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**ASPHALT PAVING REPAIR: Full Depth Patch**

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| **SECTION USAGE MATRIX** |
| C | NA | Seminary and Small Institute Standard Plan (CHURCH EDUCATION SYSTEM) - New Project |
| SM | NA | Standard MEETINGHOUSE and PHASED MEETINGHOUSE Standard Plan - New Project |
|  R | SUP | OM/RI (REPLACEMENT & IMPROVEMENT) for Existing Meetinghouse / Seminary and Institute Project |
| CM | NA | Meetinghouse and Phased Meetinghouse Standard Plan with S&I MODULE ADDITION - New Project |
| SI | NA | S&I MODULE Addition to Existing Meetinghouse Building |
| MO | NA | MISSION OFFICE MODULE Addition to Existing Meetinghouse Building |
| UM | NA | URBAN MEETINGHOUSE for Custom Meetinghouse - New or Addition Project |
| FM | NA | Small Maintenance Project specification for FACILITY MANAGER |
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| **MODIFICATION LOG** |
| DATE | SOURCE | DESCRIPTION |
| 26 Apr 24 | Mike Molyneux | Reference Standards Updated. |
| 19 Feb 19 | Gail Olsen | Reference Standards Updated. |
| 02 May 18 | Chris Barker | Asphalt Reinforcement Fiber moved to Section 32 1217 and bid as an Alternate. |
| 19 Jul 16 | Chris Barker | Changed Soil Sterilant to Pre-emergent Herbicide. Add Asphalt Reinforcement Fibers as Alternate Bid.  |
| 27 Oct 15 | Chris Barker | Procedural Note changes. Updated Reference Standard. |
| 09 Dec 14 | Chris Barker | Updated Quality Assurance and Field Quality Control for Testing and Inspection. Updated Reference Standards. |

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| **PROCEDURAL NOTES** |
| **COORDINATION**GENERAL:1. This Specification is written for small Maintenance Projects that use Division 01 Maintenance Project Specification instead of full Division 01 Specification.
2. This specification is for repairing Asphalt Paving. If replacement area is larger than 3,000 square feet (279 m), use one of the following specifications:
	1. Section 32 1216.03 ‘Asphalt Paving – Superpave Method’.
	2. Section 32 1216.01 ‘Asphalt Paving – Marshall Method’.
3. Refer to 'Asphalt, Site Concrete and Pervious Concrete Maintenance Guidelines’ for preservation maintenance program and recommendations for each asphalt paving surface treatment at [http://aec.churchofjesuschrist.org/aec/design\_guidelines/](http://aec.C.org/aec/design_guidelines/).
4. Refer to *'Asphalt Maintenance Checklists for Facilities Manager and Contractor’* available at <http://aec.churchofjesuschrist.org/aec/design_guidelines> for project checklists.
5. Use the '*Agreement for Asphalt Maintenance'* available on MFD Resource Library for asphalt maintenance scoping, budgeting and for contracts.
6. Applicators:
7. By requiring mechanical application and information about prior Projects, this specification is intended to limit bidding to top, professional applicators and products available in Project area.
8. If Project is in remote area or for some other reason contractors of level required to meet specification requirements are not available, Section should be edited to specify requirements which can be met by top applicators available in Project Area.
	1. This relaxation of standard requirements should be done with prior approval of Owner’s Representative.
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| **DESIGN INFORMATION AND BACKGROUND** |

SECTION 32 0118

ASPHALT PAVING REPAIR: Full Depth Patch

1. GENERAL
	* + 1. SUMMARY
				1. Includes But Not Limited To:

Remove and replace paving and aggregate base in specific areas as described in Contract Documents and includes:

Install new asphalt that conforms to the state’s Department of Transportation (DOT) requirements adapted to the location of the project.

Apply asphaltic material (tack coat) to existing asphalt concrete or Portland concrete surfaces before asphalt paving patch is placed.

* + - * 1. Related Requirements:

Section 01 0000: ‘General Requirements’:

**EDIT REQUIRED**: Testing for Resurfacing of Asphalt Paving should be considered by Owner’s Representative. Include following paragraph when **testing and inspection** of Asphalt Paving / Full Depth Patch and Aggregate Base is included for Project.

Section 01 1200: ‘Multiple Contract Summary’.

Section 01 3100: ‘Project Management and Coordination’ for pre-installation conference.

Section 01 4000: ‘Quality Requirements’ for administrative and procedural requirements for quality assurance and quality control.

Section 01 4301: ‘Quality Assurance – Qualifications’ establishes minimum qualification levels required.

