

February 25, 2015

TO: Members of the MAG Standard Specifications and Details Committee

FROM: Tom Wilhite, City of Tempe, Chair

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Wednesday, March 4, 2015 at 1:30 p.m.
MAG Office, Suite 200 (Second Floor), Ironwood Room
302 North 1st Avenue, Phoenix

A meeting of the MAG Specifications and Details Committee has been scheduled for the time and place noted above. Members of the MAG Specifications and Details Committee may attend the meeting either in person, by videoconference or by telephone conference call. If you have any questions regarding the meeting, please contact Committee Chair Tom Wilhite at 480-350-2921 or Gordon Tyus, MAG staff at 602-254-6300.

In 1996, the Regional Council approved a simple majority quorum for all MAG advisory committees. If the MAG Specifications and Details Committee does not meet the quorum requirement, no action can be taken. Attendance at the meeting is strongly encouraged.

Pursuant to Title II of the Americans with Disabilities Act (ADA), MAG does not discriminate on the basis of disability in admissions to or participation in its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Gordon Tyus at the MAG office. Requests should be made as early as possible to allow time to arrange the accommodation.

It is requested (not required) that written comments on active cases be prepared in advance for distribution at the meeting.

MAG Standard Specifications and Details Committee
TENTATIVE AGENDA
March 4, 2015

COMMITTEE ACTION REQUESTED

1. Call to Order and Introductions
2. Call to the Audience
An opportunity is provided to the public to address the MAG Specifications and Details Committee on items that are not on the agenda that are within the jurisdiction of MAG, or non-action agenda items that are on the agenda for discussion or information only. Citizens will be requested not to exceed a three minute time period for their comments. A total of 15 minutes will be provided for the Call to the Audience agenda item, unless the committee requests an exception to this limit. Please note that those wishing to comment on agenda items posted for action will be provided the opportunity at the time the item is heard.
3. Approval of February 4, 2015, Meeting Minutes

2. Information.

3. **Review and approve minutes of the February 4, 2015 meeting.**

Carry Forward Cases from 2015

4. Case 14-03: Updates to Guardrail Details
Revisions to Section 415 and/or inclusion of MCDOT guardrail details.
5. Case 14-06: Revisions to Section 718 Preservative Seal for Asphalt Concrete
Update specifications for current preservative seal products.
6. Case 14-12: Proposed Revisions to Sections 336, 321.10.3, 601.2.7 and Detail 200-1
Add pavement removal criteria to prevent full depth pavement cuts from being located within a lane wheel path.
7. Case 14-17: Create New Section 322
Provide specifications for Asphalt Stamping - materials and methods.

4. Information and discussion.
Sponsor: Bob Herz, MCDOT

5. Information and discussion.
Sponsor: Jeff Benedict, Asphalt Working Group

6. Information and discussion.
Sponsor: Bob Herz, MCDOT
Updated

7. Information and discussion.
Sponsor: Brian Gallimore, Materials WG

New Cases for 2015

- | | |
|---|---|
| <p>8. <u>Case 15-01: Misc. Corrections</u>
 A. Add omitted text to Section 735.1.
 Text was approved by Case 14-07 and merged into Case 13-15.
 B. Revise "OA" to Quality Assurance and "OC" to Quality Control in Section 710.</p> | <p>8. Information and discussion.
 Sponsor: Bob Herz, MCDOT</p> |
| <p>9. <u>Case 15-02: Adjust Fence Requirements to Reference ASTM F1043</u>
 Revise Section 772, Table 771-1 and Detail 145.</p> | <p>9. Information, discussion and possible action.
 Sponsor: Bob Herz, MCDOT</p> |
| <p>10. <u>Case 15-03: Revise Section 601.4.5 Trench Final Backfill Placement</u>
 Change the requirement from 2 feet, to layers not exceeding eight inches in depth.</p> | <p>10. Information and discussion.
 Sponsor: Bob Herz, MCDOT
 <i>Updated</i></p> |
| <p>11. <u>Case 15-04: Revise Section 602 Trenchless Installation of Steel Casing</u>
 Update ASTM references for casing material and add minimum casing wall thickness.</p> | <p>11. Information and discussion.
 Sponsor: Arvid Veidmark, Water/Sewer WG
 <i>Updated</i></p> |

General Discussion

- | | |
|---|--|
| <p>12. <u>Working Group Reports</u></p> | <p>12. Information and discussion.
 Water/Sewer Chair: Jim Badowich
 02/19/2015 Meeting</p> <p>Asphalt Chair: Jeff Benedict
 Materials Chair: Brian Gallimore
 Concrete Chair: Jeff Hearne
 02/26/2015 Meeting</p> |
| <p>13. <u>General Discussion</u></p> | <p>13. Information and discussion.</p> |
| <p>14. <u>Request for Future Agenda Items</u></p> | <p>14. Information and discussion.</p> |

Adjournment

MEETING MINUTES FROM THE
MARICOPA ASSOCIATION OF GOVERNMENTS
STANDARD SPECIFICATIONS AND DETAILS COMMITTEE

February 4, 2015

Maricopa Association of Governments Office, Ironwood Room
302 North First Avenue
Phoenix, Arizona

AGENCY MEMBERS

Jim Badowich, Avondale, Vice Chair	Julie Christoph, Mesa
Craig Sharp, Buckeye	Dan Nissen, Peoria
Warren White, Chandler	* Syd Anderson, Phoenix (St. Trans.)
Bryce Christo, El Mirage (proxy)	Cathy Pompa, Phoenix (Water)(proxy)
* Wayne Costa, Florence	Rod Ramos, Scottsdale
Tom Condit, Gilbert	Kristin Tytler, Surprise
* Mark Ivanich, Glendale	Tom Wilhite, Tempe, Chair
* Tom Vassallo, Goodyear	* Harvey Estrada, Valley Metro
Bob Herz, MCDOT	Gregory Arrington, Youngtown

ADVISORY MEMBERS

Jeff Benedict, ARPA	Jeff Hearne, ARPA
Arvid Veidmark, AZUCA	Peter Kandarlis, Independent
* Mike Sanders, AZUCA	Paul R. Nebeker, Independent
Brian Gallimore, AGC	Jacob Rodriguez, SRP
Greg Groneberg, AGC	

MAG ADMINISTRATIVE STAFF

Gordon Tyus

* Members not attending or represented by proxy.

GUESTS/VISITORS

David Beckel, Southwest Rock Products
Anturo Chavarria, Hanson
Stew Waller, Rinker

1. Call to Order

Chair Tom Wilhite called the meeting to order at 1:30 p.m.

