

April 24, 2013

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, May 1, 2013 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**  
**May 1, 2013**

**COMMITTEE ACTION REQUESTED**

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| <p>1. <u>Call to Order and Introductions</u></p> <p>2. <u>Call to the Audience</u><br/>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.</p> <p>3. <u>Approval of April 3, 2013, Meeting Minutes</u></p> | <p>2. Information.</p> <p>3. <b>Review and approve minutes of the April 3, 2013 meeting.</b></p> |
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**Cases Carried Forward from 2012**

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| <p>4. <u>Case 12-12:</u><br/>New Section 739: Steel Reinforced Polyethylene Pipe (SRPE)</p> | <p>4. Information and discussion.<br/>Sponsor: Rod Ramos, Scottsdale</p> |
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**New Cases for 2013**

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| <p>5. <u>Case 13-01 Miscellaneous Corrections:</u><br/>A. Revise title of Section 324<br/>B. Section 505.6.3.3 (4) Typing error correction<br/>C. Section 735.4 (D) Delete reference to AASHTO M-315<br/>D. Correction to Detail 501-5<br/>E. Correct typo in Section 311 Title<br/>F. Remove reference to Section 702.4 in Subsection 795.8.4 Decomposed Granite<br/>G. Revise Section 107.4 to change the Arizona Revised Statue reference 41-846 to 41-865.<br/>H. Remove the word "AND" in the title of Section 725 so it reads "PORTLAND CEMENT CONCRETE"<br/>I. Section 108.8 Correction: Change "or" to "and" in first line.</p> | <p>5. Information and discussion.<br/>Sponsors: Bob Herz, Maricopa County<br/>Peter Kandarlis, DGA</p> |
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6. Case 13-02:  
Revision to Section 337 CRACK SEALING to obtain compatibility with Maricopa County Requirements.
  7. Case 13-03:  
Revision to Section 321.8.6 Asphalt Concrete Overlay to obtain uniformity with Maricopa County requirements.
  8. Case 13-04:  
Revision to Detail 120 SURVEY MARKER.
  9. Case 13-05:  
New Section 740 Polypropylene Pipe and Fittings for Gravity Storm Drain and Sanitary Sewer.
  10. Case 13-06:  
Modify Part 600 title to include Storm Drain and Irrigation.
  11. Case 13-07:  
Revisions to Detail 201 ASPHALT PAVEMENT EDGE DETAILS. Correct miscellaneous errors and change the Type B thickened edge depth dimension from "8 inch minimum" to "8 inches".
  12. Case 13-08:  
Revision to Section 321.8.8 Thickened Edge. Eliminate references to 'base course' to clarify the surface being referenced.
  13. Case 13-09:  
Revision to Section 321 Asphalt Penalty Tables based on City of Mesa Supplements.
  14. Case 13-10:  
Revision to Section 301.7 (Subgrade Preparation) MEASUREMENT
  15. Case 13-11:  
Delete Section 737 ASBESTOS-CEMENT PIPE AND FITTINGS FOR STORM DRAIN AND SANITARY SEWER
6. **Information, discussion and possible action.**  
Sponsor: Bob Herz, Maricopa County  
(Updated)
  7. **Information, discussion and possible action.**  
Sponsor: Bob Herz, Maricopa County  
(Updated)
  8. **Information, discussion and possible action.**  
Sponsor: Bob Herz, Maricopa County  
(Updated)
  9. Information and discussion.  
Sponsor: Warren White, Chandler
  10. **Information, discussion and possible action.**  
Sponsor: Jami Erickson  
(Updated)
  11. Information and discussion.  
Sponsor: Bob Herz, Maricopa County
  12. Information and discussion.  
Sponsor: Bob Herz, Maricopa County  
(Updated)
  13. Information and discussion.  
Sponsor: Bob Draper, City of Mesa
  14. Information and discussion.  
Sponsor: Bob Herz, Maricopa County
  15. Information and discussion.  
Sponsor: Bob Herz, Maricopa County  
(New Case)

16. New and Potential Cases for 2013:

16. Information and discussion.

**General Discussion**

17. Working Group Reports

17. Information and discussion.

Water/Sewer Chair: Jim Badowich, Avondale  
Asphalt Chair: Jeff Benedict  
Materials Chair: Brian Gallimore  
Concrete Chair: Jeff Hearne  
Outside ROW: Peter Kandararis

