chemical occurrences during cement hydration
- Identify various factors that can adversely affect these occurrences
- Recognize the different temperature changes during particular stages of hydration

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of Portland cement concrete materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of Portland cement concrete.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134097

COURSE TITLE
Fresh Concrete Properties

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily intended for inspectors and technicians.

This module covers the properties of fresh concrete needed to produce high-quality, long lasting pavements and how to monitor these properties.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES
Upon completion of the course, participants will be able to:

- List the main properties of fresh concrete
- Describe what affects each property
- Recognize how to monitor these properties through concrete testing

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the properties of a concrete mixture provide ease in placement, ease of consolidation, and long lasting pavement. It is applicable to anyone desiring a better understanding of the properties of Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**

FHWA-NHI-134101

**Course Title**

Design of Pavement

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily for inspectors and technicians.

This module covers pavement design and subgrade concepts as they relate to materials and construction. It does not provide sufficient detail to actually design or evaluate a design. It covers the primary goal of pavement design, which is to provide a pavement with the following characteristics: safe, long lasting, cost effective, low maintenance, and constructible.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

**Outcomes**

Upon completion of the course, participants will be able to:

- Identify pavement types and design features
- Recognize what design variables are controlled by field operations
- Discuss the two primary types of pavement distresses (performance measures)
- Recognize how subgrades and bases effect construction operations and long-term pavement performance

**Target Audience**

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in designing, constructing, and inspecting Portland cement concrete pavements.

**Training Level:** Intermediate

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 1 HOURS (CEU: 0 UNITS)

**Class Size:** Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109B

Course Title
Maintenance Training Series: Shaping and Shoulders

Shoulders play an important role in both pavement performance and roadway safety. Maintaining shoulders in a proper and timely manner is a primary goal of transportation agencies. In an effort to assist agencies in meeting this goal, the Shaping and Shoulders training provides information on the maintenance of both paved and unpaved shoulders, including specific details on the maintenance of gravel shoulders. This course is primarily intended for inspectors and technicians.

In addition to a discussion of the various types of shoulders, project selection considerations, and key maintenance issues, this training places shoulders and shaping into the context of an overall maintenance and pavement preservation program.

This training was developed as part of the Maintenance Training Series. To access all the trainings in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Identify desirable characteristics of various types of shoulders
• Identify project selection considerations for shaping and shoulders
• Describe shoulder shaping and blading activities, including equipment requirements and construction activities
• Describe how a shoulder and ditching program forms the core of the overall maintenance and pavement preservation program

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109C

Course Title
Maintenance Training Series: Thin HMA Overlays and Leveling

Thin HMA overlays and leveling are common pavement treatments and can be a central part of a maintenance crew’s activities. During the Thin HMA Overlays and Leveling training, participants will be introduced to the characteristics and purposes of thin HMA overlays as well as the placement of leveling courses. Each of these techniques is capable of improving the functionality of an otherwise structurally sound pavement.

The training also covers information on the materials, personnel, and equipment needed for thin HMA overlays; items that should be considered when making project selection decisions; and guidance on proper mixture compaction. This information is designed to help participants improve project planning and execution for thin HMA overlays and leveling treatments.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:
• Determine the purpose of thin HMA overlays and leveling courses
• Identify material components of HMA overlays
• Identify personnel and equipment needed for HMA overlays and leveling construction
• Identify project selection considerations for thin HMA overlays and leveling
• Identify how this treatment can be incorporated into an overall system preservation program

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109D

Course Title
Maintenance Training Series: Base and Subbase Stabilization and Repair

Before preservation treatments can be applied, localized repairs may be necessary for a pavement's base or subbase. The Base and Subbase Stabilization and Repair course gives participants the knowledge they need to determine if the base or subbase must be stabilized or repaired, to select the appropriate stabilization and repair methods for a given project, and to ensure the repair is performed properly.

This training reviews the failures and distresses that indicate structural deterioration exists in a roadway. The course also covers project selection and trade-off considerations through example roadway projects that give participants the opportunity to evaluate a roadway and determine if it is a candidate for reconstruction or repair. Participants can use this information, as well as guidance on design and construction, to make sound project planning decisions.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

- Identify the symptoms of a localized base or subbase problem, which require greater depth of stabilization and repair than a hot-mix asphalt (HMA) or portland cement concrete (PCC) surface repair patch
- Determine when it is appropriate to employ base or subbase repair on a preventive maintenance project
- Identify the most appropriate repair methods if base or subbase failures are identified in a project

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109E

Course Title
Maintenance Training Series: Roadway Drainage

Shoulder, ditch, and pipe or culvert maintenance activities are performed frequently throughout the year. These activities are critical for avoiding hazardous roadway conditions and extending the life of pavements by controlling water flow along maintainable pathways. This course, Roadway Drainage, provides information on the purpose, function, and components of roadway drainage systems.

This course reviews the components of shoulders and ditches, the purpose of a roadway drainage inventory, and the permits used in roadway drainage maintenance. Examples of existing drainage inventories are provided. In addition, the benefits of proper water removal are discussed through examples of drainage system issues, such as ponding and washouts, in order to emphasize the connection between good drainage and roadway safety.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:
- Identify the purpose and function of roadway drainage systems
- Identify eight components of roadway drainage systems
- Identify the purpose of a roadway drainage inventory
- Identify the purpose of permits in roadway drainage maintenance
- Identify the components of shoulders and ditches

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134114

Course Title
Inspector Training for Cold In-Place Recycling (CIR)

Cold In-place Recycling (CIR) is a method of reconstructing any flexible pavement where the need arises from structural failures. These failures include: transverse cracking, wheel rutting, potholes, surface irregularities, or a combination of the above.

The proper selection of a CIR process in conjunction with good specifications and quality construction are all equally important in the long-term performance of the pavement rehabilitation.

This series on CIR will introduce each method and provide a background on when, how, and why that method is selected/used.

This training is meant to provide an overview of CIR, including an explanation of the pre-production inspection, completing the control strip, full production of the mix, mix placement, curing and maintenance, acceptance testing, and measurement and payment. This course contains 3 modules:

Module 1: Introduction to Cold In-Place Recycling
Module 2: Cold In-Place Recycling Full Production
Module 3: Cold In-Place Recycling Post Production

This course will provide the inspector with a background and proper inspection procedures when placing cold-in-place hot mix asphalt.

Outcomes
Upon completion of the course, participants will be able to:

• Explain what Cold In-Place Recycling (CIR) is, and why it is used
• Describe what happens during pre-production
• Explain how the control strip helps determine compaction procedures and why it is needed
• Identify the factors that can influence a CIR mix
• Describe important considerations during placement, compaction, and finishing
• Explain the importance of curing and maintenance on the quality of a CIR surface
• Describe what happens once the surface is finished

Target Audience
This training is designed for Local, County, and State owner agency technicians/inspectors. It is also useful for individuals who need awareness or basic understanding of cold in-place recycling. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO, NHI, and is recommended for TCCC levels II through IV.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 4 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
These web-based trainings are available in both English and Spanish!

Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses; each highlights a specific preservation technique:

- How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207A)
- How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207B)
- Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207C)
- Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207D)
- Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207E)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Each of the Web-based training products is also available as a standalone course that can be accessed by registering for the individual course number listed above.

OUTCOMES

Upon completion of the course, participants will be able to:

• Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
• Describe the best practice for installing dowel bars
• List the criteria for determining whether full-depth repairs are of sufficient quality
• List important safety considerations in performing full-depth repairs
• Explain what a partial-depth repair is, and when it is performed
• Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
• List important safety considerations in performing partial-depth repairs
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommend procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 13.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207A

Course Title
How to Construct Durable Full-Depth Repairs in Concrete Pavements

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course provides a comprehensive guide for performing full-depth repairs—from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:
• Explain the purpose of full-depth repairs
• Identify pavement problems that full-depth concrete pavement repairs can and cannot address
• Describe proper project review and material checks for a preservation job involving full-depth repair
• Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Explain how patching materials are selected for full-depth repair
• Describe the patch material mixing and handling factors that impact the quality of the repair
• Describe the different types of perimeter joint faces for transverse and longitudinal joints
• List important considerations for sawing perimeter joints
• Explain how deteriorated concrete can be removed from the repair area
• List the steps you can take to minimize damage to surrounding pavement when removing concrete
• Describe how to prepare the repair area for new concrete
• Define load transfer
• Describe important considerations for installing dowel bars for full-depth repairs
• List the three ways to connect longitudinal steel for CRCP full-depth repairs
• Explain how to handle the longitudinal joints in longer and shorter patches
• Explain the steps required to place, finish, and cure the concrete for a full-depth repair
• Describe the texturing methods used to match the patch texture with the surrounding pavement
• Explain the steps for sealing the patch perimeter joints
• Explain the difference between quality control and acceptance, including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207B

Course Title
How to Construct Durable Partial-Depth Repairs in Concrete Pavements

This course provides a comprehensive guide for performing partial-depth repairs—from planning for, preparing, and evaluating the patch through testing and quality assurance after construction is complete. Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated (or spalled) concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional.

This important preservation technique can slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course covers all of the considerations for partial-depth repairs including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

You will discover detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. The instructional methods in this Web-based training include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:

• Explain what a partial-depth repair is, and why it is used
• Identify the types of distresses that partial-depth repair can and cannot address
• Describe the three types of partial-depth repairs used to replace deteriorated concrete
• Describe proper project review and material checks for a preservation job involving partial-depth repair
• Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
• Identify which methods are appropriate for the different types of partial-depth repairs
• Describe how to prepare the existing slab for repair material
• Identify the materials used in a partial-depth repair
• List the factors that influence repair mixture selection
• Identify when compression relief is necessary for a partial-depth repair project
• Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
• List the four major steps for properly placing the patching material
• Explain the process for completing the patch
• Explain the difference between quality control and acceptance, including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2.5 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Proper Diamond Grinding Techniques for Pavement Preservation

This course provides how-to instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique. However, this depends on the conditions and characteristics of the specific project.

You will benefit from short, focused, and task-based lessons and visual aids that reinforce content by showing its relevance to work in the field.

OUTCOMES

Upon completion of the course, participants will be able to:

- Explain what diamond grinding is, and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine’s systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is, and when it is used
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input
- Describe the equipment used in diamond grooving operations
- Explain how the diamond grooving texture is achieved

TARGET AUDIENCE

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching
This course provides how-to instruction that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks in order to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices, or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that are task-based, and contain detailed visual aids and videos, reinforcing content so that it can be directly applied to work in the field.

OUTCOMES
Upon completion of the course, participants will be able to:
• Explain what dowel bar retrofitting and cross-stitching are, and why they are used
• Define load transfer
• Describe the steps you should take to prepare for a project involving DBR or cross-stitching
• Explain the basic components of DBR and cross-stitching projects
• Describe how to determine the size of the components for both DBR and cross-stitching
• Determine the proper locations to use DBR and cross-stitching for different pavement distresses
• Identify the materials used in DBR and cross-stitching operations
• List the important factors in selecting materials for DBR and cross-stitching
• Explain how slots are created and prepared for a DBR project
• Describe how dowel bars should be placed in the slot
• Explain how the backfill material is placed and finished
• Explain how to drill and clean holes for cross-stitching
• Describe the process for installing tie bars
• Explain the procedures for finishing the cross-stitching project
• Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
• List important quality considerations for DBR and cross-stitching projects

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 2 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Proper Joint Sealing Techniques for Pavement Preservation

In this course you will find detailed, “how-to” instruction that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons are task-based in nature and contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement’s acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available and which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the specific, sequential tasks required to properly perform joint sealing?

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe what joint sealing is
- Explain why joints are sealed
- List considerations for preparing for and keeping safe on a joint sealing project
- Describe the materials used in a joint or crack sealing project and their differences
- Describe the standard details used for joint or crack sealing installations
- Identify equipment used for sawing and sealing or resealing joints and cracks
- Describe the purpose of each piece of equipment and how it works
- Explain how a joint or crack is prepared for sealing
- Describe the process for installing the backer rod (if it is used)
- Explain how the sealant or seal is installed
- Describe procedures for applying a penetrating concrete sealer
- Describe procedures for repairing hairline, minor random, and wide cracks
- List important quality considerations for joint sealing projects
- Describe quality control methods you can use to make sure a sealant reservoir is ready for sealant installation and the sealant is installed properly
- Describe how sealant installations are inspected for quality assurance and acceptance
- Identify the distresses or problems that occur with joint sealants and seals
- Explain the steps to take during formed-in-place sealant or compression seal installation

TARGET AUDIENCE

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. The primary audience is contractors. This course will appeal to individuals in the following roles: construction supervisors, workers, and
technicians; agency inspectors and construction managers; and engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 4 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207F

Course Title
How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course, presented in Spanish, provides a comprehensive guide for performing full-depth repairs—from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:

• Explain the purpose of full-depth repairs
• Identify pavement problems that full-depth concrete pavement repairs can and cannot address
• Describe proper project review and material checks for a preservation job involving full-depth repair
• Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Explain how patching materials are selected for full-depth repair
• Describe the patch material mixing and handling factors that impact the quality of the repair
• Describe the different types of perimeter joint faces for transverse and longitudinal joints
• List important considerations for sawing perimeter joints
• Explain how deteriorated concrete can be removed from the repair area
• List the steps you can take to minimize damage to surrounding pavement when removing concrete
• Describe how to prepare the repair area for new concrete
• Define load transfer
• Describe important considerations for installing dowel bars for full-depth repairs
• List the three ways to connect longitudinal steel for CRCP full-depth repairs
• Explain how to handle the longitudinal joints in longer and shorter patches
• Explain the steps required to place, finish, and cure the concrete for a full-depth repair
• Describe the texturing methods used to match the patch texture with the surrounding pavement
• Explain the steps for sealing the patch perimeter joints
• Explain the difference between quality control and acceptance including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number: FHWA-NHI-134207G

Course Title: How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find a comprehensive guide for performing partial-depth repairs from planning, preparing, and evaluating the patch through testing and quality assurance after construction is complete.

Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated, or spalled, concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional. The technique is an important preservation technique to slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course will cover all of the considerations, including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

Specifically, you’ll learn how to employ successful practices and techniques on concrete pavement preservation projects. The following questions are answered in this course:

Why is the technique an important part of concrete pavement preservation?
What options are available for performing the construction processes and procedures?
Which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the proper techniques for mixing, placing, and curing?

Outcomes

Upon completion of the course, participants will be able to:

- Explain what a partial-depth repair is and why it is used
- Identify the types of distresses that partial-depth repair can and cannot address
- Describe the three types of partial-depth repairs used to replace deteriorated concrete
- Describe proper project review and material checks for a preservation job involving partial-depth repair
- Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
- Identify which methods are appropriate for the different types of partial-depth repairs
- Describe how to prepare the existing slab for repairs
- Identify the materials used in a partial-depth repair
- List the factors that influence repair mixture selection
- Identify when compression relief is necessary for a partial-depth repair project
- Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
- List the four major steps for properly placing the patching material
- Explain the process for completing the patch
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 3 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207H

Course Title
Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find “how-to” instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations. Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique; however, this depends on the conditions and characteristics of the specific project.

This course contains short, focused, task-based lessons that include detailed visual aids and videos, which reinforce the content so you can apply new knowledge directly to your work in the field.

Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will explore these questions:

Why is the technique an important part of concrete pavement preservation?
What options are available for performing the construction processes and procedures?
Which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the proper techniques for mixing, placing, and curing?
What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes
Upon completion of the course, participants will be able to:

• Explain what diamond grinding is and why it is used
• Explain how diamond grinding equipment works
• Describe the steps to take to prepare for diamond grinding on a project
• List the components of the cutting head
• Describe how blade selection impacts grinding success
• Explain basic procedures for safely operating diamond grinding equipment
• Determine when specialized equipment may be necessary
• Explain how to measure head wear
• Define slurry
• Describe how slurry is picked up and disposed of during diamond grinding operations
• Name the diamond grinding machine’s systems and their components
• Identify the system to which each part of the diamond grinding machine belongs
• Describe the function of each part or system on a diamond grinding machine
• Describe how diamond grinding is used to affect road smoothness, noise, and friction
• Explain what Next Generation Concrete Surfacing (NGCS) is and when it is used;
• List considerations for grinding on city streets
• Identify quality issues that can occur during diamond grinding
• Explain how diamond grinding quality issues can be prevented or addressed
• Identify issues that cannot be controlled by the contractor and require owner consideration and input
Describe the equipment used in diamond grooving operations

Explain how the diamond grooving texture is achieved

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-1342071

Course Title
Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)

This course is in Spanish.

This course provides “how-to” instruction in Spanish that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that include detailed instructions along with visual aids and videos that reinforce the content so you can apply it directly to your work in the field. Take this course to find answers to these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

Upon completion of the course, participants will be able to:

• Explain what dowel bar retrofitting and cross-stitching are, and why they are used
• Define load transfer
• Describe the steps you should take to prepare for a project involving DBR or cross-stitching
• Explain the basic components of DBR and cross-stitching projects
• Describe how to determine the size of the components for both DBR and cross-stitching
• Determine the proper locations to use DBR and cross-stitching for different pavement distresses
• Identify the materials used in DBR and cross-stitching operations
• List the important factors in selecting materials for DBR and cross-stitching
• Explain how slots are created and prepared for a DBR project
• Describe how dowel bars should be placed in the slot
• Explain how the backfill material is placed and finished
• Explain how to drill and clean holes for cross-stitching
• Describe the process for installing tie bars
• Explain the procedures for finishing the cross-stitching project
• Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
• List important quality considerations for DBR and cross-stitching projects

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and
construction managers; and engineers.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 3 Hours (CEU: 0 Units)

**Class Size:** Minimum: 0; Maximum: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207J

Course Title
Proper Joint Sealing Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course you will find detailed, “how-to” instruction in Spanish that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement’s acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

Why is the technique an important part of concrete pavement preservation?
What options are available and which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes
Upon completion of the course, participants will be able to:

• Explain what joint or crack sealing is, and when it should be performed;
• List important safety considerations when working on joint sealing projects;
• Explain how to prepare for joint sealing;
• Describe recommended materials and equipment used in joint sealing;
• Describe recommended construction procedures and process steps for joint sealing;
• Describe recommend procedures for repairing cracks;
• List the criteria for determining whether joint sealing results are of sufficient quality; and
• Identify typical problems encountered and how to avoid or resolve these issues.

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207S

Course Title
Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series (Spanish)

These web-based trainings are available in both English and Spanish!

Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses in Spanish; each highlights a specific preservation technique:

- How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207F)
- How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207G)
- Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207H)
- Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207I)
- Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207J)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Each of the Web-based training products is also available as a standalone course that can be accessed by registering for the individual course number listed above.

Outcomes
Upon completion of the course, participants will be able to:

- Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
- Describe the best practice for installing dowel bars
- List the criteria for determining whether full-depth repairs are of sufficient quality
- List important safety considerations in performing full-depth repairs
- Explain what a partial-depth repair is, and when it is performed
- Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
• List important safety considerations in performing partial-depth repairs
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommend procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 13 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-132010A

Course Title
Earthquake Engineering Fundamentals (Web-based)

This 4-hour NHI training course 132010A entitled “Earthquake Engineering Fundamentals” is a Web-Based pre-requisite to the 2-day 132094A “LRFD Seismic Analysis and Design of Transportation Geotechnical Features” and 132094B “LRFD Seismic Analysis and Design of Structural Foundations and Earth Retaining Structures” courses. The participants will generally be notified to take the WBT course about 1 month before the ILT sessions and must complete this course before the start of the 132094A or 132094B course. The course consists of 6 lessons including: Earthquake Fundamentals (L1); Intro to LRFD Seismic Design (L2); Earthquake Ground Motions (L3); Seismic Hazard Analysis (L4); AASHTO Design Ground Motion Characterization (L5); and Intro to Geotechnical Hazards (L6).

Outcomes
Upon completion of the course, participants will be able to:
• Describe basic earthquake concepts
• Explain basic concepts of LRFD Seismic Design
• Describe earthquake ground motions
• Describe aspects of seismic hazard analysis
• Explain AASHTO design ground motion characterization
• Describe basic aspects of geotechnical hazards

Target Audience
This course is intended to engage a target audience of bridge and geotechnical engineers with zero and up to 20 years of experience that are preparing to attend the 132094A and 132094B Instructor-Led Training courses.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU:.4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-132010B

Course Title
Introduction to LRFD for Foundation Design

NHI-132010B Introduction to LRFD for Foundation and Substructure Design is a web-based training (WBT) course covering fundamental and basic principles related to Load and Resistance Factor Design (LRFD) for Highway Bridge Foundations. The course is developed to assist engineers in understanding the transition from Allowable Stress Design (ASD) to LRFD for structural foundations. Topics in this course include basic elements of LRFD development and implementation, principles of limit state design, loads and load combinations, soil and rock properties, and shallow and deep foundation design.

This WBT is designed to be both a stand-alone course that provides introductory information on LRFD for bridge foundations, and a prerequisite for attending NHI-132082 LRFD for Highway Bridge Substructure, a 4 day instructor-led course. NHI-132010B is a recommended prerequisite to NHI-132082 as well as other foundation design courses in the geotechnical curriculum.

Outcomes
Upon completion of the course, participants will be able to:

- Describe the development of LRFD and relationship to AASHTO.
- Identify the LRFD equation, limit states, LRFD design objectives, and foundation materials associated with LRFD.
- List loads, load combinations, and load factors associated with LRFD.
- Categorize soil and rock properties to provide a basis for determination of geotechnical resistance of soil and rock.
- Recognize shallow and deep foundation design by LRFD.

Target Audience
The target audience for NHI-132010B Introduction to LRFD for Foundation Design is individuals responsible for, or involved with, the design and construction of bridge substructures on surface transportation projects. Typically, the individuals will include an audience that is novice to LRFD, but has a background in bridge foundation design on surface transportation facilities such as geotechnical engineers, bridge and transportation engineers, geologists, and managers. This course is intended for those with general knowledge and/or skills with the bridge and/or geotechnical foundation and substructure design who desire to become familiar with LRFD.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 8 Hours (CEU: .8 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-132070B

**Course Title**
Drilled Shaft Inspector Tutorial - WEB-BASED

This training is a prerequisite of another NHI training and is offered at no cost.

132070B Drilled Shaft Inspector Tutorial provides training on the fundamental concepts of drilled shafts construction for those involved in the inspection of drilled shafts. This 4-hour Web-based training (WBT) includes the following topics related to drilled shafts: foundations drilled shaft types, methods of construction, construction equipment, and tools. 132070B was developed as a companion training aid for the Instructor-led training 132070 Drilled Shaft Foundation Inspection course. This course replaces 132070A and it is recommended that this WBT be completed prior to attending 132070 Drilled Shaft Foundation Inspection.

This course details the work of the inspector prior, during and after completion of the drilled shaft construction process. Areas of focus include: the inspector's roles, functions, responsibilities, and levels of involvement at different phases of construction. The drilled shaft construction process is covered from the inspector's viewpoint with regards to the documents and tools required for inspection, including equipment and site required checks. Also highlighted is the inspector's role during the drilled shaft excavation process; the rebar cage fabrication and positioning process; and during the placement of concrete. Theoretical and actual drilled shaft concrete volumes calculation, post installation, load, and integrity tests, and other types of tests are also addressed in this course. 132070B details the steps in the drilled shaft construction process and identifies specific responsibilities and methods that will assist inspectors in safely achieving project goals.

**Outcomes**
Upon completion of the course, participants will be able to:

- Describe the inspector's duties and responsibilities during drilled shaft construction
- Explain the inspector's role in the drilled shaft construction process
- Identify different construction methods
- List equipment and tools used by the inspector and at a drilled shaft construction site
- List the steps in the drilled shaft construction process
- Identify specific responsibilities and methods to assist the inspector in achieving their goal

**Target Audience**
Federal, State, and local highway agency employees and consultant personnel who inspect foundations or major structures, as well as project managers and construction engineers responsible for drilled shaft construction inspection may benefit from this course.

**Training Level:** Intermediate

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 4 HOURS (CEU: 0 UNITS)

**Class Size:** Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
course number
fhwa-nhi-132084

course title
geotechnical subsurface exploration - web-based

the subsurface explorations web-based training course will provide transportation engineers with a basic knowledge and understanding of subsurface exploration programs for design and construction of structure foundations, walls, and other geotechnical features. properly conducted subsurface exploration programs are an essential part of geotechnical engineering, and are a critical step in understanding soil and rock properties necessary for design.

the course covers a range of topics related to subsurface exploration programs including earth materials, subsurface conditions, geophysical methods, drilling methods and equipment, soil and rock sampling methods, in-situ testing, and groundwater investigation. upon completion of this course, participants will be able to apply basic geotechnical engineering principles and sound geotechnical methods to transportation projects.

outcomes
upon completion of the course, participants will be able to:

• identify the key geotechnical considerations associated with typical transportation projects
• describe the recommended process for characterizing subsurface conditions
• identify the primary types of geophysical methods
• identify types of drilling methods and equipment
• identify types of soil and rock sampling methods
• explain the purpose of in-situ tests and energy-efficiency parameters
• explain the purpose of doing a groundwater investigation
• describe minimum guidelines for the geotechnical investigation of both roadway and structure sites

target audience
the course is intended for transportation engineers and geotechnical specialists who are involved with the planning, design, and construction of surface transportation facilities. the course will be oriented toward those professionals who routinely deal with soils and foundations issues but who may have little theoretical background in soil mechanics or foundation engineering.

training level: basic

fee: 2020: $0 per person; 2021: n/a

length: 6 hours (ceu: 0 units)

class size: minimum: 0; maximum: 0

 nhi customer service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-132091

Course Title
Earthwork Series: Grades and Grading - WEB-BASED

This course is designed to prepare technical front-line workers for what they can expect to see during actual project inspection. Topics covered include an overview of the plans that pertain to earthwork and earthwork quantities, grade stakes that will be encountered and their meanings, how Global Positioning System (GPS) works and its functions in the field, and verifying and documenting grade information. This course is primarily intended for inspectors and technicians.

The introductory lesson covers an overview of the plan sheets that deal with earthwork and earthwork quantities, topographical images and their meaning, stationing and control points, and profile/section sheets. The second section covers the typical grade stakes used throughout a project and their meaning. The GPS section discusses the history of GPS in construction and how it relates to current projects. And the final section covers how to verify the grade and what information is needed in the documentation from the inspector.

This course provides the front-line technical inspector with the proper tools to assure that the project is built on a stable platform.

Outcomes
Upon completion of the course, participants will be able to:

- Describe the process of plan reading
- Identify the purpose of grade stakes
- Explain how Global Positioning System (GPS) works
- Describe requirements for grade verification and documentation

Target Audience
This training is designed for intermediate to advanced technicians who perform site preparation inspection on earthwork projects. The training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI and is recommended for TCCC levels II through IV.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3.5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-132092

COURSE TITLE
Earthwork Series: Excavation - WEB-BASED

Excavations of soil and rock are an integral part of highway construction due to the associated costs, safety concerns, engineering considerations, and short and long-term performance expectations. The Earthwork Series: Excavation course is an overview of the basic principles related to the requirements for proper excavation during a project.

This training consists of four modules, which cover the equipment used to excavate soils, and the procedures, requirements, and special considerations for mass excavation, permanent cut slopes, and temporary trench excavations. The course also covers some common problems and safety concerns associated with excavation.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain considerations and requirements for excavation
• Recall excavation safety procedures
• Relate common issues and solutions associated with excavation

TARGET AUDIENCE
This training is designed for state and local government employees, as well as private industry technicians and inspectors who work within or around excavations, are responsible for documenting excavation operations, or are responsible for verifying foundation materials and proper earthwork construction on highway projects. The course is a beneficial overview for all those working on an earthwork project, but intermediate and advanced technicians and inspectors are the primary target audience. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI and is recommended for TCCC Levels II through IV.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-132093

COURSE TITLE
Earthwork Series: Fill Placement - WEB-BASED

Embankment construction; structural and utility bedding and backfilling; and the construction of drainage and filter systems are fundamental examples of highway earthwork - where the control of the material and how it is placed significantly influences engineering performance. The Earthwork Series: Fill Placement course is an overview of the basic applications where fill materials are to be used, and some common problems and safety considerations that you will need to know.

This training consists of four modules which cover culvert bedding and backfill, drainage filters and fabrics, embankment construction, key-ways, and benching. The course discusses material and placement requirements, methods used to control and assure placement, special construction considerations, common problems, and safety related issues.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain fill placement;
• Recall fill placement safety procedures; and
• Identify steps for addressing obstacles associated with fill placement.

TARGET AUDIENCE
This training is designed for State and local government employees as well as private industry technicians and inspectors who provide quality control/quality assurance testing, document fill placement activities, verify that earthwork has been constructed according to contract documents, or inspect earthwork activities on highway projects. The course is a beneficial overview for all those working on an earthwork project, but intermediate and advanced technicians and inspectors are the primary target audience. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO NHI and is recommended for TCCC Levels II through IV.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 5.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-132100

Course Title
Calibration at the Service Limit State, Incorporation of Foundation Movements in Structure Design

Prior to beginning the training, it is highly recommended that you download a copy of, “Incorporation of Foundation Movements in AASHTO LRFD Bridge Design Process, Second Edition”, also referred to as the “White Paper”. This White Paper will be referenced throughout the training and can be accessed by copying and pasting the following URL into your web browser address bar: http://shrp2.transportation.org/Documents/Renewal/R19B_Incorporation%20of%20Foundation%20Movements%20in%20AASHTO%20LRFD%20Bridge%20Design%20Process%20V2.pdf

Calibration at the Service Limit State, Incorporation of Foundation Movements in Structure Design is a 4-hour web-based training course offered by NHI, the authoritative source in transportation training.

Foundation movements cause many undesirable consequences, some of which include induced force effects which can lead to cracking or stress and differential movement which can lead to breaks in the grade causing rideability and/or drainage issues. These undesirable consequences often result in decreased structure life and increased maintenance costs.

Taking this course will help designers better understand calibrations for foundation movements, increasing their ability to mitigate undesirable consequences of foundation movements when designing structures. This course equips designers with the tools needed to rationally compare foundation alternatives and select the most appropriate foundation type, rather than arbitrarily using costly deep foundations.

The course consists of the following five modules covering the following topics:
1. Background and identification of key references
2. Identification of foundation movements, limit states, and terminology
3. Discussion of calibration concepts and demonstration of calibration process
4. Application of calibrated foundation movements
5. Summary and wrap-up

Note: There is no assessment for this course.

To enroll in this Web-based Training course, click “Add To Cart.”

(Launched Fall 2019)

Outcomes
Upon completion of the course, participants will be able to:
• Recognize the undesirable consequences due to foundation movements.
• Calibrate foundation movements using principles of limit state design.

Target Audience
The target audience for this web-based training is individuals responsible for, or involved with, the design and construction of bridge foundations on surface transportation projects. Typically, the individuals will include an audience that have a working knowledge of load and resistance factor design (LRFD), and a background in bridge foundation design on surface transportation facilities. This audience includes geotechnical engineers, bridge and transportation engineers, geologists, and managers. This course is intended for those with general knowledge and/or skills with the development of load and resistance factors for design of bridges and structures who desire to become familiar with calibrations for incorporation of foundation movements in structure design.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134204

Course Title
Construction of Mechanically Stabilized Earth (MSE) Walls

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI.

This training contains a collection of best practices from various agencies, including FHWA training rules, laws, policies, and procedures.

This Web-based training course begins with an overview of MSE walls: why we use them; how they work; and how they are constructed. The course emphasizes the need for inspection and explores practices to help improve inspection techniques. Participants examine the roles of the inspector, engineer, and contractor and study relevant safety procedures. The course materials present considerations for design and information contained in a geotechnical report. This course also familiarizes participants with typical project drawings and typical specifications.

The course duration is approximately 5 hours. The ten individual modules do not need to be completed at one time.

Outcomes
Upon completion of the course, participants will be able to:

• Identify the four major components of a MSE wall
• Describe the basic construction sequence for MSE
• Describe why MSE wall construction inspection is needed
• Describe the appropriate applications of MSE walls
• Describe the advantages and limitations of MSE walls
• Describe the basic design concepts used during construction
• Describe the failure modes analyzed during design
• Describe the key sections of the geotechnical report
• Describe how the geotechnical report can help familiarize the MSE wall inspector with site conditions
• Describe how reviewing the geotechnical report can help mitigate construction problems and delays
• Describe the difference between plan, elevation, and cross-section view drawings
• Describe the differences between, and the details included within, shop and contract drawings
• Identify how each type of drawing illustrates where and how MSE walls, and associated or adjacent parts, are constructed
• Describe construction inspectors’ responsibilities before and during excavation
• Describe foundation preparation techniques necessary for addressing field conditions
• Identify the components of a welded wire faced MSE wall
• Describe the construction steps for a welded wire faced MSE wall
• Describe equipment and procedures necessary to prepare concrete panels for construction of a MSE wall
• Describe the steps in constructing MSE walls with concrete panel facing
• Describe the sections within the specifications document
• Identify the relevant information contained within each specification section

Target Audience
This training is ideal for highway construction teams, specifically the highway workers and inspectors involved in the construction of MSE walls. This training is recommended for the Transportation Curriculum Coordination Council levels II, III, and IV.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 500

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133107

COURSE TITLE
Principles of Evacuation Planning Tutorial (Web-Based)

Principles of Evacuation Planning Tutorial (133107) is a Web-based asynchronous/independent training that provides an introductory overview of evacuation planning topics and common considerations. It covers the roles and responsibilities of local, regional, and state agencies involved in the evacuation process, while highlighting the importance of collaboration.

This course also presents current and emerging evacuation planning tools, methodologies, and trends, and offers insight into special considerations that evacuation planning stakeholders should take into account when designing, reviewing, or contributing to evacuation planning efforts. Emphasis is placed on multi-agency/jurisdictional planning as part of identifying effective practices used in the U.S.

This training was developed at the request of the FHWA Transportation Pooled Fund Study Security and Emergency Management Update and Request. The pooled fund study states are California, Florida, Georgia, Kansas, Mississippi, Montana, New York, Texas, and Wisconsin. In addition, the TSA is a member of the pooled fund study.

OUTCOMES
Upon completion of the course, participants will be able to:

• Define evacuation planning from a transportation standpoint
• Describe how evacuation planning impacts local and state emergency management transportation operations
• Define the roles and responsibilities of local, regional, and state agencies
• List the benefits of working across agencies and localities to maximize the effectiveness of emergency planning efforts
• List evacuation planning considerations specific to Notice and No-Notice evacuations
• Describe other special considerations that evacuation planning stakeholders should take into account when executing evacuation plans
• Identify tools and methods for coordination and collaboration
• Identify current and emerging evacuation planning practices
• Describe effective emergency evacuation planning practices
• Explain the value of engaging other organizations and jurisdictions
• Identify resources available to emergency evacuation planning stakeholders and how to access them for further study

TARGET AUDIENCE
The Principles of Evacuation Planning Tutorial (133107) is designed for transportation and emergency planning stakeholders along with local leadership (e.g. local public and private emergency management stakeholders). This course also will be made available to a variety of other professionals with an interest in evacuation planning including Government jurisdictions below state level; transportation planners; metropolitan planning organizations; transportation planners (city/county); local emergency managers; transportation management center staff; state and local police planners; metro emergency planners; public works and public schools planners; and other contributing stakeholders.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 6 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-133110

Course Title
Strategies for Developing Work Zone Traffic Analyses (Web-Based)

Strategies for Developing Work Zone Traffic Analyses is an interactive Web-based training course that provides an overview of how traffic analysis tools can be applied specifically to work zone analysis problems. Traffic analysis tools represent various transportation modeling approaches such as sketch planning, travel demand modeling, and traffic simulation (microscopic, mesoscopic, and simulation approaches).