2. Call to the Audience

Mr. Wilhite welcomed Cathy Pompa as a proxy for Jami Erickson of Phoenix. There were no requests to speak from the audience.

3. Approval of Minutes

The members reviewed the January 7, 2015 meeting minutes. Rod Ramos moved to accept the minutes as written. Bob Herz seconded the motion. A voice vote of all ayes and no nays was recorded.

Carry Forward 2014 Cases

4. Case 14-03: Updates to Guardrail Details.

Make revisions to Section 415 and/or include guardrail details in MAG. Mr. Herz said as noted in the minutes, he plans to work on the case in April.

5. Case 14-06: Revisions to Section 718 Preservative Seal for Asphalt Concrete.

Update the specifications for the Type C preservative seal. Jeff Benedict said the case was discussed at the Asphalt Working Group meeting. He called attention to a handout on Section 718 that was provided in the packet as part of the working group report. It summarized the current status of the case and the recommendations to revise the spec including adding seal coat specifications.

6. Case 14-12: Proposed Revisions to Sections 336, 321.10.3, 601.2.7 and Detail 200-1.

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. Bob Herz reviewed the case and discussed the comments he made to get committee feedback.

For his first comment in Section 336.1, Mr. Herz recommended deleting Type C trench repair from Detail 200-1. He said he believed there should be a complete joint to joint replacement. Jim Badowich said he supported this change. Mr. Herz clarified that this includes all concrete flatwork. Rod Ramos asked about possibility of dowelling the pavement. Mr. Herz responded that the agency can always approve other options. Peter Kandaris asked if we really wanted to delete the detail. Rod Ramos said the existing PCCP thickness is not shown correctly on the existing detail. Paul Nebeker described some problems that could arise if trenching through concrete paving, especially if it is at an angle—it could cause a lot of expensive concrete replacement. He suggested updating the Type C detail to note the joint to joint replacement and other options such as dowelling, if they are available. Bob Herz said the Type C detail may still

be useful for driveways. Tom Wilhite asked if there was a minimum thickness required to dowel the pavement. Mr. Herz said at least 6" is needed to get clearance for the rebar and ground.

Mr. Herz said the second comment was for Section 336.2.2, which asked if any agency requires a longer distance prior to the elimination of the seal coat requirement. Agency members responded no.

His third comment was for Section 336.2.4.1 (E) Mr. Herz wanted to know if there was any problem using existing equipment on 6' to 8' replacement widths. Members didn't feel it was an issue.

For comment four, Mr. Herz said that for thick pavements, the contractor could use two layers with staggered edges (typically done in the milling process), but some of the details on 200-1 would need to be adjusted to allow this option. Rod Ramos said Scottsdale has a detail for the offset milled joint where it is milled out an extra foot. Paul Nebeker said that a 1 foot overlap would be better than 6" due to the irregularity of trenches. Mr. Herz suggested converting a supplemental detail into a MAG detail. Several other members said they had supplemental details, and Peter Kandarlis said he would review the material he had when updating 200-1 a few years ago.

Mr. Herz explained that comment five also referenced the Type C detail on 200-1, and comment six was to simply delete a sentence that didn't seem to provide much meaning. Members agreed.

The last comment discussed had to do with how the trench size was calculated. Currently it requires the width to be rounded to the nearest foot, but depending on the trench width, this could change the calculation quite a bit due to rounding error. Mr. Herz asked if there was a more appropriate measurement. Jim Badowich suggested measuring the actual trench and then rounding up to get the final result. Members agreed this was a better method.

Finally, Bob Herz said he added a new paragraph to the end of Section 321.10.3 dealing with longitudinal joints.

He also responded to a question from Rod Ramos on how the wheel path is defined. It is described in the second paragraph on page 336-4.

Warren White asked about keeping cuts out of the bike lane. Mr. Herz responded that they are except in the case where pavement replacement cuts 2' from the curb are allowed for curb and gutter replacement. Mr. Herz will reexamine the specification to ensure full depth joints are not located within designated bike lanes.

7. Case 14-17: Create New Section 322 - Asphalt Stamping.

Provide specifications for materials and methods of Asphalt Stamping. Brian Gallimore said that after reaching out to contractors who do this work, much of the specifications in the draft,

which were based on a Gilbert supplement, are out of date. He plans to start fresh and work on the new Section 322 at the next working group meeting. Mr. Herz asked if he planned to withdraw and resubmit the case. Mr. Gallimore responded that he believes he can get the revised information ready soon, so that it would not be necessary.

New Cases for 2015

8. Case 15-01: Miscellaneous Corrections.

Two new miscellaneous corrections were introduced at the meeting.

- A. Add omitted text to Section 735.1. Text was approved by Case 14-07 and merged into Case 13-15. Both cases were approved in 2014.
- B. Revise “OA” to Quality Assurance and “OC” to Quality Control in Section 710.

Bob Herz provided two minor updates (A and B above) that he thinks should be corrected.

9. Case 15-02: Proposed Revisions to Section 772, Table 771-1 and Detail 145.

Adjust fence requirements to reference ASTM F1043 Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework. Bob Herz said he added two rows to Table 711-1 that reference ASTM F1043. He noted that Detail 145 would also need to be updated. Other changes were made to Section 772 that changed the ASTM references for the fence framework. These changes were brought to his attention by fence suppliers. He thought the case was pretty straight-forward and proposed to vote on it at the next meeting.

10. Case 15-03: Revise Section 601.4.5 Trench Final Backfill.

Change backfill placement requirement from 2 feet maximum lifts to layers not exceeding eight inches in depth. Bob Herz submitted a new case to reduce the maximum lift depth from 2’ (currently in MAG) to 8”. He said the current practice is 8” lifts, and this thickness is noted in several other places in the MAG specifications. It is also used by ADOT, and the AASHTO standard is now down to 6”. Paul Nebeker said he thought a 2’ lift would work if you were using ABC, but he didn’t know anyone doing it. Tom Wilhite asked if verbage should be added for CLSM trench backfill. Bob Herz said he could add language to identify that these requirements are for mechanically compacted materials. Warren White said the working group had discussions on this last year and reduced it from 4’ to 2’. Jim Badowich said this could be a problem in subdivisions. Paul Nebeker reminded members that any changes to MAG specs can have unintended consequences on private development that rely on them.