18. General Discussion

18. Information and discussion.

19. Request for Future Agenda Items

19. Information and discussion.

Adjournment

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

April 3, 2013

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

AGENCY MEMBERS

Jim Badowich, Avondale  
Craig Sharp, Buckeye (proxy)  
Warren White, Chandler  
Antonio Hernandez, El Mirage  
Tom Condit, Gilbert  
Mark Ivanich, Glendale  
Troy Tobiasson, Goodyear  
Bob Herz, MCDOT  
Bob Draper, Mesa

\* Javier Setovich, Peoria  
Syd Anderson, Phoenix (St. Trans.)  
Jami Erickson, Phoenix (Water)  
Rodney Ramos, Scottsdale  
Jason Mahkovtz, Surprise  
Tom Wilhite, Tempe, Chair  
\* Harvey Estrada, Valley Metro  
\* Gregory Arrington, Youngtown

ADVISORY MEMBERS

Jeff Benedict, ARPA  
Slade Ottney, NUCA  
Bill Davis, NUCA (proxy)  
Brian Gallimore, AGC  
Adrian Green, AGC

Jeff Hearne, ARPA  
Peter Kandarlis, Independent (Audio)  
Paul R. Nebeker, Independent  
Jacob Rodriguez, SRP

MAG ADMINISTRATIVE STAFF

Gordon Tyus

\* Members not attending or represented by proxy.

GUESTS/VISITORS

Dan Currence, ADS  
John Kanzleamar, Contech

1. Call to Order

Chairman Thomas Wilhite called the meeting to order at 1:33 p.m.

2. Call to the Audience

Chairman Wilhite opened the call to the audience. No members of the audience requested to speak.

3. Approval of Minutes

The members reviewed the March 6, 2013 meeting minutes. Troy Tobiasson introduced a motion to accept the minutes as written. Bob Herz seconded the motion. A voice vote of all ayes and no nays was recorded.

**Review of 2012 Carry Forward Cases**

4. Case 12-12: Steel Reinforced Polyethylene Pipe

*Add new Section 739 for Steel Reinforced Polyethylene (SRPE) Pipe.* Sponsor Rod Ramos reviewed the revised version of Section 739 based on comments received. The changes were shown in red and included changing the pressure requirements to 10.8 psi to match the minimum ASTM standards. Mr. Ramos said language was added to address the joint welding issue. He said he also had available alternate wording allowing up to 1.5 times the allowable pressure rating may be used in certain circumstances. Jim Badowich liked the additional language; however, Mr. Herz thought it was a design, not a construction issue. Jason Mahkoltz agreed. Mr. Badowich said the additional language may be useful so inspectors know when to check for higher pressure.

Mr. Herz had several questions and suggestions based on his review of the draft and comparison to ASTM standards. He asked if there should be a minimum stiffness for the pipe when used in right-of-way applications. He also wondered how it would be affected by the backfill specifications. He noted the steel strength of 80,000 psi exceeds the ASTM minimum of 20,000 psi. Mr. Herz also had questions about how the cell classification of 335464C was determined. He wanted to make sure that the specifications were not written to exclude other manufacturers. Mr. Ramos was concerned that lowering all standards to the ASTM minimums may allow inferior products to be used that have not been tested in the field, and do not match the higher quality products they currently accept.

Bob Herz also asked if water stops and clamp gaskets section and other construction-related specifications should be moved out of the material spec and into the installation spec. Antonio Hernandez said the water-stops and clamps were used specifically for this type of material, and he thought it was appropriate that they be included. Jim Badowich commented that the water/sewer working group was working on rewriting the installation specification, but were trying to make them generic for all flexible pipe, so it may make more sense to leave

specifications that pertained to a particular material type in the material section. Mr. Herz suggested some of the language could be removed since it references the ASTM standard which covers its use. Finally, he had questions about the certification section and if the following section was redundant.

John Kanzlemer of Contech, helped draft the case in the working group and explained the rationale for some of the choices made. He also said the draft was based on the existing Section 738 for HDPE, and so the subsections reflected this. He also said the proposed specifications were based on existing materials currently used. Mr. Kanzlemer agreed to work with Bob Herz to answer his questions and incorporate changes in a future revision.

## **New 2012 Cases**

### 5. Case 13-01 A-G: Miscellaneous Corrections

One new correction was added to the case.

*I) Section 108.8 Correction: Change “or” to “and” in the first line.*

Bob Herz submitted this revision to clarify that both workmanship **and** materials were covered.

Peter Kandarlis suggested a correction to the detail drawings index page, but Mr. Herz said it was already covered in a new case he submitted.

