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Case # 10-____

DATE: March 3, 2010

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, SRP Representative

RE: **Modifications Section 336 Pavement Matching and Surfacing Replacement**

The attached specification section revisions are proposed to bring Section 336 in conformance with changes made last year to Detail 200. The case is proposed at the request of the Committee. Minor additions and typographical corrections are also included and are detailed below:

- Section 336.1 is modified to note trench repair types shown in Detail 200 as it was revised last year and provide a reference to Detail 200.

- A new sentence is added to 336.2.2 which limits the time between temporary and permanent trench patch repair.

- Section 336.2.4 is completely re-organized to more simply describe pavement section repair, be consistent with language in Detail 200, be consistent with asphalt concrete mix type designations in Section 710, reference Section 321 for placement and compaction methods, correct typos, include surface tolerance requirements, and change surface seal repair from chip seal to slurry seal.

- Sections 336.3 and 336.4 are revised to be consistent with Detail 200.

## SECTION 336

## PAVEMENT MATCHING AND SURFACING REPLACEMENT

### 336.1 DESCRIPTION:

Street and alley pavement and surfacing within the Contracting Agency's rights-of-way, removed by construction activities or to be widened or matched in connection with the improvement of Public Works, shall be placed as shown on the plans and applicable standard details, in accordance with this specification and/or the special provisions.

Asphalt concrete pavement replacement shall be constructed in accordance with Type A, B, or T-Top ~~, D or E~~ of Standard Detail 200 and ~~standard details,~~ as indicated in the Contracting Agency Special Provisions or on the plans, ~~and as required by Sections 321 and 710~~.

Portland cement concrete pavement replacement shall be in accordance with Type C of the Standard Details 200 ~~s~~, and as required by Section 324. ~~s 505 and 725.~~

All other ~~ABC or decomposed granite~~ surface replacement in the right-of-way but not in paved roadways shall be constructed in accordance with Type D of Standard Detail 200 and ~~F of standard details~~ as indicated in the Contracting Agency Special Provisions or on the plans ~~and in Section 702~~.

Temporary pavement replacement shall be constructed as required herein ~~below~~.

Pavements to be matched by construction of new pavements adjacent to or at the ends of a project shall be saw cut in accordance with these specifications and where shown on the plans.

Pavement and surfacing replacement within ADOT rights-of-way shall be constructed in accordance with their permits and/or specification requirements.

### 336.2 MATERIALS AND CONSTRUCTION METHODS:

Materials and construction methods used in the replacement of pavement and surfacing shall conform to the requirements of all applicable standard details and specifications, latest revisions.

**336.2.1 Pavement Widening or Extensions:** Existing pavements which are to be matched by pavement widening or pavement extension shall be trimmed to a neat true line with straight vertical edges free from irregularities with a saw specifically designed for this purpose. The minimum depth of cut shall be 1 1/2 inches or D/4, whichever is greater.

The existing pavement shall be cut and trimmed after placement of required ABC and just prior to placement of asphalt concrete for pavement widening or extension, and the trimmed edges shall be painted with a light coating of asphalt cement or emulsified asphalt immediately prior to constructing the new abutting asphalt concrete pavements. No extra payment shall be provided for these items and all costs incurred in performing this work shall be incidental to the widening or pavement extension.

The exact point of matching, termination, and overlay may be adjusted in the field, if necessary, by the Engineer or designated representative.

**336.2.2 Pavement to be Removed:** Existing asphalt pavement to be removed for trenches or for other underground construction or repairs shall be cut by a device capable of making a neat, straight and smooth cut without damaging adjacent pavement that is not to be removed. The Engineer's decision as to the acceptability of the cutting device and manner of operation shall be final. If saw cutting, only, is to be utilized, it will be so specified in the plans or special provisions.

In lieu of cutting trenches across driveways, curbs and gutters, sidewalks, alley entrances, and other types of pavements, the Contractor may, when approved by the Engineer, elect to tunnel or bore under such structures and pavements.

When installations are within the street pavement and essentially parallel to the center line of the street, the Contractor, with approval of the Engineer, may elect to bore or tunnel all or a portion of the installation. In such installations, the seal coat requirements, as discussed in Section 336.2.4, will be modified as follows:

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(A) If the pavement cuts (bore pits, recovery pits, etc.) are 300 feet or more apart, the bore or tunneled distance will not be considered as part of the open trench and the seal coat may not be required.

(B) If the pavement cuts (bore pits, recovery pits, etc.) are less than 300 feet apart, the distance between the cuts will be considered the same as a trench cut and the distance will be added to any trench cut distances.