11. Case 15-04: Revise Section 602 Trenchless Installation of Steel Casing.

Update ASTM references for casing material and add minimum casing wall thickness. Arvid Veidmark introduced a new case from the Water/Sewer working group to update Section 602. He said that the existing material requirements reference out-of-date ASTM specs. The revised section provides updated material references based on AWS D qualified materials. There are

new ASTM references for steel that is rolled into casing, and also American Petroleum Institute (API) specifications for pipe. This would allow the use of excise pipe to be used as casing, which in some cases may be superior and less expensive. The main purpose of the case is to bring it to conform to current industry practice.

Tom Wilhite asked how the casing was identified on the site. Mr. Veidmark said rolled casing has the MDR number on the plate, but that all the information about the casing material is part of the submittal package.

Peter Kandarlis said there needed to be submittals subsection that specified what needed to be submitted. Mr. Veidmark asked for potential language. Jeff Hearne said similar language for steel pipe was shown in Section 759.3, and he may want to refer to it as an example.

Other changes to Section 602 included a table with the minimum wall thickness. Warren White asked if the shop drawings typically called out the casing materials. Mr. Veidmark said they typically do. He said the case would be reviewed further at the next working group meeting.

Tom Wilhite brought up an issue with a project in Tempe where the soil was caving in and asked if the case could account for poor soil in subsurface areas. Arvid Veidmark said if they are hand tunneling, and it caves in, then grout can be pumped in to change the conditions.

Bob Herz said it depends on the existing conditions. If they change, this would be handled by a change order. Arvid Veidmark said the geotech report drives the application based on soil type, and that it needed to be checked at the depth of the planned bore. Mr. Kandarlis said he thought a geotech report was a good idea. Jim Badowich said he would like to add something about if the soil conditions change it needs to be brought to the attention of the agency. He also suggested it may be a good idea to have a survey before and after the operation to see if any heaving or settlement occurred.

12. Working Group Reports

Chair Wilhite asked for reports from the working group chairs.

a. **Water/Sewer Issues Working Group**

Jim Badowich said the group met Thursday, January 15, 2015 at 1:30 p.m. and had a couple new attendees. Besides the cases already discussed, the group discussed possibly expanding the testing section for flushing, and discussed requiring a larger diameter flushing valve for larger diameter pipe. The group also reviewed a proposed new Section 608 on Horizontal Directional Drilling. They planned to review it again, and possibly submit a case at the next meeting. He said Bob Herz suggested getting rid of ABS Truss Pipe. The next meeting is planned for February 19, 2015 at 1:30 p.m. at the MAG office.

b. Asphalt/Materials Working Groups

Jeff Benedict said the group met on Thursday, January 22, 2015 at noon at the ARPA office. The items of discussion were shown on the meeting notes. Mr. Benedict brought attention to comments brought up during the open discussion on the issue of testing lime treated ABC. He said an email from David Beckel of Southwest Rock Products was provided in the packet that summarized concerns he had with how it is tested. Mr. Benedict said Section 702 is written with native ABC material in mind and refers to AASHTO specifications for testing, which do not make any adjustments to the procedure for lime-treated material. He asked if any agency used the material and if they wanted the working group to address the issue.

Brian Gallimore said he thinks lime treated ABC is used quite often in the valley and if it meets the current testing requirements, than in most cases it can be used. Jim Badowich said Avondale doesn't want lime treated material near metal pipe, and only allows it in the roadway base. Peter Kandararis at SRP they used it extensively on unsurfaced roads.

Chair Wilhite asked if there were any comments from the audience and guest David Beckel addressed the committee about his concerns. He said testing for gradation and PI were inconsistent according to the AASHOT requirements. He gave an example where lime treated ABC was watered extensively in order for the water to appear "clear" but by doing so essentially washed away the treated material. He suggested changing the language as was done in other states to "reasonably clear" or "straw colored" in order to avoid this problem of disintegrating the clays the lime treated. Mr. Beckel also felt that local testing labs did not always correctly follow the AASHTO testing standards for wet prep P.I. testing. He said these issues should be addressed because lime treated AB is different than native materials.

Jeff Benedict said the next meeting was planned for February 26, 2015 at noon at the ARPA office. Mr. Wilhite asked Mr. Gallimore if he had anything to add from the materials group. Mr. Gallimore said they would be working on Section 322 Asphalt Stamping, as previously discussed.

c. Concrete Working Group

Jeff Hearne said the group began discussing pervious concrete. In addition to the meeting notes, he said materials about pervious concrete, its applications, maintenance, and sample specifications are in a packet posted on the MAG website. He asked how detailed a spec would be needed for MAG, since pervious concrete works as a complete system and all the parts need to be designed together such as subgrade and water infiltration requirements in addition to the pavement requirements. Tom Wilhite asked if this was something the committee wanted a presentation on. Mr. Hearne said he could see if he could find someone to present an overview to the committee. Bob Herz said he would like to take a look at Section 725 regarding the mix design submittal process. Mr. Hearne said they would next meet after the other working groups on February 26.

d. **Outside Right-of-Way Working Group**

Peter Kandaris said he had some health issues to deal with in the next couple months, but expected to start up again in April.

13. General Discussion

Gordon Tyus provided a staff report on ADA training and the ASTM portal. He said the Arizona Local Technical Assistance Program had training workshops on the Design and Construction of ADA facilities on April 5 and October 14. The workshops are free to agency members and would be more thorough than a presentation during the committee meeting.

Check their website: <http://www.azltap.org/>

He also noted that John Gallagher from ASTM was going to be in Phoenix March 12, 2015. Mr. Gallagher wanted to provide more information on the ASTM Compass website, especially some of the new training options available. If anyone is interested in meeting on March 12th please contact Mr. Tyus.

Bob Herz asked other members if they, like MCDOT, require conduits for underground dry utilities. Peter Kandaris said electrical utilities must be in conduit. Paul Nebeker said phone lines often use a small orange inter-duct. Rod Ramos said they have had some experience with microtrenching in private streets. Scottsdale created the detail as part of their Google fiber submittal. He said he will bring in their detail.

Jim Badowich asked if there was any need to move the July 1, meeting to July 8. Most members were fine with either date, but Julie Christoph said she could not attend on the eighth. It was decided not to change the meeting date, but leave it as July 1st.

Gordon Tyus demonstrated how to sign up for the email delivery notices on the MAG website. He said he uses this method to send out mass emails whenever new meetings, agendas and other updates are posted, and encouraged members to use the service.