**EDIT REQUIRED**: Testing for Resurfacing of Asphalt Paving should be considered by Owner’s Representative. Include following paragraph when **testing and inspection** Asphalt Paving / Full Depth Patch and Aggregate Base is included for Project.

Section 01 4523: ‘Testing and Inspecting Services’ for testing and inspection, and testing laboratory services for materials, products, and construction methods.

Section 01 7800: ‘Closeout Submittals’.

Section 32 0117.01: ‘Asphalt Paving Crack Seal’.

Section 32 0117.02: ‘Asphalt Paving Crack Fill’.

**EDIT REQUIRED:** Include following paragraph if included in Project.

Section 32 1713: 'Parking Bumpers'.

**EDIT REQUIRED:** Include following paragraph if included in Project.

Section 32 1723: 'Pavement Markings'.

* + - 1. PRICE AND PAYMENT PROCEDURES
				1. Alternates:

Provide alternate bid as specified in Section 01 2300: ‘Alternates’ if Asphalt Reinforcement Fibers will be added to hot asphalt mix:

Alternate No. A: ‘Asphalt Reinforcement Fibers’.

* + - 1. REFERENCES
				1. Association Publications:

Asphalt Institute:

MS-2*, ‘Mix Design Methods’* (7th Edition).

* + - * 1. Definitions:

Aggregate: A hard inert mineral material, such as gravel, crushed rock, slag, or sand.

Coarse Aggregate: Aggregate retained on or above No. 8 (2.36 mm) sieve.

Coarse-Graded Aggregate: Aggregate having predominance of coarse sizes.

Dense-Graded Aggregate: Aggregate that is graded from maximum size down through filler with object of obtaining an asphalt mix with controlled void content and high stability.

Fine Aggregate: Aggregate passing No. 8 (2.36 mm) sieve.

Fine-Graded Aggregate: Aggregate having predominance of fine sizes.

Mineral Filler: Fine mineral product at least 70 percent of which passes a No. 200 (75µm) sieve.

Air Voids: Total volume of small air pockets between coated aggregate particles in asphalt cement concrete (ACC); expressed as percentage of bulk volume of compacted paving mixture.

Anti-Stripping Agent: Chemicals added to bitumen to improve the adhesion of the bitumen to hydrophilic aggregates

Asphalt Binder: Asphalt cement or modified asphalt cement that binds aggregate particles into dense mass.

Asphalt Cement used in paving applications that has been classified according to the Standard Specification for Performance Graded Asphalt Binder, AASHTO Designation MP 320. It can be either unmodified or modified Asphalt Cement, as long as it complies with specifications.

**EDIT REQUIRED:** Include following paragraph if paving cracks contain weed and other live vegetation matter. Apply pre-emergent herbicide prior to application of asphalt paving patch repair.

Pre-emergent Herbicide: Chemical that is applied before weeds emerge. It acts by killing weed seedlings and /or establishing layer of chemical on or near soil surface that is toxic to germinating seeds and young seedlings. Herbicide are not soil Sterilants that temporarily or permanently prevents growth of all plants and animals.

Tack Coat: Very light application of liquid asphalt, or asphalt emulsion diluted with water.

* + - * 1. Reference Standards:

American Association of State and Highway Transportation Officials:

AASHTO T 322-07(2016), ‘Standard Method of Test for Determining the Creep Compliance and Strength of Hot-Mix Asphalt (HMA) Using the Indirect Tensile Test Device.

ASTM International:

ASTM D1556/D1556M-15, ‘Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method’.

ASTM D1557-12(2021), ‘Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))'.

ASTM D2167-15, ‘Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method’.

ASTM D2172/D2172M-17, ‘Standard Test Methods for Quantitative Extraction of Bitumen From Bituminous Paving Mixtures’.

ASTM D2256/ D2256M-21, ‘Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method’.

ASTM D6932/D6932M-21, ‘Standard Guide for Materials and Construction of Open-Graded Friction Course Plant Mixtures’.

ASTM D6938-17a, ‘Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)’.

* + - 1. ADMINISTRATIVE REQUIREMENTS

**INFORMATION:** This conference is mandatory. Do not delete or cancel. See Section 01 3100 PROJECT MANAGEMENT AND COORDINATION.

* + - * 1. Pre-Installation Conferences:

Participate in pre-installation conference as specified in Section 01 3100:

**EDIT REQUIRED:** Include following paragraph if other related sections are used in Project. Include only section(s) used for Project. Delete sections not used.

Schedule paving repair pre-installation conference to be held jointly with any other 'Asphalt Surface Treatment' section that involve asphalt maintenance.

In addition to agenda items specified in Section 01 3100, review following:

**EDIT REQUIRED:** Include following paragraph if paving cracks contain weed and other live vegetation matter. Apply pre-emergent herbicide prior to application of asphalt paving patch repair.

