



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: June 4, 2014

Revised 2014-09-29

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: Revisions to Sections 336, 321.10.3, 601.2.7 and Detail 200-1

Case 14-12

PURPOSE: Add pavement removal criteria to prevent full depth pavement cuts from being located within a lane wheel path and to prevent creation of narrow pavement edge strips.

REVISIONS:

1. Identified location restrictions for full depth longitudinal joints for asphalt pavement widening and for asphalt pavement trench repairs.
2. Defined vertically staggered joint as an alternative for full depth sawed joint.
3. Added pavement removal requirements when replacing existing curb or gutter.
4. Added requirement for asphalt pavement edge replacement to have a safety edge or thickened edge constructed per Detail 201 except when the asphalt edge abuts a concrete curb or gutter.
5. Trenching into portland cement concrete pavement, sidewalk, or other concrete flatwork shall require complete joint to joint replacement of damaged panels. Type C Trench Repair in Detail 200-1 is to be deleted.
6. Adjusted the default pay width for surface replacement to be the maximum trench width at top of pipe greater than O.D. of the pipe barrel as shown in Table 601-1.

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PAVEMENT MATCHING AND SURFACING REPLACEMENT

336.1 DESCRIPTION:

~~This specification identifies requirements for removing and replacing or widening Street and alley pavement and other surfacing within the Contracting Agency's public 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 roadway ~~pavement replacement~~ trench repairs shall be constructed in accordance with Type A, B, or T-Top Trench Repair of Standard Detail 200-1 and as indicated on the plans or in the special provisions.

Trench repairs for unpaved alleys, roadways, and designated future roadway prism shall be constructed in accordance with Type E Trench Repair of Standard Detail 200-1.

Trenching into Portland cement concrete pavement, sidewalk, or other concrete flatwork shall require complete joint to joint replacement of damaged panels. ~~replacement~~ The joint system in PCCP shall be maintained. ~~in accordance with Type C of the Standard Detail 200-1 and as required by Section 324.~~

~~All other s~~Surface replacement in the right-of-way ~~but~~ not in paved roadways shall be constructed in accordance with Type D Trench Repair of Standard Detail 200-1 and as indicated on the plans or in the special provisions.

Temporary pavement replacement shall be constructed as required herein.

Pavements to be matched by construction of new pavements adjacent to or at the ends of a project shall be milled or 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 device specifically designed for this purpose. ~~The minimum depth of cut shall be 1 1/4 inches or D/4, whichever is greater.~~

~~The e~~Existing asphalt 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 pavement widening or pavement extension.

The location of longitudinal match points shall depend on the type of asphalt joint being constructed (full depth or staggered) and the location of the pavement lane striping to be in place at completion of construction. Full depth longitudinal joints shall be located within one foot of a post construction lane line stripe or within the center two feet of a post construction travel lane. The location restriction for full depth longitudinal joints does not apply to multi-layer pavements when a vertically staggered joint with the existing pavement is constructed. An acceptable vertically staggered joint must have a minimum six-inch horizontal offset with the nearest joint in the underlying asphalt layer. A vertically staggered joint may be obtained by edge milling to a depth that matches the adjacent asphalt surface course to be placed.

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

Comment [RTH1]: Delete Type C Trench Repair from Detail 200-1. The Joint system in PCCP should be maintained and not arbitrarily changed.

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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.

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:

(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 will~~ 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.

Pavement removal limits when replacing existing curb or gutter shall be as follows. For curb or gutter replacement adjacent to a designated bike lane or paved shoulder area wider than three feet, the asphalt pavement removal and replacement shall extend to within 6 inches of the travel lane edge stripe. For curb or gutter replacement when no travel lane edge stripe exists, the asphalt pavement match point shall extend two feet or less from the pavement edge into the vehicle travel lane.

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 Marshall mix design of 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: All pavement replacement shall match gradation and thickness of the existing pavement. Immediately preceding the placement of permanent pavement the density of the base material shall comply with requirements of Table 601-2. Asphalt concrete pavement replacement shall be compacted to the same density specified for asphalt concrete pavements in Section 321. The compacted thickness of all courses shall conform to the recommended thicknesses requirements of Table 710-1.

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

(A) Single course pavement replacement shall consist of a 1/2" or 3/4" mix in accordance with Section 710.

Comment [RTH2]: Does any agency require a longer distance prior to elimination of the seal coat requirement?

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- (B) The base course(s) of a multi-course pavement replacement shall consist of a 3/4" mix in accordance with Section 710.
- (C) The surface course of a multi-course pavement replacement shall consist of a 3/8" or 1/2" mix in accordance with Section 710 to match the existing surface.
- (D) Where the base course is to be placed with non-compactive equipment, it shall be immediately rolled with a pneumatic-tired roller.