14. Future Agenda Items:

Bob Herz said Section 616 notes a different type of valve box and cover for reclaimed water valves. He asked if agencies already have a detail, and if so, would they would consider adding it to MAG. He also thought that Detail 263 Wing Type Alley Entrance may need to be updated to be ADA compliant. He said the detail reference the back of the sidewalk. Finally, Mr. Herz also noted that there were errors in Note 5 of Detail 225 that should be reviewed and corrected.

15. Adjournment:

Seeing no further business the meeting was adjourned at 2:27 p.m.

2015 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: <http://www.azmag.gov/Projects/Project.asp?CMSID=1055&CMSID2=7154>)

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE	
	CARRY FORWARD CASES FROM 2014						
14-03	Case 14-03: Updates to Guardrail Details. Revisions to Section 415 and/or inclusion of MCDOT guardrail details.	MCDOT	Bob Herz	01/08/2014		0 0 0	Yes No Abstain
14-06	Case 14-06: Revisions to Section 718 Preservative Seal for Asphalt Concrete.	Asphalt WG	Jeff Benedict	02/05/2014		0 0 0	Yes No Abstain
14-12	Case 14-12: Proposed revisions to Sections 336, 321.10.3, 601.2.7 and Detail 200. 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.	MCDOT	Bob Herz	06/04/2014 02/19/2015		0 0 0	Yes No Abstain
14-17	Case 14-17: Create New Section 322 Asphalt Stamping. Provide specifications for materials and methods.	Materials WG	Brian Gallimore	07/09/2014		0 0 0	Yes No Abstain
	NEW CASES FOR 2015						
15-01	Case 15-01: Miscellaneous Corrections: A. Add omitted text to Section 735.1. Text was approved by Case 14-07 and merged into Case 13-15. Both cases were approved in 2014. B. Revise "OA" to Quality Assurance and "OC" to Quality Control in Section 710.	MCDOT	Bob Herz	02/04/2015		0 0 0	Yes No Abstain
15-02	Case 15-02: Adjust Fence Requirements to Reference ASTM F1043. Revise Section 772, Table 771-1 and Detail 145.	MCDOT	Bob Herz	01/07/2015	03/04/2015	0 0 0	Yes No Abstain
15-03	Case 15-03: Revise Section 601.4.5 trench final backfill placement requirement from 2 feet to layers not exceeding eight inches in depth.	MCDOT	Bob Herz	02/04/2015 02/20/2015		0 0 0	Yes No Abstain

2015 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: <http://www.azmag.gov/Projects/Project.asp?CMSID=1055&CMSID2=7154>)

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE
15-04	Case 15-04: Revise Section 602 Trenchless Installation of Steel Casing. Update ASTM references for casing material and add minimum casing wall thickness.	Water/Sewer WG	Arvid Veidmark	02/04/2015 02/24/2015		0 Yes 0 No 0 Abstain
15-05						0 Yes 0 No 0 Abstain



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: June 4, 2014

Revised 2015-02-20

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.

SECTION 336

PAVEMENT MATCHING AND SURFACING REPLACEMENT

336.1 DESCRIPTION:

~~This specification identifies requirements for removing and replacing or widening Street and alley pavement and replacing other surfacings 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 unless an alternative repair is required by contract documents or is authorized in writing by the Engineer. Replacement shall be 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.

~~Asphalt p~~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 ½ 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]: This change impacts Detail 200-1 Type C Trench Repair – Modification / Required.

Comment [RTH2]: The asphalt match point shown in Detail 200-1 Type A Trench Repair and the Remnant Pavement Removal detail need to be revised to comply with this paragraph. See Scottsdale Detail 2200 for a suggested staggered joint modification.

SECTION 336

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.

Comment [RTH3]: Modify to require staged removal of asphalt pavement for trenches similar to Scottsdale Detail 2200, this provides for re-compaction of the non-confined base course adjacent to the open trench.

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 Asphalt Pavement Replacement: All asphalt 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.

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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.~~

(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.~~

~~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 ~~is~~ 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 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:

Comment [RTH4]: Deleted since slurry and chip seals are not part of permanent pavement replacement.

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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 will 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 for a traffic lane is the entire lane width except the area within one foot of a traffic lane line stripe and except the center two feet of the lane. The lane wheel path for a designated bike lane is the entire lane width except the area within six inches (6") of a bike lane edge stripe.~~ When the surface match point for a full depth joint 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 location restrictions for full depth longitudinal joints will not apply for two course asphalt concrete pavement replacement 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.

Comment [RTH5]: The asphalt match point shown in Detail 200-1 Type A Trench Repair needs to be revised to comply with this paragraph.

Comment [RTH6]: Added requirement for designated bike lanes.

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.~~

Comment [RTH7]: Delete or modify 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.

Comment [RTH8]: Suggest this sentence be deleted. Type D trench repair is not for asphalt pavement.

Where a longitudinal trench is partly in pavement, the pavement ~~shall~~ be replaced 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 a landscaped or graded area outside of pavement, ~~no special surfacing treatment is required except replacement will only be as indicated by plans or specifications 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 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 1/2 the distance plus 12 inches, either side, from the centerline of the pipe as depicted 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~~

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~~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.~~

~~(H) 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 ~~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~~ The defective pavement shall be cut out along neat straight lines or for multiple course pavements the surface course may be milled out, and the removed pavement 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.

Comment [RTH1]: For two course pavements milling and replacement of the surface course should be an alternative.

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 1/2 inches or 1/4 of the thickness, whichever is greater.~~

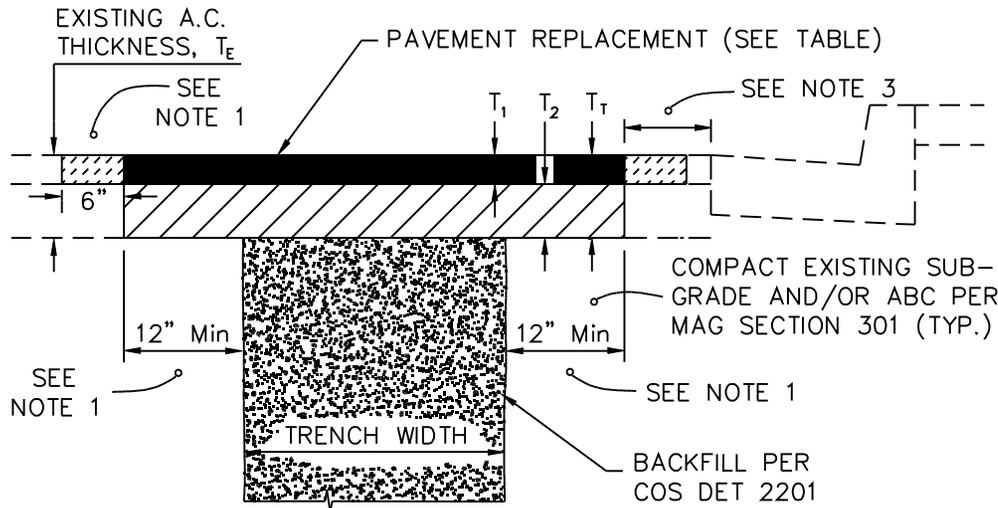
Sidewalk, curb, gutter, and other concrete flatwork shall have complete joint to joint replacement of all damaged sections. The construction replacing damaged concrete sections and joints shall be compliant with Section 340.