### 6. Case 13-02: Revision to Section 337 CRACK SEALING

*Obtain compatibility with Maricopa County requirements.* Bob Herz highlighted the difference between MCDOT’s viscosity heating requirement of 380 degrees F and the existing 400 degrees F. He asked if any members wanted to change it to MCDOT’s standard or leave it as is. The members preferred to keep the current standard. Jason Mahkovtz suggested a couple minor typographic corrections. Mr. Herz said he would put together a final version and would like to vote on it at the next meeting.

### 7. Case 13-03: Revision to Section 321.8.6 ASPHALT CONCRETE OVERLAY

*Obtain compatibility with Maricopa County requirements.* Bob Herz said there were no changes since the last meeting. Brian Gallimore asked about adding the language for pre-lowering the manholes before doing an overlay. Mr. Herz said the lowering is done before milling and suggested that the language was more appropriate for Section 345. Mr. Gallimore said they could change 345 instead. Mr. Benedict said the working group would look into updating Section 345 and the details for a future case. Mr. Herz said he would make the final revisions and would like to vote on the case at the next meeting.

### 8. Case 13-04: Revision to Detail 120 SURVEY MARKER

*Revise detail to prevent installation of survey markers that do not comply with requirements of state law.* Bob Herz presented an updated Detail 120: Survey Marker. He revised Note 2 on the

detail to remove “WHEN LOCATED IN PAVEMENT” since they are not always in pavement, and added “AND AT OTHER POINTS AS SHOWN ON PLANS.” Rod Ramos said he remembered a preference of showing on the TYPE ‘B’ detail with half of it not in pavement, since that was an option. Bob Herz said he would make that change to the drawing and asked to vote on the case at the next meeting.

9. Case 13-05: New Section 740 Polypropylene Pipe and Fittings for Gravity Storm Drain and Sanitary Sewer

*Propose new material section for Polypropylene Pipe material.* Sponsor Warren White handed out a new version of Section 740 based on comments received, which included a few minor corrections to the version included in the packet. Mr. White reviewed the changes which were outlined on the cover sheet of the case. He said the updated version he passed out fixed a typo and incorporated a reference to Section 603 for construction.

Rod Ramos suggested he review Mr. Herz’s comments on the previous Case 12-12 since 740 and 739 were similar in nature. He agreed and said they planned to coordinate within the water/sewer working group to keep the related cases in sync.

10. Case 13-06: Change Title of Part 600 to Include Storm Drain and Irrigation

*Update Title of Part 600.* Jami Erickson of Phoenix said they considered changing the title to include Underground Utilities, but decided to just add irrigation in addition to storm drain to describe Part 600 more thoroughly. The final title would read: WATER, SEWER, STORM DRAIN AND IRRIGATION. She said she would like to vote on the case next month.

11. Case 13-07: Revisions to Detail 201 ASPHALT PAVEMENT EDGE DETAILS

*Correct miscellaneous errors and change the Type B thickened edge depth dimension from “8 inch minimum” to “8 inches”.* Bob Herz introduced this case to make minor corrections to Detail 201. It would remove an unnecessary dimension, remove the min. note from another, and correct the title on the index page to match the current title of the detail drawing. Peter Kandarlis asked if the dimension should have tolerances. Mr. Herz said no, they would be determined by the asphalt tolerances. He asked the group to look it over and provide him feedback.

12. Case 13-08: Revision to Section 321.8.8 Thickened Edge.

*Eliminate references to ‘base course’ to clarify the surface being referenced.* Mr. Herz introduced another new case to clarify that the thickened edge related to the asphalt pavement, not just the base course. Mr. Gallimore asked for clarification on the first sentence that stated, “the Contractor shall submit for the Engineer’s approval construction procedures to be used for placement and compaction of the thickened edge,” since the following two paragraphs already direct the contractor on how to do it. Mr. Herz suggested it could be for other reasons such as method of compaction. Mr. Ramos said contractors normally are not asked this. Bob Herz agreed with Mr. Ramos and asked for additional feedback from contractors and agencies.

### 13. Case 13-09: Revision to Section 321 Asphalt Penalty Tables

*Raise penalties in tables based on City of Mesa supplement.* Bob Draper of Mesa introduced a new case to revise asphalt penalty tables that would help create an incentive for contractors to complete acceptable work. This was brought to the committee based on a recommendation from the asphalt working group, and was based on the supplement used by the city of Mesa. Mr. Draper highlighted the main changes including Tables 321-4, 321-5 and 321-8. Both the original and proposed tables were included in the draft. He said they basically raised the penalties around 50-100%. He said Mesa also added a paragraph on the bottom of page 321-8.

