

Section 02575
PAVEMENT REPAIR SPECIFICATION

Part 1 – GENERAL

1.1 Description of Work

Provide the necessary plant, labor, materials, and equipment to restore and maintain the various streets and driveway surfaces of all type, pavement and driveway bases, curbs, curb and gutter, and sidewalks disturbed, damaged, or demolished during the performance of the work.

1.2 Related Work Specified Elsewhere

Section 02500 – Paving and Surfacing

Section 02520 – Concrete Curb and Gutter

Section 02522 – Concrete Walks, Driveways, and Ramps

Section 02580 – Pavement Markings

Section 03300 – Concrete Formwork, Reinforcement and Materials

Subdivision Street Design Standards and Specifications

1.3 Applicable Specifications

A. American Society for Testing and Materials (ASTM).

B. Tennessee Department of Transportation, Standard Specifications for Road and Bridge Construction (TDOT).

C. NDOT Standard Drawings, ST – 270, ST – 271, ST – 273, ST – 274, ST - 275

1.4 Applicable References

American Association of State Highway and Transportation Officials (AASHTO), latest revision. American Society for Testing and Materials, (ASTM), latest revision.

1.5 Permits

Before performing any work, the contractor shall secure the required excavation and temporary lane/road closure permits to work within Metro and State right-of-way.

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PART 2 – MATERIALS

- 2.1 The quality of materials and workmanship used in the restoration of existing roadway pavements and driveways shall produce a surface equal to or better than the condition before the work began.
- 2.2 Concrete shall be Class A air-entrained Portland cement type as specified in Metro Section 03300. Flowable fill shall conform to TDOT Standard Specifications, Subsection 204.06.
- 2.3 Mineral Aggregate Base: Class A aggregate, Grading D crushed stone (TDOT Standard Specifications, Subsection 303.01, Subsection 903.05).
- 2.4 Bituminous Prime coats: Emulsified Asphalt RS-2 AE-P (TDOT Standard Specifications, Subsection 904.03).
- 2.5 Crushed Stone Chips: Size 7 or 8 (TDOT Standard Specifications, Subsection 903.14).
- 2.6 Double Bituminous Surface: For both courses, Grade RS-2 (TDOT Standard Specifications, Subsection 904.03).
- 2.7 Asphaltic Concrete Binder: Grading B, BM, BM-s, or CW as directed by the NDOT inspector (TDOT Standard Specifications, Section 307).
- 2.8 Bituminous Tack Coat: Grade SS-1 (TDOT Standard Specifications, Sections 403, Subsection 904.03)
- 2.9 Asphaltic Concrete Surface: Grading D or E, as directed by the NDOT inspector, (TDOT Standard Specifications, Section 411).
- 2.10 Quick Dry Traffic Marking Paint (White and Yellow), or Thermo-Plastic depending on existing marking and loops.

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PART 3 – General Notes Applicable to NDOT Standard Drawings ST - 270 and ST - 271

- 3.1 All backfill operations require grading D crushed stone or flowable fill and an inspection by a NDOT inspector. Contractor shall provide NDOT inspector a minimum of 24 hours advance notice for all inspections.
- 3.2 Asphalt pavement may not be installed until the backfill operations have been approved by a NDOT inspector.
- 3.3 Diagonal repairs must be squared off, milled, and paved.
- 3.4 Any disturbed pavement markings must be restored to current Metro standards.
- 3.5 Final acceptance by NDOT is required before the work is considered complete.
- 3.6 In the event of any conflict, discrepancy, of inconsistency among the plans submitted with the permit and these notes, the requirements of the Standard Drawings and NDOT Standards shall govern.

PART 4 - RECESSED TRENCH NOTES Applicable to NDOT Standard Drawing ST - 271

- 4.1 Once the backfill operations on a recessed trench have been approved by a NDOT inspector, the contractor must schedule an inspection for the final repair. The final repair shall have nine (9) inches of binder placed in a minimum of three (3) layers and compacted with mechanical compaction equipment.
- 4.2 Asphalt surface material shall be placed in two (2) inch thickness and compacted within 1-3 days after the binder is placed.