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.

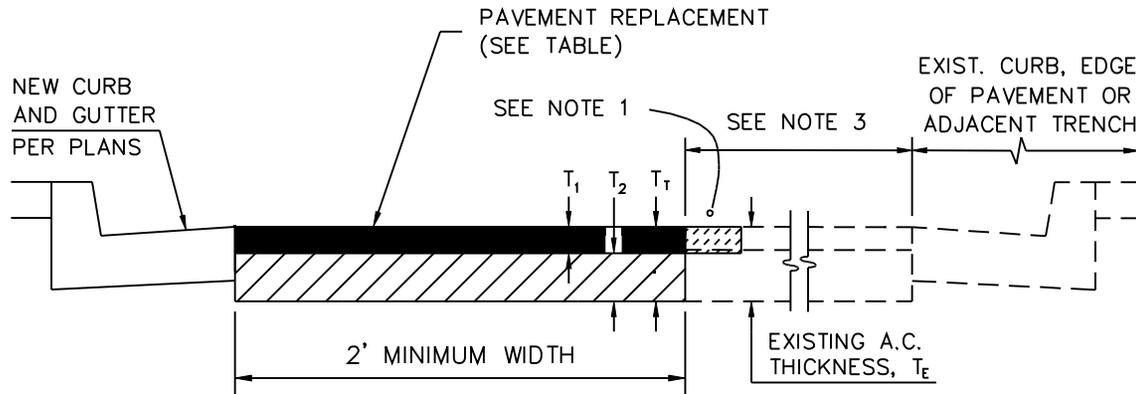
Asphalt pavement shall be clean-cut, with approved equipment and by approved methods in accordance with the requirements of Section 336.

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.

REVISED 7/15/03



PAVEMENT REPLACEMENT FOR TRENCHES (T-TOP)



PAVEMENT REPLACEMENT

EXISTING PAVEMENT THICKNESS, T_E	AC PAVEMENT REPLACEMENT TABLE		
	AC SINGLE COURSE OR SURFACE COURSE, T_1	AC BASE COURSE, T_2	TOTAL THICKNESS, T_T
$T_E \leq 3"$	3" MINIMUM	NONE	3" MINIMUM
$T_E > 3"$	2" MINIMUM	2" MINIMUM	T_E (MATCH EXIST)

PAVEMENT REPLACEMENT NOTES

1. "T"-TOP REQUIRED FOR ALL TRENCHES. A.C. SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE "T" CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4" AND THICKER.
 - a. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12" OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4" AND THICKER, MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE A MINIMUM OF 6" ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.
 - b. FOR NEW AND OVERLAYED PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF SCOTTSDALE REVISED CODE SECTIONS 47-79 AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12" OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4" AND THICKER, MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET. FOR PAVEMENTS LESS THAN 4" THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.
 - c. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS, MATCH EXISTING A.C. DEPTH. MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.
2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF MAG SECTION 321.
3. IF PAVEMENT REMNANT IS LESS THAN 36", REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE PER MAG SECTION 702 SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO COS SUPPLEMENTAL SPECIFICATIONS, SECTION 336.2.4 FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

DETAIL NO.
2200

City of Scottsdale
Standard Details

APPROVED BY:
Scottsdale Standards & Specifications Committee

PAVEMENT REPLACEMENT

DETAIL NO.
2200



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: December 17, 2014
To: MAG Specifications and Details Committee
From: Robert Herz, MCDOT Representative
Subject: Proposed Revisions to Section 772, Table 771-1, and Detail 145 **Case 15-02**

PURPOSE: Adjust fence requirements to reference ASTM F1043 Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.

REVISIONS:

1. Revise Note 1 on Detail 145 to read as follows:
 1. Posts and rails shall be 1.90 inch outside diameter high strength heavy industrial steel pipe conforming to ASTM F1043 Material Group IA-2 (2.72 lb/ft, minimum yield strength = 50 ksi) or Material Group IC galvanized after forming (2.28 lb/ft, minimum yield strength = 50 ksi).
2. Specification Section 771 GALVANIZING Modify Table 771-1 by adding ASTM F1043 groups IA and IC to the row for Steel Pipe – Rails and Post.

TABLE 771-1		
GALVANIZING SPECIFICATIONS		
Material	ASTM Spec.	Wt. of Coating Oz./Sq. Ft. (Min.)
Corrugated Metal Pipe	A929	1.80
Flat Steel or Iron Sheets	A653, A924	1.25
Iron or Steel Wire	A116	.80
Chain Link Fabric	A392	1.20
Barbed Wire	A121	.50
Steel Pipe - Rails and Posts	A53,	1.8
	F1043 IA	1.8
	F1043 IC Galvanized After Forming	0.9 oz w/chromate and organic clearcoat
Structural Shapes, Tie Rods, Ornamental Iron Railings, Handrails, Manhole and Catch Basin Steps, and Curb Armor	A123	2.00
Bolts, Nuts, Washers, Anchor Bolts, Packing Spools, Gray Iron and Malleable Iron Castings and Steel Castings	A153	1.25

3. Section 772 CHAIN LINK FENCE revise the material requirements identified in 772.2 POSTS, RAILS AND BRACES.

CHAIN LINK FENCE

772.1 GENERAL:

All material shall be new and, upon request, the Contractor shall furnish to the Contracting Agency, a certification of inspection stating that the materials have been manufactured, sampled, tested and inspected so as to meet the requirements for its type as specified below.

772.2 POSTS, RAILS AND BRACES:

Posts, rails and braces shall be constructed of pipe in conformance with types A, B or C below. Unless specifically designated by type in the plans or specifications, the Contractor may utilize any of the three types. The posts and rails in this section will cover fencing up to 12 feet in height with post spacing not to exceed 10 feet. The nominal outside dimensions and minimum weights shall be in accordance with Table 772-1. The manufacturer or his representative shall legibly mark each length of pipe by rolling, stamping or stenciling to identify the product by product name, ASTM standard, etc. and the country of manufacture.