Bob Herz noted that the bottom of Table 321-4 required removal and asked if that meant there was no longer an engineering analysis (AE). He said yes, in Mesa they do not allow an AE.

Brian Gallimore asked about a related topic concerning when the warranty period started on a job. He said that some agencies do not begin the warranty until job completion, even though the pavement may have been completed and in use for several years prior. Mr. Draper said in Mesa the warranty begins upon acceptance, and they inspect project before the year warranty expires. Mr. Gallimore countered that they often have had to wait a few years before a project was accepted, especially in subdivisions. Mr. Badowich said in Avondale they go by when a permit for the type of work is completed, not by completion of the entire project, but he noted cities practices are all different.

Bob Draper said discussions would continue in the asphalt working group, and members were invited to attend. Tom Wilhite asked if the penalties should be indexed to the CPI. Mr. Draper thought that may be a good idea, and also mentioned there was some talk of including incentives for higher quality work. Jim Badowich suggested Table 321-8 be ordered from low to high to match the existing tables. Troy Tobiasson said they should consider increased maintenance costs.

### 14. Case 13-10: Revision to Section 301.7 (Subgrade Preparation) MEASUREMENT

*Add subgrade preparation measurement for graded non-surfaced driveways.* Bob Herz introduced a new case to clarify measurement on non-paved surfaces such as driveways and dirt roads, that would also clarify payment for earth graded roads. Jim Badowich said they were not allowed to build dirt roads. Bob Herz noted that the entire county is not within the PM-10 air quality nonattainment area, and there are still many dirt roads within the county. He asked members to let him know if they have any problems with the proposed changes.

### 15. Potential Cases for 2013

Chairman Wilhite asked the committee if they had any other new or potential cases, and reminded them that July was the last month to submit new cases for 2013.

Peter Kandarlis said he planned to sponsor a case updating the curb, sidewalk and gutter specs in Section 340. He was incorporating some final comments he received from Maricopa County and hoped to introduce it at the May committee meeting.

Jim Badowich said they may have an update to the jacking and tunneling specifications come out of the water/sewer working group. He said potential changes included using bulkheads on the ends or filling the void with pea-gravel rather than grout. Mr. Draper said Mesa has some specifications, Ms. Erickson said Phoenix has some details. Peter Kandaris said SRP also has some specifications.

## 16. Working Group Reports

Chairman Wilhite asked for reports from the working groups.

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

Jim Badowich said the group met March 19<sup>th</sup> at 1:30 at the MAG office. (Notes included in packet.) He said in addition to the cases discussed previously, the group was provided a demonstration of a HDPE pipe bevel that claimed to reduce corrosion exposure and protect pipe during installation. He said the manufacturers were still working on getting AWWA approval. Jami Erickson said Phoenix is looking to it as a bevel to ease construction. Paul Nebeker said he was also aware of the product, but wondered since it took up space in the pipe, if it would have an effect on the pipe connections and deflection. The next meeting is scheduled for April 23<sup>rd</sup> at 1:30 p.m. in the MAG office.

### b. **Asphalt Working Group**

Jeff Benedict said the group met March 21<sup>st</sup> at noon at the ARPA offices. (Notes included in packet.) Mr. Benedict said he appreciated the good attendance and participation. Most of the cases discussed during the working group meeting were previously discussed; however he did say they would take a look at Section 345 and Detail 422. He said they are also finishing a draft for polymer asphalt to be added to existing Section 711. The next meeting is scheduled for April 25<sup>th</sup> at 12:00 p.m. at the ARPA office.

### c. **Materials Working Group**

Brian Gallimore said he was unable to attend the last materials working group meeting; however, he understood that the consensus of the group was to incorporate both lime stabilization and modification within Section 309, so this would continue to be revised. The next meeting would follow the asphalt group as usual.

### d. **Concrete Working Groups**

Jeff Hearne said, as Mr. Kandaris previously mentioned, Section 340 Curb, Sidewalks and Gutters should ready to present as a new case. They also continued work revising Section 324 Portland Cement Concrete Street Paving. He said some ASTM references no longer existed and needed to be updated. Warren White said he would like to forward the directional ramps that Chandler has been working on. He said they were used mainly on arterial streets, but they were having issues regarding previously approved projects in requiring the new ramps. The next meeting of the working group is scheduled for April 25<sup>th</sup> at ARPA following the materials working group at around 1:30 p.m.