(E) Pavement replacement over trenches where the pavement replacement width trench is 6 feet or more in width, all courses shall be placed with self-propelled spreading and compacting equipment. When the pavement replacement width trench is from 6 to 8 feet in width, self-propelled spreading and compacting equipment shall not be wider than 8 feet.

Comment [RTH3]: Can this be accomplished for the first layer of a two course asphalt pavement?

(F) Placement of the surface course is to be by means which will result in a surface flush with the existing pavement. The pavement replacement surface shall not vary more than 1/4 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.

(G) Pavement replacement extending to the edge of asphalt pavement shall have a safety edge or thickened edge constructed per Detail 201 except when the asphalt edge abuts a concrete curb or gutter.

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

The trench backfill must be compacted to its required density, and required ABC must shall be in place and compacted to the density required in Table 601-2 prior to the placement of the asphalt concrete structural section or other surfacing.

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

For trench cuts, pavement widening, or other partial pavement installations greater than 300 feet in length the entire area shall ~~then~~ be slurry seal coated in accordance with Section 332 or as otherwise specified. ~~The~~ 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 and~~ 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 local jurisdiction, the Contractor may deposit with the Street Maintenance Department 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.

336.2.4.2 Adjustments: When new or existing manholes, valves, 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 TRENCH~~ SURFACE ~~ING~~ REPLACEMENT:

Normally, the type of pavement surface replacement and backfill required for trenches shall will be as noted on the plans or special provisions specified in other portions of the contract documents and construction will shall be in accordance with Detail

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200-1 and 200-2. The surface replacement limits for asphalt concrete pavement may vary from Detail 200-1 for full depth longitudinal pavement cuts. If a trench repair type is not noted on the plans or specified in the special provisions, the following criteria will govern:

Type A trench repair will be ~~used for~~ utilized on all asphalt concrete paved streets where the excavation is essentially longitudinal or parallel to traffic. The pavement match point location shall depend on the type of asphalt joint being constructed. Full depth longitudinal joints shall not be located within forty-eight inches (48") of an asphalt pavement edge or within a lane wheel path. The lane wheel path is the entire lane width except the area within one foot of a lane line stripe and except the center two feet of the travel lane. When the required surface match point is located within 48" of an asphalt pavement edge, all asphalt surfacing shall be removed to the asphalt edge and the asphalt edge shall be the new asphalt surfacing match point location. When concrete curb and gutter exist adjacent to asphalt pavement, the lip of gutter shall be considered an edge of the asphalt pavement. The restrictions for full depth longitudinal joints will not apply for two course asphalt concrete pavement replacements when surface milling is used to create at least a six-inch horizontal offset between the matching joint of the surface course and the joint in the underlying asphalt layer. The depth of the asphalt surface course shall be equal to or greater than the minimum thickness recommended in Table 710-1. The milled offset distance shall be outside the match point shown in Detail 200-1.

T-Top trench repair will be utilized on all streets where the excavation is essentially transverse or not parallel to traffic, including trenches that go through an intersection.

Type B trench repair ~~may shall only~~ be used ~~to repair transverse trenches if when~~ specified by the local jurisdiction Agency.

~~Type C trench repair will be used to repair existing Portland cement concrete pavement.~~

Type D trench repair will be utilized to repair surfaces other than asphalt concrete or ~~P~~portland cement concrete pavement. ~~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. Type D trench repair# 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, with P prior written approval of the Engineer is required for this condition.~~

Where a longitudinal trench is partly in pavement, the pavement replacement shall ~~be replaced~~ extend to the outside limits edge of the existing pavement. ~~The replacement pavement on a straight edge shall be constructed in a straight line with an appropriate edge treatment, 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 surface replacement of Types B and E trench repair, the default pay widths will be based on the actual field measured width; however the boundaries of the measurement will not extend further than $\frac{1}{2}$ the distance, either side, from the centerline of the pipe as depicted on dimension calculated from Table 601-1, for the "Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel". The pay width for Type B longitudinal trench repair will be adjusted to the field width required when the default surface match point is relocated to the edge of the asphalt pavement or is adjusted to be outside of a wheel path.

(B) In computing pay quantities for a single lift asphalt replacement of a Types T-Top or, Type A, C and D trench repair, pay the default widths will be based on the dimension calculated from actual field measured width, however the boundaries of the measurement will not extend further than $\frac{1}{2}$ the distance plus 12 inches, either side, from the centerline of the pipe as depicted

Comment [RTH4]: The asphalt match point shown in Detail 200-1 needs to be revised to comply with removal requirements of Section 336.2.1 paragraph two.