The purpose of this course is three-fold. First, it will educate the participants regarding the constraints and opportunities of work zone analysis associated with available transportation modeling approaches. Second, it will build familiarity with the various work zone factors influencing the selection of a transportation modeling approach. Third, it will provide the participants with practical experience in developing a transportation modeling approach in a collaborative process that considers issues ranging from work zone characteristics, performance measurement, technical risk assessment, and resource constraints. In conclusion, participants will be able to characterize a work zone and select and justify a transportation modeling approach based upon the work zone characterization.

Outcomes
Upon completion of the course, participants will be able to:

• Define a role for work zone modeling
• Describe the work zone analysis decision-making engine
• Explain how to characterize a work zone
• Identify transportation modeling approaches
• Describe alternative transportation modeling approaches
• Justify selection of a transportation modeling approach

Target Audience
The Strategies for Developing Work Zone Traffic Analyses (WBT) is designed for professionals employed by State DOTs (district engineers, corridor planners, project engineers, traffic engineers, and work zone planners), FHWA Division Offices Staff, transportation engineers, traffic staff, planners, MPOs, and consultants.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 Hours (CEU: .4 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133116

COURSE TITLE
Maintenance of Traffic for Technicians - WEB BASED

The Maintenance of Traffic for Technicians Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed.

We've broken this training into five modules:
1. General Terms and Procedures
2. Traffic Channelizing and Control Devices
3. Traffic Control Zones
4. Flagger Operations
5. Traffic Control Zone Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the correct placement of work zone traffic control devices
• Perform field maintenance of work zone traffic control devices
• Inspect placement or operational functions of work zone traffic control devices
• Generate work zone traffic control plans
• Explain the basics of flagging

TARGET AUDIENCE
This training is designed for all persons with duties that include: Direct responsibility for placement of work zone traffic control devices; Direct responsibility for field maintenance of work zone traffic control devices; Inspection of the placement or operational function of work zone traffic control devices; and Drafting or electronic generation of work zone traffic control plans. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133117

COURSE TITLE
Maintenance of Traffic for Supervisors - WEB BASED

The Maintenance of Traffic for Supervisors Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed. This training focuses on the design of a traffic control plan, and how and why one needs to operate and implement traffic control in the work zone.

We’ve broken this training into five modules:
1. Fundamental Principles of Temporary Traffic Control Zones
2. Temporary Traffic Control Devices
3. Traffic Control Zones
4. Transportation Management Plans
5. Flagger Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe how to create clear, organized traffic control plans
• Identify acceptable temporary traffic control devices
• Determine good and bad flagging techniques

TARGET AUDIENCE
This training is designed for personnel with responsibility or authority to decide on the specific maintenance of traffic requirements to be implemented. These positions include engineers responsible for work zone traffic control development and work site traffic supervisors. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133118

COURSE TITLE
Flagger Training - WEB-BASED

Being a flagger is the most important job on the work site. Careless use of the sign or distraction from duty could cause serious injury to workers or the motoring public. Performing flagger duties diligently can prevent traffic incidents in the work area.

This is a basic training in the area of flagger training. It has been designed for someone learning the first steps in performing flagger duties. This training would be useful as a refresher course for all employees involved with work zone traffic control where flaggers are utilized.

This training does not go into individual state flagger training or certification requirements. For more information on flagger training requirements contact your State's safety office.

OUTCOMES
Upon completion of the course, participants will be able to:
- Identify the responsibilities of a flagger
- Describe the proper ways to place signs
- Describe the proper position for flagging
- Define the flagging procedures for stop, slow, and proceed
- Identify the correct procedures for various flagging situations
- Describe the proper conduct in flagging

TARGET AUDIENCE
This training is intended for individuals that will be performing or are engaging in flagger duties on construction/maintenance projects. The course will assist them in better understanding the importance and duties involved with flagging on a project. It would be beneficial to the entry level employee as well as the experienced flagger.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133119

COURSE TITLE
Safe and Effective Use of Law Enforcement Personnel in Work Zones - WEB-BASED

NHI training 133119 Safe and Effective Use of Law Enforcement Personnel in Work Zones is an interactive Web-based training (WBT) course that provides law enforcement agencies with the practices and procedures to improve traffic safety in work zones. Work zone law enforcement is highly effective in reducing speeding, speed variability, and undesirable driving behaviors such as tailgating and unsafe lane changes, which improves both traffic and worker safety. The presence of work zone enforcement is also believed to raise driver awareness and overall alertness, further improving work zone safety.

The purpose of this course is to provide basic knowledge to help save lives, avoid work zone crashes, and improve safety when working in a work zone. This course will provide tips for safe practices for law enforcement officers (LEO’s) in work zones as well as providing for a safer work zone environment. This Web-based training will educate participants on the standards and guidelines related to temporary traffic control in work zones; the role of LEO’s in work zones; the components of a typical work zone; and the proper practices and procedures related to the use of law enforcement officers in work zones.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the role of LEO’s in work zones
• Explain proper practices and procedures related to the use of LEO’s in work zones
• Explain safe operating practices of LEO’s working in a Temporary Traffic Control (TTC) zone

TARGET AUDIENCE
133119 Safe and Effective Use of Law Enforcement Personnel in Work Zones is a Web-based training course designed for LEO’s. Specifically, this course targets state troopers, state, county, municipal officers, and highway patrol officers who will participate in work zone activities.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**  
FHWA-NHI-133126A

**Course Title**  
National Traffic Incident Management Responder Training - Web-Based

This training was developed under the second Strategic Highway Research Program (SHRP2), and is being provided to you by the FHWA Office of Operations.

Three injury crashes occur every minute in the United States, putting nearly 39,000 incident responders potentially in harm’s way every day. Congestion from these incidents often generates secondary crashes, further increasing traveler delay and frustration. The longer incident responders remain at the scene, the greater the risk they, and the traveling public, face. A cadre of well-trained responders helps improve traffic incident response. Better incident response improve the safety of responders and drivers, reduces crashes that occur because of incident-related congestion, decreases traffic delays caused by incidents, and can cut incident response time.

The National Traffic Incident Management Responder Training was created by responders for responders. This course provides first responders a shared understanding of the requirements for safe, quick clearance of traffic incident scenes; prompt, reliable and open communication; and motorist and responder safeguards. First responders learn how to operate more efficiently and collectively.

This training covers many TIM recommended procedures and techniques, including:

- TIM Fundamentals and Terminology
- Notification and Scene Size-Up
- Safe Vehicle Positioning
- Scene Safety
- Command Responsibilities
- Traffic Management
- Special Circumstances
- Clearance and Termination

Prerequisite Note:

It is recommended that you take the following courses offered by FEMA:

- IS 700 - National Management System (NIMS), An Introduction
- ICS 100 - Introduction to Incident Command System (ICS)
- ICS 200 - ICS for Single Resources and Initial Action Incidents

This training was developed through the second Strategic Highway Research Program (SHRP2).

**Outcomes**

Upon completion of the course, participants will be able to:

- Use a common set of practices and advance standards across all responder disciplines.

- The National Traffic Incident Management Training Program equips responders with a common set of core competencies and assists them in achieving the TIM National Unified Goal of strengthening TIM programs in the areas of: Responder safety; Safe, quick clearance; and Prompt, reliable, and interoperable communications.

**Target Audience**

The target audience for the training is individuals from all TIM responder disciplines, including: Law Enforcement, Fire/Rescue, Emergency Medical Service, Towing and Recovery, Emergency Management, Communications, Highway/Transportation and Dispatch within States, regions and localities.


**Training Level:** Basic  
**Fee:** 2020: $0 Per Person; 2021: N/A  
**Length:** 4.1 Hours (CEU: .4 Units)  
**Class Size:** Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134005A

Course Title
Introduction to Value Engineering

This training is a prerequisite of another NHI training and is offered at no cost.

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as:

a) providing the needed functions safely, reliably, and at the lowest overall cost;
b) improving the value and quality of the project; and

c) reducing the time to complete the project.

This Web-based training is intended to provide an overview of the Value Engineering process, known as the Value Engineering study. Included in the training is a discussion of the benefits of utilizing VE, the keys to completing a successful VE study, and an overview of the objectives and tasks completed by the VE team at each phase.

Participants can complete this training independently. Those who plan on attending the 3-day Value Engineering classroom training must complete this online module prior to coming to class. Course certificates should be printed out and presented to the instructor on the first day to verify completion.

Outcomes
Upon completion of the course, participants will be able to:

• Identify the purpose of Value Engineering and its benefits to a highway transportation agency.
• Identify the critical skills required to participate successfully in the VE study.
• Describe each phase of creating a Value Engineering Job Plan in terms of the objective and tasks.

Target Audience
The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members or who are interested in learning more about the process. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance who will participate in a Value Engineering study should also attend.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: .5 Hours (CEU: 0 Units)

Class Size: Minimum: 20; Maximum: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109I

Course Title
Maintenance Training Series: Basics of Work Zone Traffic Control

Meeting the national requirements for work zone traffic control is a critically important responsibility of maintenance personnel. The national requirements, found in Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD), promote driver and worker safety during roadway maintenance projects. This training, Basics of Work Zone Traffic Control, provides an introduction to the requirements outlined in Part 6 of the 2009 MUTCD. The course also offers an overview of the manual’s structure and requirements regarding traffic control devices and their applications, flagging operations and procedures, and pedestrian and worker safety.

Through a series of work zone scenarios, this training uses the MUTCD Part 6 to review fundamental concepts of setting up work zones, including proper signage, taper lengths, and flagging procedures. Participants are encouraged to compare their State’s standards, if available, to the guidance established in the MUTCD and determine what additional requirements may need to be met to establish safe, compliant work zones.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the content and use of The Manual on Uniform Traffic Control Devices (MUTCD) Part 6
• Use the MUTCD to correctly answer questions about the basics of work zone traffic control
• Differentiate among standard, guidance, and option conditions in the MUTCD
• Differentiate among standard, guidance, and option conditions in the MUTCD for work zone traffic control in rural and urban areas

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130106A

Course Title
Bridge Preservation Fundamentals

Bridge Preservation Fundamentals (130106A) provides the participant key bridge preservation strategies that can help assist in the planning and implementation of their own bridge preservation program. It is a six lesson course that starts off with introducing definitions, terminology, and categories of bridge action. It also shares details on the benefits of timely bridge preservation and the consequences of deferred maintenance. This course discusses at length user best practices and activities related to deck preservation, superstructure preservation, and substructure preservation. This course also includes a lesson with detail on cost-effective culvert preservation practices.

This course is the first course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Establishing a Bridge Preservation Program (130106B) and Communication Strategies for Bridge Preservation (130106C). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.

Outcomes
Upon completion of the course, participants will be able to:

• Define activities and classifications related to bridge preservation, and associated work categories of rehabilitation, preventive maintenance, and systematic preventive maintenance

• Identify the benefits of timely bridge preservation activities, consequences of deferred maintenance, and strategies to transition bridge programs from reactive to proactive

• Determine cost-effective deck preservation practices and activities

• Determine cost-effective superstructure preservation practices and activities

• Determine cost-effective substructure preservation practices and activities

• Determine cost-effective culvert preservation practices and activities

Target Audience
The target audience for the Bridge Preservation Fundamentals WBT course is individuals involved in the development, implementation, and delivery of a bridge preservation program. This course is intended for those with general knowledge and/or skills in the area of bridge maintenance and management principles and practices.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 5 HOURS (CEU: .5 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130107A

Course Title
Fundamentals of Bridge Maintenance WBT

Fundamentals of Bridge Maintenance (NHI-130107A) teaches the participant the fundamental aspects of an effective bridge maintenance program. Module 1 - Introduction to Bridge Maintenance explains the importance of a balanced bridge maintenance program and the organizational structure, roles, and responsibilities of a bridge maintenance unit. Module 2 - Bridge Maintenance Management provides basic information about bridge inspections, reviews the general concept of Maintenance Management Systems (MMS) and Bridge Management Systems (BMS), reviews the various steps and activities involved in the proper planning and implementation of bridge maintenance program activities, discusses commonly used contracting bridge maintenance methods, and describes the principles of quality assurance and quality control measures used in bridge maintenance. Module 3 - Bridge Anatomy introduces bridge components, associated elements, and their intended functions, and also reviews common bridge types. Module 4 - Bridge Mechanics explains the bridge mechanics as it relates to different bridge components, introduces concepts such as redundancy and fracture critical details, and reviews basic hydraulic, scour and channel erosion concepts. Module 5 - Concrete Basics addresses the basic material properties of concrete; describes proper concrete mixing and testing processes; summarizes proper concrete placement, finishing and curing processes; and reviews proper methods for locating and removing unsound concrete. Module 6 - Maintenance of Bridge Ancillary Items examines general maintenance considerations and practices related to ancillary items often attached to bridges, such as utilities, and sign and lighting structures. This web-based training serves as a prerequisite to the 4-day instructor-led training NHI-130108 Bridge Maintenance.

Outcomes
Upon completion of the course, participants will be able to:

- Describe common organizational structures of transportation agencies, the role of the bridge maintenance unit and where it fits within such organizations, and the various cost-effective maintenance and preservation activities that these units perform.
- Review various bridge maintenance program management activities and tools used to facilitate the accomplishment of these activities.
- Classify bridge components, associated elements, and their intended function for commonly used materials.
- Review the fundamentals of bridge mechanics and behaviors.
- Review the fundamental steps involved in using concrete as a repair material.
- Describe general maintenance practices associated with bridge mounted sign and lighting structures.

Target Audience
The target audience for course 130107A, Fundamentals of Bridge Maintenance Web-Based Training is primarily members of Federal, State, and Local Departments of Transportation, as well as those contractors that perform work on behalf of these agencies. This training is primarily geared for individuals involved in onsite bridge maintenance activities and those that supervise the activities. This training is appropriate for those with basic knowledge of bridge maintenance and repair activities.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 7 HOURS (CEU: .7 UNITS)

Class Size: Minimum: 500; Maximum: 500

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130109A

COURSE TITLE
Bridge Management Fundamentals

When the average citizen commutes to work or runs errands, they are relying on us, public transportation agencies, to keep their bridges safe and available for use. It is their expectation that we keep their bridges serviceable and at the lowest life-cycle cost possible. Bridge management systems will help your agency to efficiently balance the various bridge needs against available resources. The Bridge Management Fundamentals course describes a bridge management system and walks through the process of selecting and implementing the right bridge management software for your agency. Throughout the course, you will learn direct from agencies with mature and successful bridge management systems about how they get the most utility from their system.

OUTCOMES
Upon completion of the course, participants will be able to:
• Explain the need for a BMS
• Describe a typical BMS organizational structure
• Describe the seven components of a BMS
• Describe tools that are used as part of the bridge management process
• Describe an implementation plan for a comprehensive BMS
• Describe effective practices when using BMSs
• Identify successful applications of BMS components by agencies
• Describe the bridge management process as it relates to an agency business model
• Describe how to address risk

TARGET AUDIENCE
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130124

Course Title
Tunnel Safety Inspection Refresher WBT Prerequisite

This new web-based prerequisite training provides basic concepts with regards to tunnel inspection and safety prior to taking 130125 Tunnel Safety Inspection Refresher. This course (in addition to 130125 Tunnel Safety Inspection Refresher) comprises of a total of 18 hours, and must be completed every 5 years to satisfy regulatory requirements for tunnel inspection refresher training. With recurring refresher training, these courses help maintain the consistency of the tunnel inspection program. The course is based on the FHWA National Tunnel Inspection Standards (NTIS), the FHWA Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) manual, and the FHWA Specifications for the National Tunnel Inventory (SNTI).

Outcomes
Upon completion of the course, participants will be able to:
• Describe the current overall condition and condition trends for the nation's tunnels
• Describe the National Tunnel Inspection Standards (NTIS)
• Describe the FHWA's "Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual"
• Describe the FHWA's “Specifications for the National Tunnel Inventory (SNTI)”
• Identify keys to ensuring a safe work environment
• Identify tunnel inspection documentation methods
• Define a critical finding
• Identify National Tunnel Inventory (NTI) items
• Identify tunnel structural, civil, mechanical, electrical/lighting, signage, & fire/life safety/security elements

Target Audience
The target audience for the Tunnel Safety Inspection Refresher WBT is primarily members of Federal, State, local and Tribal highway agency employees, specifically program managers, tunnel owners, and tunnel inspectors. A secondary target audience may include maintainers, such as operations and maintenance staff, as well as designers, load rating engineers, and asset managers.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 Hours (CEU: .4 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131050A

Course Title
(Introduction to) Asphalt Pavement In-Place Recycling Techniques

This training is a prerequisite of another NHI training and is offered at no cost.

Transportation agencies focusing on the use of sustainable, cost-effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
• Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
• Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
• Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
• List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience
This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency’s asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 20; Maximum: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110

COURSE TITLE
Asphalt Pavement Preservation Treatment Series (Modules A-K)

FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) created the Pavement Preservation Treatment Construction Guide (PPTCG) as a resource for agency and industry pavement preservation practitioners. The guide covers basic pavement preservation concepts, as well as information on specific treatments to extend the life of asphalt pavements.

This course includes a series of modules designed to provide participants with an introduction to the PPTCG, so that they can better use it to familiarize themselves with general information on pavement preservation concepts and techniques. The module topics include:

1. Introduction to Pavement Preservation (NHI-131110A)
2. Materials (NHI-131110B)
3. Crack Sealing, Crack Filling and Joint Sealing of Flexible and Rigid Pavements (NHI-131110C)
4. Patching and Edge Repairs (NHI-131110D)
5. Chip Seals (NHI-131110E)
6. Fog Seals (NHI-131110F)
7. Slurry Seals (NHI-131110G)
8. Micro-surfacing Projects (NHI-131110H)
9. Thin Functional and Maintenance Overlay Projects (NHI-131110I)
10. Ultra Thin, Hot-Mixed, Bonded Overlay Projects (NHI-131110J)
11. Selecting a Pavement Preservation Treatment (NHI-131110K)

Each of the modules is also offered as individual trainings and can be accessed by registering for the course number listed with each module.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify the components and value of a Pavement Preventive Maintenance (PPM) program
• Identify pavement conditions and other attributes that suggest whether preventive maintenance is appropriate
• Identify various pavement preservation strategies, techniques and materials
• State the performance characteristics of various pavement preservation strategies, techniques and materials
• Select the appropriate strategy(ies), technique(s) and material to extend the service life and retard the development of pavement distress

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.
**TRAINING LEVEL:** Intermediate

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 10 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 1; MAXIMUM: 1

*NHI Customer Service:* (877) 558-6873 • nhicustomerservice@dot.gov
Asphalt Pavement Preservation Treatment Series: Introduction to Pavement Preservation

This training is part of the “Asphalt Pavement Preservation Treatment” series which provides participants with an introduction to the Pavement Preservation Treatment Construction Guide (PPTCG) and the basics of pavement preservation. The PPTCG was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners.

This module provides an introduction to basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. Topics include: pavement structure, distresses, and differentiating pavement preservation from preventive maintenance.

The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information. To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES

Upon completion of the course, participants will be able to:

• Identify common surface distresses in pavements.
• Distinguish between distresses caused by surface failure and those caused by subsurface layer failure.
• Recognize the difference between pavement preservation and pavement maintenance.

TARGET AUDIENCE

The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: .5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110B

Course Title
Asphalt Pavement Preservation Treatment Series: Materials

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on the materials used for preventive maintenance treatments. Topics include: materials comprising maintenance treatments, emulsions, and aggregates. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• List the materials used in preventive maintenance treatments for flexible and rigid pavements.
• Recognize the differences between asphalt cement and emulsions and their use in pavement preservation treatments.
• List the six physical properties of aggregates that affect the performance of preservation treatments.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110C

COURSE TITLE
Asphalt Pavement Preservation Treatment: Crack Sealing & Filling, and Joint Sealing

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on crack sealing, crack filling, and joint sealing of flexible and rigid pavements. Topics include: working and non-working cracks, fatigue and longitudinal cracks, correct temperatures for crack sealant, crack repair sequence, hot sealant, and crack sealing or filling criteria. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the difference between a working crack and a nonworking crack.
• List the types of distresses that crack sealing, crack filling, and joint sealing treatments will repair.
• Describe how proper storage and handling of sealants and fillers affect their constructability and performance.
• Describe the procedure of repairing surface cracks and rigid joints.
• Identify common problems associated with crack sealing, crack filling, and joint sealing treatments and recognize their solutions.
• List the capabilities and limitations of crack sealing, crack filling, and joint sealing treatments.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110D

Course Title
Asphalt Pavement Preservation Treatment Series: Localized Pavement Repair

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on localized pavement repair. Topics include: pothole formation and edge failure, seal or fill decisions, construction of, and problems with, pothole patching, dig outs, edge repairs, and skin patching, and capabilities and limitations of localized repairs. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the mechanisms of pothole formation and edge failure.
• Select the type of localized pavement repair best suited to a given condition.
• Describe the process of pothole patching, dig outs, edge repairs, and skin patching.
• Identify common problems associated with pothole patching, dig outs, edge repairs, and skin patching and recognize their solutions.
• List the key capabilities and limitations of localized pavement repairs.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov


Course Number
FHWA-NHI-131110E

Course Title
Asphalt Pavement Preservation Treatment Series: Chip Seals

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on chip seals. Topics include: project selection, pavement and weather condition requirements, storage, traffic control, construction sequence, aggregate spreading distance, brooming, chip spreading process, distributor preparation, and troubleshooting.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:
• Recognize pavement conditions best suited to the chip seal treatment.
• Identify how proper storage and handling of chip seal materials affect their constructability and performance.
• Describe the construction of chip seals.
• Identify common problems associated with chip seals and recognize their solutions.
• Recognize key capabilities and limitations of chip seals.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110F

Course Title
Asphalt Pavement Preservation Treatment Series: Fog Seals

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on fog seals. Topics include: uses of fog seals, suitable pavement surfaces, storage and handling of materials, application process, and problems and causation. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes

Upon completion of the course, participants will be able to:

• Recognize pavement conditions most suitable for a fog seal.
• Describe how proper storage and handling of fog seal materials affect their constructability and performance.
• Describe the construction of a fog seal.
• Identify common problems associated with fog seals and recognize their solutions.
• List the key capabilities and limitations of fog seal treatments.

Target Audience

The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110G

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Slurry Seals

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on slurry seals. Topics include: reasons to use slurry seals, gradations of slurry seal aggregate, preparation and application process, and problems and solutions. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the type of slurry seal appropriate to various traffic conditions.
• Describe the construction of slurry seals.
• Identify common problems associated with slurry seals and recognize their solutions.
• List the key capabilities and limitations of slurry seals.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110H

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Micro-Surfacing

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on micro-surfacing. Topics include: pavement and traffic condition considerations, construction, and troubleshooting.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify pavement conditions most suitable for a micro-surfacing treatment.
• Describe the construction of micro-surfacing.
• Identify common problems associated with micro-surfacing and recognize their solutions.
• List the key capabilities and limitations of micro-surfacing relative to various traffic conditions.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110I

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Thin Functional HMA Overlay

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on thin functional hot-mix asphalt overlays. Topics include: proper usage, suitable pavement conditions, construction, and troubleshooting. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:
- Identify pavement conditions best suited for a thin hot mix asphalt overlay.
- Describe the construction process for a thin hot mix asphalt overlay.
- Identify common problems associated with a thin hot mix asphalt overlay and recognize their solutions.
- List the key capabilities and benefits of a thin hot mix asphalt overlay relative to various traffic conditions.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131110J

COURSE TITLE
Asphalt Pavement Preservation Treatment Series: Ultra Thin HMA Bonded Wearing Course

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on ultra thin, hot-mixed asphalt bonded wearing course. Topics include: usage, distresses and application considerations, construction, and troubleshooting. This course is primarily intended for inspectors and technicians.

This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify pavement conditions best suited to ultra thin, hot-mixed asphalt bonded wearing course.
• Describe the construction of ultra thin, hot-mixed, asphalt bonded wearing course.
• Identify common problems associated with ultra thin, hot-mixed, asphalt bonded wearing course and recognize their solutions.
• List key capabilities and benefits of ultra thin, hot-mixed, asphalt bonded wearing course relative to various traffic conditions.

TARGET AUDIENCE
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131110K

Course Title
Asphalt Pavement Preservation Treatment Series: Selecting the Right Treatment

This training is part of the “Asphalt Pavement Preservation Treatment” series and is designed to provide participants with information on preservation treatment selection. This course is primarily intended for inspectors and technicians.

The training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), which was created by FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) as a resource for agency and industry pavement preservation practitioners. It provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

To take the entire series of trainings for the PPTCG, access the NHI website and register for NHI-131110.

Outcomes
Upon completion of the course, participants will be able to:
• Select the appropriate pavement preservation treatment(s) after analyzing given pavement and traffic conditions.

Target Audience
The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: .5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131117

COURSE TITLE
Basic Materials for Highway and Structure Construction and Maintenance
This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review basic materials for highway and structure construction and maintenance. The training was prepared by State DOT personnel for State DOT personnel. It contains good practices from various agencies. Each State agency/company has its own specifications, which the viewer needs to review and follow. This course is primarily intended for inspectors and technicians.

Although there are a number of materials used in the construction and maintenance process for both highways and structures, this course is focused on the three basic materials. They are Aggregate, Portland Cement Concrete (referred to as PCC), and Hot Mix Asphalt (referred to as HMA).

This training is directed toward entry level technicians, to give them a general view of the basic materials used in construction and maintenance. The course modules will address the procedures used in the production and sampling of aggregates.

Module 1 is called Basic Aggregates and includes quarry inspection, sand operation, stockpiling, and sampling. Module 2 covers Portland Cement, including the production of Portland Cement, the hydration process, as well as other cementing materials used in concrete such as water, admixtures, and aggregates. Module 3 reviews Hot Mix Asphalt, including the asphalt binder and aggregates used in the production.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify aggregate production and sampling procedures
• Recognize the ingredients of PCC and the part each plays in concrete production
• Recognize the ingredients of HMA and the part each plays in hot mix asphalt production

TARGET AUDIENCE
This training is designed for Level I and Level II State/local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Construction of Portland Cement Concrete Pavements

Improving and maintaining the quality of concrete is an important aspect of keeping pavements safe and long lasting. This training provides participants with an overview of the entire Portland cement concrete (PCC) paving and restoration process: setting forms, mixing, hauling, curing and applicable repair techniques. This training is presented in several modules:

1. Construction Quality
2. PCC Production Overview
3. Slipform Paving
4. Fixed Form Paving
5. Pavement Curing, Sawing, and Joint Sealing Operations
6. Concrete Pavement Restoration

This self-paced, Web-based training is designed for participants to progress at their own pace. The training focuses on the proper methods for construction of concrete paving and pavement restoration techniques with an emphasis on cause and effect.

OUTCOMES

Upon completion of the course, participants will be able to:

• Describe the differences between truck-mixed and ready-mixed concrete
• Identify factors in production and paving operations that contribute to achieving a smooth ride
• Describe the differences between slip-form and fixed-form paving
• Identify the factors that impact saw timing and crack control
• Recognize the importance and key factors in placing joint sealant materials
• Identify the components of concrete pavement restoration application and construction techniques
• Describe the purpose and appropriate use of full depth and partial depth repairs
• Identify critical factors for curing and sawing operations that affect pavement performance
• Describe the purpose of grinding and dowel bar retrofit
• Identify applicable repair techniques for concrete pavement restoration
• Describe purpose of slab stabilization and joint and crack resealing

TARGET AUDIENCE

This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement and restoration of PCC pavements. Participants should have some working knowledge of concrete pavement construction.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 10 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131122

COURSE TITLE
Portland Cement Concrete Paving Inspection

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review inspection practices for Portland cement concrete paving projects. The training was originally developed by the Iowa Department of Transportation and more currently updated and reviewed by the TCCC and NHI. This course is recommended for the Transportation Curriculum Coordination Council levels I and II. This course is primarily intended for inspectors and technicians.

This training course has been prepared to provide guidance and instruction to inspectors involved in the construction of Portland cement concrete (PCC) pavements. The important tasks involved in this work are explained and proper procedures are described. The material is targeted for those who have not had experience in PCC paving construction.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the materials in a PCC mixture and the concrete properties
• Comprehend Design Project Plans and recognize the joints types and saw cuts
• Identify the safety requirements and recognize safe Traffic Control practices
• Recognize and comprehend the use of the equipment in a PCC Paving project
• Recognize various sub grade treatments
• Inspect project tasks for compliance with pre-paving requirements, i.e., survey stakes, proof rolling, subgrade, and dowel baskets
• Inspect project tasks for compliance with PCC Paving requirements, i.e., string line, place and consolidate, finish, and texture
• Perform post-construction checks

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process of placement and inspection of Portland cement concrete paving. It is applicable to anyone desiring a better understanding of activities and inspection procedures on Portland cement concrete paving projects.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126

Course Title
Concrete Pavement Preservation Series (Modules A-K)

NHI in partnership with the Transportation Curriculum Coordination Council (TCCC) is pleased to offer this comprehensive training series for concrete pavement preservation. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

The NHI-131126 Concrete Pavement Preservation Series presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. It concentrates primarily on strategies and methods that are applicable at the project level, and not at the network level, where pavement management activities function and address such issues as prioritizing and budgeting.

Registration in NHI-131126 enrolls you in all 11 courses in the Concrete Pavement Preservation Series (NHI-131126A-K) plus gives you access to a downloadable version of the FHWA Concrete Pavement Preservation Guide! You can take some or all of these courses when it best suits your schedule.

NHI-131126 includes:
- Introduction module with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
- Define pavement preservation
- List the major components of a pavement evaluation and the types of information gained from each
- Identify the purpose and suitable application of various concrete pavement preservation treatments
- Describe recommended materials and construction/installation practices for each treatment
- List factors to consider in the selection of concrete pavement preservation treatments

Target Audience
The Concrete Pavement Preservation Series meets the needs of a diverse audience to include design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 11 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126A

Course Title
Concrete Pavement Preservation Series: Pavement Preservation Concepts

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes

Upon completion of the course, participants will be able to:

• Define pavement preservation and preventive maintenance
• Describe characteristics of suitable pavements for preventive maintenance
• Describe the importance of selecting and placing the “right” treatment and placing it at the “right” time
• List the benefits of pavement preservation

Target Audience

The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126B

Course Title
Concrete Pavement Preservation Series: Concrete Pavement Evaluation

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was sponsored by the FHWA and developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation. This module also describes the common procedures associated with conducting thorough pavement evaluations.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
• Describe the need for a thorough pavement evaluation
• Name the common pavement evaluation components
• Describe what information is obtained from each pavement evaluation component

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
**Training Level:** Intermediate

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 2 Hours (CEU: 0 Units)

**Class Size:** Minimum: 1; Maximum: 1

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126C

COURSE TITLE
Concrete Pavement Preservation Series: Slab Stabilization

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the use of slab stabilization (also known as undersealing) and slab jacking of concrete pavements. Slab stabilization restores support beneath slabs where voids have been detected, and slab jacking is used to raise depressed or settled slabs.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:
• List benefits of slab stabilization and slab jacking
• Describe recommended materials and mixtures
• Describe recommended construction steps for both procedures
• Identify typical construction problems and remedies for slab stabilization

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126D

COURSE TITLE
Concrete Pavement Preservation Series: Partial-depth Repairs

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the procedures for partial-depth repairs (PDR) on PCC pavements. PDR is the removal and replacement of small, shallow areas of deteriorated PCC at spalled or distressed joints.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

• List benefits and appropriateness of partial-depth repairs
• List the advantages and disadvantages of different available repair materials
• Describe recommended construction procedures
• Identify typical construction problems and appropriate remedies

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
 COURSE NUMBER  
FHWA-NHI-131126E

 COURSE TITLE  
Concrete Pavement Preservation Series: Full-depth Repairs

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers the procedures for cast-in-place Portland cement concrete (PCC) full-depth repair (FDR) of jointed concrete pavements (JCP) including jointed plain (JPCP) and jointed reinforced concrete pavements (JRCP). FDR techniques for continuously reinforced concrete pavements (CRCP) are discussed separately toward the end of the presentation. FDR is the cast-in-place concrete repairs that extend the full-depth of the existing slab.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES

Upon completion of the course, participants will be able to:

• List the benefits of full-depth repairs
• Describe primary design considerations in terms of dimensions, load transfer, and materials
• Describe recommended construction activities
• Identify typical construction problems and remedies

TARGET AUDIENCE

The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
**Training Level:** Intermediate

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 2 Hours (CEU: 0 Units)

**Class Size:** Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126F

Course Title
Concrete Pavement Preservation Series: Retrofitted Edge Drains

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module presents design and construction information on retrofitted edge drains. This treatment is not as widely used as it once was, largely because it has limited applicability. Specifically, it must be targeted to those pavements that are 1) in good structural condition and 2) have bases with some degree of permeability that would allow water to be drained from beneath the pavement and to the edge drain.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:
- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126J: Joint Resealing and Crack Sealing
- NHI-131126K: Concrete Overlays
- NHI-131126L: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:
- List benefits of drainage
- List components of edge drain systems
- Describe recommended installation procedures
- Identify typical construction problems and remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
**TRAINING LEVEL:** Intermediate

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 1 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126G

Course Title
Concrete Pavement Preservation Series: Dowel Bar Retrofit

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module presents design and construction information on load transfer restoration (LTR), sometimes referred to as retrofitted load transfer. In the introduction we will describe the difference between load transfer restoration (generic term) and dowel bar retrofitting (DBR) which is a specific means of achieving LTR. There are other methods available, but DBR is the most proven.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes

Upon completion of the course, participants will be able to:

- List benefits and applications of load transfer restoration
- Describe recommended materials and mixtures
- Describe recommended construction procedures
- Identify typical construction problems and remedies

Target Audience

The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126H

COURSE TITLE
Concrete Pavement Preservation Series: Diamond Grinding and Grooving

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module describes recommended procedures for surface restoration of Portland cement concrete (PCC) pavements, specifically diamond grinding and diamond grooving operations.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

• Differentiate between diamond grinding and diamond grooving and list the benefits of each
• Identify appropriate blade spacing dimensions for grinding and grooving
• Describe recommended construction procedures
• Identify typical construction problems and remedies

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131126l

Course Title
Concrete Pavement Preservation Series: Joint Sealing and Crack Resealing

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module covers joint resealing and crack sealing for concrete pavements. Joint resealing and crack sealing is defined as placement of an approved sealant material in an existing joint or crack to reduce moisture infiltration and prevent intrusion of incompressibles.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

Outcomes
Upon completion of the course, participants will be able to:

• List the benefits of joint resealing
• Describe desirable sealant properties and characteristics
• Describe recommended installation procedures
• Identify typical construction problems and appropriate remedies

Target Audience
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126J

COURSE TITLE
Concrete Pavement Preservation Series: Concrete Overlays

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven step process that can be used to determine the most appropriate treatment (or combination of treatments) for a PCC pavement.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

- Describe the treatment selection process
- List the components of a life-cycle cost analysis
- List other factors that may enter the selection process

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131126K

COURSE TITLE
Concrete Pavement Preservation Series: Strategy Selection

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance on critical concrete pavement preservation issues. The training was developed by the National Concrete Pavement Technology Center at Iowa State University in cooperation with FHWA.

This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven step process that can be used to determine the most appropriate treatment (or combination of treatments) for a PCC pavement.

