

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

1.3 Applicable References

American Association of State Highway and Transportation Officials (AASHTO), latest revision.

American Society for Testing and Materials, (ASTM), latest revision.

1.4 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.

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 Metro Public Works 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 Metro Public Works 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.

PART 3 – GENERAL NOTES Applicable to Metro 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 Metro Public Works inspector. Contractor shall provide Metro Public Works 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 Metro Public Works 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 Metro Public Works 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 Metro Standards shall govern.

PART 4 - RECESSED TRENCH NOTES

Applicable to Metro Standard Drawing ST - 271

- 4.1 Once the backfill operations on a recessed trench have been approved by a Metro Public Works 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.

PART 5 - FLUSH TRENCH NOTES

Applicable to Metro Standard Drawing, ST – 270

- 5.1 Once the backfill operations on a flush trench have been approved by a Metro Public Works 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.
- 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 Metro Public Works 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 Metro Public Works 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 Metro Public Works inspector shall be maintained after milling.

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 ¼ 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 Metro Public Works 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 Metro 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 fill shall meet the requirements in TDOT Standard Specifications, Section 204, except as modified by Public Works technical specifications 02225, latest revision. Flowable fill may also be required in areas of special significance as determined by a Metro Public Works 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 Metro Public Works 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 Metro Public works 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 Metro Public works 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 Metro Public Works.

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.

Relief from the standard requirements due to special circumstances can be requested by the contractor to The Director of Metro Public Works 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 complete 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.

Section 02575-8
Pavement Repair Specifications
8/22/14

- 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 Metro Standard Drawing 270. However, due to seasonal limitations, or other factors deemed appropriate, the Metro Public Works 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) years 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 Metro Public Works Standard Drawings and Section 02500.