Review pre-emergent herbicide as specified in Section 31 0117.01 ‘Asphalt Paving Crack Seal’ or Section 31 0117.02 ‘Asphalt Paving Crack Fill’ for protection of adjoining property and planting area on site requirements, schedule and application requirements to be applied before asphalt paving patch areas are repaired.

Review aggregate base installation requirements.

Review asphalt paving repair (full depth patch) schedule.

Review asphalt paving repair (full depth patch) mix design.

Review safety issues.

**EDIT REQUIRED:** Testing for Asphalt Paving / Full Depth Patch and Aggregate Base should be considered by Owner’s Representative. Include following **TWO** paragraphs if Testing is included for Project.

Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.

Review requirements and frequency of testing and inspections.

**EDIT REQUIRED:** Testing for Asphalt Paving / Full Depth Patch and Aggregate Base should be considered by Owner’s Representative. Include following paragraph if Testing is included for Project.

* + - * 1. Scheduling:

Notify Testing Agency and Architect twenty four (24) hours minimum before placing aggregate base.

Notify Testing Agency and Architect twenty four (24) hours minimum before placing asphalt paving / full depth patch.

* + - 1. SUBMITTALS
				1. Informational Submittals:

Manufacturer Instructions:

Asphalt Paving Patch:

Provide mix design.

Qualification Statement:

Installer:

Provide Qualification documentation if requested by Owner's Representative.

* + - * 1. Closeout Submittals:

Include following in Operations And Maintenance Manual specified in Section 01 7800:

Record Documentation:

Manufacturer’s documentation:

Asphalt Manufacturer’s product literature.

**EDIT REQUIRED:** Include following paragraph if paving cracks contain weed and other live vegetation matter. Apply pre-emergent herbicide prior of asphalt paving patch repair.

Pre-emergent Herbicide product literature and application documentation.

**EDIT REQUIRED:** Testing for Asphalt Paving / Full Depth Patch and Aggregate Base should be considered by Owner’s Representative. Include following paragraph if Testing is included for Project.

Testing and Inspection Reports:

Testing Agency Testing and Inspecting Reports of asphalt paving repair (full depth patch) and aggregate base.

* + - 1. QUALITY ASSURANCE
				1. Qualifications: Requirements of Section 01 4301 applies but not limited to following:

Installer:

Minimum five (5) years experience in asphalt surface treatment installations.

Minimum five (5) years satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding:

Upon request, submit documentation.

**EDIT REQUIRED:** Testing for Asphalt Paving / Full Depth Patch and Aggregate Base should be considered by Owner’s Representative. Include following paragraph if Testing is included for Project.

* + - * 1. Testing and Inspection:

Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.

Owner will provide Testing and Inspection for asphalt paving repair (full depth patch) and aggregate base:

Owner will employ testing agencies to perform testing and inspection for asphalt paving repair (full depth patch) and aggregate base as specified in Field Quality Control in Part 3 of this specification.

Owner’s employment of an independent Testing Agency does not relieve Contractor of Contractor’s obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.

See Section 01 1200: ‘Multiple Contract Summary’.

* + - 1. FIELD CONDITIONS
				1. Ambient Conditions:

Tack Coat:

Apply only when air and roadbed temperatures in shade are greater than 40 deg F (4.4 deg C). Temperature restrictions may be waived only upon written authorization from Architect or Civil Engineer.

Do not apply to wet surfaces.

Do not apply when weather conditions prevent tack coat from adhering properly.

Asphalt Paving Patch:

Do not perform work during following conditions. Temperature restrictions may be waived only upon written authorization from Owner’s Representative:

Ambient temperature is below 45 deg F (7.2 deg C) or will fall below 45 deg F (7.2 deg C) during placement.

Temperature of aggregate base below 50 deg F (10 deg C).

Presence of free surface water or weather is unsuitable.

Over-saturated aggregate base and subgrade materials.

Wind or ground cools mix material before compaction.

1. PRODUCTS
	* + 1. MATERIALS
				1. Aggregate Base:

Road Base type gravel or crushed stone, graded as follows:

Sieve Percent of Weight Passing

1 inch (25.4 mm) 100

3/4 inch (19.0 mm) 85 - 100

No. 4 (4.750 mm) 45 - 60

No. 10 (2.000 mm) 30 - 50

No. 200 (0.075 mm) 5 - 10 (non-plastic)

* + - * 1. Asphaltic Paving Patch:

Install new asphalt that conforms to the state’s Department of Transportation (DOT) requirements adapted to the area of the project

1. EXECUTION
	* + 1. PREPARATION
				1. Owner Responsibilities:

Remove Scout Trailer(s) if needed.