**336.2.3 Temporary Pavement Replacement:** Temporary pavement replacement, as required in Section 601, may be with cold-mix asphalt concrete, with a minimum thickness of 2 inches, using aggregate grading in accordance with Section 710.

Permanent pavement replacement shall replace temporary repairs within 5 working days after completion of temporary work.

Temporary pavement replacement shall be used in lieu of immediate placement of single course permanent replacement or the first course of two course pavement replacement only on transverse lines such as spur connections to inlets, driveways, road crossings, etc., when required by the Engineer, by utilities or others who subcontract their permanent pavement replacement, under special prior arrangement; or for emergency conditions where it may be required by the Engineer. Temporary pavement replacement shall be placed during the same shift in which the backfill to be covered is completed.

Rolling of the temporary pavement replacement shall conform to the following:

(A) Initial or breakdown rolling shall be followed by rolling with a pneumatic-tired roller. Final compaction and finish rolling shall be done by means of a tandem power roller.

(B) On small areas or where equipment specified above is not available or is impractical, the Engineer will approve the use of small vibrating rollers or vibrating plate type compactors provided comparable compaction is obtained.

The surface of the temporary pavement shall be finished off flush with the adjacent pavement.

**336.2.4 Permanent Pavement Replacement and Adjustments:**

**336.2.4.1 Permanent Pavement Replacement:** Pavement replacement for cuts essentially parallel to the street centerline and greater than 50 feet in length shall be two course pavement replacement as hereinafter specified. For cuts greater than 600 feet in length the entire area shall then be seal coated in accordance with Section 330 (coated chips) or as otherwise specified. This seal coat shall extend from the edge of pavement or lip of gutter to the street centerline except that on residential streets less than 36 feet face to face of curb or where the pavement patch straddles the centerline, the entire width of street shall be seal coated.

In lieu of placing the seal coat as required previously, and with approval of the Contracting Agency, the Contractor may deposit with the Contracting Agency for credit to the Street Maintenance Department, a negotiated agreed upon amount. The Street Maintenance Department will incorporate this work into their street maintenance program.

Pavement replacement for cuts parallel to the street centerline less than 50 feet in length, transverse cuts, bell holes and similar small areas shall match gradation and thickness of the existing pavement. These one course pavement patches shall be compacted with a vibratory roller to the same density specified for asphalt concrete pavements.

Laying of single course or the base course of the asphalt concrete pavement replacement where a two course replacement is applicable shall never be more than 600 feet behind the ABC placed for the pavement replacement.

The trench must be compacted to its required density, and required ABC must be in place prior to the placement of the asphalt concrete.

Single course replacement shall consist of a 12.5 mm or 19 mm mix placed and finished as directed by the Engineer.

The base course of two course pavement replacement shall consist of a 19 mm mix in accordance with Section 710.

(336.2.4.1: rearranged existing text in red – proposed new text in green)

**336.2.4.1 Permanent Pavement Replacement:** Pavement replacement for longitudinal trenches ~~cuts~~ (essentially parallel to traffic ~~the street centerline~~) greater than 50 feet in length and transverse cuts of any length shall be at least a two-course pavement replacement ~~as specified herein.~~ Pavement replacement for longitudinal trenches ~~cuts parallel to the street centerline~~ less than 50 feet in length, ~~transverse cuts,~~ bell holes and similar small areas may be a single course provided the layer thickness complies with requirements of Section 321.5.4. All pavement replacement shall match gradation and thickness of the existing pavement. ~~These one course~~ Pavement ~~patches~~ replacement shall be compacted ~~with a vibratory roller~~ to the same density specified for asphalt concrete pavements in Section 321.

Unless otherwise noted, pavement replacement shall comply with the following:

(A) Single coarse pavement replacement shall consist of a 1/2" or 3/4" mix ~~12.5 mm or 19 mm mix placed and finished as directed by the Engineer~~ in accordance with Section 710.

(B) The base course(s) of ~~two~~ a multi-course pavement replacement shall consist of a 3/4" ~~19 mm~~ mix in accordance with Section 710.

(C) The surface course of a multi-course pavement replacement shall consist of a ~~9.5 mm~~ 3/8" or 1/2" mix in accordance with Section 710 ~~as specified by the Engineer~~ to match the existing surface. The surface course shall not be placed sooner than 2 weeks after the base course, except where the trench crosses a signalized intersection. In this case the surface course shall be placed within 48 hours, or the crossing pavement replacement shall be a single course as specified above.