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

Peter Kandarlis (via audio conference) said the group met on March 26<sup>th</sup> and reviewed the meeting notes provided to members. He said he would like to get a little more participation, so the next meeting is scheduled for May 1<sup>st</sup>, an hour before the regular committee meeting. He encouraged members to come early. He said Jacob Rodriguez volunteered to help review the 300 Sections, but that a couple more volunteers were needed to review sections and revise them as needed for outside ROW uses. He said it typically only took a few minutes per section. Mr. Kandarlis also encouraged vendors to submit new specifications for materials typically used outside the right-of-way. Finally he asked members to review their supplements for sections that could be incorporated into the document. He planned to prepare a draft for review by the committee later in the year.

17. General Discussion

Chairman Wilhite asked for general discussion items. Bob Draper said he would not be able to attend the July 3<sup>rd</sup> meeting and asked if others had a problem with attendance and suggested moving it to the following week. Mr. Tyus said he would look into the schedule, but thought it would be okay if the committee desired to change dates.

Gordon Tyus provided an update on the new ASTM portal implementation. He provided a handout that listed the two main options for connecting to the new ASTM portal (either by IP address or Java applet), as well as the ASTM representative's contact information. He described the testing he did setting it up at MAG, and told them about some of the limitations, such as not being able to access the portal through MAG's site, or being able to log-in remotely via user name and password which is currently allowed. He asked the members to find the list of users within their agency that required portal access, and also asked them to contact their IT department to help coordinate implementation of the new access methods. He said Jill Walters from ASTM would be contacting them soon to begin making the new portal available.

Mr. Wilhite said Mr. Tyus ordered a copy of the Southern California Greenbook that would be available as a peer reference when reviewing cases. Mr. Tyus confirmed that a single, hardcopy was purchased.

18. Future Agenda Items

Chairman Wilhite asked for general discussion items. None were voiced by the committee.

19. Adjournment:

The chair adjourned the meeting at 3:21 p.m.

## 2013 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: <http://www.azmag.gov/Committees/Committee.asp?CMSID=1055> )

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE	
	<b>CARRY FORWARD CASES FROM 2012</b>						
12-12	Case 12-12: New Section 739 – Steel Reinforced Polyethylene Pipe (SRPE).	Scottsdale	Rod Ramos	07/11/2012 03/11/2013		0 0 0	Yes No Abstain
	<b>NEW CASES FOR 2013</b>						
13-01	<b>Case 13-01: Miscellaneous Corrections:</b> A. Revise title of Section 324 B. Section 505.6.3.3 (4) Typing error correction C. Section 735.4 (D) Delete obsolete reference to AASHTO M-315 D. Correction to Detail 501-5 E. Correct typo in Section 311 Title F. Remove reference to Section 702.4 in Subsection 795.8.4 Decomposed Granite G. Revise Section 107.4 to change the Arizona Revised Statue reference 41-846 to 41-865. H. Remove the word “AND” in the title of Section 725 so it reads “PORTLAND CEMENT CONCRETE” I. Section 108.8 Correction: Change “or” to “and” in first line.	MCDOT	Bob Herz Peter Kandaris Jeff Hearne	01/02/2012 03/18/2013		0 0 0	Yes No Abstain
13-02	Case 13-02: Revision to Section 337 CRACK SEALING to obtain compatibility with Maricopa County requirements.	MCDOT	Bob Herz	01/02/2012 04/04/2013	Scheduled for: 05/01/2013	0 0 0	Yes No Abstain
13-03	Case 13-03: Revision to Section 321.8.6 Asphalt Concrete Overlay to obtain uniformity with Maricopa County requirements.	MCDOT	Bob Herz	02/06/2013 04/04/2013	Scheduled for: 05/01/2013	0 0 0	Yes No Abstain
13-04	Case 13-04: Revision to Detail 120 SURVEY MARKER.	MCDOT	Bob Herz	02/06/2013 04/08/2013	Scheduled for: 05/01/2013	0 0 0	Yes No Abstain
13-05	Case 13-05: New Section 740 Polypropylene Pipe and Fittings for Gravity Storm Drain and Sanitary Sewer.	Chandler	Warren White	02/06/2013 03/06/2013		0 0 0	Yes No Abstain

## 2013 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: <http://www.azmag.gov/Committees/Committee.asp?CMSID=1055> )