This module is part of the curriculum from the Concrete Pavement Preservation Series (FHWA-NHI-131126) which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. The other Web-based training modules are:

- NHI-131126 Concrete Pavement Preservation Series with downloadable version of the FHWA Concrete Pavement Preservation Guide
- NHI-131126A: Pavement Preservation Concepts
- NHI-131126B: Concrete Pavement Evaluation
- NHI-131126C: Slab Stabilization
- NHI-131126D: Partial-depth Repairs
- NHI-131126E: Full-depth Repairs
- NHI-131126F: Retrofitted Edge Drains
- NHI-131126G: Dowel Bar Retrofit
- NHI-131126H: Diamond Grinding and Grooving
- NHI-131126I: Joint Resealing and Crack Sealing
- NHI-131126J: Concrete Overlays
- NHI-131126K: Strategy Selection

OUTCOMES
Upon completion of the course, participants will be able to:

- Describe the treatment selection process
- List factors that might enter into the selection process
- Describe pavement deficiencies addressed by the different preservation treatments
- Describe how the benefits and costs of alternative treatment strategies are computed in a cost-effectiveness analysis
- Describe a process used to select the preferred treatment strategy

TARGET AUDIENCE
The intended audience is quite diverse, and includes design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field. This course is recommended for the Transportation Curriculum Coordination Council levels I - IV.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: .3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131127

Course Title
Concrete Series

The Transportation Curriculum Coordination Council (TCCC) in partnership with NHI is pleased to offer this comprehensive training series (FHWA-NHI-131127) for any engineer or supervisor working with Portland cement. The series is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University.

This course is recommended for the Transportation Curriculum Coordination Council levels II - IV.

To streamline registration and enable you to take some or all of these courses when it best suits your schedule, we have created this new series option which automatically registers you for all 11 modules—it's that easy. They are as follows:

Module 1 - TCCC Design of Pavement (FHWA-NHI-134101)
Module 2 - TCCC Fundamentals of Materials Used for Concrete Pavements (FHWA-NHI-134084)
Module 3 - TCCC Mix Design Principles (FHWA-NHI-134087)
Module 4 - TCCC Fresh Concrete Properties (FHWA-NHI-134097)
Module 5 - TCCC Basics of Cement Hydration (FHWA-NHI-134096)
Module 6 - TCCC Incompatibility in Concrete Pavement Systems (FHWA-NHI-134085)
Module 7 - TCCC Early Age Cracking (FHWA-NHI-134095)
Module 8 - TCCC Hardened Concrete Properties- Durability (FHWA-NHI-134075)
Module 9 - TCCC Construction of Concrete Pavements (FHWA-NHI-134098)
Module 10 - TCCC QCQA for Concrete Pavements (FHWA-NHI-134100)
Module 11 - TCCC Troubleshooting for Concrete Pavements (FHWA-NHI-134102)

Outcomes
Upon completion of the course, participants will be able to:

• Explain concrete pavement construction as a complex, integrated system involving several discrete practices that interrelate and affect one another in various ways
• Recognize and implement technologies, tests, and best practices to identify materials, concrete properties, and construction practices that are known to optimize concrete performance
• Identify factors that lead to premature distress in concrete, and learn how to avoid or reduce those factors
• Apply appropriate how-to and troubleshooting information

Target Audience
This training is intended as both a training tool and a reference to help concrete paving engineers, quality control personnel, specifiers, contractors, suppliers, technicians, and tradespeople bridge the gap between recent research and practice regarding optimizing the performance of concrete for pavements.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 12 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-131129

COURSE TITLE
HMA Paving Field Inspection

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to provide guidance and instruction to inspectors involved in the construction of hot mix asphalt (HMA) pavements. The important tasks involved in this work are explained and proper procedures are described. This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III. This course is primarily intended for inspectors and technicians.

This training is arranged in a fashion to help the inspector first learn the various aspects of what is involved in a HMA paving operation and then become familiar with the duties that are a part of the HMA pavement grade inspection responsibilities. It also explains how to recognize the mix properties of a HMA mixture. The information included will assist the inspector in recognizing problems during a project and offering solutions to the problems. This training is not intended to cover every aspect of HMA paving.

OUTCOMES
Upon completion of the course, participants will be able to:

- Know various aspects of what is involved in a HMA paving operation
- Understand the duties of a HMA paving inspector
- Recognize the mix properties of a HMA mixture
- Recognize the problems that may occur on HMA paving projects
- Understand the product and project so solutions can be recommended

TARGET AUDIENCE
This training would be beneficial to anyone that is involved with an HMA paving project, but focuses on technicians/inspectors that are involved with the production, placement, and inspection of HMA paving projects.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131132

Course Title
Chip Seal Best Practices

The Chip Seal Best Practices course presents ways to assist in the development and implementation of pavement preservation programs by identifying the benefits of using chip seal as part of a preventive maintenance program. This course has six modules. Module 1 is an introduction into chip seals, module 2 covers designing chip seal mixes, module 3 is selecting the proper materials for the chip seal mix, module 4 focuses on the use of the equipment, module 5 covers proper construction practices, and module 6 rounds out the course with performance measures of chip seals. The combination of all this information provides an excellent overview of successful chip seal practices worldwide.

Outcomes
Upon completion of the course, participants will be able to:
• Define chip seal
• Describe how chip seals are used as a preventive maintenance treatment for pavement
• Identify materials used in chip seals
• Describe the characteristics of chip seal design
• Identify types of chip seal
• Identify the important considerations of aggregate and binder selection
• Describe aggregate-binder compatibility
• Describe equipments used in chip seal practices
• Identify important variables in construction practice
• Define the measures of control implemented over the quality of materials and construction
• Identify construction best practices
• Describe the components of engineering-based performance measures
• Identify qualitative performance indicators for chip seal
• Define common visible chip seal distresses

Target Audience
This training is recommended for the Transportation Curriculum Coordination Council levels I, II and III. This training would benefit entry level construction inspectors, maintenance employees and contractor personnel as well as serve as refresher training for those already well versed in the selection and application of a chip seal as a preventive maintenance treatment.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131133

Course Title
Roller Compacted Concrete Pavements

The Roller Compacted Concrete (RCC) Pavements course provides detailed overviews of RCC properties and materials, mixture proportioning, structural design issues, and production and construction considerations, plus troubleshooting guidelines and an extensive reference list for more comprehensive information.

This course contains six modules. Module 1 is an introduction in RCC covering the characteristics, benefits, limitations, selection considerations, and typical uses. Module 2 discusses the property differences between RCC and conventional mixes, material requirements and testing. Module 3 covers mix proportioning of RCC, while Module 4 gets into structural design of RCC pavements. Module 5 acquaints the student with production and the proper handling and storage of materials, mixing and batching, and production planning. Module 6 covers the actual construction of a RCC pavement. All of the modules for this training were developed from the August 2010 “Guide for Roller-Compacted Concrete Pavements” which is available from the Portland Cement Association website www.cement.org/pavements.

Outcomes
Upon completion of the course, participants will be able to:

- Define RCC key elements and common uses
- Define RCC properties and materials
- Describe RCC mix proportioning
- Describe structural design of RCC pavement
- Identify RCC production
- Identify RCC pavement construction

Target Audience
This training provides agencies, contractors, materials suppliers, and others with a thorough introduction to and updated review of RCC and its many paving applications. This training is recommended for the Transportation Curriculum Coordination Council levels II through IV.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

NHI Training Information: (877) 558-6873 • Fax (703) 235-0577
Course Number
FHWA-NHI-131134

Course Title
Superpave for Construction

The Superpave for Construction Course contains information for field construction personnel on the Superpave mix design system and the control of field produced Hot Mix Asphalt.

There are two modules in this course. The first module introduces the Superpave Hot Mix Asphalt design testing and analysis. It will cover design testing procedures, design analysis methods, and will include calculations to analyze the volumetrics of paving samples. Module two includes relevant volumetric examples including the use of phase diagrams to calculate volumetric properties. Example problems are included. This course is an excellent learning tool to assist in understanding corrective actions for volumetric parameters.

Outcomes

Upon completion of the course, participants will be able to:

• Describe the benefits of Superpave over previous mix design methodologies
• Understand Superpave mix design procedures and testing
• Understand mix design analysis methods
• Perform the calculation necessary to analyze the volumetrics of paving samples for comparison
• Describe how to use phase diagrams to calculate volumetric properties
• Describe factors which can influence key mass-volume relationships and calculations
• Understand corrective action for volumetric parameters
• Calculate and evaluate volumetric properties through example problems

Target Audience
This training is targeted to intermediate and advanced technicians from both contractor and agency employment, which will be involved in construction of pavements using Superpave. This training is recommended for the Transportation Curriculum Coordination Council levels II and III.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3.5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-131142

Course Title
Full Depth Reclamation (FDR)

Full Depth Reclamation, or FDR, is a rehabilitation technique in which the full thickness of the asphalt pavement and a predetermined portion of the underlying materials (that is, the base, the subbase, and/or subgrade) is uniformly pulverized and blended to provide an upgraded, homogeneous material.

FDR was originally limited to low to medium traffic volume roadways; however, newer and larger equipment options means that FDR now can be used on high traffic volume roadways. There is no upper limit to roadway traffic volumes if a pavement structural design is undertaken as part of the rehabilitation process and traffic control allows for diversion of traffic or travel on a pulverized or stabilized surface without damage.

This Web-based training contains four modules. Module 1 introduces full depth reclamation of pavements. Module 2 presents pre-production activities associated with FDR, including the pre-production meeting, roadway preparation, and FDR equipment. Module 3 covers establishing a control strip and pulverizing material, and explores various methods and agents used for stabilizing reclaimed materials. Module 4 reviews post-production actions following reclamation. It takes approximately 4.5 hours to complete the four modules.

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI.

Outcomes
Upon completion of the course, participants will be able to:
• Describe why a pre-production meeting is important
• Describe what preparation is needed for a full depth reclamation project
• List the equipment needed for a full depth reclamation project
• Identify the purposes of a control strip
• Describe the process used to pulverize existing pavement material for FDR
• List methods used to stabilize reclaimed materials
• Describe the stabilizing agents and additives used for stabilization of reclaimed materials
• Describe the finishing steps involved in full-depth reclamation
• Identify factors and actions that can affect yield and gradation result
• Describe the different methods of measuring compaction and the effect stabilizing agents may have on the results
• List factors affecting how various FDR mixtures should be cured
• Describe the steps involved in placing the final surface on a pavement
• List criteria for acceptance and payment for FDR pavements

Target Audience
This training is designed for local, county, and state owner agency technicians and inspectors. It is also useful for individuals seeking awareness or basic understanding of the topic. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI, and is recommended for TCCC levels II through IV.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133116

COURSE TITLE
Maintenance of Traffic for Technicians - WEB BASED

The Maintenance of Traffic for Technicians Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed.

We’ve broken this training into five modules:
1. General Terms and Procedures
2. Traffic Channelizing and Control Devices
3. Traffic Control Zones
4. Flagger Operations
5. Traffic Control Zone Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the correct placement of work zone traffic control devices
• Perform field maintenance of work zone traffic control devices
• Inspect placement or operational functions of work zone traffic control devices
• Generate work zone traffic control plans
• Explain the basics of flagging

TARGET AUDIENCE
This training is designed for all persons with duties that include: Direct responsibility for placement of work zone traffic control devices; Direct responsibility for field maintenance of work zone traffic control devices; Inspection of the placement or operational function of work zone traffic control devices; and Drafting or electronic generation of work zone traffic control plans. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133117

COURSE TITLE
Maintenance of Traffic for Supervisors - WEB BASED

The Maintenance of Traffic for Supervisors Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed. This training focuses on the design of a traffic control plan, and how and why one needs to operate and implement traffic control in the work zone.

We've broken this training into five modules:
1. Fundamental Principles of Temporary Traffic Control Zones
2. Temporary Traffic Control Devices
3. Traffic Control Zones
4. Transportation Management Plans
5. Flagger Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe how to create clear, organized traffic control plans
• Identify acceptable temporary traffic control devices
• Determine good and bad flagging techniques

TARGET AUDIENCE
This training is designed for personnel with responsibility or authority to decide on the specific maintenance of traffic requirements to be implemented. These positions include engineers responsible for work zone traffic control development and work site traffic supervisors. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-133118

Course Title
Flagger Training - WEB-BASED

Being a flagger is the most important job on the work site. Careless use of the sign or distraction from duty could cause serious injury to workers or the motoring public. Performing flagger duties diligently can prevent traffic incidents in the work area.

This is a basic training in the area of flagger training. It has been designed for someone learning the first steps in performing flagger duties. This training would be useful as a refresher course for all employees involved with work zone traffic control where flaggers are utilized.

This training does not go into individual state flagger training or certification requirements. For more information on flagger training requirements contact your State’s safety office.

Outcomes
Upon completion of the course, participants will be able to:
• Identify the responsibilities of a flagger
• Describe the proper ways to place signs
• Describe the proper position for flagging
• Define the flagging procedures for stop, slow, and proceed
• Identify the correct procedures for various flagging situations
• Describe the proper conduct in flagging

Target Audience
This training is intended for individuals that will be performing or are engaging in flagger duties on construction/maintenance projects. The course will assist them in better understanding the importance and duties involved with flagging on a project. It would be beneficial to the entry level employee as well as the experienced flagger.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134005A

Course Title
Introduction to Value Engineering

This training is a prerequisite of another NHI training and is offered at no cost.

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as:

a) providing the needed functions safely, reliably, and at the lowest overall cost;
b) improving the value and quality of the project; and
c) reducing the time to complete the project.

This Web-based training is intended to provide an overview of the Value Engineering process, known as the Value Engineering study. Included in the training is a discussion of the benefits of utilizing VE, the keys to completing a successful VE study, and an overview of the objectives and tasks completed by the VE team at each phase.

Participants can complete this training independently. Those who plan on attending the 3-day Value Engineering classroom training must complete this online module prior to coming to class. Course certificates should be printed out and presented to the instructor on the first day to verify completion.

Outcomes
Upon completion of the course, participants will be able to:

- Identify the purpose of Value Engineering and its benefits to a highway transportation agency.
- Identify the critical skills required to participate successfully in the VE study.
- Describe each phase of creating a Value Engineering Job Plan in terms of the objective and tasks.

Target Audience
The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members or who are interested in learning more about the process. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance who will participate in a Value Engineering study should also attend.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: .5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 20; Maximum: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134006A

Course Title
Introduction to Utility Coordination for Highway Projects

NHI 134006 is a blended course, with both Web-based and instructor-led components. The Web-based training component (NHI 134006A) must be completed before attending the instructor-led training session.

This training is a prerequisite of another NHI training and is offered at no cost.

Every State highway agency participates in construction projects that include accommodation and relocation of utilities along public rights-of-way. 134006 Utility Coordination for Highway Projects considers how communication, cooperation, and coordination between transportation agencies and utility companies can mitigate or avoid common challenges.

In the Web-based training, participants learn about regulatory requirements for both public and private utilities, subsurface utility engineering (SUE), and their own State's Utility Accommodation Policy. By putting these lessons into practice, utility-related complications in many cases can be predicted and mitigated at the most appropriate stage of project development, which can reduce potential negative impacts to timeline and budget.

Outcomes
Upon completion of the course, participants will be able to:

• Explain the importance of early and effective cooperation, communication, and coordination of utility-related activities throughout a project's lifecycle.
• Identify successful techniques that could be used to avoid or mitigate utility challenges throughout the project development and delivery process.
• Explain the major impacts of identified conflicts or issues on the schedule or budget of a project.

Target Audience
The course targets Federal, State, and local personnel who are responsible for planning, designing, constructing, operating, and maintaining transportation facilities that involve the accommodation or relocation of utilities. It is most effectively delivered with additional participation from representatives of public and private utility companies, DOT contractors, risk managers, right-of-way staff, mid-to senior-level managers, and engineering consultants.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A
Length: 4 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134063G

Course Title
Maintenance Leadership Academy - Web-based Curriculum

Important Notice: NHI 134063-G is the online curriculum attached to the Maintenance Leadership Academy. You must be enrolled in a current session of Maintenance Leadership Academy to register for NHI 134063-G. If you are not enrolled in Maintenance Leadership Academy and would like to take the series of Web-based trainings, please register for NHI 134109 Maintenance Training Series. If you complete the NHI 134063-G courses without being enrolled in the Maintenance Leadership Academy, you will not receive credit or certificates for the online curriculum. Anyone outside of the current Maintenance Leadership Academy sessions, please register for NHI 134109.

The Maintenance Leadership Academy provides an intensive training program to individuals who hold positions as State, district, and county maintenance supervisors. The Academy can help decrease the time it takes to acclimate new managers and provide an opportunity for career development.

Participants acquire an understanding of the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems. Participants develop a knowledge base of personnel management, materials selection, equipment use, and applicable methods to react to problems in bridges, roadways, budgeting, and planning.

The Academy curriculum consists of self-paced lessons accessed via the Web and classroom sessions. Self-paced lessons are completed prior to attending each of the two classroom sessions. Upon enrolling for the Maintenance Leadership Academy, participants attend a 1-hour orientation Web conference that provides an overview of the Academy's schedule and information on how to access the self-paced lessons.

An example of the structure of the Academy:
- Enroll and attend a 1-hour Web conference orientation
- Complete 22 hours of independent study materials
- Attend 8 days of classroom training
- Complete 10.5 hours of independent study material and attend a 1-hour homework review Web conference
- Attend the final 4 days of classroom training

Outcomes
Upon completion of the course, participants will be able to:

• Describe the use of maintenance administration in achieving highway agency goals. (Module A)
• Describe how various treatments fit into an overall system preservation program and when to implement them. (Module B)
• Identify appropriate drainage maintenance and roadside management techniques. (Module C)
• Describe the maintenance manager's roles and responsibilities for developing, implementing, and managing a comprehensive plan for dealing with weather-related events. (Module D)
• Explain the maintenance and use of traffic control devices (including work zone plans, work zone traffic control devices, signs, striping, guardrails, and median barriers) in maintenance operations. (Module E)
• Describe how environmental protection issues, regulations and control measures affect highway maintenance activities. (Module F)

Target Audience
This course was designed for State, regional, or county personnel who manage operations programs and deal with oversight and quality assurance over broader geographic areas. They are involved with handling materials, scheduling, budgeting and planning. Participants have an advanced skill in maintenance activities. Participants enrolling in the Academy will need to have taken NHI-134064 “Transportation Construction Quality Assurance” and NHI-131110 “Pavement Preservation Treatment Construction” or had equivalent training or experience in these content areas.
TRAINING LEVEL: Accomplished

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 32.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134069

COURSE TITLE
Ethics Awareness for the Transportation Industry

The training contains good practices from various agencies. The topics of discussion in this training are: conflict of interest, safety, fraud, falsification of documentation, reporting ethical concerns, gifts and favors, fairness, personal use of agency property, and consequences.

Not all State agencies’ codes of conduct are the same but they all demand similar ethical behavior of their employees. Be sure to access to your agency’s codes or check with your supervisor for more information specific to your organization. Each State agency/company has its own work rules, which the viewer needs to review and follow.

This training is provided in partnership with the Transportation Curriculum Coordination Council (TCCC) to provide good practices for ethical behavior of transportation employees. The training was prepared by State DOT personnel for State DOT personnel. This course is primarily intended for inspectors and technicians.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe agency expectations on ethics
• Give an example of a current code of conduct policy
• Recognize and practice good ethics as an employee in the transportation industry
• Explain the consequences when rules and regulations are not followed

TARGET AUDIENCE
This training is designed for Level I and Level II State and local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134070

Course Title
SpecRisk Quality Assurance Specification Development and Validation Course

This course will provide an introduction to statistical analysis and the development of statistically valid quality assurance specifications, introducing general guidelines established and put forth by the Federal Government and FHWA policy. The course also provides participants with an introduction to SpecRisk, the resource that is necessary to successfully develop statistically valid specifications. The course is designed and delivered to motivate members of the target audience to use SpecRisk software to develop their specifications. Although the course demonstrates basic functions of the software, it is not intended to be an in-depth training on how to use SpecRisk.

This course requires a prerequisite solid foundation in basic statistics. Minimum knowledge includes methods of organizing data and how to plot frequency histograms; understanding how a sample relates to the population, the relationship between single and multiple samples, and the use of random stratified sampling tables.

Outcomes
Upon completion of the course, participants will be able to:

• Recognize key concepts to develop an effective, statistically valid Quality Assurance (QA) specification.
• Make an informed selection among available options when developing an acceptance plan.
• Develop QA specifications in alignment with best practices, Federal regulations, and FHWA policy.
• Apply SpecRisk software to understand risks and develop statistically valid specifications.

Target Audience
Personnel involved in specification development: Federal, State, and local highway agency engineers and technicians in materials, construction, and research. The training is also appropriate for industry personnel that are involved in reviewing and providing input to the specification development process.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 8 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134071

COURSE TITLE
Basic Construction and Maintenance Documentation - Improving the Daily Diary

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to help improve documentation on construction and maintenance projects. The training was prepared by State DOT personnel for State DOT personnel. This course is primarily intended for inspectors and technicians.

It contains good practices from various agencies. This training is intended to assist you with proper documentation on a construction or maintenance project. It is important that the information in the daily diary kept for projects are accurate, correct, and factual to insure proper payment and to avoid lawsuits.

Please note that the terminology may differ slightly from DOT to DOT; for example, the document may also be referred to as a Daily Work Report. Each State agency/company has its own requirements, which the viewer needs to review and follow.

OUTCOMES
Upon completion of the course, participants will be able to:
• Compose a complete and correct daily diary
• Recognize the importance of daily diary entries

TARGET AUDIENCE
This training is designed for Level I and Level II State and local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-134072

**Course Title**
Math Module

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review math basics such as, math functions, algebra, and geometry. This course includes instruction that would be applicable to variety of end users. The basic math functions would be appropriate to the entry level technician or as a review. This course is primarily intended for inspectors and technicians.

The more complex areas of algebra and geometry would be appropriate for the more advanced technician. Problems covered in this course can be applied to further an employee’s education or use the principals to solve everyday work problems. This course can be used as both a learning tool and/or as an excellent refresher.

**Outcomes**
Upon completion of the course, participants will be able to:
- Perform basic and intermediate calculations using mathematics, algebra, and geometry
- Understand the impact of mathematics, algebra, and geometry in their job functions
- Build upon a foundation for applying operations and engineering concepts on the job
- Understand the impact that their actions may have on the safe and reliable operation of DOT components and systems

**Target Audience**
This course is designed for FHWA, State, and Local Agencies and their industry counterparts that are involved in construction and maintenance practices. It is applicable to anyone that will be performing everyday calculations for inspection, testing, and a variety of other job functions.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 6 HOURS (CEU: 0 UNITS)

**Class Size:** Minimum: 1; Maximum: 1

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134074

Course Title
Bolted Connections

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to introduce the basics of structural bolted connections. The information presented is useful for non-structural applications as well. Bolting is a common method of making connections, care should be exercised both in their design, installation and maintenance. For the purposes of this course, we are focusing on the installation of bolts. This training is recommended for the Transportation Curriculum Coordination Council levels II through IV. This course is primarily intended for inspectors and technicians.

This module consists of three lessons:
Bolted joints reviews the basic connection types, types of holes, faying/contact surfaces, use of washers, tightening patterns, and fastener documentation.
Installation procedures explain how important it is to protect the fastener assemblies and surfaces during construction. We will review fastener assemblies’ pre-installation verification and explain the rotational-capacity testing.
Installation methods discuss basic guidelines to achieve quality fastener installations. There are several accepted methods for installing structural bolts. The methods covered in this training are turn-of-nut, calibrated wrench, direct tension indicator, twist-off bolt, and lock pin and collar.

Outcomes
Upon completion of the course, participants will be able to:
• Identify various fastener connection types
• Describe installation procedures
• Identify and describe various accepted installation methods

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the installation and inspection of bolts and bolted connections on construction projects.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134075

Course Title
Hardened Concrete Properties - Durability

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

Durability as a property of hardened concrete is essential for long-lasting pavements. This workshop discusses factors that contribute to durable concrete and covers permeability, frost resistance, sulfate resistance, alkali silica attack, and a brief look at abrasion resistance.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:

- Recognize factors contribute to durable concrete
- Explain the importance of permeability, alkali-silica reaction, abrasion resistance and, in certain regions in the country, frost resistance and sulfate resistance of hardened concrete
- Identify tests that can be performed to determine the variables affecting the durability of hardened concrete

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements for durability. It is applicable to anyone desiring a better understanding of the factors of durability.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134084

COURSE TITLE
Fundamentals of Materials Used for Concrete Pavements

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The materials used in Portland cement concrete play an extremely valuable role in the performance of the concrete. This training covers both the non-reactive and reactive materials used in Portland cement concrete. This would include the aggregates, curing compound, reinforcement, and the materials that are chemically reactive.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES
Upon completion of the course, participants will be able to:

- Identify materials used in Portland cement concrete
- Describe the importance of each material and the role it plays in the performance of the concrete
- Describe how each material reacts with the other materials to obtain strength, permeability, workability, etc.

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the materials used in Portland cement concrete meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Incompatibility in Concrete Pavement Systems

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV.

The materials used in Portland cement concrete play an extremely valuable role in the performance of the concrete. This training covers the incompatibilities of materials used in Portland cement concrete. Although certain materials may be perfectly acceptable on their own, when they are combined they are not compatible with each other. This can cause early stiffening, retardation, cracking, and the lack of a quality of air void system.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES

Upon completion of the course, participants will be able to:

- Identify the causes of incompatible conditions leading to early stiffening or setting and occasional early age cracking
- Recognize the importance to use the correct air void system
- Describe test methods used to identify incompatibilities

TARGET AUDIENCE

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the materials used in Portland cement concrete meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134087

Course Title
Mix Design Principles

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV.

This module discusses mix design and mix proportioning. Mix design is the process of choosing the characteristics we are looking for in the concrete mixture. Mix proportioning, on the other hand, involves taking the information provided by the mix design process and using that information to determine the actual proportions of ingredients in the mixture. This course discusses theoretical, laboratory, and field testing to determine the Portland cement concrete mix that will achieve the best possible durability, strength, constructability, economy, and uniformity.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes

Upon completion of the course, participants will be able to:

- Describe the overall goal of mix design
- Define the difference between mix design and mix proportioning
- Recognize field and laboratory testing plans
- Describe test methods used to identify incompatibilities

Target Audience

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of Portland cement concrete materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of Portland cement concrete.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134095

Course Title
Early Age Cracking

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

Cracks are not a problem as long as they are controlled through jointing; ideally the concrete will crack below the saw joint to relieve the stress. Uncontrolled random cracks are not aesthetically acceptable and can reduce ride quality, durability, and particularly load transfer. Early cracking in this module is defined as those cracks that occur before the concrete is open to public traffic. In this module, we will be talking about early age cracking. Primarily, why does it occur and how can it be eliminated or at least controlled?

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:

- Describe the various mechanisms that can lead to early age cracking
- Define and understand why curling and warping occur
- Recognize how curling and warping affect early age cracking
- Recognize the proper use of the materials and maintaining good construction practices can control early age cracking
- Describe how certain material properties and construction methods can affect early age cracking and can help prevent the cracking from occurring

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements to prevent early age cracking. It is applicable to anyone desiring a better understanding of the causes and prevention of early age cracking.
TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134096

COURSE TITLE
Basics of Cement Hydration

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily intended for inspectors and technicians.

This module covers how a concrete mixture changes from a plastic state to become a solid concrete slab in a relatively short period of time. Central to this transformation is a complex process called hydration, an irreversible series of chemical reactions between water and cement.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:
- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134097 TCCC Fresh Concrete Properties
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES
Upon completion of the course, participants will be able to:
• Knowledge of physical and chemical occurrences during cement hydration
• Identify various factors that can adversely affect these occurrences
• Recognize the different temperature changes during particular stages of hydration

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of Portland cement concrete materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134097

COURSE TITLE
Fresh Concrete Properties

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily intended for inspectors and technicians.

This module covers the properties of fresh concrete needed to produce high-quality, long-lasting pavements and how to monitor these properties.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:

- FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
- FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
- FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
- FHWA-NHI-134087 TCCC Mix Design Principles
- FHWA-NHI-134095 TCCC Early Age Cracking
- FHWA-NHI-134096 TCCC Basics of Cement Hydration
- FHWA-NHI-134098 TCCC Construction of Concrete Pavements
- FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
- FHWA-NHI-134101 TCCC Design of Pavement
- FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

OUTCOMES
Upon completion of the course, participants will be able to:

- List the main properties of fresh concrete
- Describe what affects each property
- Recognize how to monitor these properties through concrete testing

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the process to assure that the properties of a concrete mixture provide ease in placement, ease of consolidation, and long-lasting pavement. It is applicable to anyone desiring a better understanding of the properties of Portland cement concrete.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134101

Course Title
Design of Pavement

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review integrated materials and construction practices for concrete pavement. The training was developed by the National Concrete Pavement Technology Center at Iowa State University. This training is recommended for the Transportation Curriculum Coordination Council levels III and IV. This course is primarily for inspectors and technicians.

This module covers pavement design and subgrade concepts as they relate to materials and construction. It does not provide sufficient detail to actually design or evaluate a design. It covers the primary goal of pavement design, which is to provide a pavement with the following characteristics: safe, long lasting, cost effective, low maintenance, and constructible.

This module is part of a curriculum from the “Integrated Materials and Construction Practices for Concrete Pavement” manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:
FHWA-NHI-134075 TCCC Hardened Concrete Properties - Durability
FHWA-NHI-134084 TCCC Fundamentals of Materials Used for Concrete Pavements
FHWA-NHI-134085 TCCC Incompatibility in Concrete Pavement Systems
FHWA-NHI-134087 TCCC Mix Design Principles
FHWA-NHI-134095 TCCC Early Age Cracking
FHWA-NHI-134096 TCCC Basics of Cement Hydration
FHWA-NHI-134097 TCCC Fresh Concrete Properties
FHWA-NHI-134098 TCCC Construction of Concrete Pavements
FHWA-NHI-134100 TCCC QCQA for Concrete Pavements
FHWA-NHI-134102 TCCC Troubleshooting for Concrete Pavements

Outcomes
Upon completion of the course, participants will be able to:
- Identify pavement types and design features
- Recognize what design variables are controlled by field operations
- Discuss the two primary types of pavement distresses (performance measures)
- Recognize how subgrades and bases effect construction operations and long-term pavement performance

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in designing, constructing, and inspecting Portland cement concrete pavements.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134105

Course Title
Pipe Installation, Inspection, and Quality

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with State DOT personnel. It helps transportation professionals involved in the installation, inspection, and quality of pipe on highway construction projects improve their understanding of the factors that contribute to high-quality installations. The training was prepared by State DOT personnel for State DOT personnel. It contains good practices from various agencies. Each State agency/company has its own specifications, which the viewer needs to review and follow for the specified pipe. This course is primarily intended for inspectors and technicians.

This course is focused on the three basic pipe materials. They are Concrete, Metal, and Plastic. This course contains important instructional material, procedures and guidance that has been developed to maintain uniformity among pipe inspectors. This course will cover what you need to know, do, and look for during the inspection of pipe installation.

This training is directed toward intermediate level technicians, to give them an in-depth view of the basic materials used in pipe construction. The course modules will address the different types of pipe as well as the foundation work, bedding selection, placement, joint sealants, backfilling and documentation for concrete, metal and plastic pipe.

Outcomes
Upon completion of the course, participants will be able to:

• Identify basic material pipe types
• Recognize proper foundation and bedding requirements for pipe
• Link different types of pipe with its required specifications for installation
• Identify common errors to avoid when dealing with placement, joints and backfilling of pipe
• Recognize the importance of accurate records and reporting

Target Audience
This course targets field personnel involved in all aspects of highway construction from engineers to technicians. The ideal audience will have a mix of experience and responsibility levels so that agency-specific practices can be shared by more experienced participants with those who are newer to the field. The course materials also are appropriate for project manager/resident engineer involvement.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 7 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134106

COURSE TITLE
Basic Construction Surveying

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics of construction surveying. This training has been prepared to provide guidance and instruction to those involved in construction surveying. The important surveying tasks involved in this work and the surveying procedures to be followed are also described in this training. This course is primarily intended for inspectors and technicians.

This training is targeted for those who are new to the construction surveying experience or for anyone needing a refresher. This training is recommended for the Transportation Curriculum Coordination Council levels I and II.

We've broken this training into three modules:

1. Basic Surveying Concepts
2. Measurement and Construction Surveying
3. Survey Mathematics

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe basic surveying concepts
• Understand measurement and construction surveying
• List the instruments and techniques used in measurement
• Perform stationing and staking operations
• Perform basic survey mathematics

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in construction survey. This training is targeted for those who have not had construction surveying experience or anyone needing a review over the key concepts of surveying.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 3 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134107

Course Title
Recognizing Roadside Weeds (Southeastern States)

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI and has been designed for someone learning the first steps in the vegetation management. However, it does not go into the education of weed prevention. This training is recommended for the Transportation Curriculum Coordination Council levels I, and II. This course is primarily intended for inspectors and technicians.

The first step in determining an appropriate weed control strategy is to identify the weed plant. There are numerous different plants growing along many roadways that can be considered weeds. This is a basic course in the area of weed identification. Most weeds are territorial to different climates and regions, therefore, making it difficult to identify nationally weeds that are dealt with by different State DOT's. This training does focus on southeastern states and is organized in alphabetical order of the weeds that will be covered.

For more information on how to stop the migration of weeds contact your State Vegetation Management Program.

Outcomes
Upon completion of the course, participants will be able to:
• Understand the definition of a weed
• Describe the reasons for weed control
• Identify several of the most common weeds

Target Audience
This course is designed for entry level individuals working in vegetation management.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108

Course Title
Plan Reading Series

The Transportation Curriculum Coordination Council (TCCC) in partnership with NHI is pleased to offer this comprehensive training series (FHWA-NHI-134108) for highway plan reading. This training is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training contains modules covering both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading.

To streamline registration and enable you to take some or all of these trainings when it best suits your schedule, we have created this new series option which automatically registers you for all 8 modules— it’s that easy. They are as follows:

Module 1: Highway Plan Reading Basics (134108A) - This module describes the foundational information needed to begin reading and understanding highway plans. This includes an overview of the title page and its components, station numbers, townships, and quantity estimates.

Module 2: Grading Plans (134108B) - This module reviews the information found in the Grading Plans (sheets that begin with “B”) section of a highway plan.

Module 3: Traffic Control Plans (134108C) - This module reviews the information found in the Traffic Control Plans (sheets that begin with “C”) section of a highway plan.

Module 4: Erosion and Sediment Control Plans (134108D) - This module reviews the information found in the Erosion and Sediment Control Plans (sheets that begin with “D”) section of a highway plan.

Module 5: Right of Way Plans (134108E) - This module reviews the information found in Right-of-Way Plans for a highway project.

Module 6: County Plans (134108F) - This module reviews the information found in a county plan.

Module 7: Bridge Plans (134108G) - This module reviews the information found in a bridge plan.

Module 8: Culvert Plans (134108H) - This module reviews the information found in a culvert plan.