(D) Where the base course is to be placed with non-compactive equipment, it shall be not less than 2 inches in thickness and the material shall be immediately rolled with a pneumatic-tired roller. The surface course shall be of sufficient depth to provide the total required compaction thickness of the two courses, but not more than 1 inch.

~~Where the base course is to be placed with non-compactive equipment, it shall be not less than 2 inches in thickness and the aterial shall be immediately rolled with a pneumatic-tired roller. The surface course shall be of sufficient depth to provide th total required compacted thickness of the two courses, but not more than 1 inch.~~

~~Where the trench is 6 feet or more in width, all courses, single or both courses of the two course pavement replacement, shall be laid with a self-propelled compacting, spreading equipment. When the trench is from 6 to 8 feet in width, the self-propelled compacting, spreading equipment shall not be wider than 8 feet. All courses, except the surface course, shall be of a compacted thickness of not less than 1 1/2 inches.~~

~~The surface course shall consist of a 9.5 mm mix in accordance with Section 710 as specified by the Engineer to match the existing surface. The surface course shall not be placed sooner than 2 weeks after the base course, except where the trench crosses a signalized intersection. In this case the surface course shall be placed within 48 hours, or the crossing pavement replacement shall be single course as specified above.~~

~~Placement of the surface course is to be by means which will result in a surface texture satisfactory to the Engineer, and flush with the existing pavement.~~

~~Where deep lift asphalt concrete (asphalt concrete base and asphalt concrete wearing course) exists, the base course replacement shall be made in lifts not exceeding 6 inches in compacted thickness to within 1/2 inch of the finish grade.~~

**336.2.4.2 Adjustments:** When new or existing manholes, values, survey monuments, clean outs, etc. fall within the limits of the permanent pavement replacement as discussed in this Section, the Contractor shall be responsible for adjusting the various items to the new pavement surface or as directed by the Engineer. This will include but not be limited to slurry and chip seals.

The Contractor will coordinate with the Engineer and with representatives of the various utilities regarding the adjustment and inspection of the work. The Contractor shall be responsible for obtaining and complying with all specifications, special requirements, details, etc. of the Utility Company regarding the adjustments. When adjusting the Agency's utilities, survey monuments, etc., the adjustment will comply with these Specifications and Details.

The work will be done in compliance with OSHA standards and regulations regarding confined space entry.

The Contractor shall remove all material attached to the lids and/or covers including that of prior work. The method of removal shall be approved by the Engineer and/or the Utility Representative.

**336.3 TYPES AND LOCATIONS OF PAVEMENT AND SURFACING REPLACEMENT:**

Normally, the type of pavement replacement and backfill required will be noted on the plans or specified in other portions of the contract documents and construction will be in accordance with ~~Detail 200. This detail requires that a 12 inches "T" Top be utilized when normal traffic flow is perpendicular to any one of the four sides of the trench excavation. Therefore, Type A pavement replacement will require a "T" Top whenever the trench crosses a street or goes through an intersection and at the end(s) if they terminate in the street. Type B pavement replacement will require the "T" Top on the sides that are perpendicular to normal traffic flow~~. Details 200-1 and 200-2.

Placed as Notes 6, 7 and 8 in Detail 200-1 in 2009

If a type is not noted on the plans or specified in the special provisions, the following criteria will govern:

Type A ~~pavement replacement, including the "T" Top,~~ trench repair will be utilized on all streets where the excavation is ~~parallel to the centerline of the street.~~ essentially longitudinal or parallel to traffic.

~~Type B pavement replacement, including the "T" Top~~ T-top trench repair, will be utilized on all streets where the excavation is ~~transverse to the centerline of the street.~~ essentially transverse or not parallel to traffic, including trenches that go through an intersection. Type B trench repair may be used to repair transverse trenches if specified by the Agency.

Type C ~~pavement replacement~~ trench repair will be used to match existing portland cement concrete pavement.

Type D ~~pavement replacement may~~ trench repair will be utilized to repair asphalt concrete, portland concrete and aggregate surfaces in the right-of-way, but not in paved roadways. It may also be used when the condition of the existing pavement does not justify construction of Type A, Type B or T-Top trench repair. ~~A or B.~~ Prior written approval of the Engineer is required. for this condition.

(336.2.4.1 continued: Rearranged existing text in red – proposed new text in green)

(E) Where the trench is 6 feet or more in width, all courses ~~, single or both courses of the two course pavement replacement~~ shall be ~~laid~~ placed with ~~a~~ self-propelled ~~compacting,~~ spreading and compacting equipment. When the trench is from 6 to 8 feet in width, ~~the~~ self-propelled ~~compacting,~~ spreading and compacting equipment shall not be wider than 8 feet. All courses, except the surface course, shall be of a compacted thickness of not less than 1 1/2 inches.