* + - 1. PERFORMANCE
				1. Repair Of Deteriorated Areas:

Cut edges of pavement in rectangular shape and for 1 foot (300 mm) minimum beyond damaged material. Make vertical cuts using pavement saw or cold planer.

Subgrade:

Repair and recompact damaged subgrades.

Aggregate Base:

Remove and replace damaged aggregate base and sub-grade. Aggregate base is to be at least 6 inches (150 mm) thick when compacted.

Compact to ninety five (95) percent minimum density as determined by ASTM D1557.

Finished aggregate base course shall be true to line and grade within plus or minus 1/4 inch in 10 feet (6 mm in 3 000 mm).

Apply tack coat to vertical edges of existing asphalt and curbs.

Asphalt Paving Patch:

Place full depth patch to match thickness of existing asphalt paving but not less than 3 inches (76 mm), at temperatures between 250 and 325 deg F (121 and 163 deg C).

Longitudinal bituminous joints shall be vertical and properly tack coated if cold. Transverse joints shall always be tack coated.

Compaction:

Compact paving to ninety four (94) percent plus three (3) percent minus two (2) percent of theoretical maximum specific gravity.

Roll with powered equipment capable of obtaining specified density. Vibratory plate compactor may be used for areas too small for large power equipment.

Begin breakdown rolling immediately after asphalt is placed when asphalt temperature is at maximum. Complete breakdown rolling before mix temperature drops below 240 deg F (116 deg C). Complete handwork compaction concurrently with breakdown rolling.

Complete intermediate rolling as soon as possible after breakdown rolling and before mix temperature drops below 185 deg F (85 deg C). Do not roll paving for compaction purposes after asphalt temperature falls below 185 deg F (85 deg C).

Execute compaction so visibility of joints is minimized. Complete finish rolling to improve asphalt surface as soon as possible after intermediate rolling and while asphalt paving is still warm. Do not use vibration for finish rolling.

Lift Thickness:

Preferred Method:

For pavements 3-1/2 inch (89 mm) or thinner apply asphalt paving in single lift.

For pavements greater than 3-1/2 inch (89 mm), use alternate method below.

Alternate Method:

Asphalt paving may be applied in two (2) lifts, first 2 inches (50 mm) thick minimum and second 1 1/2 inches (38 mm) thick minimum following temperature recommendations of following paragraph.

Surface of first lift shall be clean and provide tack coat between first and second lifts.

Provide not less than 2 times maximum aggregate size in compacted asphalt concrete mixes.

Surface shall be uniform with no 'birdbaths'. Leave finished surfaces clean and smooth. Variations from specified grades shall not exceed 1/2 inch (13 mm).

**EDIT REQUIED:** Testing for Asphalt Paving / Full Depth Patch and Aggregate Base should be considered by Owner’s Representative. Include following paragraph if Testing is included for Project. Coordinate with References specified in Part 1 of this specification.

* + - 1. FIELD QUALITY CONTROL
				1. Field Tests And Inspections:

Civil and structural field tests, laboratory testing, and inspections are provided by Owner’s independent Testing Agency as specified in Section 01 4523 ‘Testing And Inspection Services’:

Quality Control is sole responsibility of Contractor:

Owner’s employment of an independent Testing Agency does not relieve Contractor of Contractor’s obligation to perform testing and inspection as part of his Quality Control:

Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.

Provide copies of test reports as required in Section 01 4523 ‘Testing And Inspection Services’ of Division 01 ‘General Requirements’.

Aggregate Base:

Testing Agency shall provide testing and inspection for exterior aggregate base.

Number of tests may vary at discretion of Architect.

Testing Agency will test compaction of base in place according to ASTM D1556, ASTM D2167, and ASTM D6938, as applicable. Tests will be performed at following frequency:

Sitework Areas: One (1) test for every 10,000 sq. ft. (930 sq. m) or less of exterior pads area but no fewer than three (3) tests.

Asphalt Paving Patch:

Testing Agency shall provide full time nuclear density testing and inspection for asphalt paving during asphalt paving operations.

Inspection to include:

Aggregate coating.

Asphalt content.

Compaction control and effort required.

Gradation.

Suitability of spreading and paving equipment.

Temperature of mix as delivered and placed.

Field Tests: When tested with 10 foot (3 meter) straight edge, surface of completed work shall not contain irregularities in excess of 1/4 inch (6 mm).

Provide nuclear density testing of asphalt paving at a minimum rate of one (1) per 10,000 sq. ft. (930 sq. m). Minimum of three (3) tests required.

* + - 1. CLEANING
				1. General:

Upon completion of repair operations, clean up and remove debris.

END OF SECTION