Outcomes
Upon completion of the course, participants will be able to:

• Recognize plan sheets for highway, county, bridge, culvert construction
• Recognize station locations and calculate; cross section, profile, and plan views; centerline location; point of intersection; and a variety of plan details
• Recognize plan sheet for all parts of both a bridge substructure and superstructure
• Comprehend the terminology and symbols used when reading plans

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways, county, bridges, or culverts. It is applicable to anyone desiring a better understanding of plan reading.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 8 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134108A

COURSE TITLE
Plan Reading: Highway Plan Reading Basics

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training describes the foundational information needed to begin reading and understanding highway plans. This includes an overview of the title page and its components, station numbers, townships, and quantity estimates.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:
- FHWA-NHI-134108B Grading Plans
- FHWA-NHI-134108C Traffic Control Plans
- FHWA-NHI-134108D Erosion and Sediment Control Plans
- FHWA-NHI-134108E Right-of-Way Plans
- FHWA-NHI-134108F County Plans
- FHWA-NHI-134108G Bridge Plans
- FHWA-NHI-134108H Culvert Plans

OUTCOMES
Upon completion of the course, participants will be able to:
- Describe the components of a plan’s title sheet
- Calculate the distance between two station numbers
- Explain how a township is designated in a plan
- Identify quantity estimates for given supplies and materials

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108B

Course Title
Plan Reading: Grading Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in the Grading Plans (sheets that begin with “B”) section of a highway plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

FHWA-NHI-134108A Highway Plan Reading Basics
FHWA-NHI-134108C Traffic Control Plans
FHWA-NHI-134108D Erosion and Sediment Control Plans
FHWA-NHI-134108E Right-of-Way Plans
FHWA-NHI-134108F County Plans
FHWA-NHI-134108G Bridge Plans
FHWA-NHI-134108H Culvert Plans

Outcomes
Upon completion of the course, participants will be able to:
• Describe the information provided in the grading plans
• Identify grade characteristics provided in the typical grading sections sheets
• Explain the importance of plan and profile sheets
• Describe the different elements that can be depicted in plan and profile sheets

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A
Length: 1.5 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134108C

COURSE TITLE
Plan Reading: Traffic Control Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in the Traffic Control Plans (sheets that begin with “C”) section of a highway plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

FHWA-NHI-134108A Highway Plan Reading Basics
FHWA-NHI-134108B Grading Plans
FHWA-NHI-134108D Erosion and Sediment Control Plans
FHWA-NHI-134108E Right-of-Way Plans
FHWA-NHI-134108F County Plans
FHWA-NHI-134108G Bridge Plans
FHWA-NHI-134108H Culvert Plans

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe the information provided in the traffic control plans
• Identify signs to be used in the project
• Identify sign locations

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: .5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108D

Course Title
Plan Reading: Erosion and Sediment Control Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in the Erosion and Sediment Control Plans (sheets that begin with “D”) section of a highway plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

- FHWA-NHI-134108A Highway Plan Reading Basics
- FHWA-NHI-134108B Grading Plans
- FHWA-NHI-134108C Traffic Control Plans
- FHWA-NHI-134108E Right-of-Way Plans
- FHWA-NHI-134108F County Plans
- FHWA-NHI-134108G Bridge Plans
- FHWA-NHI-134108H Culvert Plans

Outcomes

Upon completion of the course, participants will be able to:

- Describe the information provided in the erosion and sediment control plans
- Explain the erosion and sediment control items used in the plan

Target Audience

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: .5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108E

Course Title
Plan Reading: Right-of-Way Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in right-of-way plans for a highway project.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

FHWA-NHI-134108A Highway Plan Reading Basics
FHWA-NHI-134108B Grading Plans
FHWA-NHI-134108C Traffic Control Plans
FHWA-NHI-134108D Erosion and Sediment Control Plans
FHWA-NHI-134108F County Plans
FHWA-NHI-134108G Bridge Plans
FHWA-NHI-134108H Culvert Plans

Outcomes
Upon completion of the course, participants will be able to:

- Explain the purpose of right-of-way plans
- Explain when right-of-way is needed
- Describe the information provided in right-of-way plans
- Describe when land is acquired for easements
- Explain how parcels are used in right-of-way plans
- Describe how utilities will be handled for the project

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108F

Course Title
Plan Reading: County Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in a county plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

- FHWA-NHI-134108A Highway Plan Reading Basics
- FHWA-NHI-134108B Grading Plans
- FHWA-NHI-134108C Traffic Control Plans
- FHWA-NHI-134108D Erosion and Sediment Control Plans
- FHWA-NHI-134108E Right-of-Way Plans
- FHWA-NHI-134108G Bridge Plans
- FHWA-NHI-134108H Culvert Plans

Outcomes

Upon completion of the course, participants will be able to:

- Describe the information provided in a county plan
- Given a county plan, explain the details of the project

Target Audience

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134108G

COURSE TITLE
Plan Reading: Bridge Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in a bridge plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

- FHWA-NHI-134108A Highway Plan Reading Basics
- FHWA-NHI-134108B Grading Plans
- FHWA-NHI-134108C Traffic Control Plans
- FHWA-NHI-134108D Erosion and Sediment Control Plans
- FHWA-NHI-134108E Right-of-Way Plans
- FHWA-NHI-134108F County Plans
- FHWA-NHI-134108H Culvert Plans

OUTCOMES
Upon completion of the course, participants will be able to:
- Identify the major components of a bridge structure
- Describe the information provided in a bridge plan
- Using a bridge plan, explain details of the project

TARGET AUDIENCE
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134108H

Course Title
Plan Reading: Culvert Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in a culvert plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

- FHWA-NHI-134108A Highway Plan Reading Basics
- FHWA-NHI-134108B Grading Plans
- FHWA-NHI-134108C Traffic Control Plans
- FHWA-NHI-134108D Erosion and Sediment Control Plans
- FHWA-NHI-134108E Right-of-Way Plans
- FHWA-NHI-134108F County Plans
- FHWA-NHI-134108G Bridge Plans

Outcomes
Upon completion of the course, participants will be able to:
- Identify the major components of a culvert
- Describe the information provided in a culvert plan
- Using a culvert plan, explain details of the project

Target Audience
This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109

Course Title
Maintenance Training Series

The Maintenance Training Series was created to train individuals responsible for the maintenance of our Nation’s roadways. The series consists of 11 self-paced, Web-based trainings (WBTs) on various maintenance operations topics, ranging from the conceptual (pavement preservation) to the practical (management of underground storage tanks). The trainings included in the series are listed below and each will take approximately 1 hour to complete.

Participants who wish to complete all 11 trainings in the Maintenance Training Series should enroll in course 134109. Those who are interested in specific topics may enroll in each training individually.

- Pavement Preservation Program (134109A)
- Shaping and Shoulders (134109B)
- Thin HMA Overlays and Leveling (134109C)
- Base and Subbase Stabilization and Repair (134109D)
- Drainage (134109E)
- Outdoor Advertising and Litter Control (134109F)
- Roadside Vegetation Management (134109G)
- Weather-related Operations (134109H)
- Basics of Work Zone Traffic Control (134109I)
- Underground Storage Tanks (134109J)
- Cultural and Historic Preservation (134109K)

Outcomes
Upon completion of the course, participants will be able to:

• Learning outcomes have been established at the module level. Please see the individual modules for the specific learning outcomes.

Target Audience
This course was designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance over broader geographic areas. The target audience is also involved with handling materials, scheduling, budgeting and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 11 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109A

Course Title
Maintenance Training Series: Pavement Preservation Program

Pavement preservation represents a major paradigm shift in the way many transportation agencies view and operate their highway networks. The Pavement Preservation Programs course provides basic information on what comprises a pavement preservation program and how it is implemented. It places particular emphasis on changes in practice and assignment of dedicated funding.

Additionally, the training covers the benefits and challenges to a preservation program; Federal and State resources available to support a preservation program; and approaches for communicating the advantages of pavement preservation to stakeholders.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:
• Identify the benefits and challenges of implementing a pavement preservation program
• Determine ways to develop support for a pavement preservation program

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
 COURSE NUMBER
FHWA-NHI-134109B

 COURSE TITLE
Maintenance Training Series: Shaping and Shoulders

Shoulders play an important role in both pavement performance and roadway safety. Maintaining shoulders in a proper and timely manner is a primary goal of transportation agencies. In an effort to assist agencies in meeting this goal, the Shaping and Shoulders training provides information on the maintenance of both paved and unpaved shoulders, including specific details on the maintenance of gravel shoulders. This course is primarily intended for inspectors and technicians.

In addition to a discussion of the various types of shoulders, project selection considerations, and key maintenance issues, this training places shoulders and shaping into the context of an overall maintenance and pavement preservation program.

This training was developed as part of the Maintenance Training Series. To access all the trainings in the series, enroll in the 134109 course.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify desirable characteristics of various types of shoulders
• Identify project selection considerations for shaping and shoulders
• Describe shoulder shaping and blading activities, including equipment requirements and construction activities
• Describe how a shoulder and ditching program forms the core of the overall maintenance and pavement preservation program

TARGET AUDIENCE
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

TRAINING LEVEL: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109C

Course Title
Maintenance Training Series: Thin HMA Overlays and Leveling

Thin HMA overlays and leveling are common pavement treatments and can be a central part of a maintenance crew's activities. During the Thin HMA Overlays and Leveling training, participants will be introduced to the characteristics and purposes of thin HMA overlays as well as the placement of leveling courses. Each of these techniques is capable of improving the functionality of an otherwise structurally sound pavement.

The training also covers information on the materials, personnel, and equipment needed for thin HMA overlays; items that should be considered when making project selection decisions; and guidance on proper mixture compaction. This information is designed to help participants improve project planning and execution for thin HMA overlays and leveling treatments.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Determine the purpose of thin HMA overlays and leveling courses
• Identify material components of HMA overlays
• Identify personnel and equipment needed for HMA overlays and leveling construction
• Identify project selection considerations for thin HMA overlays and leveling
• Identify how this treatment can be incorporated into an overall system preservation program

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109D

Course Title
Maintenance Training Series: Base and Subbase Stabilization and Repair

Before preservation treatments can be applied, localized repairs may be necessary for a pavement's base or subbase. The Base and Subbase Stabilization and Repair course gives participants the knowledge they need to determine if the base or subbase must be stabilized or repaired, to select the appropriate stabilization and repair methods for a given project, and to ensure the repair is performed properly.

This training reviews the failures and distresses that indicate structural deterioration exists in a roadway. The course also covers project selection and trade-off considerations through example roadway projects that give participants the opportunity to evaluate a roadway and determine if it is a candidate for reconstruction or repair. Participants can use this information, as well as guidance on design and construction, to make sound project planning decisions.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Identify the symptoms of a localized base or subbase problem, which require greater depth of stabilization and repair than a hot-mix asphalt (HMA) or portland cement concrete (PCC) surface repair patch
• Determine when it is appropriate to employ base or subbase repair on a preventive maintenance project
• Identify the most appropriate repair methods if base or subbase failures are identified in a project

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A
Length: 1 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109E

Course Title
Maintenance Training Series: Roadway Drainage

Shoulder, ditch, and pipe or culvert maintenance activities are performed frequently throughout the year. These activities are critical for avoiding hazardous roadway conditions and extending the life of pavements by controlling water flow along maintainable pathways. This course, Roadway Drainage, provides information on the purpose, function, and components of roadway drainage systems.

This course reviews the components of shoulders and ditches, the purpose of a roadway drainage inventory, and the permits used in roadway drainage maintenance. Examples of existing drainage inventories are provided. In addition, the benefits of proper water removal are discussed through examples of drainage system issues, such as ponding and washouts, in order to emphasize the connection between good drainage and roadway safety.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:
• Identify the purpose and function of roadway drainage systems
• Identify eight components of roadway drainage systems
• Identify the purpose of a roadway drainage inventory
• Identify the purpose of permits in roadway drainage maintenance
• Identify the components of shoulders and ditches

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 1 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134109F

COURSE TITLE
Maintenance Training Series: Outdoor Advertising and Litter Control

The Highway Beautification Act (HBA) of 1965 mandated a state program, based on Federal rules and regulations, for improving motorists’ visual experiences on the roadway. The HBA affects billboards and advertisements along State roadways. The Outdoor Advertising and Litter Control course familiarizes maintenance personnel with the rules and regulations governing placement and control of outdoor advertising along highway rights-of-way to ensure they are in compliance with the standards stipulated in the HBA. Additionally, the course covers litter control safety for public groups assisting State DOTs in litter pickup.

Participants learn about the rules and regulations for maintaining and controlling outdoor advertising, guidance on administering an outdoor advertising program, the steps involved in the permitting process, and appropriate actions for non-compliance by sign owners. Additionally, participants are encouraged to compare the standards outlined in the HBA to their State’s rules and regulations, which may include stricter provisions than those in the HBA.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify Federal and State regulations, laws, ordinances, guidelines, and policies governing outdoor advertisement placement
• Describe the permit process
• Describe the role of the maintenance supervisor in outdoor advertising control

TARGET AUDIENCE
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: .5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-134109G

**Course Title**
Maintenance Training Series: Roadside Vegetation Management

Vegetation management is much more than routine mowing of grass and trimming of bushes and trees. The Roadside Vegetation Management course explains the need for and purpose of good vegetation management. The course also underscores why vegetation management is a critical part of a roadway maintenance program.

Participants learn about equipment and herbicides used for vegetation management, including an overview of mechanical vegetation control and the environmental controls and precautions needed when using herbicides as part of a noxious weed control program.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

**Outcomes**
Upon completion of the course, participants will be able to:
- Describe why vegetation control is important to roadway safety and performance
- Identify the types of equipment used for mechanical vegetation control
- Identify types of herbicide vegetation management methods, their use, environmental control, and precautions
- Describe the requirements of a noxious weed control program

**Target Audience**
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 1 HOURS (CEU: 0 UNITS)

**Class Size:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109H

Course Title
Maintenance Training Series: Weather-related Operations

Storm control is a major component of roadway maintenance in many areas of the country. State, municipal, and county agencies are responsible for providing safe, passable roadways even in severe weather. While the majority of the Weather-related Operations course concentrates on snow and ice storms, many of the elements apply to other weather events as well. Tornadoes, hurricanes, and flooding all require coordination and dedication of maintenance personnel. In any weather event, agencies need to restore roadways and bridges and to ensure they are safe for motorists.

Participants learn about the planning requirements for an effective storm response, including scheduling and training personnel, identifying equipment needs, executing dry runs, and the additional requirements posed by a multi-day storm event. This training assists participants with planning and responding effectively to all weather-related operations.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

- Identify the elements of an effective storm response plan
- Identify factors involved in scheduling personnel needs
- Identify safety and training considerations for maintenance personnel who are involved in weather-related operations
- Identify the types of equipment used in a snow and ice removal plan and their uses
- Describe how to identify equipment needs for a particular storm

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109I

Course Title
Maintenance Training Series: Basics of Work Zone Traffic Control

Meeting the national requirements for work zone traffic control is a critically important responsibility of maintenance personnel. The national requirements, found in Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD), promote driver and worker safety during roadway maintenance projects. This training, Basics of Work Zone Traffic Control, provides an introduction to the requirements outlined in Part 6 of the 2009 MUTCD. The course also offers an overview of the manual's structure and requirements regarding traffic control devices and their applications, flagging operations and procedures, and pedestrian and worker safety.

Through a series of work zone scenarios, this training uses the MUTCD Part 6 to review fundamental concepts of setting up work zones, including proper signage, taper lengths, and flagging procedures. Participants are encouraged to compare their State's standards, if available, to the guidance established in the MUTCD and determine what additional requirements may need to be met to establish safe, compliant work zones.

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the content and use of The Manual on Uniform Traffic Control Devices (MUTCD) Part 6
• Use the MUTCD to correctly answer questions about the basics of work zone traffic control
• Differentiate among standard, guidance, and option conditions in the MUTCD
• Differentiate among standard, guidance, and option conditions in the MUTCD for work zone traffic control in rural and urban areas

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134109J

COURSE TITLE
Maintenance Training Series: Underground Storage Tanks

The Nation’s underground storage tank (UST) systems consist of underground tanks and piping that store petroleum and other hazardous materials. This course, Underground Storage Tanks, addresses the procedures to install, operate, and remove USTs.

Developed specifically for maintenance personnel, this course provides participants with an understanding of the Federal laws and regulations that govern UST systems. During the course, participants acquire the knowledge needed to successfully oversee UST installations and closures. Specifically, the course explores the requirements of industry installation and closure codes, leakage detection, spill and overfill prevention, corrosion protection, and ensuring a “clean” closure.

This training was developed as part of the Maintenance Training Series. To access all the trainings in the series, enroll in the 134109 course.

OUTCOMES
Upon completion of the course, participants will be able to:

- Describe the regulatory framework governing the operation of underground storage tanks
- Describe UST operations
- Describe the process that must be followed to obtain satisfactory “clean closure” from the appropriate oversight agency
- Describe UST cleanup and removal operations

TARGET AUDIENCE
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109K

Course Title
Maintenance Training Series: Cultural and Historic Preservation

Cultural and historic sites are often located within an area where maintenance activities are scheduled to be completed. This training, Cultural and Historic Preservation, is teaches participants about regulations and concerns related to safeguarding cultural and historic sites from the potential impacts of highway maintenance activities. Examples of maintenance activities that can impact cultural or historic sites include slope stabilization, shoulder or pavement widening, and vegetation control. Additional examples are presented during the course.

This course assists participants with recognizing potential historic or cultural resources, verifying a site’s cultural or historic status, and avoiding impacts to sites when carrying out maintenance activities. Since completing these tasks often requires additional expertise, resources for obtaining needed assistance are provided. In addition, participants learn how maintenance activities can enhance cultural and historic sites through utilization of Context Sensitive Solutions (CSS).

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:

• Identify governing bodies and registries that should be consulted prior to commencing maintenance activities on sites of cultural and historic importance
• Recognize what sorts of structures, landmarks, and properties could pose potential cultural and historic preservation issues
• Describe how to avoid impacts to historic sites
• Describe the role of DOT in maintaining and enhancing cultural resources

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134114

Course Title
Inspector Training for Cold In-Place Recycling (CIR)

Cold In-place Recycling (CIR) is a method of reconstructing any flexible pavement where the need arises from structural failures. These failures include: transverse cracking, wheel rutting, potholes, surface irregularities, or a combination of the above.

The proper selection of a CIR process in conjunction with good specifications and quality construction are all equally important in the long-term performance of the pavement rehabilitation.

This series on CIR will introduce each method and provide a background on when, how, and why that method is selected/used.

This training is meant to provide an overview of CIR, including an explanation of the pre-production inspection, completing the control strip, full production of the mix, mix placement, curing and maintenance, acceptance testing, and measurement and payment. This course contains 3 modules:

Module 1: Introduction to Cold In-Place Recycling
Module 2: Cold In-Place Recycling Full Production
Module 3: Cold In-Place Recycling Post Production

This course will provide the inspector with a background and proper inspection procedures when placing cold-in-place hot mix asphalt.

Outcomes
Upon completion of the course, participants will be able to:
• Explain what Cold In-Place Recycling (CIR) is, and why it is used
• Describe what happens during pre-production
• Explain how the control strip helps determine compaction procedures and why it is needed
• Identify the factors that can influence a CIR mix
• Describe important considerations during placement, compaction, and finishing
• Explain the importance of curing and maintenance on the quality of a CIR surface
• Describe what happens once the surface is finished

Target Audience
This training is designed for Local, County, and State owner agency technicians/inspectors. It is also useful for individuals who need awareness or basic understanding of cold in-place recycling. This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO, NHI, and is recommended for TCCC levels II through IV.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 4 Hours (CEU: 0 Units)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134204

COURSE TITLE
Construction of Mechanically Stabilized Earth (MSE) Walls

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI.

This training contains a collection of best practices from various agencies, including FHWA training rules, laws, policies, and procedures.

This Web-based training course begins with an overview of MSE walls: why we use them; how they work; and how they are constructed. The course emphasizes the need for inspection and explores practices to help improve inspection techniques. Participants examine the roles of the inspector, engineer, and contractor and study relevant safety procedures. The course materials present considerations for design and information contained in a geotechnical report. This course also familiarizes participants with typical project drawings and typical specifications.

The course duration is approximately 5 hours. The ten individual modules do not need to be completed at one time.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify the four major components of a MSE wall
• Describe the basic construction sequence for MSE
• Describe why MSE wall construction inspection is needed
• Describe the appropriate applications of MSE walls
• Describe the advantages and limitations of MSE walls
• Describe the basic design concepts used during construction
• Describe the failure modes analyzed during design
• Describe the key sections of the geotechnical report
• Describe how the geotechnical report can help familiarize the MSE wall inspector with site conditions
• Describe how reviewing the geotechnical report can help mitigate construction problems and delays
• Describe the differences between plan, elevation, and cross-section view drawings
• Describe the differences between, and the details included within, shop and contract drawings
• Identify how each type of drawing illustrates where and how MSE walls, and associated or adjacent parts, are constructed
• Describe construction inspectors’ responsibilities before and during excavation
• Describe foundation preparation techniques necessary for addressing field conditions
• Identify the components of a welded wire faced MSE wall
• Describe the construction steps for a welded wire faced MSE wall
• Describe equipment and procedures necessary to prepare concrete panels for construction of a MSE wall
• Describe the steps in constructing MSE walls with concrete panel facing
• Describe the sections within the specifications document
• Identify the relevant information contained within each specification section

TARGET AUDIENCE
This training is ideal for highway construction teams, specifically the highway workers and inspectors involved in the construction of MSE walls. This training is recommended for the Transportation Curriculum Coordination Council levels II, III, and IV.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 500

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134206

COURSE TITLE
Rockfall Stabilization

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI. This course will introduce the key concepts in rockfall stabilization, including tools and methods used in stabilization and reinforcement. The purpose of this course is to familiarize the construction inspector with current techniques utilized in stabilizing rock slopes with respect to rockfall. This course contains six modules:

Module 1: Introduction
Module 2: Scaling
Module 3: Rock Reinforcement and Drainage
Module 4: Surface Stabilization
Module 5: Rockfall Containment Systems on Slope
Module 6: Rockfall Barriers Along Edge of Road

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe scaling methods and techniques
• Identify and explain reinforcement strategies and the need for drainage
• Describe surface stabilization methods
• Identify and explain different types of rockfall containment systems and barriers
• Identify hand scaling, mechanical scaling, and trim blasting and describe the tools that are used
• Explain typical types of rock reinforcement and how they work
• Explain horizontal drains and grouting
• Explain the types of rock reinforcement testing
• Describe and identify types of surface stabilization
• Describe the application of wet-mix and dry-mix shotcrete
• Identify and explain high tensile strength wire mesh, draped wire mesh, and cable net
• Identify and explain mid-slope attenuator fences and flexible rockfall fences

TARGET AUDIENCE
Federal, State, and local highway agency employees and consultant personnel who are involved in the stabilization of rock slopes, as well as construction inspectors responsible for rockfall stabilization, may benefit from this course.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207

Course Title
Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series

These web-based trainings are available in both English and Spanish!

Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses; each highlights a specific preservation technique:

-How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207A)
-How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207B)
-Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207C)
-Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207D)
-Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207E)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Each of the Web-based training products is also available as a standalone course that can be accessed by registering for the individual course number listed above.

Outcomes
Upon completion of the course, participants will be able to:

• Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
• Describe the best practice for installing dowel bars
• List the criteria for determining whether full-depth repairs are of sufficient quality
• List important safety considerations in performing full-depth repairs
• Explain what a partial-depth repair is, and when it is performed
• Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
• List important safety considerations in performing partial-depth repairs
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommend procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 13.5 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207A

Course Title
How to Construct Durable Full-Depth Repairs in Concrete Pavements

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course provides a comprehensive guide for performing full-depth repairs—from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:

• Explain the purpose of full-depth repairs
• Identify pavement problems that full-depth concrete pavement repairs can and cannot address
• Describe proper project review and material checks for a preservation job involving full-depth repair
• Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Explain how patching materials are selected for full-depth repair
• Describe the patch material mixing and handling factors that impact the quality of the repair
• Describe the different types of perimeter joint faces for transverse and longitudinal joints
• List important considerations for sawing perimeter joints
• Explain how deteriorated concrete can be removed from the repair area
• List the steps you can take to minimize damage to surrounding pavement when removing concrete
• Describe how to prepare the repair area for new concrete
• Define load transfer
• Describe important considerations for installing dowel bars for full-depth repairs
• List the three ways to connect longitudinal steel for CRCP full-depth repairs
• Explain how to handle the longitudinal joints in longer and shorter patches
• Explain the steps required to place, finish, and cure the concrete for a full-depth repair
• Describe the texturing methods used to match the patch texture with the surrounding pavement
• Explain the steps for sealing the patch perimeter joints
• Explain the difference between quality control and acceptance, including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207B

Course Title
How to Construct Durable Partial-Depth Repairs in Concrete Pavements

This course provides a comprehensive guide for performing partial-depth repairs—from planning for, preparing, and evaluating the patch through testing and quality assurance after construction is complete. Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated (or spalled) concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional.

This important preservation technique can slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course covers all of the considerations for partial-depth repairs including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

You will discover detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. The instructional methods in this Web-based training include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:
• Explain what a partial-depth repair is, and why it is used
• Identify the types of distresses that partial-depth repair can and cannot address
• Describe the three types of partial-depth repairs used to replace deteriorated concrete
• Describe proper project review and material checks for a preservation job involving partial-depth repair
• Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
• Identify which methods are appropriate for the different types of partial-depth repairs
• Describe how to prepare the existing slab for repair material
• Identify the materials used in a partial-depth repair
• List the factors that influence repair mixture selection
• Identify when compression relief is necessary for a partial-depth repair project
• Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
• List the four major steps for properly placing the patching material
• Explain the process for completing the patch
• Explain the difference between quality control and acceptance, including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 2.5 Hours (CEU: 0 Units)

**Class Size:** Minimum: 0; Maximum: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134207C

COURSE TITLE
Proper Diamond Grinding Techniques for Pavement Preservation

This course provides how-to instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique. However, this depends on the conditions and characteristics of the specific project.

You will benefit from short, focused, and task-based lessons and visual aids that reinforce content by showing its relevance to work in the field.

OUTCOMES
Upon completion of the course, participants will be able to:
• Explain what diamond grinding is, and why it is used
• Explain how diamond grinding equipment works
• Describe the steps to take to prepare for diamond grinding on a project
• List the components of the cutting head
• Describe how blade selection impacts grinding success
• Explain basic procedures for safely operating diamond grinding equipment
• Determine when specialized equipment may be necessary
• Explain how to measure head wear
• Define slurry
• Describe how slurry is picked up and disposed of during diamond grinding operations
• Name the diamond grinding machine’s systems and their components
• Identify the system to which each part of the diamond grinding machine belongs
• Describe the function of each part or system on a diamond grinding machine
• Describe how diamond grinding is used to affect road smoothness, noise, and friction
• Explain what Next Generation Concrete Surfacing (NGCS) is, and when it is used
• List considerations for grinding on city streets
• Identify quality issues that can occur during diamond grinding
• Explain how diamond grinding quality issues can be prevented or addressed
• Identify issues that cannot be controlled by the contractor and require owner consideration and input
• Describe the equipment used in diamond grooving operations
• Explain how the diamond grooving texture is achieved

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207D

Course Title
Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching

This course provides how-to instruction that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks in order to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices, or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that are task-based, and contain detailed visual aids and videos, reinforcing content so that it can be directly applied to work in the field.

Outcomes
Upon completion of the course, participants will be able to:

• Explain what dowel bar retrofitting and cross-stitching are, and why they are used
• Define load transfer
• Describe the steps you should take to prepare for a project involving DBR or cross-stitching
• Explain the basic components of DBR and cross-stitching projects
• Describe how to determine the size of the components for both DBR and cross-stitching
• Determine the proper locations to use DBR and cross-stitching for different pavement distresses
• Identify the materials used in DBR and cross-stitching operations
• List the important factors in selecting materials for DBR and cross-stitching
• Explain how slots are created and prepared for a DBR project
• Describe how dowel bars should be placed in the slot
• Explain how the backfill material is placed and finished
• Explain how to drill and clean holes for cross-stitching
• Describe the process for installing tie bars
• Explain the procedures for finishing the cross-stitching project
• Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
• List important quality considerations for DBR and cross-stitching projects

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

NHI Training Information: (877) 558-6873 • Fax (703) 235-0577
Proper Joint Sealing Techniques for Pavement Preservation

In this course you will find detailed, “how-to” instruction that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons are task-based in nature and contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement’s acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available and which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the specific, sequential tasks required to properly perform joint sealing?

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe what joint sealing is
- Explain why joints are sealed
- List considerations for preparing for and keeping safe on a joint sealing project
- Describe the materials used in a joint or crack sealing project and their differences
- Describe the standard details used for joint or crack sealing installations
- Identify equipment used for sawing and sealing or resealing joints and cracks
- Describe the purpose of each piece of equipment and how it works
- Explain how a joint or crack is prepared for sealing
- Describe the process for installing the backer rod (if it is used)
- Explain how the sealant or seal is installed
- Describe procedures for applying a penetrating concrete sealer
- Describe procedures for repairing hairline, minor random, and wide cracks
- List important quality considerations for joint sealing projects
- Describe quality control methods you can use to make sure a sealant reservoir is ready for sealant installation and the sealant is installed properly
- Describe how sealant installations are inspected for quality assurance and acceptance
- Identify the distresses or problems that occur with joint sealants and seals
- Explain the steps to take during formed-in-place sealant or compression seal installation

TARGET AUDIENCE

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. The primary audience is contractors. This course will appeal to individuals in the following roles: construction supervisors, workers, and
technicians; agency inspectors and construction managers; and engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 4 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

*NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov*
Course Number
FHWA-NHI-134207F

Course Title
How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course, presented in Spanish, provides a comprehensive guide for performing full-depth repairs—from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes
Upon completion of the course, participants will be able to:

• Explain the purpose of full-depth repairs
• Identify pavement problems that full-depth concrete pavement repairs can and cannot address
• Describe proper project review and material checks for a preservation job involving full-depth repair
• Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Explain how patching materials are selected for full-depth repair
• Describe the patch material mixing and handling factors that impact the quality of the repair
• Describe the different types of perimeter joint faces for transverse and longitudinal joints
• List important considerations for sawing perimeter joints
• Explain how deteriorated concrete can be removed from the repair area
• List the steps you can take to minimize damage to surrounding pavement when removing concrete
• Describe how to prepare the repair area for new concrete
• Define load transfer
• Describe important considerations for installing dowel bars for full-depth repairs
• List the three ways to connect longitudinal steel for CRCP full-depth repairs
• Explain how to handle the longitudinal joints in longer and shorter patches
• Explain the steps required to place, finish, and cure the concrete for a full-depth repair
• Describe the texturing methods used to match the patch texture with the surrounding pavement
• Explain the steps for sealing the patch perimeter joints
• Explain the difference between quality control and acceptance including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.
**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 3 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207G

Course Title
How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find a comprehensive guide for performing partial-depth repairs from planning, preparing, and evaluating the patch through testing and quality assurance after construction is complete.

Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated, or spalled, concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional. The technique is an important preservation technique to slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course will cover all of the considerations, including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

Specifically, you’ll learn how to employ successful practices and techniques on concrete pavement preservation projects. The following questions are answered in this course:

Why is the technique an important part of concrete pavement preservation?
What options are available for performing the construction processes and procedures?
Which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the proper techniques for mixing, placing, and curing?

Outcomes
Upon completion of the course, participants will be able to:
• Explain what a partial-depth repair is and why it is used
• Identify the types of distresses that partial-depth repair can and cannot address
• Describe the three types of partial-depth repairs used to replace deteriorated concrete
• Describe proper project review and material checks for a preservation job involving partial-depth repair
• Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
• Describe the criteria for selecting repair locations and boundaries
• Explain what to do if you think the boundaries are marked incorrectly
• Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
• Identify which methods are appropriate for the different types of partial-depth repairs
• Describe how to prepare the existing slab for repairs
• Identify the materials used in a partial-depth repair
• List the factors that influence repair mixture selection
• Identify when compression relief is necessary for a partial-depth repair project
• Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
• List the four major steps for properly placing the patching material
• Explain the process for completing the patch
• Explain the difference between quality control and acceptance, including who is responsible
• Describe the tests that may be used for acceptance and opening to traffic

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 3 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
 Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)

In this course, presented in Spanish, you will find “how-to” instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations. Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique; however, this depends on the conditions and characteristics of the specific project.

This course contains short, focused, task-based lessons that include detailed visual aids and videos, which reinforce the content so you can apply new knowledge directly to your work in the field.

Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will explore these questions:

- Why is the technique an important part of concrete pavement preservation?
- What options are available for performing the construction processes and procedures?
- Which options provide the best opportunities for success?
- What materials are involved in the techniques?
- What are the proper techniques for mixing, placing, and curing?
- What are the specific, sequential tasks required to properly perform each of the techniques?

OUTCOMES

Upon completion of the course, participants will be able to:

- Explain what diamond grinding is and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine’s systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is and when it is used;
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input
• Describe the equipment used in diamond grooving operations
• Explain how the diamond grooving texture is achieved

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

TRAINING LEVEL: Basic

FEES: 2020: $0 Per Person; 2021: N/A

LENGTH: 3 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)

This course is in Spanish.

This course provides “how-to” instruction in Spanish that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that include detailed instructions along with visual aids and videos that reinforce the content so you can apply it directly to your work in the field. Take this course to find answers to these questions:

Why is the technique an important part of concrete pavement preservation?
What options are available for performing the construction processes and procedures?
Which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the proper techniques for mixing, placing, and curing?
What are the specific, sequential tasks required to properly perform each of the techniques?

OUTCOMES

Upon completion of the course, participants will be able to:

- Explain what dowel bar retrofitting and cross-stitching are, and why they are used
- Define load transfer
- Describe the steps you should take to prepare for a project involving DBR or cross-stitching
- Explain the basic components of DBR and cross-stitching projects
- Describe how to determine the size of the components for both DBR and cross-stitching
- Determine the proper locations to use DBR and cross-stitching for different pavement distresses
- Identify the materials used in DBR and cross-stitching operations
- List the important factors in selecting materials for DBR and cross-stitching
- Explain how slots are created and prepared for a DBR project
- Describe how dowel bars should be placed in the slot
- Explain how the backfill material is placed and finished
- Explain how to drill and clean holes for cross-stitching
- Describe the process for installing tie bars
- Explain the procedures for finishing the cross-stitching project
- Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
- List important quality considerations for DBR and cross-stitching projects

TARGET AUDIENCE

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and...
construction managers; and engineers.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 3 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207J

Course Title
Proper Joint Sealing Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course you will find detailed, “how-to” instruction in Spanish that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement’s acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

Why is the technique an important part of concrete pavement preservation?
What options are available and which options provide the best opportunities for success?
What materials are involved in the techniques?
What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes
Upon completion of the course, participants will be able to:

• Explain what joint or crack sealing is, and when it should be performed;
• List important safety considerations when working on joint sealing projects;
• Explain how to prepare for joint sealing;
• Describe recommended materials and equipment used in joint sealing;
• Describe recommended construction procedures and process steps for joint sealing;
• Describe recommend procedures for repairing cracks;
• List the criteria for determining whether joint sealing results are of sufficient quality; and
• Identify typical problems encountered and how to avoid or resolve these issues.

Target Audience
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134207S

Course Title
Constructing Quality PCC Pavement Preservation Treatments: The Five-Course Series (Spanish)

These web-based trainings are available in both English and Spanish!

Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses in Spanish; each highlights a specific preservation technique:

- How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207F)
- How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207G)
- Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207H)
- Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207I)
- Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207J)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

Upon completion of the course, participants will be able to:

- Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
- Describe the best practice for installing dowel bars
- List the criteria for determining whether full-depth repairs are of sufficient quality
- List important safety considerations in performing full-depth repairs
- Explain what a partial-depth repair is, and when it is performed
- Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
• List important safety considerations in performing partial-depth repairs
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommended procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 13 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380108

COURSE TITLE
Maintenance of Drainage Features for Safety - WEB-BASED

The purpose of this training is to highlight common roadway drainage problems that can cause an unsafe condition and suggest inspection methods and corrective action. Maintaining roadway drainage is important for safety and for ensuring the long life of the roadway by preventing erosion of the roadway, saturation of the subbase, and damage to roadway structures. The training is broken into two modules:

Module 1: Effects of Drainage describes common roadway safety hazards and how to recognize drainage problems.
Module 2: Safe Drainage Features and Work Zones covers solutions to common roadway safety issues and work zone safety.

This training is not intended to be a design guide. Participants may want to contact their State Local Technical Assistance Program (LTAP) for more details on drainage design.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify problems created by ponding and standing water on the roadway
• Describe safety issues related to ditches and side slopes
• Describe how drainage features can become safety hazards
• Identify methods for identifying drainage problems
• Recall conditions to look for during field inspections
• Explain how to fix or prevent common roadway side slope problems
• Describe work zone safety procedures

TARGET AUDIENCE
This training is intended to help local road agency maintenance workers understand the importance of maintaining and upgrading drainage features on their road system to avoid an unsafe condition.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-135085

COURSE TITLE
Plan of Action (POA) for Scour Critical Bridges - WEB-BASED

This course supports an FHWA-wide priority and is brought to you at no cost by the Office of Bridges and Structures. This web-based training (WBT) provides guidance on developing a Plan of Action (POA) for scour critical bridges. It highlights the history of the POA requirement and recommends management and inspection strategies for POA development. The WBT also introduces the FHWA POA Standard Template and illustrates the use of the POA via a case study of a scour critical bridge in a riverine setting.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the purpose of a Plan of Action (POA) for a scour critical bridge
• Identify strategies for developing and implementing a POA
• Describe the sections of the POA Standard Template

TARGET AUDIENCE
Federal, State, and local bridge owners responsible for developing Plan of Actions (POA) for scour critical bridges.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-135086

COURSE TITLE
Stream Stability Factors and Concepts (Prerequisite) WEB-BASED

This training is a prerequisite of another NHI training and is offered at no cost.

This course is intended to help participants understand river processes and stream stability factors and concepts as a prerequisite for NHI Courses 135046, 135047, 135048. Participants will also be introduced to the concepts of water and sediment continuity.

OUTCOMES
Upon completion of the course, participants will be able to:

• After completing this course participants will be able to describe the factors influencing stream stability that are important to a bridge scour evaluation, and define water and sediment continuity concepts.

TARGET AUDIENCE
Federal, State, and local highway hydraulic, structural, and geotechnical engineers and bridge inspectors responsible for maintaining the integrity of highway bridges against possible hydraulic-related problems. Consultants who do bridge engineering work are also encouraged to take this prerequisite.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-135087

COURSE TITLE
Scour at Highway Bridges: Concepts and Definitions (Prerequisite) WEB-BASED

This training is a prerequisite of another NHI training and is offered at no cost.

This course has been designed to provide an introduction to scour as a prerequisite for NHI courses 135046, 135047, and 135048.

OUTCOMES
Upon completion of the course, participants will be able to:

• Define scour
• Define total scour and each of its three components
• Characterize the time dependency of scour
• Distinguish between live-bed and clear-water scour

TARGET AUDIENCE
Federal, State, and local highway hydraulic, structural, and geotechnical engineers and bridge inspectors responsible for maintaining the integrity of highway bridges against possible hydraulic-related problems. Consultants who do bridge engineering work are also encouraged to take this prerequisite.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-135091

Course Title
Basic Hydraulic Principles Review (WBT)

Basic Hydraulic Principles Review is designed to familiarize participants with the background concepts, theories, and equations associated with basic hydraulic principles routinely used in highway engineering. NHI strongly suggests that participants complete this self-paced Web-based training (WBT) before attending any Instructor-led hydraulics courses. To fully understand the material presented in NHI hydraulics courses, participants must have an understanding of the basic hydraulic principles presented in this course.

In this course, “hydraulics” is considered to be the determination of various properties and characteristics of flowing water. Such determinations are essential for quantifying the nature of water flow under various conditions. This includes natural features such as streams and rivers, as well as man-made structures such as: bridges, drainage ditches, pipes, culverts, weirs, and spillways.

This WBT consists of three main lessons: Fundamental Concepts, Steady Uniform Flow, and Steady Non-Uniform Flow. After each lesson, knowledge check questions will be presented to test participants’ understanding of the material presented in the lesson. The fundamental principles of hydraulics are used as a basis for designing new structures, as well as determining the flow capacity of existing structures.

135091 Basic Hydraulic Review (WBT) is a prerequisite for ILT courses 135010 (River Engineering), 135041 (HEC-RAS), 135046 (Stream Stability and Scour), and 135056 (Culvert Design). Mastery of the concepts covered in this WBT is important to successful completion of the Instructor-led training.

Outcomes
Upon completion of the course, participants will be able to:
• Define fundamental hydraulic concepts of open-channel flow
• Identify steady uniform flow conditions
• Describe the equations used for steady uniform flow
• Identify steady non-uniform flow conditions
• Describe the equations used for steady non-uniform flow

Target Audience
The primary target audience includes Federal and State Department of Transportation Hydraulic Engineering Units and consultants. The course is relevant to anyone involved in bridge designs over waterways, regardless of their technical discipline or whether they are in the private, municipal, State or Federal sectors. This course is designed primarily for entry-level engineers or engineering technicians who deal with hydraulics. It is also beneficial for experienced personnel as a refresher course on hydraulic fundamentals.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-135092

Course Title
Highway Hydrology: Basic Concepts and Methods Web-Based

NHI Web-based Training Course #135092 Highway Hydrology: Basic Concepts and Methods provides training on basic hydrologic concepts that will enable users to determine peak flow for transportation hydraulic structures. For engineers, the course teaches basic hydrologic concepts as a review before taking more advanced hydraulic courses. For non-engineers the course enables learners to better understand hydrologic concepts used by engineers.

The Web-based training uses a range of text, graphics, animations, and problem solving in its three lessons. The first lesson focuses on the hydrologic cycle, associated terms, and the relationship of risk to return period and probability of exceedance. The second lesson explains the variability of storms based on three general types of storms, how variations in storm duration and intensity impact runoff, and the watershed characteristics that influence runoff. The third lesson discusses the Rational Method, the NRCS Graphical Method, and Regression Equations as methods to determine peak flow quantities. At the end of the training, learners will be able to apply basic hydrologic concepts to fundamental methods to determine peak flow for highway drainage and hydraulic structures.

Outcomes
Upon completion of the course, participants will be able to:

• Identify the hydrologic cycle processes most important to transportation hydraulic engineering.
• Define the relationship between return period and probability of exceedance in hydraulic design.
• Define the temporal and spatial variations observed in precipitation patterns.
• List watershed characteristics that affect peak flows.

Target Audience
Highway Hydrology: Basic Concepts and Methods is a Web-based training course designed for Federal, state, and local hydraulic engineers, highway designers, design consultants, and environmental specialists who have responsibility for the analysis, design, and permitting of roadway drainage features and stream crossings (both culverts and bridges). Designers and reviewers of erosion and sediment control plans may also benefit from the course.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 Hours (CEU: .2 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-135093

Course Title
Hydraulic Toolbox (Web-Based)

The Federal Highway Administration’s (FHWA) Hydraulic Toolbox software contains a suite of calculators to assist with the routine hydrologic and hydraulic analyses and designs of transportation infrastructure including ditches, curb and gutter sections, drop inlets, weirs, detention basins, bridge foundations, and riprap installations. The calculators adapt procedures and methods found in FHWA Hydraulic Design Series (HDS) and Hydraulic Engineering Circular (HEC) technical publications and in NHITS training courses. NHI-135093, Hydraulic Toolbox Web-based Training (WBT) serves as an introduction to the use of most of the Toolbox calculators through a combination of discussion, graphics, examples, and workshop problems. This course includes eight primary lessons, a course summary, and an end-of-course assessment. The lessons in this course include: Toolbox Overview, Rational Method Calculator, Roadway Drainage Calculators, Stormwater Calculators, Channel Calculators, Bridge Scour Calculator, Riprap/Rock Calculators, File Saving & Report Generation, and a concluding course summary.

Upon completing the course, participants will be able to use the Hydraulic Toolbox software to perform routine hydrologic and hydraulic computations for roadway drainage and hydraulic structure design applications.

Note: NHI-135093, Hydraulic Toolbox WBT is a prerequisite for Course 135027, Urban Drainage Design. Comprehension of many of the concepts covered in this WBT is important to successful completion of Course 135027.

Outcomes
Upon completion of the course, participants will be able to:
• Identify the major capabilities of the Hydraulic Toolbox and how they relate to transportation hydraulic engineering
• List the capabilities of the calculators in the Hydraulic Toolbox
• Recognize when to apply each of the calculators in the Hydraulic Toolbox
• Apply the Hydraulic Toolbox to complete hydrologic and hydraulic computations
• Identify the steps to generate Hydraulic Toolbox reports

Target Audience
The target audience is comprised of federal, state, and local hydraulic engineers, highway designers, design consultants, and environmental specialists who have responsibility for the analysis, design, and permitting of roadway drainage features and stream crossings.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 3 HOURS (CEU: .3 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-135094

COURSE TITLE
Culvert Hydraulic Analysis and Design Program (HY-8) Web-Based

NHI web-based Training Course 135094, Culvert Hydraulic Analysis and Design Program (HY-8), provides training on the use of the Federal Highway Administration’s (FHWA) HY-8 computer program to complete culvert analysis and design calculations commonly performed by Civil Engineers and others involved in roadway design.

This web-based training uses a combination of text, graphics, examples, animations, and workshop problems in its six primary lessons:

- HY-8 Overview
- Conventional Design Scenarios
- Rehabilitative Linings/Common Pitfalls in the Use of HY-8
- Special Geometries
- Energy Dissipation
- Project File Management and Report Generation

Upon completing the course, participants will be able to apply the HY-8 software to analyze and design culverts in many commonly encountered situations.

Note: NHI 135094, Culvert Hydraulic Analysis and Design Program (HY-8) (Web-Based) is a prerequisite for Course 135080, Hydrologic Analysis and Modeling with WMS. Mastery of the concepts covered in this WBT is important to successful completion of Course 135080.

OUTCOMES

Upon completion of the course, participants will be able to:

- List the primary capabilities of HY-8
- Identify inlet and outlet control situations from the culvert summary tables
- List the material types used in culverts
- List the material shapes that may be analyzed within HY-8
- Select a culvert from a list of available culverts that satisfies headwater and outlet velocity criteria by using HY-8
- Predict the effect of lining material (new or rehabilitated) on headwater
- Identify common pitfalls in using HY-8 in conventional design scenarios
- Identify situations appropriate for application of special culvert geometries
- Identify situations requiring energy dissipation to mitigate scour or high outlet Velocities.
- Select an appropriate energy dissipator by using HY-8.
- Identify the steps to generate customized HY-8 reports.

TARGET AUDIENCE

The target audience is comprised of federal, state, and local hydraulic engineers, highway designers and design consultants who have responsibility for the analysis, design, and review of culverts. Length of service with an organization or status within an organization would not be a factor in that this training could apply to anyone that has a need for hands-on use of HY-8.
**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 2 HOURS (CEU: .2 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-130109A

Course Title
Bridge Management Fundamentals

When the average citizen commutes to work or runs errands, they are relying on us, public transportation agencies, to keep their bridges safe and available for use. It is their expectation that we keep their bridges serviceable and at the lowest life-cycle cost possible. Bridge management systems will help your agency to efficiently balance the various bridge needs against available resources. The Bridge Management Fundamentals course describes a bridge management system and walks through the process of selecting and implementing the right bridge management software for your agency. Throughout the course, you will learn direct from agencies with mature and successful bridge management systems about how they get the most utility from their system.

Outcomes
Upon completion of the course, participants will be able to:

• Explain the need for a BMS
• Describe a typical BMS organizational structure
• Describe the seven components of a BMS
• Describe tools that are used as part of the bridge management process
• Describe an implementation plan for a comprehensive BMS
• Describe effective practices when using BMSs
• Identify successful applications of BMS components by agencies
• Describe the bridge management process as it relates to an agency business model
• Describe how to address risk

Target Audience
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130109B

COURSE TITLE
Performance-Based Management of Highway Bridges

The traditional approach to bridge management has focused on identifying the worst performing structures in the inventory and addressing their deficiencies before anything else. But as inventories expand and age and as budgets shrink, most agencies discover that even as they address the worst bridges in the inventory, other bridges that could have been saved through preservation activities slip into deficiency. Today, the public expects transportation agencies to adopt a performance-based management approach that will achieve the highest level of performance possible and make the most effective use of available funds. The Performance-based Management of Bridges course uses video-based testimonies from transportation professionals to illustrate the ways in which their agencies have used performance-based management to estimate the cost-effectiveness of decisions and assess risk.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe how a bridge management system supports a performance-based bridge program.
• Identify framework for a performance-based management business model;
• Describe the development of performance measures;
• Describe methods for determining cost-effectiveness of actions;
• Describe considerations when assessing risk; and
• Describe strategies for communicating and reporting highway bridge performance-based management actions and results to other agency stakeholders and the public.

TARGET AUDIENCE
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 4 HOURS (CEU: .4 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses; each highlights a specific preservation technique:

- How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207A)
- How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207B)
- Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207C)
- Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207D)
- Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207E)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Each of the Web-based training products is also available as a standalone course that can be accessed by registering for the individual course number listed above.

Outcomes

Upon completion of the course, participants will be able to:

- Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
- Describe the best practice for installing dowel bars
- List the criteria for determining whether full-depth repairs are of sufficient quality
- List important safety considerations in performing full-depth repairs
- Explain what a partial-depth repair is, and when it is performed
- Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
- List important safety considerations in performing partial-depth repairs

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommended procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 13.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Please note that you need to complete all five of these training modules to earn a certificate and credit for taking the course. If you are only interested in receiving credit for one or two of the preservation technique trainings, NHI suggests you register only for the one(s) you need. See the individual course numbers in the description below.

Pavement preservation is a proactive approach to protecting and maintaining existing pavements. NHI offers this five-course series that focuses on different pavement preservation techniques that may be performed on Portland Cement Concrete (PCC) pavements.

All the courses in the series provide detailed, how-to instruction covering the full scope of tasks involved in successfully completing each preservation technique. The Web-based trainings use short, focused, task-based lessons with creative instruction that make the lessons directly applicable to your work in the field. You’ll find checklists, visual aids and graphics, and videos that reinforce the content so you can apply new knowledge right away.

Enrolling in this series gives you access to the following courses in Spanish; each highlights a specific preservation technique:

- How to Construct Durable Full-Depth Repairs in Concrete Pavements (FHWA-NHI-134207F)
- How to Construct Durable Partial-Depth Repairs in Concrete Pavements (FHWA-NHI-134207G)
- Proper Diamond Grinding Techniques for Pavement Preservation (FHWA-NHI-134207H)
- Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (FHWA-NHI-134207I)
- Proper Joint Sealing Techniques for Pavement Preservation (FHWA-NHI-134207J)

Whether you work for a contractor or a transportation agency (Federal, State, or local), take this series to increase your knowledge about constructing durable, quality PCC pavement projects using specific pavement preservation treatments. Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will focus on these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available for performing the construction processes and procedures? Which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the proper techniques for mixing, placing, and curing?
5. What are the specific, sequential tasks required to properly perform each of the techniques?

Each of the Web-based training products is also available as a standalone course that can be accessed by registering for the individual course number listed above.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain how to prepare for a full-depth repair project (specification review, equipment and materials, and sequencing)
• Describe the best practice for installing dowel bars
• List the criteria for determining whether full-depth repairs are of sufficient quality
• List important safety considerations in performing full-depth repairs
• Explain what a partial-depth repair is, and when it is performed
• Explain proper preparation steps for a partial-depth repair project, including project specification and design plan review, and planning the sequence and timing of operations
• List important safety considerations in performing partial-depth repairs
• Explain what diamond grinding, diamond grooving, and NGCS are, and when they are performed
• Describe recommended techniques for conventional diamond grinding, diamond grooving, and NGCS
• List important safety considerations when performing diamond grinding, diamond grooving, and NGCS operations
• Explain what DBR and cross-stitching are, and when they can be performed
• Explain how to prepare for DBR and cross-stitching
• List important safety considerations when working on DBR and cross-stitching projects
• Explain what joint or crack sealing is, and when it should be performed
• List important safety considerations when working on joint sealing projects
• Explain how to prepare for joint sealing
• Describe recommended materials and equipment used in joint sealing
• Describe recommended construction procedures and process steps for joint sealing
• Describe recommend procedures for repairing cracks
• List the criteria for determining whether joint sealing results are of sufficient quality
• Identify typical problems encountered and how to avoid or resolve these issues

TARGET AUDIENCE
This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. This course will appeal to individuals in the following roles: agency inspectors and construction managers; construction supervisors, workers, and technicians; and engineers.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 13 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-136002A

Course Title
Introduction to Financial Planning for Transportation Asset Management

Introduction to Financial Planning for Transportation Asset Management (TAM) explores common terms, background information, and the context of financial plans for TAM. This engaging WBT builds a foundation of knowledge and helps you answer these questions:

1. What is a financial plan and what are the benefits of creating and using one?
2. What are the components of a financial plan?
3. Who are the essential stakeholders for developing a financial plan?
4. What factors influence the investment strategies for meeting condition targets?
5. How are the financial plans and other State plans, programs, and budgets related?

The 60-minute Web-based training is organized into three lessons. The lessons do not need to be completed at one sitting.

The course includes introductory material that can help anyone involved with developing the financial plan.

Outcomes
Upon completion of the course, participants will be able to:

- Describe the financial plan’s purpose and benefits.
- List the components of a financial plan.
- Identify stakeholders who are essential contributors to the development of a financial plan.
- Identify key factors that influence investment strategies for meeting condition targets.
- Explain the relationships between the financial plan and other state plans, programs, and budgets.

Target Audience
The primary audience for this course includes those involved with or interested in developing the financial plan, including asset management program managers, their staff in State transportation agencies, and staff members from metropolitan planning organizations (MPOs). These individuals include engineers, planners, and budgeting and finance personnel. State DOT Chief Executive Officers and their staff would benefit from the level of understanding provided in this Web-based training. This is an introductory-level course. There are no prerequisites.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-136106C

Course Title
Introduction to a Transportation Asset Management Plan

This training is a prerequisite of another NHI training and is offered at no cost.

A Transportation Asset Management Plan (TAMP) can be considered a business plan that builds the case for making infrastructure investments and explains how resources will be used. This course, “Introduction to a Transportation Asset Management Plan,” is a 1-hour, Web-based training (WBT) that introduces the content and organization of a TAMP and the typical TAMP development process. This course was previously cataloged under 131106C.

This training includes the following topics:
- The use of a TAMP in transportation agencies
- The typical content of a TAMP (including a comparison with requirements in MAP-21)
- Key components, including performance projections and the financial summary
- Examples of TAMPs at various levels of maturity
- Existing and anticipated use of a TAMP in state highway agencies
- The expected involvement of agency personnel in developing and updating a TAMP

This training includes audio clips from leaders in state highway agencies that convey the anticipated benefits from the development of a TAMP and the way they expect to use their TAMP. In addition, the WBT highlights the use of existing documentation to develop the TAMP and plans for enhancing the content of future TAMPs.

This training serves as a prerequisite for NHI-136106B “Developing a Transportation Asset Management Plan”, which describes the role of a TAMP in a transportation agency and explores in some detail three important components: strategic performance management, risk assessment and management, and financial management.

Outcomes
Upon completion of the course, participants will be able to:
- Describe the role of a TAMP as a communication tool with internal and external stakeholders.
- List the typical content of a TAMP.
- Identify several sources of information that will contribute to the development of a TAMP.

Target Audience
The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who typically have the responsibility for decision-making in one or more areas addressed by transportation asset management. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

Training Level: Intermediate

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-136113

COURSE TITLE
Transportation Asset Management Overview

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI. This training explains the basics of asset management and why asset management is important. After you complete this training, you’ll have new terms, and new ways of thinking about what you’re already doing. More importantly, you’ll understand why it’s so important to be strategic and systematic when you’re responsible for managing huge numbers of assets.

This training contains the following lessons:

Lesson 1: What is Transportation Asset Management? This lesson will explain the concept of asset management; give examples of how asset management is used in the planning process; and explain how current asset management practices have been impacted by past transportation needs.

Lesson 2: Asset Management Principles and Practices. This lesson lists the categories of activity that inform spending decisions; explain how policy goals and objectives impact asset management; relate planning and programming to managing assets; describe how asset management principles apply to program delivery; explain why system monitoring is necessary; and explain how quality data and analysis impact asset management.

OUTCOMES

Upon completion of the course, participants will be able to:

• Explain what transportation asset management is and why it is important
• Describe the asset management principles and practices used to make informed spending decisions

TARGET AUDIENCE

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO, NHI, and is recommended for TCCC levels II through IV.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137046

COURSE TITLE
ITS Deployment Analysis System (IDAS) - WEB-BASED

This course is a Web-based training session on the newly developed ITS Deployment Analysis System (IDAS) software. IDAS provides ITS sketch planning capability to calculate the relative costs and benefits of ITS investments. IDAS incorporates a cost module, a benefit module and an internal travel demand model to generate cost/benefit comparisons for alternative ITS deployment scenarios. IDAS uses the output from an existing transportation planning model to establish a best-case scenario on which the user can deploy ITS services on specific links in the regional transportation network model.

The participant's computer should have the following recommended requirements: 500 MHz Intel Pentium II Processor or equivalent with 128 MB of RAM, Windows 2000, Windows NT, or Windows XP, color monitors, 2 GB of available disk space.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain the importance of integrating operations/ITS into the planning and decision-making processes
• Explain that IDAS software can be used to link operations to the planning process
• Demonstrate how IDAS uses the network and output from an existing regional travel demand model
• Employ IDAS to screen ITS alternatives and produce a cost/benefit analysis.
• Interpret IDAS results
• Review and refine IDAS defaults

TARGET AUDIENCE
FHWA, State DOT, metropolitan planning organization, and local government transportation planning staff members who are involved in the day-to-day elements of transportation planning and modeling would benefit for this course. Operations Engineers, ITS Project Managers, and Transit Agency Personnel (this includes individuals who: 1. develop inputs for, set up, and carry out analyses of operations/ITS alternatives and/or 2. examine results, conduct sensitivity analyses, and explore tradeoffs of such analyses created by others) would also benefit for this course.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137048

Course Title
Turbo Architecture Version 5.0 - Web-Based

This course is based upon Turbo Architecture Version 5.0. This is not the most current architecture but if you are a legacy user, please proceed. The current version is 7.0 (as Turbo Architecture jumped directly from Version 5.0 to Version 7.0 to align the Turbo Architecture version with the corresponding version of the National ITS Architecture.) There are some minor differences in the versions but the information presented in this course is still applicable to Version 7.0. For more information on the differences in version 7.0, see the Turbo Architecture page on The National ITS Architecture 7.0 website, http://www.iteris.com/itsarch/html/turbo/turbomain.htm.

This training is provided to you at no cost by the ITS Joint Program Office.

Turbo Architecture is an interactive software program that assists transportation planners and system integrators in the development of regional and project architectures. This Web-based training (WBT) provides ITS professionals with a hands-on experience using the Turbo Software Version 5.0. Participants will work with simulated examples and practice exercises to create, maintain, and use regional and project ITS architectures.

At the end of the training, participants will be able to use the Turbo software to create and modify a regional or project architecture including providing a link to planning, entering stakeholders, entering inventory data, selecting ITS services, creating operational concepts, tailoring functional requirements, building and customizing interfaces, customizing standards mappings, entering agreements, creating outputs, and applying features to new projects.

Outcomes
Upon completion of the course, participants will be able to:
• Recall training objective and delivery elements
• Verify the correct installation of Turbo Version 5.0
• Explain the use and importance of Turbo
• Explain Turbo’s support of the ITS project life cycle

Target Audience
The Turbo Architecture WBT is designed for ITS professionals employed by MPOs, transit agencies, municipalities, State DOTs, FHWA Division Offices, or consultants and system integrators who use and/or maintain an ITS architecture and are involved with ITS planning, deployment, and operations.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137049

Course Title
ITS Procurement - WEB-BASED

This course is brought to you by the Intelligent Transportation Systems Joint Program Office’s Professional Capacity Building Program (https://www.pcb.its.dot.gov/).

This course will provide an overview of strategies for successfully deploying ITS projects that build on systems engineering principles and practices. This course will present an approach to defining ITS projects and desired outcomes. The focus of this course is on the procurement stage of the overall acquisition process. For this course, the procurement stage spans from identifying what you need to developing a procurement that helps you get what you need through contractor selection. 

This course will provide you with tools to develop the key aspects of a request for quote (RFQ), request for proposal (RFP), invitation for bid (IFB), or goods contract advertisement to ensure a successful procurement.

Outcomes
Upon completion of the course, participants will be able to:

• Explain what it means to have a successful procurement.
• Accurately define what you need so that it can be clearly communicated.
• Select the ideal approach for a given procurement project.
• Match a selection method to an outcome.
• Complete an ITS procurement project.

Target Audience
Primary audience: Public agency ITS program and project managers, support staff, and consultants
Public agency procurement/contract managers and support staff
Federal field staff involved in ITS
Secondary audience: Planners who will be assisting in interagency coordination/cooperation and ITS projects

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 3.5 Hours (CEU: .3 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137050

Course Title
ITS Awareness WBT

This course is brought to you by the Intelligent Transportation Systems Joint Program Office's Professional Capacity Building Program (https://www.pcb.its.dot.gov/).

This course provides public and private sector practitioners with an introduction to current intelligent transportation systems (ITS). It presents an overview of the broader context in which individual ITS applications and service packages are developed, deployed, and operated. It also offers insights into the future directions in which ITS is expected to develop. This course will be of particular interest to Department of Transportation (DOT) staff seeking to introduce ITS to a wider number of staff, while also advancing the ITS expertise of select staff.

Lesson Topics include:
- Foundational Concepts of ITS
- ITS Service Areas and Service Packages
- Operational Environment
- Connected Vehicles (CV), Automated Vehicles (AV), and Connected and Automated Vehicles (CAV or C/AV)

This web-based course (WBT) offers an End-of-Course Assessment that qualifies you to receive Continuing Education Credits (CEUs).

Outcomes
Upon completion of the course, participants will be able to:
- Identify the capabilities, projects, technologies, and methods of ITS that enable it to be “intelligent” (or at least “integrated”)
- Determine how ITS fits into the overall framework of transportation and its impacts on the future of transportation
- List ways in which ITS affects the various users and stakeholders
- Identify the major areas of ITS in which transportation professionals work
- Describe how different areas of the United States are using ITS to operate their transportation systems safely and efficiently
- Describe how ITS elements share information using open standards to implement ITS capabilities across multiple modes and regions
- Identify future ITS technologies, especially with the future introduction of Connected and Automated Vehicles

Target Audience
Public and private sector practitioners with interest in new transportation directions, including increased information on CV, AV and Smart City activities.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137051

COURSE TITLE
Systems Engineering Fundamentals for ITS

‘Systems Engineering Fundamentals’ is an 8-hour web-based training offered by NHI, the authoritative source in transportation training. This course is an introduction to systems engineering for ITS project managers and project staff. It provides a high-level view of a broad and rich topic area, introducing basic concepts to individuals who are working on ITS projects. The goal is to allow these individuals to understand the benefits of applying systems engineering approaches as a means of developing quality systems. The course covers technical practices such as modeling, prototyping, trade-off analysis and testing, and management practices such as risk assessment and mitigation, which make up “best practices” in the systems engineering arena.

To enroll in this web-based training course, select ‘Add ToCart.’

OUTCOMES
Upon completion of the course, participants will be able to:

• Define Systems Engineering and its application to ITS
• Describe the system’s life cycle and its relationship to systems engineering
• Develop, derive, and validate requirements for a system
• List the systems engineering tools available to mitigate risk
• Define and apply the concept of earned value as a tracking mechanism
• List three alternative strategies that may be applied to decision making under uncertainty
• Identify where to find appropriate standards for developing ITS projects
• Identify resources that may help project personnel to look at systems as a whole

TARGET AUDIENCE
TBD

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 8 HOURS (CEU: .8 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137055

COURSE TITLE
Transportation Cyber Security

‘Transportation Cyber Security’ is a 4-hour long web-based training offered by NHI, the authoritative source in transportation training. The course is intended for professionals working with surface transportation systems. Each of the subject areas could be a course on its own, as the field is constantly changing and technologies evolve quickly under competitive pressure. This course is intended to help transportation professionals improve their understanding of the subject, and offer the tools that are useful for learning more about cyber security and resilience. Selected topics covered in this course are: hackers and their motivations, transportation objectives at risk, cyber technologies, common vulnerabilities associated with social media and public information systems, and tools for keeping informed about the developments in cybersecurity.

To enroll in this web-based training course, select ‘Add to Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:
• Discuss the motivations of hackers and determine what transportation objectives are at risk
• Analyze the complex and rapidly changing technologies associated with the broad discipline of cyber security
• Explain common vulnerabilities associated with social media, public information systems, etc.
• Identify and explain what makes up the center-to-field network, discuss its common vulnerabilities and operational risks
• Explain the common vulnerabilities of the Traffic Management Center and identify some common solutions
• List the tools that are useful for learning more about cyber security and resilience

TARGET AUDIENCE
Transportation professionals working with surface transportation systems

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 4 HOURS (CEU: .4 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137056

Course Title
Data Archiving and Analytics for Planning, Operations, and Safety

‘Data Archiving and Analytics for Planning, Operations, and Safety’ is a 4-hour web-based training offered by NHI, the authoritative source in transportation training. This course is designed to help you understand the benefits of creating an open and accessible data archive of your agency’s data. It will also explain the challenges you might face in trying to make your agency’s data more open and available to others, and ways in which you can mitigate those challenges. After showing you some real-world examples of how data can be leveraged for better decision making and analysis, we will discuss the pros and cons of building your very own archive, leveraging technologies that others have developed, or paying a consultant to help you with your archiving needs.

To enroll in this web-based training course, select ‘Add to Cart.’

Outcomes
Upon completion of the course, participants will be able to:
• Communicate the business cases for archiving data
• Understand the importance of visual analytics in making your archive more valuable
• Identify real-world use-cases for leveraging archives for better decision making
• Evaluate the pros and cons of different archive implementation strategies

Target Audience
TBD

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 Hours (CEU: .4 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137057

COURSE TITLE
OPM 01: Introduction to Operations Performance Measures and Management

‘OPM 01: Introduction to Operations Performance Measures and Management’ is a 4-hour web-based training offered by NHI, the authoritative source in transportation training. This course will define performance measurement and management, how they are used in an organization, how they are set up, and what the expected outcomes are for performance management. We will describe both the reasons performance measurement and management enhance a transportation agency’s operations and the elements of a successful Operations Performance Measures & Management (OPMM) program.

To enroll in this web-based training course, select ‘Add to Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:
• Discuss rationales for undertaking performance measurement and management, especially for Operations
• Describe the process of performance measurement and management
• Describe the characteristics of operations performance measurement and management (OPMM)
• Define the elements of a successful OPMM program

TARGET AUDIENCE
Senior analysts and first and second-level managers

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137058

COURSE TITLE
OPM 02: Nuts and Bolts of Operations Performance Measurement

‘OPM 02: Nuts and Bolts of Operations Performance Measurement’ is an 8-hour long web-based training offered by NHI, the authoritative source in transportation training. This course is intended for senior analysts, as well as first and second-level management. In it, we emphasize the measurement side of performance measurement, looking specifically at the data, tools, and analysis methodologies available to the practitioner. This course also will serve as a primer for those who have forgotten transportation engineering fundamentals.

To enroll in this web-based training course, select ‘Add to Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe the data needed to drive Operations Performance Measurement
• Discuss the use and importance of travel time and volume data
• List and explain the guidelines for the effective presentation of complex data

TARGET AUDIENCE
Senior analysts and first and second-level managers

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 8 HOURS (CEU: .8 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-137059

COURSE TITLE
OPM 03: Operations Performance Management

‘OPM 03: Operations Performance Management’ is a 6-hour long web-based training offered by NHI, the authoritative source in transportation training. This course takes a broader management view of performance management: harnessing the power of performance measurement to improve management practice, closing the loop between strategic objectives and measured performance. It provides the use with understanding of how performance management is used to make cost-effective investment decisions that are geared to meeting agency goals.

To enroll in this web-based training course, select ‘Add to Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:
• Explain what operations performance measurement and management entail
• Discuss the steps necessary to develop an operations performance measurement system

TARGET AUDIENCE
Senior analysts and first and second-level managers

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 6 HOURS (CEU: .6 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137060

Course Title
Introduction to Connected Vehicles and Automated Vehicles

This course is brought to you by the Intelligent Transportation Systems Joint Program Office’s Professional Capacity Building Program (https://www.pcb.its.dot.gov/).

The goal of this course is to provide public and private sector practitioners with an understanding of the basics of connected vehicle and automated vehicle technology. This introductory course highlights the USDOT’s connected and automated vehicle research and efforts and the technologies’ benefits and implications. Participants will learn about the applications envisioned for the connected vehicle and automated vehicle environments.

The course consists of the following WBT topics:

Topic 1: What Are Connected Vehicles and Automated Vehicles?
Topic 2: Technologies and Applications for Connected Vehicles and Automated Vehicles
Topic 3: Research Toward Implementation
Topic 4: Testing and Piloting the Technologies
Topic 5: Resources for Deployment

This course was launched in --month-- 2019.

Some of the topics include videos and links to more resources.

This web-based course (WBT) offers an End-of-Course Assessment that qualifies you to receive Continuing Education Credits (CEUs).

To enroll in this WBT/WCT course, select the ‘View Sessions’ button and select ‘Add To Cart’ next to your session choice. If there are no upcoming sessions, select ‘Sign Up for Session Alerts.’

Outcomes
Upon completion of the course, participants will be able to:

• Describe the concept of connected vehicles
• Describe the concept of automated vehicles
• Identify the types of communications technologies that can be used for connected vehicles
• Describe how connectivity enhances automation
• Identify some of the applications for connected and automated vehicles
• Describe the pertinent USDOT research efforts related to connected vehicles
• Describe the pertinent USDOT research efforts related to automated vehicles
• Identify the resources available to learn more and get involved

Target Audience
The target audience for this WBT course includes transportation planners, managers, and engineers at state and local agency levels who are interested in learning about the basics of connected vehicles and automated vehicles, their benefits and implications, and the USDOT’s latest related research and activities.
**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 2 HOURS (CEU: .2 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137070

Course Title
Improving Highway Safety with ITS

‘Improving Highway Safety with ITS’ is an 1.5 hours WBT course offered by NHI, the authoritative source in transportation training. This course is an introduction to ITS-based strategies and tools available for improving highway safety. This course is intended for ITS, transportation operations, and safety professionals, including, but not limited to, planners, operators, designers, emergency management, and maintenance personnel. This course is divided into five lessons, each intended to introduce or illustrate concepts relating to the development and deployment of ITS strategies to address safety issues.

To enroll in this web-based training course, select ‘Add to Cart.’