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PART 5 - FLUSH TRENCHNOTES Applicable to NDOT Standard Drawing, ST – 270

- 5.1 Once the backfill operations on a flush trench have been approved by a NDOT inspector, the contractor must schedule an inspection for the final repair. The final repair shall have eleven (11) inches of binder placed in a minimum of three (3) layers and compacted with mechanical compaction equipment
- 5.2 All repairs shall include full lane width resurfacing except when using infrared technology. See attached Infrared specifications.
- 5.3 The binder surface shall be milled or heated using infrared technology two (2) inches in depth and replaced with two (2) inches of surface mix and compacted with mechanical equipment.
- 5.4 All longitudinal repairs more than forty (40) feet in length must be milled and paved.

PART 6 – EXECUTION - Subgrade

6.1 Subgrade

- A. Before any material aggregate base is installed, contractor shall compact the subgrade of the area to be paved to 95% of the optimum density as determined by ASTM D 698.
- B. The backfill material shall contain no topsoil or organic matter. For all areas where subgrade has been prepared, test for uniformity of support by driving a loaded dump truck at a speed of 2 to 3 mph over the entire surface. Make further improvements on all areas that show a deflection of 1 inch or more. When completed, the finished subgrade shall be hard, smooth, stable, and constructed in reasonably close conformance with the lines and grades that existed prior to the beginning of construction.

6.2 Mineral Aggregate Base

- A. Install a mineral aggregate base to the type specified sections 4.2 B and 4.2C in accordance with Section 303 of the TDOT Standard Specifications. The maximum compacted thickness of any one layer shall be 6 inches, and the total thickness of the base shall be that indicated by the Standard Drawings shown in the Subdivision Street Design Standards and Specifications.

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- B. When a base is compacted, cut back the surface course of the existing pavement a minimum of 1 foot beyond the limit of the joint between the old and new base course. Take special care to ensure good compaction of the new base course at the joint. Apply and compact the surface to conform to the existing pavement so that it will have no surface irregularity.
- C. Where flowable fill is required, it shall conform to TDOT Standard Specifications Section 204.06, Excavatable Flowable Fill (EFF). Typically, a 28-day compressive strength shall be 30 psi. Refer to ST-270 drawing for proper placement.

6.3 Double Bituminous Surface

- A. Apply the first course at a rate of 0.38 to .042 gallon per square yard with either emulsified asphalt, Grade RS-2 and then immediately cover with Size 6 crushed stone chips at a rate of 33 to 37 pounds per square yard. After this is rolled, apply the second course at a rate of 0.30 to 0.35 gallons per square yard. Then roll the entire area.
- B. After the application of the cover aggregate, lightly broom or otherwise maintain the surface for a period of 4 days, or as directed by a NDOT inspector. Maintenance of the surface shall include the distribution of cover aggregate over the surface to absorb any free bitumen and cover any areas deficient in aggregate. Sweep excess material from the entire surface with rotary brooms. Sweep the surface at the time determined by a NDOT inspector.

6.4 Asphaltic Concrete Binder

- A. Apply a bituminous prime coat of emulsified asphalt, Grade AE-P at a rate of 0.38 to 0.42 gallon per square yard. Take care to prevent the bituminous material from splashing on exposed faces of curbs and gutters, walls, walks, trees, etc. If such splashing does occur, remove it immediately. After the prime coat has properly cured, apply an asphaltic concrete binder to the thickness shown on the thickness shown on the standard drawings in the Subdivision Street Design Standards and Specifications.
- B. Carefully place material to avoid segregation of the mix. Broadcasting of the material will not be permitted. Remove any lumps that do not readily break down.
- C. If milling of the street is required, the thickness of the binder course as specified by a NDOT inspector shall be maintained after milling.

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6.5 Asphaltic Concrete Surface

If the asphaltic concrete surface is to be placed directly on the mineral aggregate base, place the bituminous prime coat as described above. If the surface course is to be placed on a binder course, then apply a bituminous tack coat of the sort specified above under MATERIALS at a rate of 0.05 to 0.10 gallons per square yard. Take care to prevent splashing of the bituminous material on the exposed faces of the curbs, gutters, walls, walks, trees, etc. If such splashing does occur, the material shall be removed by the contractor. After the prime or tack has been properly cured, apply the asphaltic concrete surface to the thickness shown on the drawings in the Subdivision Street Design Standards and Specifications. Apply the surface course as described above for the asphaltic concrete binder course, Sections 4.4.