Type A: ~~Pipe s~~ Shall be manufactured in conformance to ASTM F1043 IA-2 black steel pipe, welded or seamless, hot-dipped zinc coated, ~~manufactured in conformance to ASTM F1083~~, plain end, standard weight (schedule 40). The hot-dipped zinc coating (galvanized) shall be applied both inside and outside with not less than 1.8 ozs. per square foot \pm 0.1 ozs.

Type B: Shall be manufactured in conformance to ASTM F1043 IC Galvanized After Forming. Steel used in the manufacturing of the pipe shall be hot-rolled strip steel in compliance with ASTM A1011 having a minimum yield strength of 50,000 psi. The pipe will be manufactured by electric welded cold-formed process per ASTM A500. The exterior surface will be triple coated and the interior surface single coated ~~per ASTM F1043~~. The triple coated external surface shall be hot-dipped zinc coated (galvanized) having a weight of not less than 1.0 ozs. per square foot \pm 0.1 ozs., followed by a chromate conversion coating, having a weight not less than 1.05 micro ounces per square foot \pm 0.353 micro ounces (30 micrograms per square inch \pm 15 micrograms) and an acrylic coating having a thickness of 0.0005 inches \pm 0.0002 inches. The internal surface shall be coated with a zinc base paint having a 90% zinc powder loading and having a minimum thickness of 0.0005 inches.

Type C: Shall be manufactured in conformance to ASTM F1043 IC Galvanized Before Forming. Steel used in the manufacturing of the pipe shall be strip steel in compliance with ASTM A653 Grade D having a minimum yield strength of 50,000 psi. Both sides of the strip shall be hot-dipped zinc coated (galvanized) per ASTM A653 and A-924 having the weight of not less than 1.0 oz. per square inch \pm 0.1 oz. The zinc coating will form the first coat of a triple coated external surface and the final coat of the interior surface. The pipe will be manufactured by electric welded cold formed process per ASTM A789. After manufacturing, the final two external coatings shall be a chromate conversion having a weight of not less than 1.05 micro ounces per square inch \pm 0.353 micro ounces and an acrylic coating having a thickness of 0.0005 inches \pm 0.0002 inches.

772.3 CHAIN LINK FABRIC:

Chain link fabric shall conform to the requirements of ASTM A392 (Zinc-Coated) or ASTM A491 (Aluminum-Coated). The coating process must leave the fabric completely free of barbs, icicles, or other projections which might be hazardous. The wire used in the manufacture of the fabric shall be 11 gage for all fence 60 inches or less in height and shall be 9 gage for all fence over 60 inches in height unless otherwise specified.

All chain link fabric shall be woven into approximately 2 inch mesh. Fabric less than 60 inches wide shall have knuckled finish on the top edge, and twisted and barbed finish on the bottom edge. Fabric 60 inches or reater in width shall have twisted and barbed finish on both edges. Barbing shall be done by cutting the wire on the bias.

772.4 TENSION WIRES AND FABRIC TIES:

Tension wires shall be at least 7 gage galvanized coil spring steel wire per ASTM A824. Ties used to fasten the fabric to posts, rails, and gate frames shall be not smaller than 11 gage galvanized steel, 6 gage aluminum wire, or approved non-corrosive metal bands.

Tension bars used in fastening fabric to end and corner posts and gate frames shall be galvanized high carbon steel bars not smaller than 3/16 inch x 3/4 inch.

TABLE 772-1					
FENCE MEMBER SIZES & WEIGHTS					
USE	FENCE HEIGHT (Feet)	NPS DESIGNATOR	OUTSIDE DIAMETER (Inches)	WEIGHT (Lb/Lf Minimum)	
				TYPE A Schedule 40	TYPE B and C
FENCE POSTS					
End, corner, slope, pull and strain posts	Less than 6	2	2.375	3.65	3.12
	6 and over but less than 9	2 1/2	2.875	5.79	4.64
	9 and over but not over 12	3 1/2	4.000	9.11	6.56
Line posts	less than 6	1 1/2	1.900	2.72	2.28
	6 and over but less than 9	2	2.375	3.65	3.12
	9 and over but not over 12	2 1/2	2.875	5.79	4.64
GATE POSTS					
Single swing gates 6 feet or less in width or double swing gates 12 feet or less	less than 6	2	2.375	3.65	3.12
	6 and over but not over 12	3 1/2	4.000	9.11	6.56
Single swing gates over 6 feet but not over 13 feet in width or double swing gates over 12 feet but not over 26 feet in width	—	3 1/2	4.000	9.11	6.56
Single swing gates over 13 feet but not over 18 feet in width or double swing gates over 26 feet but not over 36 feet in width	—	6	6.625	18.97	—
Single swing gates over 18 feet in width or double swing gates over 36 feet in width	—	8	8.625	28.55	—
OTHER MEMBERS					
Top rail and braces	—	1 1/4	1.666	2.27	1.84
Frame for gates	—	1 1/2	1.900	2.72	2.28
Stiffners for gates	—	1 1/4	1.666	2.27	1.84

Notes to Table 772-1:

- All unit weights shall be subject to the standard mill tolerance of ± 5 percent.
- Posts shall be fitted with tops designed so as to fit securely over the posts and carry a top rail where specified. They shall have a total length of not less than the depth of the concrete footings, as specified, plus the length required above ground. Where no top rail is required, pipe posts shall be fitted with suitable caps.
- Top rail shall be furnished in random lengths of approximately 20 feet where required.

772.5 TRUSS OR TENSION RODS:

Truss or tension rods used in trussing gate frames and line posts adjacent to end, corner, slope or gate posts shall be adjustable 3/8 inch diameter galvanized steel rod. When used in trussing line posts, adjustment shall be provided by means of galvanized, turnbuckle or other suitable tightening devices.

772.6 FITTINGS:

Fittings shall conform to ASTM F626.

Fittings, hardware, nuts and bolts shall be galvanized.

Couplings to connect the individual lengths of top rail shall be of the outside sleeve type at least 7 inches long. The bore of the sleeves shall be sufficiently true to maintain adjacent lengths of rail in alignment.

Extension arms for barbed wire on pipe posts shall be of 13 gage steel or heavier, single piece construction and a type that can be attached to the tops of the posts. Extension arms shall carry 3 wires at approximately 5 1/2 inch centers in a plane approximately 45 degrees from the vertical, inclined as shown on the plans or as directed by the Engineer.