(F) Placement of the surface course is to be by means which will result in a surface texture satisfactory to the Engineer, and flush with the existing pavement.

~~(G) Where deep lift asphalt concrete (asphalt concrete base and asphalt concrete wearing course) exists, the base course replacement shall be made in lifts not exceeding 6 inches in compacted thickness to within 1/2 inch of the finished grade~~.

The pavement replacement surface shall not vary more than ¼ inch from the lower edge of a straightedge placed across the replacement pavement surface between edges of the existing matched surfaces. When the pavement replacement includes replacement of the roadway crown, the surface smoothness shall comply with requirements of Section 321.

Laying ~~of~~ a single course or the base course(s) of the asphalt concrete pavement replacement ~~where a two course replacement is applicable~~ shall never be more than 600 feet behind the ABC placement for the pavement replacement.

The trench must be compacted to its required density, and required ABC must be in place and compacted prior to the placement of the asphalt concrete.

For cuts greater than 600 feet in length the entire area shall then be slurry seal coated in accordance with Section ~~330 (coated chips)~~ 332 or as otherwise specified. This seal coat shall extend from the edge of pavement or lip of gutter to the street centerline except that on residential streets less than 36 feet face-to-face of curb or where pavement patch straddles the centerline, the entire width of street shall be seal coated.

In lieu of placing the seal coat as required previously, and with approval of the Contracting Agency, the Contractor may deposit with the Contracting Agency for credit to the Street Maintenance Department, a negotiated agreed upon amount. The Street Maintenance Department will incorporate this work into their street maintenance program.

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~~Type F pavement replacement will be utilized to match existing ABC or decomposed granite roadways.~~

Where a longitudinal trench is partly in pavement, the pavement shall be replaced to the outside edge of the existing pavement, on a straight line, as indicated on the plans. Measurements for payment shall be from the inner limit of pay width allowed below, to the outside edge of the existing pavement as defined herein.

Where no part of a trench is in pavement, surfacing replacement will only be specified where existing surfacing materials have been removed.

When a trench cut is in aggregate surfaced area, the surfacing replacement shall be of a like type and depth as the existing material, compacted to the densities required in Section 601.

**336.4 MEASUREMENT:**

Measurement for payment and surfacing replacement shall be by the square yard, based upon actual field measurement of the area covered except as noted below.

(A) In computing pay quantities for replacement Types ~~A, B, and F~~ B and E, pay widths will be based on the actual field measured width, however the boundaries of the measurement will not extend further than 1/2 the distance, either side, from the centerline of the pipe as depicted on Table 601-1, Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel.

(B) In computing pay quantities for replacement Types ~~C, D, E, and T~~ T-Top, A, C and D, pay widths will be based on the actual field measured width, however the boundaries of the measurement will not extend further than 1/2 the distance plus 12 inches, either side, from the centerline of the pipe as depicted on Table 601-1, Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel.

(C) Where a longitudinal trench is partly in pavement, computations of pay quantities shall be based on the limitations specified above.

(D) The length of pavement and surfacing replacement shall be measured through any manhole, valve box, or other structure constructed in the pipe line, and any pavement or surface replacement and/or seal treatment in excess of the above pay widths shall be considered and included in the bid item for such structure.

(E) Any pavement replacement in excess of the specified pay widths necessitated by the installation of valves, tapping sleeves and valves, valve by-passes, and concrete thrust blocks shall be included in the bid price for these items.

(F) When special provisions allow deviations from the trench widths specified in Section 601, the above allowed pay widths for pavement replacement may be altered where so specified.

(G) Measurement of pavement and surfacing replacement shall be made along the finished surface of the ground to the nearest foot, and shall be computed to the nearest square yard.

**336.5 PAYMENT:**

Direct payment for pavement or surfacing replacement will be made for replacement over all pipe trench cuts except as otherwise allowed in the special provisions. Payment for replacements over other work shall be included in the cost of constructing that work, in accordance with the applicable standard details and specifications.

Payment for temporary pavement replacement shall be included in the cost of the pipe.

When a Contractor has the option of either jacking and/or boring or opencut construction, and elects to construct a pipeline by the jacking and/or boring method, he will be paid for the replacement of such items of work as pavement, curb and gutter, sidewalk, driveway, and alley entrances, as allowed for opencut construction.

End of Section