6.6 Smoothness

The finished surfaces shall conform to the lines and grades that existed prior to construction. No deviation, variations, or irregularities exceeding $\frac{1}{4}$ inch in any direction when tested with 12-foot straightedge will be permitted in the finished work, nor will any depressions that will not drain properly. All defects shall be corrected by the contractor.

6.7 Sampling and Testing

A NDOT inspector may require that tests be made on the completed elements of the pavement to ascertain the compacted thickness of the base and surface courses. If sections with deficiencies are found, the full section for a reasonable distance on each side of the deficiency shall be refused. All such sections shall be removed and reinstalled. All test holes in connection with the thickness test shall be patched.

PART 7 – EXECUTION – Excavations

- 7.1 Where trenches have been opened in any roadway or street that is a part of the State of Tennessee Highway system, restore surfaces in accordance with the requirements of TDOT. All other restoration shall be done in accordance with the NDOT Standard Drawings and these specifications.
- 7.2 Excavations in the pavement area shall require that pavement surface edges be saw-cut or cold plane milled to provide a straight and smooth edge.
- 7.3 Flowable fill will be required on all arterials, collectors, and downtown streets. Flowable

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fill shall meet the requirements in TDOT Standard Specifications, Section 204, except as modified by NDOT technical specifications 02225, latest revision. Flowable fill may also be required in areas of special significance as determined by a NDOT inspector.

- 7.4 Upon completion of installation of utility or other work if a temporary patch is to be used, placement of compacted backfill or mineral aggregate base or grading D crushed stone (6" layers) and temporary asphalt patch (2" cold mix) shall be placed and rolled or mechanically compacted until such time that the permanent repair will be constructed as shown on NDOT Standard Drawing ST-270 or ST-271.
- 7.5 All final repairs shall use a minimum two (2) foot trench width and a one (1) foot cutback on all sides of the excavation as shown on NDOT Standard Drawing ST-270 or ST -271, except at the edge of pavement.
- 7.6 Upon completion of installation of utility or other work, placement of compacted backfill mineral aggregate base capped off with 8" to 12" of grading D crushed stone (6" layers), asphaltic concrete binder (3" layers), and surface shall be placed as shown on NDOT Standard Drawing ST-270 or ST -271.
- 7.7 Milling and paving the full lane or roadway width is required where successive or continuous excavations are planned so as not to "checkerboard" the roadway and to provide a smooth riding surface.

New Excavations (Without Existing Patches):

If two or more excavations are made in the roadway the contractor will be required to mill and pave the full width of the lane or roadway throughout the entire length of the project. Exceptions can be made with the approval from the director of NDOT.

If a continuous longitudinal trench is made in the roadway, the entire length of the trench shall be milled and paved the width of the lane impacted. If the continuous trench is within 100 feet of an intersection, the restoration limits shall extend to the radius points of the intersection. If the continuous trench falls between the edge of pavement and a construction joint, milling and paving can be completed to the existing construction joint.

New Excavations (With Existing Patches)

New excavations made within 20 feet of any existing patches less than 5 years old from the same utility company, the contractor will be required to pave the patches as one continuous patch. Once the number of patches made from the same utility company exceeds 5 excavations/patches within a street block 500 feet or less, the entire lane or roadway shall be milled and paved.

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Relief from the standard requirements due to special circumstances can be requested by the contractor to The Director of NDOT or their designee.