772.7 BARBED WIRE:

Barbed wire shall be 4 point pattern; composed of 2 strands of 12 1/2 gage galvanized steel wire with barbs spaced 5 inches apart and shall conform to ASTM A121.

- End of Section -



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: January 28, 2015

Revised 2/19/2015

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: Proposed Revision to Section 601.4.5 Final Backfill

Case 15-03

PURPOSE: Revise trench final backfill placement requirement from 2 feet to layers not exceeding eight inches in depth for pneumatic or mechanical tamping devices.

REVISIONS:

601.4.5 Final Backfill: Material placed above the initial backfill to the top of the trench or to the bottom of the road base material. Final backfill compacted by pneumatic or mechanical tamping devices shall be placed in horizontal layers not more than eight inches in depth before compaction. For compaction wheels the loose uncompacted lift height lifts that shall not exceed 2 feet and the lift height shall not be more than can be compacted to the required density with the equipment and methods being used.

Final backfill shall be ABC per Section 702 or sound earthen material with no piece larger than 4 inches and be free from broken concrete, broken pavement, wood or other deleterious material.

Backfill under street pavement shall be constructed per Detail 200-1 with the type of trench and surface replacement as noted on the plans or in the special provisions. Unless otherwise noted, backfill under single curb, curb and gutter, attached sidewalk, driveways, valley gutters, etc. shall be the same as the adjacent street pavement.

SECTION 602

TRENCHLESS INSTALLATION OF STEEL CASING

602.1 DESCRIPTION:

The Contractor shall furnish all labor, material and equipment as required for the trenchless operation to install steel casing using horizontal earth auger boring, hand tunneling or pipe ramming.

602.2 MATERIALS:

602.2.1 Steel Casing Fabrication: ~~The steel casing shall consist of steel plates rolled and welded into a cylinder. Plate material shall meet the minimum requirements of ASTM A283. Shop and field joints shall be butt welded in accordance with the minimum requirements of AWS D1.1/D1.1M. Welding shall be performed by AWS D1.1 certified personnel.~~

Steel casing shall conform to ASTM A36, ASTM A53, ASTM A139, or American Petroleum Institute “API” Specification API 5L Gr B, API 5L X42 or API 5L X52. Welding shall use matching filler metal requirements as listed in AWS D1.1 Table 3.1. Shop and field joints shall be welded in accordance with AWS D1.1/D1.1M. Welding shall be performed by AWS D1.1 qualified personnel.

602.2.2 Steel Casing Wall Thickness: The minimum wall thickness for steel casings shall be in accordance with Table 602-1.

Table 602-1	
Minimum Wall Thickness	
6”-36”	3/8”
37”-48”	1/2”
49”-60”	5/8”
61”-78”	3/4”
79” and up	1”

602.2.2.3 Steel Casing Diameter: The steel casing for pressurized carrier pipes shall be a minimum of 12-inches larger than the largest OD outside dimension of the carrier line, (including pipe bells and flanges) or the size indicated on the plans, whichever is greater.

The steel casing for gravity carrier pipes shall be a minimum of 18-inches larger than the largest OD outside dimension of the carrier line, (including pipe bells and flanges) or the size indicated on the plans, whichever is greater.

602.3 TRENCHLESS OPERATION:

Before starting operations, the Contractor shall submit in accordance with Section 105.2, detailed shop drawing of the bore pit and receiving pit shoring, ~~the casing~~, bulkheads, carrier pipe installation method, and welder certifications. The contractor shall submit a letter of certification for the casing listing the specification that conforms with section to 602.2.1 and the ASTM or API specification shall be stenciled on the outside of the casing matching the certification letter. The contractor shall submit a procedure detailing the trenchless installation method selected from 602.1 to be used for the project, if a geotechnical report is not available in the contract documents, the contractor shall define the soil limitation for the method selected.

The bore and reception pits for the trenchless operation shall be shored to safeguard existing sub-structures and surface improvements and to protect against ground movement. Survey of the bore alignment shall be taken prior to the installation of steel casing and taken after the installation of steel casing and shall be presented to the engineer.

On steel casing 37-inches (I.D.) or larger grout connections shall be provided at a maximum spacing of every 20-feet located at 12 o'clock in the steel casing. Upon completion of the boring operation, the contractor shall inspect each grout hole to determine if grouting is required. When a 2-inch or greater void occurs at a grout hole, the void shall be filled with a flowable grout. After grouting the grout holes shall be closed with a threaded plug.

Steel casing smaller than 36-inches (O.D.) installed by horizontal earth auger boring, hand tunneling or pipe ramming will not require outside grouting unless caving or earth movement occurs.

Unexpected loose soil conditions that do not accommodate the method submitted by the contractor, (horizontal earth auger boring, hand tunneling or pipe ramming), shall be brought to the agency attention to determine further course of action. Contractor shall stop boring until an alternative method is mutually agreed on.

602.4 DEWATERING:

All water encountered during the trenchless operation shall be disposed of by the Contractor in a manner that will not damage public or private property or create a nuisance or health problem. The cost of furnishing pumps, pipes and equipment for dewatering shall be considered incidental to the work and no additional payment shall be made.

602.5 CARRIER PIPE PLACEMENT:

The tolerances allowed for the alignment and grade of carrier pipe shall comply with requirements of Section 610, 615 or 618 as applicable. The Contractor shall be responsible to obtain the required line and grade for the carrier pipe, the carrier pipe shall not contact or rest on the casing.

Pressurized carrier pipes, (i.e. water, gas, force main) shall be placed using casing spacers, wood skids or steel pipes for rails. Casing spacers shall be installed 3 per joint minimum with 8-foot maximum spacing. The annular space between the casing and carrier line shall be left empty unless otherwise directed. When the annular space is to be filled, 3/8-inch pea gravel shall be used.

Gravity carrier pipes, (i.e. sewer, storm drain, irrigation) shall be placed using wood skids or steel pipes for rails. The annular space between the casing and carrier line shall be left empty unless otherwise directed. When the annular space is to be filled, 3/8-inch pea gravel shall be used.

Bulkheads consisting of brick and mortar or concrete shall be constructed on the ends of the casing; bulkheads shall be a minimum of 8-inches thick. Alternative casing end closures may be substituted for brick and mortar or concrete bulkheads if approved by the engineer.