Outcomes
Upon completion of the course, participants will be able to:

• Explain the overall magnitude and importance of highway safety
• Recognize and discuss the contribution ITS can make in improving highway safety
• Identify applications in the connected vehicle program that are primarily safety related
• Describe the framework for considering ITS countermeasures within your safety planning process
• Exploit practical opportunities for collaboration among Safety and ITS personnel
• Employ several ITS and Safety resources

Target Audience
The target audience for this WBT course are safety professionals, including planners, operators, designers, emergency management, and maintenance personnel.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 1.5 HOURS (CEU: .1 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137072

Course Title
Weather Responsive Traffic Management (WRTM)

‘Weather Responsive Traffic Management (WRTM)’ is a 6-hour long web-based training offered by NHI, the authoritative source in transportation training. This course provides information and guidance to transportation system managers and operators to help them effectively manage traffic flow and operations during adverse weather conditions. Various WRTM strategies are described and case studies are presented to illustrate existing best practices. Specific guidance is provided on how to choose, design, and implement WRTM strategies that are appropriate for different roadway, traffic, and weather conditions. Training materials include information and tools for traffic modeling and analysis, types and sources of traffic and weather data needed to support WRTM strategies, guidance on integrating weather and traffic data in daily operations, and procedures for performance measurement and evaluation of WRTM strategies. At the end of this course, participants will be able to define the WRTM concepts and frameworks and to describe different strategies and types of data and analytical tools available for the management of traffic during adverse weather events.

To enroll in this web-based training course, select ‘Add to Cart.’

Outcomes
Upon completion of the course, participants will be able to:

- Identify and describe the range of strategies and tools offered by WRTM for effectively managing traffic operations during weather events
- Identify the benefits associated with WRTM and the situations that warrant its application
- Identify the traffic and weather data needed to support WRTM implementation, and how to obtain and use this data
- Discuss the approaches to evaluating the performance of WRTM strategies
- Describe how agencies can more proactively implement WRTM strategies as part of transportation systems management including capacity enhancement and demand management

Target Audience
Transportation systems managers and operators

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 Hours (CEU: .6 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-137074

Course Title
Road Weather Information Systems (RWIS) Equipment and Operations

‘Road Weather Information Systems (RWIS) Equipment and Operations’ is a 4-hour long web-based training offered by NHI, the authoritative source in transportation training. Adverse weather is our common enemy in road maintenance, traffic, and emergency operations. Transportation agencies are aware of the operational and logistical challenges of such weather. Many agencies are fighting this age-old battle by implementing Road Weather Information Systems (RWIS). This requires that critical personnel be well-informed of the impacts and considerations of deploying RWIS. The goal of this course is to, not only discuss RWIS initiatives and considerations, but through workshops, exercises, and self-assessments, explore individual state and local deployment challenges which will leave participants with an action plan tailored for their specific needs.

To enroll in this web-based training course, select ‘Add to Cart.’

Outcomes
Upon completion of the course, participants will be able to:
• Discuss the value of regional and national RWIS Initiatives
• Explain how RWIS can benefit your region
• Identify and discuss key considerations when installing a RWIS
• Develop an action plan and identify the steps to successfully integrate a RWIS into your regional operations

Target Audience
Transportation professionals in highway maintenance and/or highway operations

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-130109B

COURSE TITLE
Performance-Based Management of Highway Bridges

The traditional approach to bridge management has focused on identifying the worst performing structures in the inventory and addressing their deficiencies before anything else. But as inventories expand and age and as budgets shrink, most agencies discover that even as they address the worst bridges in the inventory, other bridges that could have been saved through preservation activities slip into deficiency. Today, the public expects transportation agencies to adopt a performance-based management approach that will achieve the highest level of performance possible and make the most effective use of available funds. The Performance-based Management of Bridges course uses video-based testimonies from transportation professionals to illustrate the ways in which their agencies have used performance-based management to estimate the cost-effectiveness of decisions and assess risk.

OUTCOMES
Upon completion of the course, participants will be able to:

• Describe how a bridge management system supports a performance-based bridge program;
• Identify framework for a performance-based management business model;
• Describe the development of performance measures;
• Describe methods for determining cost-effectiveness of actions;
• Describe considerations when assessing risk; and
• Describe strategies for communicating and reporting highway bridge performance-based management actions and results to other agency stakeholders and the public

TARGET AUDIENCE
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 4 HOURS (CEU: .4 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-138001

COURSE TITLE
Transportation Performance Management Awareness - Federal Aid Version
‘Transportation Performance Management Awareness - Federal Aid Version’ is a one-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Transportation Performance Management is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Performance Management helps inform decisions on the use of available resources, strengthens our accountability, and allows us to better understand and communicate what works and what does not work.

This course provides an introduction to performance management. It covers the definition of performance management and basic performance management concepts, explains the critical role that the planning process plays in implementing a performance management program, and addresses what performance management means to the Federal Highway Administration.

The course includes the following three lessons:
+ Introduction to Performance Management
+ Basic Concepts
+ Performance-Based Planning

This course was created in October of 2012. It does not include an assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe performance management
• Describe the basic elements of a performance management program
• Explain the critical role planning plays in implementing a performance management program

TARGET AUDIENCE
The target audience for this Web-based Training course includes all FHWA employees.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Introduction to Performance Measurement

‘Introduction to Performance Measurement’ is a two-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

This course is one in a series of introductory courses that fall within the subject area of Transportation Performance Management. Transportation Performance Management is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Performance Management helps inform decisions on the use of available resources, strengthens our accountability, and allows us to better understand and communicate what works and what does not work.

Performance measures help us see if targets and goals are being reached and give us clear information to communicate with decision-makers and stakeholders. In addition, performance measures help ensure program alignment with investments and customer expectations.

The training provides an overview of performance measures. It covers FHWA’s role in developing performance measures and the criteria for developing effective performance measures. It also discusses the importance of data in developing performance measures, tools available for collecting data, and considerations for data analysis. It also addresses how performance measurement information can be used.

The course includes the following five lessons:

+ Performance Measures Overview
+ FHWA and Performance Measures
+ Criteria for Developing Effective Performance Measures
+ Data, Tools, and Analysis
+ Using Performance Measurement Information

This course was created in May of 2013. It does not include an assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

• Explain why performance measures are important
• Explain the FHWA’s role in developing performance measures
• Describe the criteria an effective performance measure must meet
• Recognize the importance of data in developing performance measures
• Explain how performance measurement information is used

TARGET AUDIENCE

The target audience for this Web-based Training course includes all FHWA employees.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Transportation Performance Management Overview for the MAP-21 and FAST Acts

This course presents an overview of the Transportation Performance Management (TPM) provisions of MAP-21 and FAST, describes the responsibilities that agencies at various levels (Federal, State, and MPO) have in delivering these requirements, and captures best practices in use today that can help agencies get started on meeting the requirements. It begins by introducing participants to the TPM provisions of MAP-21 and FAST—including national goals and performance measures and how they relate, target setting, incorporation into the planning and programming process, and accountability and transparency requirements.

The course provides a necessary introduction for participants who are impacted by the law’s provisions in their own agencies’ processes. Learners will understand how the provisions impact their existing processes, and will also be able to study the examples provided throughout the course. It also addresses how TPM provisions may impact individual performance areas, such as safety, pavement, bridge condition, traffic congestion, etc. These impacts will be explained in more detail in subsequent courses on the specific performance areas.

The course includes the following specific topic modules:
+ TPM in MAP-21 and FAST
+ Measures and Targets
+ How Federal Planning and Programming Support TPM
+ Accountability and Transparency

This course was published in May of 2018.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

• Identify the transportation performance management provisions of MAP-21/FAST, how they are tied together, and the associated products and delivery timelines
• Describe the roles and responsibilities different agencies (Federal, State and MPO) have in implementing the MAP-21/FAST TPM provisions
• Describe noteworthy practices in use at other agencies that may be helpful to begin the process of implementing MAP-21/FAST TPM provisions

TARGET AUDIENCE

The target audience for this Web-based course primarily consists of FHWA, State DOT, and MPO staff who have a role in meeting the MAP-21/FAST TPM requirements. Regional planning organization (RPO), transit agency, other local agency staff, along with executives and senior decision makers, make up a secondary audience.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: .2 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Effective Target Setting for Transportation Performance Management

‘Effective Target Setting for Transportation Performance Management’ is a 6.5-hour Web-based Training (WBT) course offered by NHI, the authoritative source in transportation training.

Transportation agencies have been moving toward a performance-based management approach for over a decade. The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act further emphasized the importance of target setting within a performance management context. MAP-21 requires State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), and public transit providers to set performance targets for the United States Department of Transportation’s (USDOT’s) established national performance measures.

It is anticipated that performance management principles will carry forward in subsequent legislation as it has been shown to be good business practice and has been supported by the United States Government Accountability Office (GAO). While FHWA and most State DOTs and MPOs have experience with developing performance measures and reporting on condition/performance, experience is much more limited in setting performance targets and reporting on the achievement (or not) of those targets. Understanding and applying targets within a Transportation Performance Management (TPM) program is a critical component of TPM.

The course supports the larger objective of helping State DOTs and MPOs understand how to implement performance management principles by teaching how to develop and set performance targets that will support progress toward an agency’s strategic goals. This course answers the question, “How do I set targets?” by providing an in-depth review of the steps necessary.

The course strikes a careful balance with providing information on setting targets that can be applied to a range of performance areas without getting into the details of specific methodologies that are required by MAP-21. It contains short, focused lessons that reinforce content so that it can be directly applied by the learner.

The course includes an assessment. The course was launched in summer of 2018.

To enroll in this Web-based Training course, click ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe the existing practices and systems at an agency or organization that are essential to target setting
- List the basic steps involved in setting a target
- Explain how a target’s purpose and parameters can be defined
- Describe the information needed to set a target
- Identify the factors that influence target setting
- Explain how a target is actually established
- Describe the process for tracking a target’s progress
- List methods for reporting and communicating target information to internal and external stakeholders
- Describe how target setting fits into the performance-based planning and programming process and influences project selection and prioritization
- Identify requirements that impact target setting practices and processes

TARGET AUDIENCE

The target audience for this Web-based Training course includes the following: + Technical roles responsible for setting targets + Planning/programming staff who develop the Statewide Transportation Improvement Program (STIP) and regional Transportation Improvement Programs (TIPs) + Staff dedicated to performance management + Individuals who will be involved in coordination/collaboration of target setting + Federal Highway Administration/Division Office employees and FTA employees who provide oversight for and assistance with target setting, including Performance and Management Analysts (PMAs) and subject area specialists who will assist their state and local partners + Higher-level decision makers who will ultimately decide on which targets to use
**Training Level:** Intermediate

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 6.5 Hours (CEU: .7 Units)

**Class Size:** Minimum: 0; Maximum: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-138014

Course Title
Getting Started on Effective TPM for Pavements

‘Getting Started on Effective TPM for Pavements’ is a one-hour web-based training course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders need information about new requirements, as well as noteworthy practices.

This WBT course provides an effective, time-efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to provide individuals with a foundational knowledge of the new legislation and regulatory requirements related to pavement condition performance. This foundation will give participants the tools and skills needed to begin helping their DOT and/or MPO meet the new requirements.

The course is organized into the following lessons:
+ Welcome and Overview
+ Performance Measures
+ Data
+ Calculating the Measure
+ Target Setting
+ Minimum Condition Requirements
+ Reporting
+ Coordination and Collaboration
+ Timeline

This course was launched in February 2019.

To enroll in this Web-based Training course, select ‘Add To Cart.’

Outcomes
Upon completion of the course, participants will be able to:
• Identify how TPM can benefit your State DOT or MPO
• Identify the performance measures established for pavement conditions
• Identify the data that is required for metric calculation
• Identify the importance of submitting complete and quality data
• Identify the key aspects of an effective data quality management plan
• Given metric ratings for pavement, calculate the percentage of lane miles in good condition
• Given metric ratings for pavement, calculate the percentage of lane miles in poor condition
• Identify target setting requirements and considerations associated with TPM for pavements
• Identify the minimum condition requirements for pavement
• Identify the different reports and requirements associated with TPM for pavements
• Identify the importance of collaboration to meet the pavement regulatory requirements
• Identify important deadlines associated with the pavement regulatory requirements
TARGET AUDIENCE
The target audience for this web-based training course includes State DOT and MPO staff responsible for pavement management, performance management, and asset management; State DOT and local government staff responsible for Highway Performance Monitoring System (HPMS) reporting who compile pavement data; and State DOT and MPO staff responsible for preparing proposals and calculating impacts for decision makers and target setters.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Getting Started on Effective TPM for Bridges

‘Getting Started on Effective TPM for Bridges’ is a one-hour web-based training course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders need information about new requirements, as well as noteworthy practices.

This WBT course provides an effective, time-efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials, through the use of knowledge checks and other interactive features.

The goal of this course is to give learners an introduction to the new legislation and regulatory requirements related to bridge condition performance. It will help them build a working knowledge of the actions necessary to meet these requirements. This goal will give participants the skills needed to comply with regulation requirements, including data needs, metric calculations, reporting, target setting, collaboration with partners, and making significant progress relative to their state’s identified performance needs.

The module is organized into the following lessons:

+ Welcome and Overview
+ Performance Measures
+ Data
+ Calculating the Measure
+ Target Setting
+ Minimum Condition Requirements
+ Reporting
+ Coordination and Collaboration
+ Timeline

This course was launched in February 2019.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

• Identify how TPM can benefit your State DOT or MPO
• Identify the performance measures established for bridge conditions
• Identify the data that is required for metric calculation
• Identify the importance of submitting complete and quality data
• Given metric ratings for bridges, calculate the percentage of deck area in good condition
• Given metric ratings for bridges, calculate the percentage of deck area in poor condition
• Identify target setting requirements and considerations associated with TPM for bridges
• Identify the minimum condition requirements for bridges
• Identify the different reports and requirements associated with TPM for bridges
• Recognize the role of collaboration in reaching the common goal of achieving a state of good repair
• Identify important deadlines associated with the bridge regulatory requirements
**TARGET AUDIENCE**

The target audience for this WBT course includes State Department of Transportation (DOT) and Metropolitan Planning Organization (MPO) staff responsible for bridge management who are new to Federal performance measure requirements, target setting, and reporting. It also includes experienced staff looking to refresh their knowledge.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 1 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Implementing Performance-Based Planning and Programming

‘Implementing Performance-Based Planning and Programming’ is a one-hour web-based training course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. With associated rulemakings at completion or going through final administration review, State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are looking for and need information to learn about new requirements, as well as noteworthy practices.

This web-based course provides an effective, time efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups to learn more about the lesson topics noted below. This format provides a richer context for information than static materials, through the use of knowledge checks and other interactive features.

The goal of this web-based course is to provide learners with an introductory overview of the key elements and requirements of transportation performance management (TPM) and the performance-based planning and programming (PBPP) framework. The course will give participants the information and resources necessary to begin understanding PBPP to implement it effectively.

The module is organized into the following lessons:
- Welcome and Overview
- Strategic Direction
- Analysis - Part I
- Analysis - Part II
- Programming
- Implementation and Evaluation
- Collaboration and Coordination

This course was launched in May of 2019.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:
- Identify why TPM and PBPP requirements were created and how they are connected
- Recognize the importance of setting a strategic direction in the PBPP framework
- Identify how to align statewide goals and objectives with national goals and performance measures with goals and objectives
- Recognize what factors to consider while setting strategic direction
- Identify how and when to set targets based on goals and measures using the planning analysis process
- Identify how to prioritize transportation investments to meet targets using the planning analysis process
- Identify how to prioritize program-level projects in the TIP and STIP using the PBPP framework
- Identify effective methods for monitoring and evaluating system performance
- Identify performance reporting requirements
- Identify effective methods for coordinating and collaborating across State DOTs, MPOs, and public transit

TARGET AUDIENCE

The target audience for this web-based training course includes State Department of Transportation (DOT) leadership and planning staff—particularly state DOT staff who work on related topics (e.g., performance measures, LRTPs, TAMPs,
freight plans, STIPs) or are new to these topics; Metropolitan Planning Organization (MPO) boards and staff responsible for Metropolitan Transportation Plan and Transportation Improvement Program (TIP) preparation; new hires and junior-level employees at State DOTs and MPOs who may be unfamiliar with planning requirements and PBPP; FHWA Divisions Office staff; consultants working with transportation agencies; and public transit staff.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 1 HOURS (CEU: 0 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Introduction to Highway Performance Monitoring System (HPMS)

‘Introduction to Highway Performance Monitoring System (HPMS)’ is a one-hour Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. In response to associated rulemakings, State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders need information to learn about requirements, as well as noteworthy practices.

The goal of this course is to introduce learners to the HPMS program, its purpose and uses, and how HPMS relates to their jobs. It will help learners understand the history of HPMS, the HPMS data model, data that must be collected and reported, and submission requirements. The course will provide participants with the introductory knowledge needed to ensure their State DOT is complying with HPMS requirements.

This course was launched in August of 2019.

The course includes an end-of-course assessment.
To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify why the HPMS program was created
• Identify the datasets States are responsible for in the HPMS Data Model
• Recognize the importance of submitting data according to requirements
• Identify how data is used after it is submitted
• Identify key dates for submittal and dataset lockdown
• Identify general reporting requirements that all States must follow
• Identify the steps involved in the HPMS workflow
• Recognize what is required during the post-submittal process

TARGET AUDIENCE
The target audience for this Web-based training course includes State Department of Transportation (DOT) HPMS coordinators and staff that collaborate within their respective agencies (from other offices, divisions, etc.) for HPMS purposes; HPMS Program managers and leadership; performance analysts including, but not limited to, traffic engineers, pavement engineers, GIS analysts, and roadway inventory management analysts; junior-level State DOT employees or employees unfamiliar with HPMS; and State DOT consultants.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 1 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Getting Started on Effective TPM for Freight

‘Getting Started on Effective TPM for Freight’ is a one-hour Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to provide individuals with a foundational knowledge of legislation and regulatory requirements related to freight bottlenecks and reliability. This foundation will give participants the skills needed to begin helping their DOT and/or MPO meet the new requirements.

The course is organized into the following lessons:

= Welcome and Overview
= Performance Measures
= Data
= Calculating the Measure
= Target Establishment
= Truck Freight Bottlenecks
= Reporting and Timeline
= Working with the Private Sector
= Wrap-Up

This course was launched in August of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

• Identify how TPM can benefit your State DOT or MPO
• Identify the performance measure established for Freight Reliability and the data required for metric calculation
• Calculate the Total Annual Truck Delay and the Truck Travel Time Reliability Index
• Identify requirements associated with establishing targets for freight and considerations associated with tracking travel time reliability
• Describe potential approaches for setting targets for freight
• Identify the importance of coordination and collaboration to establish targets and meet the freight regulatory requirements
• Describe best practices for agencies to collaborate to improve freight performance
• Identify the TPM requirements for, and outline methods to classify, truck freight bottlenecks
• Identify tools to determine bottleneck root causes
• Identify the different reports, requirements, and important deadlines associated with TPM for freight

TARGET AUDIENCE
The target audience for this Web-based training course includes freight planners or TPM practitioners at State DOTs and MPOs who are charged with TPM implementation and preparation of regular baseline and progress TPM reports. The course is also relevant for planners preparing or updating their freight plan and/or calculating the Truck Travel Time Reliability performance measure.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A  
**LENGTH:** 1 HOURS (CEU: 0 UNITS)  
**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-138019

Course Title
Transportation Performance Management for Congestion including Freight, Self-Study

This course is the WBT-only version of a previous course (138010) that included a live webconference session with instructors. This course does not include the live feature.

‘Transportation Performance Management for Congestion including Freight, Self-Study’ is a six-hour web-based training course offered by NHI.

In many locations around the country, transportation agencies are tasked with the mandate to improve system performance, while struggling with limited budgets and resources. The Moving Ahead for Progress in the 21st Century (MAP-21) established a new performance-based Federal-aid program that was continued under the Fixing America’s Surface Transportation Act (FAST). The new program required State Departments of Transportation (State DOTs) and Metropolitan Planning Organizations (MPOs) to “assess the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP); to assess freight movement on the Interstate System; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program”.

The goal of this course is to provide the target audience with the skills and abilities to compile and analyze highway system performance data, calculate highway system performance measures, establish highway system performance targets, report highway system performance, and assess progress toward achieving performance targets.

The course consists of the following WBT modules:

Module 1: Highway System Performance Management Overview
Module 2: Performance-Based Planning and Programming
Module 3: Congestion and Freight Measures
Module 4: Data for Measuring Highway System Performance
Module 5: Calculating Congestion and Freight Measures
Module 6: Setting System Performance Targets
Module 7: Performance Evaluation and Reporting

The original course was launched in March 2019. This version of the course, which removes the live webconference component, was launched in September 2019.

Some of the modules include hands-on exercises to practice the calculations. Following these modules, participants must complete an end-of-course-assessment covering the content of the WBT modules.

To enroll in this WBT course, select ‘Add To Cart’.

Outcomes
Upon completion of the course, participants will be able to:

• Describe the transportation performance management requirements related to highway system performance.
• Describe the performance-based planning process as it applies to highway system performance.
• Identify required highway system performance measures and their role in system performance management.
• Identify the steps in processing highway system performance data, including manipulating the probe data sets to obtain the data needed to calculate the performance measures.
• Calculate highway system performance measures.
• Discuss the application of target setting approaches to highway system performance.
• Describe required process for highway system performance monitoring, reporting, and evaluation.

Target Audience
The target audience for this WBT course includes staff involved in establishing system performance targets for State...
Departments of Transportation (State DOT) staff and Metropolitan Planning Organizations (MPOs). This target audience includes planners, system operators, traffic engineers, freight planners, and performance managers from State, local, and Federal agencies and MPOs. FHWA Division Office Freight staff is also included as target audience for this course.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 6 HOURS (CEU: .6 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-138020

Course Title
Getting Started on Effective TPM for the On-Road Mobile Source Emissions Reduction Measure

‘Getting Started on Effective TPM for the On-Road Mobile Source Emissions Reduction Measure’ is a one-hour Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to introduce you to the legislation and regulatory requirements related to measurement and reporting of on-road mobile source emissions reductions associated with CMAQ projects. The course will help you build a working knowledge of the actions necessary to meet these requirements. The course will also give you the skills needed to comply with regulation requirements, including data needs, measure calculations, reporting, target setting, and collaboration with partners.

The course is organized into the following lessons:
= Welcome and Overview
= Performance Measures
= Data
= Calculating the Measure
= Target Setting
= Reporting and Timeline
= Collaboration
= Wrap-Up

This course was launched in September of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

Outcomes

Upon completion of the course, participants will be able to:

- Identify how TPM can benefit your State DOT or MPO
- Identify the performance measure established for CMAQ on-road mobile source emissions reductions
- Explain who is affected by a performance measure related to CMAQ on-road mobile source emissions reductions
- Identify the requirements for data submission and explain the importance of submitting timely, complete, and quality data
- Calculate cumulative CMAQ program-related emission reductions over 2 and 4 years
- Identify target setting requirements and suggested approaches associated with the TPM measure for CMAQ on-road mobile source emissions reductions
- Identify additional considerations related to the TPM measure for CMAQ on-road mobile source emissions reductions
- Identify the different reports, requirements, and important deadlines associated with TPM for CMAQ on-road mobile source emissions reduction measure
- Identify the importance of collaboration to meet the CMAQ on-road mobile source emissions measure regulatory
requirements and suggested strategies for coordination

TARGET AUDIENCE
The target audience for this web-based training course includes CMAQ program managers and staff with TPM responsibilities at State DOTs and MPOs whose geographic boundaries include any part of a nonattainment or maintenance area for ozone, carbon monoxide, or particulate matter and, therefore, receive Federal CMAQ funding for transportation projects that improve air quality.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Data for TPM

‘Data for TPM’ is a ninety-minute Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time-efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to introduce you to the legislation and regulatory requirements related to the management and use of data. The course will help you build a working knowledge of how to meet TPM requirements of 23 CFR 490 and the associated MAP-21 and FAST Acts—including the specific skills of collecting data, processing and storing data, data distribution and retrieval, data analysis, and data delivery.

The course is organized into the following lessons:

- Welcome and Overview
- Data for TBM Business Practices
- The Who and What of Data for TPM
- Data Management for TPM
- Data Improvement Planning
- Wrap-Up

This course was launched in November of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

- Identify the role of data for TPM in your State DOT or MPO and your own role in data for TPM
- Identify the data required to support TPM business practices
- Distinguish between the different data audiences
- Identify methods for delivering data to your agency's data audiences
- Define methods to address data quality
- Identify data elements and attributes that need to be consistently defined across program areas to integrate data
- Describe the importance of data governance
- Identify how to address data gaps in a Data Management and Improvement Plan
- Describe the benefits of using a Data Management and Improvement Plan
- Identify additional resources for learning about data for TPM

TARGET AUDIENCE

The target audience for this web-based training course includes safety, infrastructure condition, congestion reduction, system reliability, freight movement, and environmental sustainability data managers and analysts who want to understand how to support TPM.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Making the Connection between HPMS Data Items and TPM

‘Making the Connection between Highway Performance Monitoring System (HPMS) Data Items and TPM’ is a ninety-minute Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time-efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to introduce you to HPMS as it relates to TPM, as well as data items used to meet TPM requirements. The course will help you understand how HPMS supports TPM performance measures, as well as how TPM has affected HPMS requirements. The course will also help you understand reporting requirements for each of the data items included in the course. This knowledge will help you ensure the HPMS workflows and processes at your State DOTs align with the HPMS requirements and timeline. Additionally, you will gain the knowledge and skills needed to collect, process, and report TPM-related data in an HPMS-compliant manner.

The course is organized into the following lessons:

=Welcome and Overview
=Sections Data Set
=Inventory Data Items
=Pavement Data Items
=Special Networks Data Items
=Travel Time Data Items
=Overview of Reporting Requirements
=Overview of Timeline Requirements

This course was launched in November of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

- Identify why TPM requirements were created
- Identify how HPMS supports TPM national goals and performance measures
- Recognize the importance of following data submission requirements
- Identify the reporting requirements for the Sections dataset
- Identify reporting requirements for select inventory data items, pavement data items, special networks and National Highway System (NHS) data items, and travel time data items
- Recognize the importance of updating existing workflows to align with reporting requirements related to TPM
- Identify how to process data to meet HPMS reporting requirements
- Recognize changes to the HPMS timeline for data collection related to TPM and for reporting due to TPM
- Identify what happens to the data post-submission
TARGET AUDIENCE
The target audience for this web-based training course includes State Department of Transportation (DOT) HPMS coordinators and staff that collaborate within their respective agencies (from other offices, divisions, etc.) for HPMS purposes; performance analysts including, but not limited to, traffic engineers, pavement engineers, GIS analysts, and roadway inventory management analysts; junior-level State DOT employees or employees unfamiliar with HPMS; and State DOT consultants.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Communicating and Reporting on Transportation Performance Management

‘Communicating and Reporting on Transportation Performance Management’ is a one-hour Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to provide you with a foundational knowledge base about how communicating and reporting on transportation performance provides a rigorous practice to promote transparency and accountability. Topics include the products, techniques, and processes used to communicate performance information to different audiences for maximum impact.

The course is organized into the following lessons:

= Welcome and Overview
= Implementing Reporting
= Stakeholder Communication Parts 1 and 2

This course was launched in December of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

OUTCOMES

Upon completion of the course, participants will be able to:

• Identify how transportation performance management (TPM) provides a rigorous reporting and communication practice to promote transparency and accountability
• Identify the benefits of, and elements essential to, communicating and reporting on TPM
• Compare the purposes of, and audiences for, internal and external transportation performance reporting
• Distinguish the steps for integrating internal reporting into the TPM process to the steps for integrating external reporting into the TPM process
• Distinguish between exploratory data analysis and explanatory data analysis
• Identify components of an effective reporting performance story
• Identify how to select visuals to illustrate a performance story
• Identify the impact of biases on performance storytelling
• Identify how to use numbers correctly to illustrate a performance story
• Identify additional resources for learning about communicating and reporting on transportation performance

TARGET AUDIENCE

The target audience for this web-based training course includes practitioners in State DOTs and MPOs responsible for communicating and reporting on transportation performance.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-138024

Course Title
Monitoring and Adjustment for TPM

‘Monitoring and Adjustment for TPM’ is a ninety-minute Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management (TPM) and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time-efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to provide you a foundational knowledge base about processes used to track and evaluate actions taken and outcomes achieved, thereby establishing a feedback loop to refine planning, programming, and target-setting decisions. This foundation will enable you to use performance data to obtain key insights into the effectiveness of decisions and identify where adjustments need to be made to improve performance.

The course is organized into the following lessons:

- Welcome and Overview
- The Relationship to TPM
- The System-Level Monitoring and Adjustment Process
- The Program and Project-Level Monitoring and Adjustment Process

This course was launched in December of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

Outcomes
Upon completion of the course, participants will be able to:

- Identify how monitoring involves using performance data to obtain key insights into the effectiveness of decisions
- Identify how adjustments involve using key insights captured during monitoring to improve performance
- Identify the relationship between monitoring and adjustment and the TPM components from the FHWA TPM Guidebook
- Define systems-level monitoring and adjustment and program- and project-level monitoring and adjustment
- Identify the steps for implementing both system-level monitoring and adjustment and project-level monitoring and adjustment from the FHWA TPM Guidebook

Target Audience
The target audience for this web-based training course includes practitioners in State DOTs and MPOs responsible for monitoring and adjustment of transportation performance.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-138025

Course Title
Investment Decision Making and TPM

‘Investment Decision Making & TPM’ is a ninety-minute Web-based training (WBT) course offered by NHI, the authoritative source in transportation training.

The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act ushered in a range of new provisions for the Federal-aid highway program related to transportation performance management and highway infrastructure. State Departments of Transportation (DOTs), metropolitan planning organizations (MPOs), FHWA Division Offices, and other stakeholders are seeking information about requirements, as well as noteworthy practices.

This course provides an effective, time efficient, and accessible format for practitioners in State DOTs, MPOs, FHWA, and other groups. This format provides a richer context for information than static materials through the use of knowledge checks and other interactive features.

The goal of this course is to provide you a foundational knowledge base about how legislative and regulatory requirements related to TPM and asset management affect investment decision making during planning. This foundation will give you the skills needed to help your DOT or MPO integrate the requirements into your wider investment decision-making processes.

The course is organized into the following lessons:
- Welcome and Overview
- Cross-Asset Resource Allocation & MODA Techniques
- MODA Framework
- Basic Principles of Enterprise Risk Management

This course was launched in December of 2019.

The course includes an end-of-course assessment.

To enroll in this Web-based Training course, select ‘Add To Cart.’

Outcomes
Upon completion of the course, participants will be able to:
- Identify how investment decision making at your State DOT or MPO can be strengthened during development of statewide or metropolitan plans by integrating it with TPM elements (including goals, measures, and targets)
- Identify how a MODA framework and MODA techniques can help practitioners consider tradeoffs and optimize allocation of transportation investments to achieve desired performance outcomes via cross-asset allocation
- Identify how programming within and across performance areas is beneficial
- Identify the importance of choosing broad strategies during planning that will inform selection of projects during programming that best ensure progress toward performance goals, objectives, or targets
- Identify the importance of evaluating tradeoffs across alternative investment scenarios, based on comparison of their predicted impacts on performance targets and goals
- Identify how risk management complements investment decision making and TPM
- Identify how MODA can be used to help with risk management

Target Audience
The target audience for this web-based training course includes practitioners and supervisors in State DOTs and MPOs responsible for planning, programming, performance management, and asset management.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-139006

Course Title
Integrating Freight in the Transportation Planning Process - WBT-Standard Version

The information contained in this course has not been updated to reflect major changes in freight and planning such as those enacted under the MAP-21 and the FAST-Act.

Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight perspectives into the transportation planning process in a way that results in a safe and efficient transportation system for both people and goods. This Web-based training course will provide a greater understanding of freight trends, its stakeholders, and its issues, so that public-sector transportation planners are better able to incorporate freight into their respective transportation planning processes and programs.

This is a prerequisite course for other Freight courses.

In accordance with the Rehabilitation Act of 1973, as amended, this WBT is also available in an accessible 508 compliant version. See course number FHWA-NHI-139006W for more information.

Outcomes
Upon completion of the course, participants will be able to:

- Identify the stakeholders involved in freight transportation
- Explain the role of different modes in freight transportation
- Describe some trends affecting freight transportation, and their impact on a State’s transportation system and communities
- Discuss some of the common issues that prevent freight from being fully incorporated into the planning process
- Identify key resources to help guide statewide and metropolitan freight planning effort

Target Audience
Transportation planners and freight transportation planners from State DOTs, MPOs, local governments, and Federal agencies.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-139006W

Course Title
Integrating Freight in the Transportation Planning Process - WBT-Accessible 508 Version

The information contained in this course has not been updated to reflect major changes in freight and planning such as those enacted under the MAP-21 and the FAST-Act.

Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight perspectives into the transportation planning process in a way that results in a safe and efficient transportation system for both people and goods. This Web-based training course will provide a greater understanding of freight trends, its stakeholders, and its issues, so that public-sector transportation planners are better able to incorporate freight into their respective transportation planning processes and programs.

This is a prerequisite course for other Freight courses.

In accordance with the Rehabilitation Act of 1973, as amended, this WBT was developed as an accessible 508 compliant version. See course number FHWA-NHI-139006 for the standard WBT version.

Outcomes
Upon completion of the course, participants will be able to:

• Upon completion of the course, participants will be able to:
• Identify the stakeholders involved in freight transportation
• Explain the role of different modes in freight transportation
• Describe some trends affecting freight transportation, and their impact on a State's transportation system and communities
• Discuss some of the common issues that prevent freight from being fully incorporated into the planning process
• Identify key resources to help guide statewide and metropolitan freight planning effort

Target Audience
Transportation planners and freight transportation planners from State DOTs, MPOs, local governments, and Federal agencies.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 6 HOURS (CEU: .6 UNITS)
Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-141045

COURSE TITLE
Real Estate Acquisition under the Uniform Act: An Overview - WEB-BASED

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) is the basis for Federally-funded real estate acquisition programs. This self-paced training provides an overview of the Uniform Act's three key elements: valuation, acquisition, and relocation. This course underscores the importance of following Uniform Act requirements when acquiring property for a Federally-funded transportation project.

OUTCOMES
Upon completion of the course, participants will be able to:

• Provide a basic overview of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act)
• Discuss the three key elements of the Uniform Act: valuation/appraisal, acquisition and relocation
• Explain how to develop an estimate of just compensation using the appraisal process or appraisal waiver procedure(s)
• Identify relocation benefits and services required by the Uniform Act
• List places to obtain relevant resource documents and materials

TARGET AUDIENCE
Federal, State, and local government employees and consultants who acquire real estate for Federally-funded transportation projects. This includes acquisition and relocation agents; program or project managers; grant administrators or grant recipients; appraisers, realty specialists, attorneys, engineers, planners, and others involved with real property acquisition.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 6 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
141047 Local Public Agency Real Estate Acquisition training is designed for those who are unfamiliar with Federal requirements when acquiring real property for Federally-assisted transportation projects. This training provides participants with a working knowledge of these Federal requirements when acquiring real property, including relocation guidance related to individuals and businesses.

Comprised of seven distinct learning modules, this self-paced Web-based training (WBT) provides an overview on real estate acquisition authority and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) and related regulations. Additional modules include project development and administrative matters; valuation; acquisition and negotiation; relocation; and property management. This training also includes case studies, important resources, and suggestions for other companion courses.