Comment [RTH5]: Delete Type C Trench Repair from Detail 200-1. The Joint system in PCCP should be maintained and not arbitrarily changed as indicated in Sections 324.3.5 and 324.3.9. Section 340.3.10 requires replacement from joint to joint.

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~~on~~ Table 601-1, for the "Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel" plus 24 inches. The pay width for Type A trench repair will be adjusted to the field width required when the surface match point is relocated to the edge of the asphalt pavement or is adjusted to be outside of a wheel path. In all cases, the minimum pay width for a single lift replacement Types T-Top, or Type A and D surface replacement shall be 48 inches.

In computing pay quantities for a multiple lift surface replacement for T-Top and Type A trench repair, the pay widths will be based on the dimension calculated from Table 601-1 for the "Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel" plus an additional 30 inches. In all cases, the minimum pay width for a multiple lift T-Top or Type A surface replacement shall be 48 inches.

(C) In computing pay quantities of surface replacement for Type D trench repair, pay widths will be based on the dimension calculated from Table 601-1 for the "Maximum Width At Top Of Pipe Greater Than O.D. Of Barrel". In all cases, the minimum pay width for Type D surface replacement shall be 48 inches.

~~(D)~~ Where a longitudinal trench is partly in asphalt pavement, computations of pay quantities shall be based on not exceed the actual pavement replacement quantities. The measurement shall be the area as allowed for the respective Type A or Type B trench repair limited to that portion located within the existing pavement. Limitations specified above. The minimum 48 inch pay width for the Type A pavement replacement does not apply when the trench is partially in pavement.

~~(E)~~ 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.

~~(F)~~ 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.

~~(G) 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.

Comment [RTH6]: This does not provide clarification but creates confusion, therefore suggest deletion.

Comment [RTH7]: This may be appropriate for trench length but not for trench width.

336.5 PAYMENT:

Direct payment for pavement or other surfacing replacement will be made for replacement over all pipe trench cuts except as otherwise allowed noted in the special provisions. Payment for surface 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.

Payment for pavement replacement shall include the replacement cost of any existing pavement markings that have been degraded, obscured, obliterated or removed by underground trench construction or repairs.

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

- End of Section -

321.10.3 Surface Testing: If directed by the Engineer surface drainage test shall be performed. The completed surfacing shall be thoroughly compacted, smooth and true to grade and cross-section and free from ruts, humps, depressions or irregularities. An acceptable surface shall not vary more than 1/4 inch from the lower edge of a 12-foot straightedge when the straightedge is placed parallel to the centerline of the roadway. The straightedge shall be furnished by the contractor and shall be acceptable to the Engineer.

All streets shall be water tested for drainage in the presence of the Engineer or designated representative before final acceptance. Any areas not draining properly shall be corrected to the Engineer's satisfaction at the Contractor's expense. Water for this testing shall be provided and paid for by the Contractor.

When deviations in excess of the above tolerance are found, humps or depressions shall be corrected to meet the specified tolerance, or shall be cut out along neat straight lines and replaced with fresh hot mixture and thoroughly compacted to conform with and bond to the surrounding area. Materials and work necessary to correct such deviations shall be at no additional cost to the Contracting Agency.

When pavement is cut out along neat straight lines, the restrictions for full depth longitudinal joints shall match the restrictions for longitudinal joints in Section 336.3 for Type A Trench Repairs. Full depth longitudinal joints shall not be located within a lane wheel path or within forty-eight inches (48") of an asphalt pavement edge.

601.2.7 Pavement and Concrete Cutting and Removal: Where trenchless methods are not used and trenches or other excavations lie within the portland cement concrete section of streets, alleys, driveways, or sidewalks, etc., such concrete shall be completely removed between the closest adjacent joints. sawcut to Removal methods shall produce neat, straight, vertical, ~~true~~-lines in such a manner that the remaining adjoining ~~surface-concrete~~ will not be damaged. ~~The minimum depth of cut shall be 1 ½ inches or 1/4 of the thickness, whichever is greater.~~

Sidewalk, curb, gutter, and other concrete flatwork shall have complete joint to joint replacement of all damaged sections. The construction replacing damaged concrete sections and joints shall be compliant with Section 340.

The existing joint system in portland cement concrete pavement (PCCP) shall be maintained. Reconstruction of PCCP panels and joints shall be in accordance with Section 324.

Asphalt pavement shall be clean-cut, with approved equipment and by approved methods in accordance with the requirements of Section 336.

No ripping or rooting will be permitted outside limits of cuts. Surfacing materials removed shall be hauled from the job site immediately, and will not be permitted in the backfill.