PVC conduits for dry utilities, (i.e. communications, fiber, electric) shall be placed using non-metallic PVC casing spacers. The annular space between the casing and carrier line shall be filled as indicated in the contract documents.

After completing the carrier pipe installation, the Contractor shall remove all loose and disturbed material in the bore pits and backfill the pits in accordance with Sections 601 and 336.

602.6 MEASUREMENT AND PAYMENT:

Measurement for steel casing shall be the number of horizontal linear feet from the end of casing in the bore pit to the end of casing in the reception pit. Payment for steel casing shall be full compensation for furnishing all labor, material, tools, and equipment required for the trenchless installation of steel casing, complete in place including but not limited to placement of carrier pipe, annular space fill material (when required), bulkheads placement and the excavation and backfilling of pits. Payment for steel casing does not include payment for the carrier pipe, a separate payment will be made for the carrier pipe and any required testing of the carrier pipe.

- End of Section -

Water/Sewer Working Group Meeting

Meeting Notes
February 19, 2015

Opening:

A meeting of the Specifications and Details Water/Sewer Working Group was called to order by Jim Badowich on February 19, 2015, at 1:35 p.m. in the MAG Cholla Room.

1. Introductions/Attendance

Tony Ayala (Avondale), Jim Badowich (Avondale), Arturo Chavarria (Hanson), Julie Christoph (Mesa), Jami Erickson (Phoenix), John Gluck (Winnelson), Bob Herz (MCDOT), Daniel Kiel (Peoria), Danny Koellen (Winnelson), Paul Nebeker (Pipe Right Now), Gordon Tyus (MAG), Arvid Veidmark (SSC Boring), Stew Waller (Rinker).

2. Feedback from Case 13-15 and new Case 15-03

Jim Badowich asked if members had received any feedback to all the changes made last year. Paul Nebeker suspects many have not read them yet. Bob Herz said he sponsored Case 15-03 which modifies Section 601.4.5 to make backfill compaction a maximum of 8" lifts rather than the current 2'. Arvid Veidmark said that lifts are fine for roads, but are not really used when filling trenches since the material is pushed in and typically compacted with a mechanical wheel. Tony Ayala said that the operator experience makes a big difference in the depth of the material put in the trench. Paul Nebeker said the nature of how the wheel works only compacts 3"-4" as it processes the material, and that it operates at an angle that depends on the depth of the trench. Mr. Herz said that maybe different specs were needed for the wheel and asked if the manufacturer had recommended amounts. Mr. Veidmark searched for the specs for one online and reported that it said it could compact 2'-5' lifts – more than currently allowed. Jim Badowich said it would be nice to have a geotech engineer provide input. Mr. Waller said he knew someone who might be able to attend a future meeting. There was further discussion on how the compaction wheel worked and how compaction could be tested. Mr. Herz said he would try to create language that took into account the different compaction methods.

3. Revisions to Section 602 – Case 15-04

Arvid Veidmark provided a new revision to Section 602 Trenchless Installation of Steel Casing. Bob Herz provided a copy with his comments on it. Mr. Veidmark said he added a minimum wall thickness table. Julie Christoph asked how the thickness was determined. Was it based on the depth of the casing? Mr. Veidmark replied that it actually was determined by strength needed in shallow installations such as under railroad tracks, and the ability to withstand wear. Mr. Herz went through some of his comments including spelling out API. A new sentence requiring a survey before and after the installation was added. Jim Badowich discussed the usefulness of a survey to check if there was any heaving or settlement. Mr. Veidmark said for this process typically you don't get heaving, but you can get settlement. This is often corrected by using grout. Daniel Kiel said he would like the type of grout used to be in the spec. There was also discussion about what happens when there are changing soil conditions. Mr. Badowich wants any change to be brought to the attention of the agency right away. Julie Christoph stressed the importance of stopping any boring when this occurs. Mr. Veidmark said he would work on updating the Section 602 and provide it to Mr. Tyus for the next committee meeting.

4. Horizontal Drilling Directional Drilling (New Section 608)

Sponsor Arvid Veidmark provided a new version #13 of the proposed case. He noted the updated sections shown in red. It was suggested to move the language about profiling the ground along the bore path back to 608.6.4, since that is when it would be done. Jim Badowich brought up the issue of telecommunications utilities such as Century Link and Cox putting in a lot of cable using HDD, He wants to make sure they are aware of the proposed specifications. There was also some discussion on when it would be required to paint and mark the depth of the pilot bore on the ground every 10'. This led to further discussion on what qualified as a small medium and large project. Mr. Badowich also asked how to deal with pulling multiple bundles of cable. Julie Christoph described a large fiber project in Mesa. She also voiced her concerns on locating all sewer lines and laterals, so that no boring goes through them. Mr. Veidmark said Slade Otney is working on the cross bore issue at the state level. She said Mesa has a supplement. When discussing the minimum separation from existing utilities, Mr. Tyus asked how could a pilot hole only needed 1' minimum, if a reaming that goes in later requires 2'. Mr. Veidmark said the 1' clearance was for a pilot hole that didn't need any reaming, but could pull smaller pipe through. He said he would try to clarify the language. He also said he sends out the revisions to industry and AZUCA, and says they are on board. Mr. Badowich wanted it to specifically go to the telecommunications utilities for review once the case was ready.

5. Section 611 Testing

Mr. Badowich said he wants to deal with the flushing spec, which he thinks needs to be expanded and improved. Jamie Erickson said Phoenix has a small supplement. Mr. Badowich talked about needing different sized orifices, specs on the distances, metering, etc. Tony Ayala said Avondale typically take samples but send them to the Phoenix lab for testing. He said he also was concerned about what to do with the highly chlorinated discharge water – how it should be treated and where it should go.

6. Case 14-12

Bob Herz said he made updates to his case that impact Detail 200-1. He would like to see a new trench backfill detail that allows for milling operations to offset the roadway cuts. This was discussed as some length during the regular committee meeting. He provided an example of a Scottsdale detail. Ms. Christoph said Mesa also has a detail and supplement. Jim Badowich proposed that we should have a modified T-Top detail. Paul Nebeker said Peter Kandaris said he was going to look into it.

7. Other Items

Daniel Kiel mentioned earlier discussion about reclaimed water (Section 616) and details for reclaimed water valve boxes and covers. Mr. Badowich said he believed Chandler had a detail for the square boxes. He would ask Warren White about it.

8. Next Meeting Date/Adjournment

The next Water/Sewer working group meeting is scheduled for Thursday, March 19, 2015.

The meeting was adjourned at 3:30 p.m.