Failure to comply with the Uniform Act when acquiring real property for a Federally-funded transportation project can put this funding at risk and may lead to project delays.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain the statutory basis for Federal requirements and relate these to State and local laws, regulations and procedures
• Explain the intent of the Uniform Act and describe what States and LPAs must do to comply
• Describe how a typical project is developed and strategies for enhancing project delivery
• Describe the LPA role in the appraisal process and determine the appropriate valuation format for specific situations
• Describe the sequence for land acquisition and options available to the negotiator
• Explain what relocation advisory services are to be provided to property owners and tenants and differentiate the residential and nonresidential relocation processes
• Summarize various property management activities and evaluate property management actions using specific case studies

TARGET AUDIENCE
Those within local public agencies who are responsible for acquiring right-of-way for federally-funded projects, as well as those responsible for oversight of LPAs, in addition to FHWA personnel, consultants, Federal and State staff and other interested parties.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 6 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-141048

Course Title
Outdoor Advertising Control: Bonus States - WEB-BASED

Outdoor Advertising Control (OAC) limits the location, size, spacing, and lighting of signs adjacent to the interstate, National Highway System, and other Federal-Aid primary routes. Regulators are responsible for enforcing these requirements. The material in this training applies to all States and will help participants interpret major legislation and make effective decisions in support of OAC.

There are two related OAC Web-based trainings (WBTs): one designed for Bonus States (23 states) and the other for the remaining non-Bonus States. 141048 Outdoor Advertising Control: Bonus States includes one additional lesson addressing unique requirements these States must follow. Please refer to 141049 for information on this companion course.

Comprised of eight distinct learning modules, this self-paced WBT addresses Federal laws and regulations regarding signs adjacent to the right-of-way; zoning and related programs; commercial advertising signs adjacent to the right-of-way; recognized Federal sign classifications; implementation; maintenance and illegal sign removal; acquisition of signs on highway projects under the Uniform Act, as amended; and bonus state requirements.

This training provides participants an overview on laws and requirements related to Outdoor Advertising Control.

Outcomes
Upon completion of the course, participants will be able to:

• Apply Federal laws and regulations to assist in interpreting State and local laws and regulations for effective control
• Identify major Federal outdoor advertising legislation and regulations, and their importance for effective control
• Implement the process of effective control

Target Audience
State department of transportation employees; county, city town, and township staff involved with outdoor advertising; FHWA staff; and consultants assisting governmental entities with their Outdoor Advertising Control program.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-141049

Course Title
Outdoor Advertising Control: Non-Bonus States - WEB-BASED

Outdoor Advertising Control (OAC) limits the location, size, spacing, and lighting of signs adjacent to the interstate, National Highway System, and other Federal-Aid primary routes. Regulators are responsible for enforcing these requirements. The material in this training applies to all States and will help participants interpret major legislation and make effective decisions in support of OAC.

There are two related OAC Web-based trainings (WBTs): one designed for Bonus States (23 states) and the other for the remaining non-Bonus States. 141049 Outdoor Advertising Control: Non-Bonus States and 141048 Outdoor Advertising Control: Bonus States. Please refer to 141048 for information on this companion course.

The course follows recommended FHWA specifications and practices for drilled shaft construction but may be modified to follow local agency specifications and practices.

Comprised of seven distinct learning modules, this self-paced WBT addresses Federal laws and regulations regarding signs adjacent to the right-of-way; zoning and related programs; commercial advertising signs adjacent to the right-of-way; recognized Federal sign classifications; implementation; maintenance and illegal sign removal; and acquisition of signs on highway projects, under the Uniform Act, as amended.

This training provides participants an overview on laws and requirements related to Outdoor Advertising Control.

Outcomes
Upon completion of the course, participants will be able to:

- Apply Federal laws and regulations to assist in interpreting State and local laws and regulations for effective control
- Identify major Federal outdoor advertising legislation and regulations, and their importance for effective control
- Implement the process of effective control

Target Audience
State department of transportation employees; county, city town, and township staff involved with outdoor advertising; FHWA staff; and consultants assisting governmental entities with their Outdoor Advertising Control program.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134109J

Course Title
Maintenance Training Series: Underground Storage Tanks

The Nation’s underground storage tank (UST) systems consist of underground tanks and piping that store petroleum and other hazardous materials. This course, Underground Storage Tanks, addresses the procedures to install, operate, and remove USTs.

Developed specifically for maintenance personnel, this course provides participants with an understanding of the Federal laws and regulations that govern UST systems. During the course, participants acquire the knowledge needed to successfully oversee UST installations and closures. Specifically, the course explores the requirements of industry installation and closure codes, leakage detection, spill and overfill prevention, corrosion protection, and ensuring a “clean” closure.

This training was developed as part of the Maintenance Training Series. To access all the trainings in the series, enroll in the 134109 course.

Outcomes
Upon completion of the course, participants will be able to:
• Describe the regulatory framework governing the operation of underground storage tanks
• Describe UST operations
• Describe the process that must be followed to obtain satisfactory “clean closure” from the appropriate oversight agency
• Describe UST cleanup and removal operations

Target Audience
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
 COURSE NUMBER
FHWA-NHI-134109K

 COURSE TITLE
Maintenance Training Series: Cultural and Historic Preservation

Cultural and historic sites are often located within an area where maintenance activities are scheduled to be completed. This training, Cultural and Historic Preservation, is teaches participants about regulations and concerns related to safeguarding cultural and historic sites from the potential impacts of highway maintenance activities. Examples of maintenance activities that can impact cultural or historic sites include slope stabilization, shoulder or pavement widening, and vegetation control. Additional examples are presented during the course.

This course assists participants with recognizing potential historic or cultural resources, verifying a site’s cultural or historic status, and avoiding impacts to sites when carrying out maintenance activities. Since completing these tasks often requires additional expertise, resources for obtaining needed assistance are provided. In addition, participants learn how maintenance activities can enhance cultural and historic sites through utilization of Context Sensitive Solutions (CSS).

This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.

 OUTCOMES
Upon completion of the course, participants will be able to:

- Identify governing bodies and registries that should be consulted prior to commencing maintenance activities on sites of cultural and historic importance
- Recognize what sorts of structures, landmarks, and properties could pose potential cultural and historic preservation issues
- Describe how to avoid impacts to historic sites
- Describe the role of DOT in maintaining and enhancing cultural resources

 TARGET AUDIENCE
This course is designed for State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

 TRAINING LEVEL: Basic

fee: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Introduction to NEPA and Transportation Decisionmaking - WEB-BASED

The National Environmental Policy Act of 1969 (NEPA) requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with Federal environmental protection goals. NEPA also requires Federal agencies to use an interdisciplinary approach in planning and decisionmaking for any action that adversely impacts the environment.

This Web-based training is a basic introduction to FHWA’s NEPA transportation decisionmaking process that takes into account the potential impacts of transportation projects on the human and natural environment balanced with the public’s need for safe and efficient transportation. The training covers NEPA requirements as implemented by the Council on Environmental Quality, as well as FHWA’s regulations and guidance for NEPA implementation and project decisionmaking. Topics include purpose and need, alternatives development and analysis, impact analysis, public involvement, interagency coordination, mitigation, and documentation. We strongly recommend completion of this self-paced training prior to enrolling in FHWA-NHI 142005.

OUTCOMES
Upon completion of the course, participants will be able to:

• Relate the origin, evolution, and context of NEPA
• Describe the intent, goals, and basic requirements of NEPA
• Describe the NEPA umbrella concept in transportation decisionmaking
• Identify the NEPA principles in the development of transportation projects
• Explain the roles and responsibilities of the lead agency, applicant, and cooperating agencies in the NEPA process
• List documentation requirements of the NEPA process

TARGET AUDIENCE
Staff from FHWA, State Departments of Transportation (DOT), Federal and State environmental resource agencies, local government, MPOs who participate in the transportation decisionmaking process, and consultants acting on behalf of State and local governments.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142062

Course Title
Administrative Record - WEB-BASED

This web-based training (WBT) course describes the purpose of an Administrative Record, explains what should be included in an Administrative Record, and presents best practices for building a defensible Administrative Record. Please note that this WBT is not meant to take the place of formal legal advice and consultation with FHWA counsel is strongly recommended.

Outcomes
Upon completion of the course, participants will be able to:

- Describe the purpose of an Administrative Record
- Explain the factors involved in determining what should be included in an Administrative Record
- Describe best practices for building a defensible Administrative Record

Target Audience
This course is designed for Federal Highway Administration (FHWA) Division office staff who are responsible for the Administrative Record, as well as for State DOT employees and their contractors who need to build and maintain an Administrative Record.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142063

Course Title
Highway Traffic Noise: Basic Acoustics - WEB-BASED

This Web-based training (WBT) course provides an overview of Acoustic Principles related to highway traffic noise. The course incorporates the Interactive Sounds Information System (ISIS) -- a customized noise simulation model -- to demonstrate Acoustic Principles.

The WBT begins with the characteristics of sound and discusses how to apply basic concepts of acoustics to solve sample problems. It proceeds to the propagation of sound: a presentation on the four phenomena of divergence, ground effects, atmospheric effects, and shielding by natural and man-made features. The interaction between highway noise and barriers is described and key noise barrier concepts are presented (i.e. direct, incident, transmittal, reflected, and diffracted). Traffic noise sources are discussed, as well as a brief overview of traffic noise modeling and vehicle classification types.

The goal for the Highway Traffic Noise: Basic Acoustics WBT is to explain the basic principles of highway traffic acoustics.

Outcomes
Upon completion of the course, participants will be able to:

- Apply basic concepts of acoustics to solve sample problems
- Add levels in decibels
- Describe characteristics affecting noise propagation
- Describe how noise interacts with barriers
- Determine the increase in level for N sources vs. one source
- Determine the change in level with changing distance for a point source and for a line source

Target Audience
The Basic Acoustics of Highway Traffic Noise WBT is intended for FHWA staff; State department of transportation (DOT) environmental specialists, designers, planners or engineers; city or county environmental engineers, coordinators or specialists, and consultants. The training design for this WBT assumes that participants have basic computer skills (e.g. manipulating windows, using directories, a web browser, etc).

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 2 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142068

Course Title
Air Quality Planning: Clean Air Act Overview - WEB-BASED

The purpose of this training is to provide participants with an overview of air quality planning, including requirements, processes, interactions with and implications for, transportation planning and project development.

This is the first in a future series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

Outcomes
Upon completion of the course, participants will be able to:
• Define the purpose of the Clean Air Act
• Describe the 1990 Clean Air Act Amendments
• Identify and explain Clean Air Act Amendment provisions relevant to transportation
• Recognize impacts of Clean Air Act

Target Audience
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-142069

COURSE TITLE
Air Quality Planning: SIP and TCM Requirements and Policies - WEB-BASED

This course covers the different types of SIPs and key CAA SIP requirements general to all SIPs and specific to ozone, CO and PM SIPs; discusses how the EPA processes SIPs; explores the key features of EPA SIP policies and how they differ from CAA requirements; and explains RACM and how it applies to TCMs.

This is the second in a future series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

OUTCOMES
Upon completion of the course, participants will be able to:
- Define SIP
- List different types of SIPs and their purposes
- Identify SIP requirements in Title I of the Clean Air Act
- Describe TCM requirements
- Describe what is meant by Reasonably Available Control Measure, or RACM, and how this applies to TCMs

TARGET AUDIENCE
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142070

Course Title
Air Quality Planning: SIP Development Process - WEB-BASED

This course provides an overview of the State Implementation Plan (or SIP) development process, focusing on agency roles, with an explanation of the problem definition and solution parts of the process. This course also covers motor vehicle emission budgets that are included in SIPs and used in conformity determinations, as well as describes EPAs procedures in approving and disapproving SIPs.

This is the third in a series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

Outcomes
Upon completion of the course, participants will be able to:
• Describe the SIP development process;
• Identify the various emission sources and describe emission trends;
• List the steps involved in preparing emission inventories;
• Describe how SIP emission reductions are determined; and
• Describe the different types of control measures, emphasizing the role of transportation-related strategies.

Target Audience
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A
Length: 2 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142071

Course Title
Air Quality Planning: Transportation Conformity - WEB-BASED

This course defines transportation conformity and is designed for individuals that are new to transportation conformity, with little to no experience with the Transportation Conformity Rule.

This introductory transportation conformity course will answer questions related to the “what” of transportation conformity. What is transportation conformity? What activities are covered by conformity? What are the major requirements?

This course does not address how transportation conformity regulations are met. That topic is an advanced subject matter area and out of scope for an introductory transportation conformity course.

This is the fourth in a future series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

Outcomes
Upon completion of the course, participants will be able to:

• Relate transportation conformity to Transportation Improvement Programs (TIPs) and transportation plans
• Define transportation conformity
• Explain the transportation activities that are subject to conformity in a given timeframe
• Describe transportation conformity requirements for different activities
• Explain stakeholder responsibilities related to transportation conformity

Target Audience
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 1.5 Hours (CEU: 0 Units)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-142074

COURSE TITLE
Fundamentals of Environmental Justice

Fundamentals of Environmental Justice (WBT) explains how environmental justice, or EJ, applies to each stage of transportation decision making. The US Department of Transportation, or US DOT, and its partners are committed to integrating the principles of EJ and nondiscrimination into all Federal programs and activities. In this course, participants are presented with a variety of strategies and resources for considering EJ throughout the transportation decision-making process.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the background of EJ as related to transportation and decision making.
• Identify definitions, principles, and benefits related to EJ.
• Describe the importance of public involvement in the transportation decision-making process.
• Describe EJ considerations in the transportation planning process.
• Describe EJ considerations in environmental review and design.
• Describe EJ considerations related to the right of way phase of transportation decision making.
• Identify EJ considerations during construction, operations, and maintenance.

TARGET AUDIENCE
The target audience consists of transportation practitioners (entry-level to senior-level) employed at a range of organizations, including State Departments of Transportation, Metropolitan Planning Organizations, local transportation agencies, and consulting firms. The typical learner may hold the following professional roles: data analyst, planner, project-development specialist, environmental specialist, civil rights specialist, consultant, or any other job function that may require knowledge of environmental justice and transportation. Also, those who interact with minority and/or low-income communities; provide community services; and elected officials and their representatives may benefit from this course.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142077

Course Title
Basics of Public Involvement in Transportation Decision Making

Basics of Public Involvement in Transportation Decision Making is a 4-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Effectively engaging the public in transportation decisions can help build support for the project, which can promote cost savings by reducing project delays and improving the project delivery process. NHI-142077 Basics of Public Involvement in Transportation Decision Making provides transportation practitioners with the knowledge and tools needed to better engage the public in transportation decisions as well as meet Federal requirements for public involvement.

In this course, participants will discover the importance of public involvement in transportation decision making and become familiar with the broad range of strategies and techniques transportation practitioners can use to identify and engage the public in a meaningful way.

This course explores the relationship between public involvement and transportation decision making. It presents participants with an overview of Federal public involvement regulations and directives for transportation planning, programming, and project development, as well as a framework for engaging the public using a variety of approaches.

Outcomes
Upon completion of the course, participants will be able to:

- Identify the importance of public involvement
- Recall the background of public involvement
- Recall the requirements of public involvement
- Recognize the purpose and importance of participation and public engagement during the planning and NEPA processes
- Recall which members of the public are potential participants in the transportation decision-making process
- Choose how to tailor public involvement communication to engage a variety of constituents
- Identify effective public involvement techniques appropriate to a variety of situations
- Identify strategies for promoting participant interaction
- Identify how to solicit and use public feedback to inform transportation decision making
- Select evaluation strategies and methods that are suitable for determining the effectiveness of a public engagement plan
- Identify emerging trends and innovative approaches to public involvement

Target Audience
The target audience for this WBT course includes transportation practitioners from Federal, State, regional, and local agencies, particularly data analysts, planners, engineers, project development specialists, environmental specialists, civil rights specialists, consultants, and other professionals whose job function may require knowledge of public involvement to support transportation decision making.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU:.4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-139006

COURSE TITLE
Integrating Freight in the Transportation Planning Process - WBT-Standard Version

The information contained in this course has not been updated to reflect major changes in freight and planning such as those enacted under the MAP-21 and the FAST-Act.

Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight perspectives into the transportation planning process in a way that results in a safe and efficient transportation system for both people and goods. This Web-based training course will provide a greater understanding of freight trends, its stakeholders, and its issues, so that public-sector transportation planners are better able to incorporate freight into their respective transportation planning processes and programs.

This is a prerequisite course for other Freight courses.

In accordance with the Rehabilitation Act of 1973, as amended, this WBT is also available in an accessible 508 compliant version. See course number FHWA-NHI-139006W for more information.

OUTCOMES
Upon completion of the course, participants will be able to:

• Upon completion of the course, participants will be able to:
• Identify the stakeholders involved in freight transportation
• Explain the role of different modes in freight transportation
• Describe some trends affecting freight transportation, and their impact on a State’s transportation system and communities
• Discuss some of the common issues that prevent freight from being fully incorporated into the planning process
• Identify key resources to help guide statewide and metropolitan freight planning effort

TARGET AUDIENCE
Transportation planners and freight transportation planners from State DOTs, MPOs, local governments, and Federal agencies.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 6 HOURS (CEU: .6 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
 COURSE NUMBER
FHWA-NHI-139006W

 COURSE TITLE
Integrating Freight in the Transportation Planning Process - WBT-Accessible 508 Version

The information contained in this course has not been updated to reflect major changes in freight and planning such as those enacted under the MAP-21 and the FAST-Act.

Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight perspectives into the transportation planning process in a way that results in a safe and efficient transportation system for both people and goods. This Web-based training course will provide a greater understanding of freight trends, its stakeholders, and its issues, so that public-sector transportation planners are better able to incorporate freight into their respective transportation planning processes and programs.

This is a prerequisite course for other Freight courses.

In accordance with the Rehabilitation Act of 1973, as amended, this WBT was developed as an accessible 508 compliant version. See course number FHWA-NHI-139006 for the standard WBT version.

 OUTCOMES
Upon completion of the course, participants will be able to:

• Upon completion of the course, participants will be able to:
  • Identify the stakeholders involved in freight transportation
  • Explain the role of different modes in freight transportation
  • Describe some trends affecting freight transportation, and their impact on a State's transportation system and communities
  • Discuss some of the common issues that prevent freight from being fully incorporated into the planning process
  • Identify key resources to help guide statewide and metropolitan freight planning effort

 TARGET AUDIENCE
Transportation planners and freight transportation planners from State DOTs, MPOs, local governments, and Federal agencies.

 TRAINING LEVEL: Basic

 FEE: 2020: $0 Per Person; 2021: N/A

 LENGTH: 6 HOURS (CEU: .6 UNITS)

 CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

 NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-141045

Course Title
Real Estate Acquisition under the Uniform Act: An Overview - WEB-BASED

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) is the basis for Federally-funded real estate acquisition programs. This self-paced training provides an overview of the Uniform Act's three key elements: valuation, acquisition, and relocation. This course underscores the importance of following Uniform Act requirements when acquiring property for a Federally-funded transportation project.

Outcomes
Upon completion of the course, participants will be able to:

- Provide a basic overview of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act)
- Discuss the three key elements of the Uniform Act: valuation/appraisal, acquisition and relocation
- Explain how to develop an estimate of just compensation using the appraisal process or appraisal waiver procedure(s)
- Identify relocation benefits and services required by the Uniform Act
- List places to obtain relevant resource documents and materials

Target Audience
Federal, State, and local government employees and consultants who acquire real estate for Federally-funded transportation projects. This includes acquisition and relocation agents; program or project managers; grant administrators or grant recipients; appraisers, realty specialists, attorneys, engineers, planners, and others involved with real property acquisition.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 6 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-142068

COURSE TITLE
Air Quality Planning: Clean Air Act Overview - WEB-BASED
The purpose of this training is to provide participants with an overview of air quality planning, including requirements, processes, interactions with and implications for, transportation planning and project development.

This is the first in a future series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

OUTCOMES
Upon completion of the course, participants will be able to:
• Define the purpose of the Clean Air Act
• Describe the 1990 Clean Air Act Amendments
• Identify and explain Clean Air Act Amendment provisions relevant to transportation
• Recognize impacts of Clean Air Act

TARGET AUDIENCE
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
**Course Number**
FHWA-NHI-142069

**Course Title**
Air Quality Planning: SIP and TCM Requirements and Policies - WEB-BASED

This course covers the different types of SIPs and key CAA SIP requirements general to all SIPs and specific to ozone, CO and PM SIPs; discusses how the EPA processes SIPs; explores the key features of EPA SIP policies and how they differ from CAA requirements; and explains RACM and how it applies to TCMs.

This is the second in a future series of air quality Web-based trainings (WBTs):
- 142068: Clear Air Act Overview
- 142069: SIP and TCM Requirements and Policies
- 142070: SIP Development Process
- 142071: Transportation Conformity

**Outcomes**
Upon completion of the course, participants will be able to:
- Define SIP
- List different types of SIPs and their purposes
- Identify SIP requirements in Title I of the Clean Air Act
- Describe TCM requirements
- Describe what is meant by Reasonably Available Control Measure, or RACM, and how this applies to TCMs

**Target Audience**
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

**Training Level:** Basic

**Fee:** 2020: $0 Per Person; 2021: N/A

**Length:** 1 HOURS (CEU: 0 UNITS)

**Class Size:** Minimum: 1; Maximum: 1

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142070

Course Title
Air Quality Planning: SIP Development Process - WEB-BASED
This course provides an overview of the State Implementation Plan (or SIP) development process, focusing on agency roles, with an explanation of the problem definition and solution parts of the process. This course also covers motor vehicle emission budgets that are included in SIPs and used in conformity determinations, as well as describes EPAs procedures in approving and disapproving SIPs.
This is the third in a series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

Outcomes
Upon completion of the course, participants will be able to:
• Describe the SIP development process;
• Identify the various emission sources and describe emission trends;
• List the steps involved in preparing emission inventories;
• Describe how SIP emission reductions are determined; and
• Describe the different types of control measures, emphasizing the role of transportation-related strategies.

Target Audience
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 2 HOURS (CEU: 0 UNITS)
Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-142071

COURSE TITLE
Air Quality Planning: Transportation Conformity - WEB-BASED

This course defines transportation conformity and is designed for individuals that are new to transportation conformity, with little to no experience with the Transportation Conformity Rule.

This introductory transportation conformity course will answer questions related to the “what” of transportation conformity. What is transportation conformity? What activities are covered by conformity? What are the major requirements?

This course does not address how transportation conformity regulations are met. That topic is an advanced subject matter area and out of scope for an introductory transportation conformity course.

This is the fourth in a future series of air quality Web-based trainings (WBTs):
142068: Clear Air Act Overview
142069: SIP and TCM Requirements and Policies
142070: SIP Development Process
142071: Transportation Conformity

OUTCOMES
Upon completion of the course, participants will be able to:
• Relate transportation conformity to Transportation Improvement Programs (TIPs) and transportation plans
• Define transportation conformity
• Explain the transportation activities that are subject to conformity in a given timeframe
• Describe transportation conformity requirements for different activities
• Explain stakeholder responsibilities related to transportation conformity

TARGET AUDIENCE
The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1.5 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-142077

Course Title
Basics of Public Involvement in Transportation Decision Making

Basics of Public Involvement in Transportation Decision Making is a 4-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Effectively engaging the public in transportation decisions can help build support for the project, which can promote cost savings by reducing project delays and improving the project delivery process. NHI-142077 Basics of Public Involvement in Transportation Decision Making provides transportation practitioners with the knowledge and tools needed to better engage the public in transportation decisions as well as meet Federal requirements for public involvement.

In this course, participants will discover the importance of public involvement in transportation decision making and become familiar with the broad range of strategies and techniques transportation practitioners can use to identify and engage the public in a meaningful way.

This course explores the relationship between public involvement and transportation decision making. It presents participants with an overview of Federal public involvement regulations and directives for transportation planning, programming, and project development, as well as a framework for engaging the public using a variety of approaches.

Outcomes
Upon completion of the course, participants will be able to:

• Identify the importance of public involvement
• Recall the background of public involvement
• Recall the requirements of public involvement
• Recognize the purpose and importance of participation and public engagement during the planning and NEPA processes
• Recall which members of the public are potential participants in the transportation decision-making process
• Choose how to tailor public involvement communication to engage a variety of constituents
• Identify effective public involvement techniques appropriate to a variety of situations
• Identify strategies for promoting participant interaction
• Identify how to solicit and use public feedback to inform transportation decision making
• Select evaluation strategies and methods that are suitable for determining the effectiveness of a public engagement plan
• Identify emerging trends and innovative approaches to public involvement

Target Audience
The target audience for this WBT course includes transportation practitioners from Federal, State, regional, and local agencies, particularly data analysts, planners, engineers, project development specialists, environmental specialists, civil rights specialists, consultants, and other professionals whose job function may require knowledge of public involvement to support transportation decision making.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-151044

COURSE TITLE
Traffic Monitoring and Pavement Design Programs - WEB-BASED

The goal of this online presentation is to promote interaction and collaboration between traffic monitoring program staff and pavement program staff. The presentation supports implementation of the new Mechanistic Empirical Pavement Design Guide (MEPDG). FHWA's Office of Highway Policy Information, in collaboration with the Design Guide Implementation Team (DIGI Team), created this presentation to help ensure that pavement data needs are met with the existing traffic monitoring program or adjustments to the program.

Please note that the Flash Player must be installed on your computer in order to view the presentation.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe the traffic monitoring program
• Describe the pavement design program, as it relates to traffic monitoring
• Explain the interconnectivity and interdependency between the traffic monitoring and pavement design programs
• Identify ways to make the best use of available funding to meet users’ data needs

TARGET AUDIENCE
Federal and State department of transportation specialists, designers, and administrators who are responsible for traffic monitoring and pavement programs. Local transportation agencies, as well as those who are new to the traffic program and pavement programs, may also find this presentation to be interesting and helpful.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-151052

COURSE TITLE
Basics of Transportation Planning
This course provides an introduction to the Statewide, metropolitan, and rural transportation planning requirements and highlights techniques that may be applied. It highlights the transportation requirements and planning processes, and why they are important; identifies the key stakeholders and describes their roles, responsibilities, and relationships in informed decision making.

OUTCOMES
Upon completion of the course, participants will be able to:

• Explain why the transportation planning process exists and why it is important
• Describe the requirements of the transportation planning process
• Identify the players in the process and describe their roles and responsibilities

TARGET AUDIENCE
Metropolitan Planning Organizations (MPOs)/Regional Transportation Planning Organizations or affected nonmetropolitan transportation officials with responsibility for transportation planning; State Departments of Transportation; Federal Highway Administration and Federal Transit Administration; Planning, Programming, or Project Development staff working or participating in the Statewide or Metropolitan Transportation Planning process; Transit Agencies

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-151057

Course Title
FHWA Planning and Research Grants: Program Administration (23 CFR Part 420)

This course is the first in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed. FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057); FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058); FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHWA-NHI-151509)

‘FHWA Planning and Research Grants: Program Administration (23 CFR Part 420)’ is a 2-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the first of a series of Web-based Training courses on this topic and provides an introduction to the series. Learners will gain familiarity with terms and general concepts around grants. They will also learn the requirements of 23 CFR Part 420--the regulation that implements the Federal-Aid highway planning program outlined in Title 23 and contains the specific FHWA grant policies and procedures that need to be followed.

The course consists of three lessons:
Lesson 1 (Overview) covers key terms associated with and guidelines and legislation that govern the administration of FHWA planning and research grants, distribution of FHWA planning and research funds, and the steps of the grants funding process.
Lesson 2 (23 CFR Part 420 Subpart A) covers the purpose, terminology, and requirements of grants administration outlined in 23 CFR Part 420 Subpart A.
Lesson 3 (23 CFR Part 420 Subpart B) covers the purpose, terminology, and requirements of grants administration outlined in 23 CFR Part 420 Subpart B.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget’s promulgation of 2 CFR 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the “Uniform Guidance” or “Supercircular”) and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.
To enroll in this Web-based Training course, click ‘Add To Cart.’

Outcomes
Upon completion of the course, participants will be able to:
• Define key terms associated with FHWA planning and research grants
• Describe various guidelines and legislation that govern the administration of FHWA planning and research grants
• Discuss the distribution of FHWA planning and research funds
• Define the steps of the grants funding process
• Explain the purpose of 23 CFR Part 420
• Describe the requirements of 23 CFR Part 420

Target Audience
The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--including planning, engineering, and fiscal staff.
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: .2 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-151058

Course Title
FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1

This course is the second in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed.

FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057)

--> FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058)

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHWA-NHI-151059)

‘FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1’ is a 1.5-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the second in a series of Web-based Training courses on this topic and introduces 2 CFR Part 200, the Uniform Guidance. Learners will gain familiarity with the history and overview of the Uniform Guidance, and will get into detail on Subparts A through D.

The course consists of three lessons:

Lesson 1 (History and Overview) covers a brief history of the Uniform Guidance, the responsibilities of the States, and the flow of requirements to state and local governments.

Lesson 2 (Definitions, General Provisions, and Pre-Award Requirements) covers key terms, general provisions, and pre-award requirements, as presented in Subparts A through C of the Uniform Guidance.

Lesson 3 (Post Federal Award Requirements) covers Post Federal Award Requirements, which are presented in Subpart D of the Uniform Guidance.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget's promulgation of 2 CFR Part 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the "Uniform Guidance" or "Supercircular") and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.

To enroll in this Web-based Training course, click ‘Add To Cart.’

Outcomes

Upon completion of the course, participants will be able to:

• Discuss a brief history of the Uniform Guidance
• Describe the responsibilities of the States, in relation to grants management
• Explain the flow of requirements to state and local governments
• Define key terms in the Uniform Guidance (Subpart A)
• Discuss general provisions of the Uniform Guidance (Subpart B)
• Identify pre-award requirements (Subpart C)
• Discuss post-award requirements (Subpart D)

Target Audience

The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--
including planning, engineering, and fiscal staff.

**TRAINING LEVEL:** Basic

**FEE:** 2020: $0 Per Person; 2021: N/A

**LENGTH:** 1.5 HOURS (CEU: .2 UNITS)

**CLASS SIZE:** MINIMUM: 0; MAXIMUM: 0

**NHI Customer Service:** (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-151059

Course Title
FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2

This course is the third in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed.

FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057)

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058)

---> FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHWA-NHI-151059)

‘FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2’ is a 2-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the third in a series of Web-based Training courses on this topic and completes the discussion of 2 CFR 200, the Uniform Guidance (started in course 151058). Learners will explore the last two subparts of the Uniform Guidance, which are Subpart E on Cost Principles and Subpart F on Audit Requirements.

The course consists of four lessons:

Lesson 1 (Cost Principles - Part 1) covers the first few subject groups of Subpart E, which are General Provisions; Basic Considerations; Direct and Indirect Costs; and Special Considerations for States, Local Governments, and Indian Tribes.

Lesson 2 (Cost Principles - Part 2) covers the last subject group of Subpart E—General Provisions for Selected Items of Cost, which explains which costs are allowable and which are unallowable.

Lesson 3 (Audit Terms & Requirements) covers key terms and basic requirements for the audit of Federal awards.

Lesson 4 (Audit Roles & Responsibilities) covers the roles and responsibilities associated with the audit of Federal awards.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget's promulgation of 2 CFR 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the “Uniform Guidance” or “Supercircular”) and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.

To enroll in this Web-based Training course, click ‘Add To Cart.’

Outcomes

Upon completion of the course, participants will be able to:

• Define general terms related to cost principles
• Discuss the General Provisions of Subpart E
• Explain key terms and concepts covered in Basic Considerations of Subpart E
• Discuss Direct and Indirect (F&A) Costs
• Discuss key terms, allocation methods, and related procedures for indirect cost proposals
• Identify costs that are allowable and unallowable under Subpart E
• Define key terms associated with audits
• Discuss the audit requirements for federal awards
• Distinguish between a subrecipient and a contractor
• Discuss the roles and responsibilities of auditees, federal agencies, and auditors
• Identify online resources related to audits

TARGET AUDIENCE
The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--including planning, engineering, and fiscal staff.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: .2 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-134069

COURSE TITLE
Ethics Awareness for the Transportation Industry

The training contains good practices from various agencies. The topics of discussion in this training are: conflict of interest, safety, fraud, falsification of documentation, reporting ethical concerns, gifts and favors, fairness, personal use of agency property, and consequences.

Not all State agencies’ codes of conduct are the same but they all demand similar ethical behavior of their employees. Be sure to access to your agency’s codes or check with your supervisor for more information specific to your organization. Each State agency/company has its own work rules, which the viewer needs to review and follow.

This training is provided in partnership with the Transportation Curriculum Coordination Council (TCCC) to provide good practices for ethical behavior of transportation employees. The training was prepared by State DOT personnel for State DOT personnel. This course is primarily intended for inspectors and technicians.

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe agency expectations on ethics
• Give an example of a current code of conduct policy
• Recognize and practice good ethics as an employee in the transportation industry
• Explain the consequences when rules and regulations are not followed

TARGET AUDIENCE
This training is designed for Level I and Level II State and local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-134070

Course Title
SpecRisk Quality Assurance Specification Development and Validation Course

This course will provide an introduction to statistical analysis and the development of statistically valid quality assurance specifications, introducing general guidelines established and put forth by the Federal Government and FHWA policy. The course also provides participants with an introduction to SpecRisk, the resource that is necessary to successfully develop statistically valid specifications. The course is designed and delivered to motivate members of the target audience to use SpecRisk software to develop their specifications. Although the course demonstrates basic functions of the software, it is not intended to be an in-depth training on how to use SpecRisk.

This course requires a prerequisite solid foundation in basic statistics. Minimum knowledge includes methods of organizing data and how to plot frequency histograms; understanding how a sample relates to the population, the relationship between single and multiple samples, and the use of random stratified sampling tables.

Outcomes
Upon completion of the course, participants will be able to:

- Recognize key concepts to develop an effective, statistically valid Quality Assurance (QA) specification.
- Make an informed selection among available options when developing an acceptance plan.
- Develop QA specifications in alignment with best practices, Federal regulations, and FHWA policy.
- Apply SpecRisk software to understand risks and develop statistically valid specifications.

Target Audience
Personnel involved in specification development: Federal, State, and local highway agency engineers and technicians in materials, construction, and research. The training is also appropriate for industry personnel that are involved in reviewing and providing input to the specification development process.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 8 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 1; Maximum: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Introduction to a Transportation Asset Management Plan

This training is a prerequisite of another NHI training and is offered at no cost.

A Transportation Asset Management Plan (TAMP) can be considered a business plan that builds the case for making infrastructure investments and explains how resources will be used. This course, “Introduction to a Transportation Asset Management Plan,” is a 1-hour, Web-based training (WBT) that introduces the content and organization of a TAMP and the typical TAMP development process. This course was previously cataloged under 131106C.

This training includes the following topics.

- The use of a TAMP in transportation agencies
- The typical content of a TAMP (including a comparison with requirements in MAP-21)
- Key components, including performance projections and the financial summary
- Examples of TAMPs at various levels of maturity
- Existing and anticipated use of a TAMP in state highway agencies
- The expected involvement of agency personnel in developing and updating a TAMP

This training includes audio clips from leaders in state highway agencies that convey the anticipated benefits from the development of a TAMP and the way they expect to use their TAMP. In addition, the WBT highlights the use of existing documentation to develop the TAMP and plans for enhancing the content of future TAMPs.

This training serves as a prerequisite for NHI-136106B “Developing a Transportation Asset Management Plan”, which describes the role of a TAMP in a transportation agency and explores in some detail three important components: strategic performance management, risk assessment and management, and financial management.

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe the role of a TAMP as a communication tool with internal and external stakeholders.
- List the typical content of a TAMP.
- Identify several sources of information that will contribute to the development of a TAMP.