- 7.8 Asphalt repairs adjacent to curb and gutter work encroaching more than 24-inches into the roadway shall require full lane width paving. If a construction joint falls within the road centerline and the edge of pavement, the milling and paving can be completed to the existing construction joint.
- 7.9 Curb and gutter, sidewalk, and shoulders, shall be restored as required to match existing construction. Replace damaged sections with completely new sections from expansion joint to expansion joint. Patching curb, gutter, or sidewalk will not be permitted.
- 7.10 When a manhole top or other utility casting requires adjustment to an elevation one inch or more above the existing pavement grade a temporary ramp shall be constructed by feathering bituminous concrete 360 degrees around the casting. A taper slope of not less than two feet per inch shall be used. Taper shall be removed prior to placement of bituminous concrete surface course.
- 7.11 Where asphaltic concrete surface courses are required for a continuous trench or five (5) successive cuts or more are made at intervals of 300 feet or less, the asphaltic surface course shall not be placed for a minimum of 30 days after the binder is placed flushed in the trench according to NDOT Standard Drawing 270. However, due to seasonal limitations, or other factors deemed appropriate, the NDOT inspector may grant variances to this requirement on a case-by-case basis.
- 7.12 All repairs within the right of way shall be warranted for a period of one (1) year following the date of final acceptance. Evidence of settling, pumping, or cracking represents a warranty violation. Construction Requirements of TDOT Standard Specifications Section 407 shall apply.
- 7.13 In addition to this section, all pavement restoration for the various types of streets shall be in conformance with NDOT Standard Drawings and Section 02500.
- 7.14 5 Year New Pavement Excavation Moratorium

The 5 Year New Pavement Excavation Moratorium on newly paved streets is being established by the Nashville Department of Transportation and Multimodal Infrastructure (NDOT) in response to the increase in development and construction throughout the city which has damaged many of our roads and especially many of the newly paved streets. This has materially affected our network OCI and caused negative financial impacts to NDOT and the City of Nashville. The moratorium was established to minimize pavement degradation, increase our overall network condition rating, maintain structural integrity, and limit negative visual impacts.

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On a paved, constructed, reconstructed, or resurfaced streets, the pavement surface shall not be cut or opened for a period of five (5) years after completion. In the event the roadway is excavated within this 5-year period, the permittee shall adhere to the specification as described in **Exhibit A**.

Exhibit A:

The roadway shall be milled and paved the full roadway width and extend at a minimum for the length of the property causing the street cut or for the entire project frontage on the street. If the project frontage or property limits are 50% or more of the length of the street segment or block, paving shall be extended for the entire block. All street paving due to this requirement shall be completed within 30 days of the completion of the work or project that required the pavement cut and shall be completed prior to the issuance of any Use and Occupancy or final project approvals. If the Chief Engineer determines that a restoration of the street is not appropriate at a particular time for reasons relating to paving season, weather, other known projects in the same general location, or other short-term factors, a postponement may be required until conditions allow for restoration work. Temporary or conditional approvals can be granted but at no time should any final approvals be granted prior to completion of the street restoration as defined above.

The NDOT Chief Engineer may grant exemptions to the moratorium for reasons such as the following:

- Emergencies which endanger life or property or interrupt essential utility service, as determined by the Chief Engineer.
- Private residential utility service connections for a single property that would cause an undue hardship on a private resident of the city.
 - Even if an exemption is granted, the repair shall still follow standard detailed as outlined in ST-270 and require additional infrared pavement repair to all joints of the cut.
- Work that is mandated by City, State or Federal law.
- Where no other reasonable means of providing service exits to a building, as determined by the Chief Engineer.
- Other situations deemed by the Chief Engineer to be in the best interest of the city.

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When granting exemptions to this regulation, the Chief Engineer shall impose conditions determined appropriate to ensure the rapid and complete restoration of the street and street paving. The pavement repair may include cold planning, base and sub-base repairs, flowable fill, restoration of pavement markings, infrared pavement repair and other related work as determined necessary and will include up to the full-width street paving of the roadway. Any person who is required to repave a street shall obtain an encroachment permit and shall be responsible for the full cost of plan preparation, plan review, construction inspection, material testing, bonding, and all other expenses related to the work. Repaving shall be completed in accordance with NDOT standards. All street paving shall be completed with 411-E mix in neighborhoods or on low volume streets but if the road is a collector or higher with speeds over 45 mph or with as much as 10,000 vpd, 411-D mix should be used as surface material. If the street was initially paved with polymer modified asphalt due to rutting or other factors, it shall be the responsibility of the developer to repave in kind with material used by the NDOT Paving Office. It shall also be the responsibility

of the permittee to have third party testing and quality control on all paving projects. A letter stamped by an Engineer registered in TN, certifying compliance with all NDOT standards, shall be submitted in writing prior to final approval.