TARGET AUDIENCE

The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who typically have the responsibility for decision-making in one or more areas addressed by transportation asset management. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

TRAINING LEVEL: Intermediate

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-136113

COURSE TITLE
Transportation Asset Management Overview

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI. This training explains the basics of asset management and why asset management is important. After you complete this training, you’ll have new terms, and new ways of thinking about what you’re already doing. More importantly, you’ll understand why it's so important to be strategic and systematic when you’re responsible for managing huge numbers of assets.

This training contains the following lessons:

Lesson 1: What is Transportation Asset Management? This lesson will explain the concept of asset management; give examples of how asset management is used in the planning process; and explain how current asset management practices have been impacted by past transportation needs.

Lesson 2: Asset Management Principles and Practices. This lesson lists the categories of activity that inform spending decisions; explain how policy goals and objectives impact asset management; relate planning and programming to managing assets; describe how asset management principles apply to program delivery; explain why system monitoring is necessary; and explain how quality data and analysis impact asset management.

OUTCOMES
Upon completion of the course, participants will be able to:
- Explain what transportation asset management is and why it is important
- Describe the asset management principles and practices used to make informed spending decisions

TARGET AUDIENCE
This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO, NHI, and is recommended for TCCC levels II through IV.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 2 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-310124A

Course Title
Highway Research 101: Administering the FHWA Highway Research Program

In advancing Federal highway research goals, collaboration between FHWA, grant recipients, and sub-recipients is critical. The Highway Research 101: Administering the FHWA Highway Research Program Web-based Training (WBT) is intended to highlight the responsibilities of FHWA Division Office staff members responsible for research oversight and to acquaint them with the key aspects of regulation and practice that satisfy the agency’s responsibility, as well as expose them to FHWA R&T priorities and programs to help them advance agency goals.

Implementation of RD&T programs is highly contextual, as is implementation of the overall federally assisted, State-administered programs. Those considered among the best are developed and executed to meet the unique priorities and needs of each FHWA partner. Thus, the emphasis of this course is not to communicate the one best way to administer programs using specific professional disciplines. Instead, it communicates the basics of sound project and program management, ranging from practices that lay a framework for optimizing return on investment and provide for accountability to stimulating innovation and improvements to the state of the practice. Formal case studies are available in this course to illustrate the concepts.

Outcomes
Upon completion of the course, participants will be able to:

• Define FHWA’s Research Development and Technology (RD&T) policy
• Explain the Research Program Management Process
• Describe how to administer the requirements for SP&R Subpart B work programs
• Explain how to determine what costs are eligible
• Define a peer exchange program
• Identify the RD&T Coordinator’s role in determining state highway problems and RD&T needs
• Identify how national programs and organizations impact/complement SP&R Part B

Target Audience
The target audience for this course is the staff person deployed in each FHWA Division Office to carry out research oversight. Responsibility for the research portion of SP&R is normally only one of several functional programs administered by this individual. This course is applicable to FHWA research coordinators and other FHWA staff who need training and knowledge to administer the research portion of the SP&R program and support the development and execution of State research programs.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 Hours (CEU: .4 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-361031

Course Title
DBE/ACDBE Certification Training

On November 3, 2014, the Department of Transportation issued a final rule amending its disadvantaged business enterprise program at 49 CFR Part 26. This final rule contains amendments to various certification provisions that are not reflected in the 9-module DBE/ACDBE Certification Training series (FHWA-NHI-361031). We are working to update the 9 modules to reflect the changes. In the meantime, we recommend that upon completion of training you watch a recorded presentation of the final rule amendments available at the Departmental Office of Civil Rights website here: http://www.civilrights.dot.gov/disadvantaged-business-enterprise

-- This training is provided to you at no cost by the Office of the Secretary of Transportation (OST) --

Gain the skills necessary to perform a full review and analysis of Disadvantaged Business Enterprise (DBE) and Airport Concession Disadvantaged Business Enterprise (ACDBE) certification eligibility. The course is delivered through 12 hours of web based training consisting of 9 critical module segments. This training helps ensure that all persons responsible for determining whether or not a firm qualifies as a DBE or ACDBE, as well as those who have general DBE/ACDBE program responsibilities, are knowledgeable concerning all requirements for eligibility, and that the interpretation and application of requirements are consistent throughout the country.

Outcomes
Upon completion of the course, participants will be able to:
• Identify and understand the historical foundation of the DBE/ACDBE program, its objectives, and the overall program operation
• Identify basic certification eligibility requirements according to the regulation 49 CFR Part 26
• Assess whether applicant firms and existing DBE/ACDBEs meet the small business size requirements of the regulation
• Assess ownership/control requirements according to the regulation
• Determine how applicant owners can make an individual showing of social and economic disadvantage according to 49 CFR Part 26 and Appendix E
• Assess whether firm owners meet the economic disadvantage requirements of the regulation
• Perform on-site reviews and collect necessary data
• Properly deny applicant firms entry into the program or remove existing firms’ DBE/ACDBE certification
• Properly apply the interstate certification provisions of the regulation
• Understand fraud and fraud prevention strategies applicable to the DBE/ACDBE program
• Identify and understand DBE/ACDBE certification requirements

Target Audience
All persons responsible for determining whether a firm qualifies as a DBE or ACDBE should take this training, including certifiers and DBE Liaison Officers. Certifiers are required to be knowledgeable concerning all requirements for eligibility and that the interpretation and application of the regulatory requirements are applied consistently nationwide. Ensuring that individuals processing DBE certifications apply the same measure of scrutiny and subjectivity is integral to maintaining the integrity of the program.
Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 12 Hours (CEU: 0 Units)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133116

COURSE TITLE
Maintenance of Traffic for Technicians - WEB BASED

The Maintenance of Traffic for Technicians Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed.

We've broken this training into five modules:
1. General Terms and Procedures
2. Traffic Channelizing and Control Devices
3. Traffic Control Zones
4. Flagger Operations
5. Traffic Control Zone Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify the correct placement of work zone traffic control devices
• Perform field maintenance of work zone traffic control devices
• Inspect placement or operational functions of work zone traffic control devices
• Generate work zone traffic control plans
• Explain the basics of flagging

TARGET AUDIENCE
This training is designed for all persons with duties that include: Direct responsibility for placement of work zone traffic control devices; Direct responsibility for field maintenance of work zone traffic control devices; Inspection of the placement or operational function of work zone traffic control devices; and Drafting or electronic generation of work zone traffic control plans. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A
LENGTH: 5 HOURS (CEU: 0 UNITS)
CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-133117

COURSE TITLE
Maintenance of Traffic for Supervisors - WEB BASED

The Maintenance of Traffic for Supervisors Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed. This training focuses on the design of a traffic control plan, and how and why one needs to operate and implement traffic control in the work zone.

We've broken this training into five modules:
1. Fundamental Principles of Temporary Traffic Control Zones
2. Temporary Traffic Control Devices
3. Traffic Control Zones
4. Transportation Management Plans
5. Flagger Operations

OUTCOMES
Upon completion of the course, participants will be able to:
• Describe how to create clear, organized traffic control plans
• Identify acceptable temporary traffic control devices
• Determine good and bad flagging techniques

TARGET AUDIENCE
This training is designed for personnel with responsibility or authority to decide on the specific maintenance of traffic requirements to be implemented. These positions include engineers responsible for work zone traffic control development and work site traffic supervisors. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER  
FHWA-NHI-134107

COURSE TITLE  
Recognizing Roadside Weeds (Southeastern States)

This training was prepared by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI and has been designed for someone learning the first steps in the vegetation management. However, it does not go into the education of weed prevention. This training is recommended for the Transportation Curriculum Coordination Council levels I, and II. This course is primarily intended for inspectors and technicians.

The first step in determining an appropriate weed control strategy is to identify the weed plant. There are numerous different plants growing along many roadsides that can be considered weeds. This is a basic course in the area of weed identification. Most weeds are territorial to different climates and regions, therefore, making it difficult to identify nationally weeds that are dealt with by different State DOT’s. This training does focus on southeastern states and is organized in alphabetical order of the weeds that will be covered.

For more information on how stop the migration of weeds contact your State Vegetation Management Program.

OUTCOMES
Upon completion of the course, participants will be able to:

• Understand the definition of a weed
• Describe the reasons for weed control
• Identify several of the most common weeds

TARGET AUDIENCE  
This course is designed for entry level individuals working in vegetation management.

TRAINING LEVEL: Basic  

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380106

COURSE TITLE
Highway Safety Manual Online Overview

Implementation of the HSM requires an understanding of the Science of Safety which supports the quantitative methodologies presented in the manual. This course is an overview of the HSM structure, concepts and principles.

The free selection format of the course allows the student to select modules and concepts of interest in the order preferable to their:
learning style
time availability
and previous knowledge level.

It includes an introduction of terminology, examples of the Roadway Safety Management Process (Part B) and Predictive Methods (Part C), explains the relationship of Crash Modification Factors (CMFs) to decision making and quantitative safety analysis, and human factors. FHWA will continue to develop courses, products and services to meet the needs of the HSM implementation community.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify the parts of HSM and what they are used for.
• Explain the overall concepts and principles promoted in HS for safety decision making.
• Recognize the benefits of using a quantitative safety analysis in various stages of the transportation project development process.

TARGET AUDIENCE
This course is for all interested students. It is an introductory course intended to provide a broad, base level understanding of HSM.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 12 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380108

COURSE TITLE
Maintenance of Drainage Features for Safety - WEB-BASED

The purpose of this training is to highlight common roadway drainage problems that can cause an unsafe condition and suggest inspection methods and corrective action. Maintaining roadway drainage is important for safety and for ensuring the long life of the roadway by preventing erosion of the roadway, saturation of the subbase, and damage to roadway structures. The training is broken into two modules:

Module 1: Effects of Drainage describes common roadway safety hazards and how to recognize drainage problems.
Module 2: Safe Drainage Features and Work Zones covers solutions to common roadway safety issues and work zone safety.

This training is not intended to be a design guide. Participants may want to contact their State Local Technical Assistance Program (LTAP) for more details on drainage design.

OUTCOMES
Upon completion of the course, participants will be able to:
• Identify problems created by ponding and standing water on the roadway
• Describe safety issues related to ditches and side slopes
• Describe how drainage features can become safety hazards
• Identify methods for identifying drainage problems
• Recall conditions to look for during field inspections
• Explain how to fix or prevent common roadway side slope problems
• Describe work zone safety procedures

TARGET AUDIENCE
This training is intended to help local road agency maintenance workers understand the importance of maintaining and upgrading drainage features on their road system to avoid an unsafe condition.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 1 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-380110

Course Title
Highway Safety Improvement Program Overview - WEB BASED

This course is intended to provide you with a basic understanding of the purpose of the Highway Safety Improvement Program (HSIP) and relationship of HSIP programs, background on data collection and quality measures, and an overview of the HSIP processes for planning, implementation and evaluation.

This training course provides a basic understanding of the purpose of the HSIP and relationship of HSIP programs, as well as a basic understanding of the HSIP processes for planning, implementation, and evaluation. Since data is the foundation of the HSIP, the course provides an overview of safety data including safety data collection and management methods, safety data sources, data quality measures, and methods for overcoming data challenges.

A primary challenge in bringing highway safety professionals, traffic and safety engineers, and transportation planners together is a lack of understanding of each area's responsibilities and a common language. The course provides a basic understanding of how the HSIP works; encourages managers to make employees knowledgeable about the program; and begins to establish a common language among HSIP practitioners. The HSIP Overview Course can help overcome the barriers to cross-discipline collaboration.

NHI hosts the HSIP Overview Course and four other Web-based HSIP-related training courses: 380113 Strategic Highway Safety Plan (SHSP) Development, 380114 SHSP Implementation, 380111 HSIP Project Identification, and 380112 HSIP Project Evaluation.

Outcomes
Upon completion of the course, participants will be able to:

• Describe HSIP program structure;
• Recognize HSIP legislative/regulatory requirements;
• Identify potential safety data issues and method for overcoming data challenges; and
• Explain the processes involved in HSIP planning, implementation and evaluation.

Target Audience
This training course is designed for a wide range of transportation professionals from transportation agency leadership to new practitioners in the transportation safety field, HSIP managers and SHSP partners.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A

Length: 4 HOURS (CEU: 0 UNITS)

Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Web site: www.nhi.fhwa.dot.gov • E-mail: nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380113

COURSE TITLE
Strategic Highway Safety Plan Development

This course provides applications for States presently in the implementation stage or for those in the process of updating their SHSP. This course will also benefit regional and local agencies who are considering or in the process of developing their first regional safety plan, or updating their existing plan.

The course is designed to appeal to experienced SHSP stakeholders and those that are new to the process.

This training course provides a basic understanding of the Strategic Highway Safety Plan (SHSP) development processes. The course will benefit States presently in the implementation stage or those in the process of updating their SHSP, along with regional and local agencies that are developing or updating a regional safety plan. The intended audience for SHSP Development encompasses the many federal, state and local stakeholders which partner on state SHSPs but will be especially useful for individuals who are new to the SHSP.

The SHSP Development Course contains relevant information for all SHSP stakeholders. Many states have updated or are in the process of updating their SHSPs, and a refresher course may be helpful to the oversight committees, emphasis area team members, or as training for new stakeholders. Metropolitan Planning Organizations (MPO), counties, and communities who are encouraged by the state departments of transportation (DOT) to participate in SHSP implementation by developing local safety plans related to the SHSP will find this course instructive. New hires are continually joining the workforce, which creates a demand for a basic tutorial on the background, history, contents, development, and maintenance of the SHSP.

NHI hosts the SHSP Development Course and four other Web-based Highway Safety Improvement Program (HSIP)-related training courses: HSIP Overview, SHSP Implementation, HSIP Project Identification, and HSIP Project Evaluation.

OUTCOMES
Upon completion of the course, participants will be able to:

• Identify the purpose and benefits of Strategic Highway Safety Plans (SHSPs);
• Recognize SHSP legislative/regulatory requirements;
• Identify the SHSP development process;
• Recognize the importance of data in SHSP development and implementation;
• Recognize the importance of collaboration and leadership in the SHSP development process; and
• Identify the purpose of problem identification, monitoring, and evaluation.

TARGET AUDIENCE
The target audience for this course encompasses a wide range of safety stakeholders involved in SHSP efforts. Stakeholders may include State departments of transportation safety engineers/specialists, transportation planning and safety professionals representing metropolitan planning organizations, local safety and planning organizations/agencies; highway safety offices; motor carrier safety offices; law enforcement agencies; EMS offices and first responders; nonprofit and private sector partners; others involved in transportation safety; and representatives from Federal agencies (FHWA, NHTSA, FMCSA, FTA).
TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 15; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
Course Number
FHWA-NHI-380122A

Course Title
Safety Data and Analysis Fundamentals Training for Data Analysts

This web-based training (WBT) is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Managers, and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the “Target Audience” section for more information.

NHI’s Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It’s important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results. This web-based training (WBT) provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes
Upon completion of the course, participants will be able to:

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience
DATA ANALYSTS - 7 hours (0.7 CEUs) - For professionals in charge of integrating and analyzing datasets, including highway safety engineers, specialists, traffic engineers, highway designers, and technical analysts. Emphasizes the applicability, uses, strengths, limitations, and requirements of safety data and collection methods. Recommended for anyone whose responsibility is to analyze safety data to identify causes and potential patterns that contribute to crashes and other systemic safety issues.

Training Level: Basic

Fee: 2020: $0 Per Person; 2021: N/A
Length: 7 HOURS (CEU: .7 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380122B

COURSE TITLE
Safety Data and Analysis Fundamentals Training for Data Collectors/Stewards

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Managers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the “Target Audience” section for more information.

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

OUTCOMES
Upon completion of the course, participants will be able to:

• Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.

• Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.

• Identify types, sources, strengths, and weaknesses of transportation safety data.

• Explain various methods used to analyze safety data, including their application and limitations.

TARGET AUDIENCE
DATA COLLECTORS/STEWARDS - 4 hours (0.4 CEUs) - For professionals who are responsible for collecting, coding, and managing data to support safety analysis and decision-making. Emphasizes ways data collectors meet the needs of data analysts and helps collectors understand how managers use data to make strategic, informed decisions about safety priorities. Recommended for law enforcement officers, emergency medical service providers, trauma registrars, driver and vehicle service clerks, roadway data collectors, and anyone responsible for collecting crash, traffic, roadway, behavioral, injury, or other safety data.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380122C

COURSE TITLE
Safety Data and Analysis Fundamentals Training for Project and Program Managers

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Managers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the “Target Audience” section for more information.

NHI’s Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

OUTCOMES
Upon completion of the course, participants will be able to:

• Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.

• Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.

• Identify types, sources, strengths, and weaknesses of transportation safety data.

• Explain various methods used to analyze safety data, including their application and limitations.

TARGET AUDIENCE
PROJECT and PROGRAM MANAGERS - 5 hours (0.5 CEUs) - For transportation professionals responsible for using safety analytics to identify and prioritize safety issues, develop and implement safety countermeasures, and evaluate project/program effectiveness. Emphasis on the trade-offs of project alternatives in terms of cost and benefits, including the safety impacts of the project/program as well as the individual components. Recommended for transportation planners, traffic records coordinating committee members, highway safety online directors, and State and local mid-level managers such as division and district program managers in highway safety, design, traffic engineering, enforcement, and public health.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 5 HOURS (CEU: .5 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

NHI Training Information: (877) 558-6873 • Fax (703) 235-0577
Course Number
FHWA-NHI-380122D

Course Title
Safety Data and Analysis Fundamentals Training for Senior Managers and Safety Advocates

This web-based training is tailored to the participant’s individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Managers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the “Target Audience” section for more information.

NHI’s Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It’s important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes
Upon completion of the course, participants will be able to:
• Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
• Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
• Identify types, sources, strengths, and weaknesses of transportation safety data.
• Explain various methods used to analyze safety data, including their application and limitations.

Target Audience
SENIOR MANAGERS & SAFETY ADVOCATES - 5 hours (0.5 CEUs) - For anyone looking to bridge the gap between the public and practitioners, and who are responsible for developing or influencing policies, practices, setting budgets, allocating resources, and making safety investments. Emphasis on understanding the needs of data collectors, data managers, and data analysts in terms of equipment, human resources, and organizational structure. Recommended for State and local senior managers, such as division heads/chief of transportation, planning, civil engineering, and public health.

Training Level: Basic
Fee: 2020: $0 Per Person; 2021: N/A
Length: 5 HOURS (CEU: .5 UNITS)
Class Size: Minimum: 0; Maximum: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
COURSE NUMBER
FHWA-NHI-380122B

COURSE TITLE
Safety Data and Analysis Fundamentals Training for Data Collectors/Stewards

This web-based training is tailored to the participant’s individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Managers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the “Target Audience” section for more information.

NHI’s Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It’s important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

OUTCOMES
Upon completion of the course, participants will be able to:

• Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
• Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
• Identify types, sources, strengths, and weaknesses of transportation safety data.
• Explain various methods used to analyze safety data, including their application and limitations.

TARGET AUDIENCE
DATA COLLECTORS/STEWARDS - 4 hours (0.4 CEUs) - For professionals who are responsible for collecting, coding, and managing data to support safety analysis and decision-making. Emphasizes ways data collectors meet the needs of data analysts and helps collectors understand how managers use data to make strategic, informed decisions about safety priorities. Recommended for law enforcement officers, emergency medical service providers, trauma registrars, driver and vehicle service clerks, roadway data collectors, and anyone responsible for collecting crash, traffic, roadway, behavioral, injury, or other safety data.

TRAINING LEVEL: Basic

FEE: 2020: $0 Per Person; 2021: N/A

LENGTH: 4 HOURS (CEU: .4 UNITS)

CLASS SIZE: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov
NHI STORE PROVIDES RESOURCES AND REFERENCE MATERIALS

Created based on customer feedback, the NHI Store is an online resource that enables users to order course materials through the NHI Web site. These materials can be used to plan a workshop, support train-the-trainer programs, or gather highway-related reference materials. The NHI Store offers both electronic downloads and hard copy versions.

To search for and purchase NHI course training materials, please visit www.nhi.fhwa.dot.gov. Easy directions are provided for ordering and payment; special instructions are provided for FHWA employees.

If you are unable to find the training materials you need, please contact us at nhitraining@dot.gov.

The following pages list all materials available for purchase at the time this catalog was published. For the most up-to-date listing, visit the NHI Store at www.nhi.fhwa.dot.gov. Credit card payment is accepted.

**Legend**

- PW - Participant Workbook
- RM - Reference Manual
- PP - PowerPoint Presentation
- OM - Other Materials
- EF - Electronic File

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Material Name</th>
<th>Format</th>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>142055</td>
<td>Advanced Seminar on Transportation Project Development: Navigating the NEPA Maze (December 2008)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>133115</td>
<td>Advanced Work Zone Management and Design (August 2007)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$20.00</td>
</tr>
<tr>
<td>133115</td>
<td>Advanced Work Zone Management and Design (August 2007)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>131050</td>
<td>Asphalt Pavement In-Place Recycling Techniques (March 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>142049</td>
<td>Beyond Compliance: Historic Preservation In Transportation Project Development - Exercise 4 (July 07)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>142049</td>
<td>Beyond Compliance: Historic Preservation In Transportation Project Development (July 2012)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>142049</td>
<td>Beyond Compliance: Historic Preservation In Transportation Project Development - Exercise 3 (July 07)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>142049</td>
<td>Beyond Compliance: Historic Preservation In Transportation Project Development - Exercise 2 (July 07)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>142046</td>
<td>Bicycle Facility Design (July 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>142046</td>
<td>Bicycle Facility Design (July 2013)</td>
<td>Electronic Copy</td>
<td>PP</td>
<td>$50.00</td>
</tr>
<tr>
<td>130053A</td>
<td>Bridge Inspection Refresher Training (August 2014)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$70.00</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>130108</td>
<td>Bridge Maintenance Reference Manual (10/16)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132042</td>
<td>Corrosion/ Degradation of Soil Reinforcements for MSE/ RSS (November 2009)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>135048</td>
<td>Countermeasure Design for Bridge Scour and Stream Instability</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$30.00</td>
</tr>
<tr>
<td>135056</td>
<td>Culvert Design for Aquatic Organism Passage: HEC-26, First Ed. (October 2010)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132010B</td>
<td>Design and Construction of Driven Pile Foundations-RM/DE Set (09/2016) NHI Store Only-132021</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$80.00</td>
</tr>
<tr>
<td>142054</td>
<td>Design And Implementation Of Erosion And Sediment Control - Participant Workbook (December 2006)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>130096</td>
<td>Design Criteria for Arch and Cable Stayed Signature Bridges (February 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$70.00</td>
</tr>
<tr>
<td>130096</td>
<td>Design Criteria for Arch and Cable Stayed Signature Bridges (March 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>132042</td>
<td>Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 1 (March 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>132043</td>
<td>Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 1 (March 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>132042</td>
<td>Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 2 (March 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>132043</td>
<td>Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 2 (March 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>380069</td>
<td>Desktop Reference for Crash Reduction Factors (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380076</td>
<td>Desktop Reference for Crash Reduction Factors (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380077</td>
<td>Desktop Reference for Crash Reduction Factors (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380090</td>
<td>Developing a Pedestrian Safety Action Plan Participant Workbook (0219)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>136106B</td>
<td>Developing a Transportation Asset Management Plan (09/17)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>136106B</td>
<td>DEVELOPING A TRANSPORTATION ASSET MANAGEMENT PLAN (APRIL 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132070</td>
<td>Drilled Shaft Foundation Inspection - Participant Workbook (December 2002)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132070</td>
<td>Drilled Shaft Inspector’s Course - Plan Set Handout</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132014</td>
<td>Drilled Shafts: Construction Procedures and Design Methods (09/18)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132069</td>
<td>Drilled Pile Foundation Inspection - Participant Workbook (July 2006)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132036</td>
<td>Earth Retaining Structures (RM)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130054</td>
<td>Engineering Concepts for Bridge Inspectors (09/14)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>130102</td>
<td>Engineering for Structural Stability in Bridge Construction (04/2015)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130102A</td>
<td>Engineering for Structural Stability in Bridge Construction (04/2015)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>134080</td>
<td>Environmental Factors in Construction and Maintenance (Independent Study Guide)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$20.00</td>
</tr>
<tr>
<td>135027</td>
<td>Errata for HEC-22 dtd September 2009 (Included in September 2013 Revision)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>135046</td>
<td>Evaluating Scour At Bridges, 5th Edition (HEC-18) (April 2013)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>380069</td>
<td>FHWA Road Safety Audit Guidelines (June 2006)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>130078</td>
<td>Fracture Critical Inspection Techniques for Steel Bridges (08/2016)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>133075</td>
<td>Freeway Management And Operations - Participant Workbook (August 2005)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>133075A</td>
<td>Freeway Management And Operations - Participant Workbook (August 2005)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132040</td>
<td>Geotechnical Aspects of Pavements (June 2010)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>130087</td>
<td>Guidelines For The Installation, Inspection, Maintenance And Repair Of Structural Supports For Highw</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>135048</td>
<td>HEC-23 Bridge Scour And Stream Instability Countermeasures-Vol I</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$20.00</td>
</tr>
<tr>
<td>135048</td>
<td>HEC-23 Bridge Scour And Stream Instability Countermeasures-Vol II</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$30.00</td>
</tr>
<tr>
<td>135082</td>
<td>HEC-25 (Volume 2)-Highways in the Coastal Environment: Assessing Exposure to Extreme Events</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$30.00</td>
</tr>
<tr>
<td>380095</td>
<td>Highway Design: Applying Flexibility &amp; Risk Management (07/16)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132081</td>
<td>Highway Slope Maintenance and Slide Restoration (10/08)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132081</td>
<td>Highway Slope Maintenance and Slide Restoration (10/08)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>135027A</td>
<td>Highway Stormwater Pump Station Design (HEC-24)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$40.00</td>
</tr>
<tr>
<td>135028</td>
<td>Highway Stormwater Pump Station Design HEC-24</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>135082</td>
<td>Highways in the Coastal Environment (HEC-25)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>135056</td>
<td>Hydraulic Design of Highway Culverts-HDS 5 (04/12)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>135090</td>
<td>Hydraulic Design of Safe Bridges-HDS-7 (April 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>420018</td>
<td>IDC Pre-Read Materials</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>130087</td>
<td>Inspection And Maintenance Of Ancillary Highway Structures-(March 2005)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>380071</td>
<td>Interactive Highway Safety Design Model (02/2017)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>141050</td>
<td>Introduction to Federal-Aid Right-of-Way Requirements for Local Public Agencies (August 2010)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>135065</td>
<td>Introduction to Highway Hydraulics-(June 2008)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>135065</td>
<td>Introduction to Highway Hydraulics-HDS No. 4 (June 2008)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>136106A</td>
<td>Introduction to Transportation Asset Management (September 2017)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>152054</td>
<td>INTRODUCTION TO URBAN TRAVEL DEMAND FORECASTING (February 2012)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>380076</td>
<td>Low Cost Safety Improvements Workshop - Participant Workbook (February 2010)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>130095</td>
<td>LRFD and Analysis of Curved Steel Highway Bridges (February 2011)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$70.00</td>
</tr>
<tr>
<td>130095</td>
<td>LRFD and Analysis of Curved Steel Highway Bridges (February 2011)-Compact Disc</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$20.00</td>
</tr>
<tr>
<td>130081</td>
<td>LRFD for Highway Bridge Superstructures-RM/DE CD</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>130093A</td>
<td>LRFD Seismic Analysis and Design of Bridges - Reference Manual (October 2014)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130093</td>
<td>LRFD Seismic Analysis and Design of Bridges (July 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>130093</td>
<td>LRFD Seismic Analysis and Design of Bridges-Design Examples (July 2014)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130093A</td>
<td>LRFD Seismic Analysis and Design of Bridges-Design Examples (July 2014)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130093</td>
<td>LRFD Seismic Analysis and Design of Bridges-Reference Manual (October 2014)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132094</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (Feb 2012)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132094</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (Feb 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$75.00</td>
</tr>
<tr>
<td>132094A</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (Feb 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$75.00</td>
</tr>
<tr>
<td>132094B</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (Feb 2012)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$75.00</td>
</tr>
<tr>
<td>132094B</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (August 2011)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>132094</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (April 2012)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$75.00</td>
</tr>
<tr>
<td>132094A</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (April 2012)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$75.00</td>
</tr>
<tr>
<td>132094B</td>
<td>LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (April 2012)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$75.00</td>
</tr>
<tr>
<td>134037A</td>
<td>Managing Highway Contract Claims: Analysis And Avoidance (09/05)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>142048</td>
<td>Managing Road Impacts on Stream Ecosystems: An Interdisciplinary Approach (December 2008)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>133099</td>
<td>Managing Travel For Planned Events - CD (September 2005)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>133099</td>
<td>Managing Travel For Planned Events - Participant Workbook (September 2005)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>142005</td>
<td>NEPA And The Transportation Decision Making Process (02/2019)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>137046</td>
<td>NHI Using IDAS Data</td>
<td>Electronic Copy</td>
<td>EF</td>
<td>Free</td>
</tr>
<tr>
<td>135041</td>
<td>One-Dimensional Modeling of River Encroachments with HEC-RAS (Mar 2016)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>135085</td>
<td>PLAN OF ACTION (POA) FOR SCOUR CRITICAL BRIDGES - CD (MAY 2007)</td>
<td>Hard Copy</td>
<td>PP</td>
<td>Free</td>
</tr>
<tr>
<td>132069</td>
<td>Plan Set Handout Driven Pile Foundation Inspection Course (October 2002)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$60.00</td>
</tr>
<tr>
<td>380005</td>
<td>Railroad-Highway Grade Crossing Improvement Program (09/2016)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>380069</td>
<td>Road Safety Audits/Assessements Participant Workbook (August 2008)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>380069</td>
<td>Road Safety Audits: Case Studies (December 2006)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>132035</td>
<td>Rock Slopes - Module 5 - Reference Manual</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132035</td>
<td>Rock Slopes - Module 5 - Student Exercises (August 1999)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132037</td>
<td>Shallow Foundations</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>132085</td>
<td>Soil Nail Walls Reference Manual-GEC 007 (February 2015)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>132033</td>
<td>Soil Slope and Embankment Design (September 2005)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>380116</td>
<td>Speed Management (06/17)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>135046</td>
<td>Stream Instability, Bridge Scour, and Countermeasures: A Field Guide for Bridge Inspectors (Feb2009)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$20.00</td>
</tr>
<tr>
<td>135046</td>
<td>Stream Stability at Highway Structures, 4th Edition (HEC-20)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$50.00</td>
</tr>
<tr>
<td>130126</td>
<td>Strut-and-Tie Modeling (STM) for Concrete Structures (11/17)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>130126</td>
<td>Strut-and-Tie Modeling (STM) for Concrete Structures-CD (10/17)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$25.00</td>
</tr>
<tr>
<td>132079</td>
<td>SUBSURFACE INVESTIGATION QUALIFICATION PARTICIPANT WORKBOOK (JULY 2006)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>133125</td>
<td>Successful Traffic Signal Management: The Basic Service Approach (May 2014)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>133123</td>
<td>Systems Engineering for Signal Systems Including Adaptive Control (05/14)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>380069</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Intersection Crashes (September 2007)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380076</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Intersection Crashes (September 2007)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380077</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Intersection Crashes (September 2007)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380069</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Pedestrian Crashes (September 2007)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380076</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Pedestrian Crashes (September 2007)</td>
<td>Electronic</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>380077</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Pedestrian Crashes (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380069</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Roadway Departure Crashes (Sept 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380076</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Roadway Departure Crashes (Sept 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380077</td>
<td>Toolbox of Countermeasures &amp; Their Potential Effectiveness for Roadway Departure Crashes (Sept 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>133121</td>
<td>Traffic Signal Design and Operations (Dec 2011)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>380069</td>
<td>Traffic Signals (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380076</td>
<td>Traffic Signals (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>380077</td>
<td>Traffic Signals (September 2007)</td>
<td>Electronic Copy</td>
<td>OM</td>
<td>Free</td>
</tr>
<tr>
<td>134064A</td>
<td>Transportation Construction Quality Assurance</td>
<td>Electronic Copy</td>
<td>RM</td>
<td>Free</td>
</tr>
<tr>
<td>134064</td>
<td>Transportation Construction Quality Assurance (12/13)-1.5 Day Version</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>134064</td>
<td>Transportation Construction Quality Assurance Reference Manual</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>135095</td>
<td>Two-Dimensional Hydraulic Modeling of Rivers at Hwy Encroachments-Modeling Exercises (04/19)</td>
<td>Hard Copy</td>
<td>OM</td>
<td>$20.00</td>
</tr>
<tr>
<td>130091</td>
<td>Underwater Bridge Inspection (January 2010)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$40.00</td>
</tr>
<tr>
<td>130091B</td>
<td>Underwater Bridge Repair (December 2009)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>130091B</td>
<td>Underwater Bridge Repair, Rehabilitation, and Countermeasures (December 2009)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>130091</td>
<td>Underwater Inspection of Bridges (June 2010)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$40.00</td>
</tr>
<tr>
<td>135027</td>
<td>Urban Drainage Design Manual, HEC-22 (Revised September 2013)</td>
<td>Hard Copy</td>
<td>RM</td>
<td>$50.00</td>
</tr>
<tr>
<td>231030</td>
<td>Using AASHTO Audit Guide for Auditing and Oversight of A/E Consultant Indirect Cost Rate (Feb2012)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>231029</td>
<td>Using AASHTO Audit Guide for Development of A/E Consultant Indirect Cost Rates (01/19)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>231028</td>
<td>Using the AASHTO Audit Guide for the Procurement and Administration of A/E Contracts (12/18)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$35.00</td>
</tr>
<tr>
<td>134005A</td>
<td>VALUE ENGINEERING (AUGUST 2010)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>134005</td>
<td>VALUE ENGINEERING (February 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>134005B</td>
<td>VALUE ENGINEERING (February 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>134005C</td>
<td>VALUE ENGINEERING (February 2013)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$30.00</td>
</tr>
<tr>
<td>142047</td>
<td>Water Quality Management of Highway Runoff (03/06)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
<tr>
<td>310119</td>
<td>Writing Effective Program Reviews: Moving People to Action (April 2012)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$35.00</td>
</tr>
<tr>
<td>Course Number</td>
<td>Material Name</td>
<td>Format</td>
<td>Type</td>
<td>Price</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------</td>
<td>----------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>133120</td>
<td>WZ Traffic Analysis Applications and Decision Framework (08/12)</td>
<td>Hard Copy</td>
<td>PW</td>
<td>$50.00</td>
</tr>
</tbody>
</table>
NATIONAL HIGHWAY INSTITUTE (NHI)
Division of FHWA Office of Technical Services
1310 N Courthouse Road, Suite 300
Arlington, VA 22201
Phone: 703-235-0500 or Toll Free 877-558-6873
Fax: 703-235-0593

MAIN CONTACTS

<table>
<thead>
<tr>
<th>Questions About?</th>
<th>E-mail</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHI Training</td>
<td><a href="mailto:nhitraining@dot.gov">nhitraining@dot.gov</a></td>
<td>703-235-0534</td>
</tr>
<tr>
<td>General Inquiries</td>
<td><a href="mailto:nhicustomerservice@dot.gov">nhicustomerservice@dot.gov</a></td>
<td>703-235-0500</td>
</tr>
<tr>
<td>Instructors</td>
<td><a href="mailto:nhiinstructorliaison@dot.gov">nhiinstructorliaison@dot.gov</a></td>
<td>703-235-0952</td>
</tr>
<tr>
<td>Materials</td>
<td><a href="mailto:nhimaterials@dot.gov">nhimaterials@dot.gov</a></td>
<td>703-235-0552</td>
</tr>
</tbody>
</table>