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE	
13-06	Case 13-06: Modify Part 600 title to include Storm Drain and Irrigation.	Phoenix	Jami Erickson	03/06/2013 04/04/2013	Scheduled for: 05/01/2013	0 0 0	Yes No Abstain
13-07	Case 13-07: Revisions to Detail 201 ASPHALT PAVEMENT EDGE DETAILS. Correct miscellaneous errors and change the Type B thickened edge depth dimension from "8 inch minimum" to "8 inches."	MCDOT	Bob Herz	04/03/2013		0 0 0	Yes No Abstain
13-08	Case 13-08: Revision to Section 321.8.8 Thickened Edge. Eliminate references to 'base course' to clarify the surface being referenced.	MCDOT	Bob Herz	04/03/2013 04/04/2013		0 0 0	Yes No Abstain
13-09	Case 13-09: Revision to Section 321 Asphalt Penalty Tables based on City of Mesa Supplements.	Mesa	Bob Draper	04/03/2013		0 0 0	Yes No Abstain
13-10	Case 13-10: Revision to Section 301.7 (Subgrade Preparation) MEASUREMENT.	MCDOT	Bob Herz	04/03/2013		0 0 0	Yes No Abstain
13-11	Case 13-11: Delete Section 737 ASBESTOS-CEMENT PIPE AND FITTINGS FOR STORM DRAIN AND SANITARY SEWER	MCDOT	Bob Herz	05/01/2013		0 0 0	Yes No Abstain

**John V. Kanzleamar**  
Area Manager – SRPE and Reline Technologies

March 24, 2013

To: MAG Specifications and Details Committee

Subject: Case 12-12, New Section 739: Steel Reinforced Polyethylene Pipe (SRPE)

The Section 739 specification for Steel Reinforced Polyethylene (SRPE) pipe was originally drafted by modifying and editing the existing Section 738 specification for HDPE pipe. The latest 739 revision (attached) incorporates comments and suggestions from various MAG members including Rod Ramos, Jim Badowich, Bob Herz, Bob Draper and others. We have also worked closely with ADS personnel (Dan Currence, Bill Davis and Kelly Kokesh) to assure that, where appropriate, content and format in the new pipe specifications 739 and 740 is consistent. The attached specification has also been updated to reflect recent comments received at the April 23, 2013 Water & Sewer Working Group meeting and is ready to submit to the Main Committee for final review, comment and vote.

Primary revisions to Section 739, since its original draft that was based on specification 738 (HDPE) include the following:

- Incorporated references to the various installation specifications for flexible pipe (Sections 603, 615, & 618) that are being developed and updated.
- Maintained select wording (underlined) within 739 specification that exceeds ASTM minimum requirements including:
  1. Galvanized vs. black steel
  2. 80,000 psi vs. 20,305 psi steel tensile strength
  3. 335464C vs. 335420C polyethylene cell classification
  4. Steel reinforced bell and spigot joints

A general explanation for the areas where 739 requirements exceeded ASTM minimums is as follows: Although the steel is full encapsulated in HDPE material, the galvanized steel vs. black steel provides a second level of corrosion protection in case the exterior HDPE protective coating is ever scuffed due to rough handling. The 80,000 psi vs. 20,305 psi tensile steel is significantly stronger, which means less steel can be used or fewer steel ribs are needed to develop required pipe stiffness. The more efficient 80,000 psi steel results in more economy for the end user. The 335464 cell classification is for pressure rated resin vs. non-pressure rated resin. Pressure rated resins possess higher resistance to environmental stress cracking and other desirable characteristics. DuroMaxx (SRPE) is sold into sanitary sewer and low pressure irrigation applications (not just storm drains); where the higher rated polyethylene cell classification is desirable for more demanding applications. The 335464 cell classification is also commonly available from resin suppliers, which is also important.

DuroMaxx SRPE utilizes steel reinforced polyethylene (HDPE) bell and spigot gasketed joints as a means to provide joints that are rated at 15 psi vs. 10.8 psi, when tested in accordance with ASTM D3212. The ASTM D3212 joint test is a 10 minute test and does not necessarily capture the long-term tightness capabilities of a jointing system. HDPE material can creep over time so purely HDPE joints (without steel reinforcement) could relax and lose gasket compression over time if not designed properly. The steel reinforcement in the joint eliminates the possibility of plastic creep (relaxation) and consequently loss of gasket compression over time. The minimum pressure rating in the 739 specification has been revised from 15 psi to 10.8 psi to reflect the ASTM minimum requirement per committee suggestion.

The minimum requirements included in 739 appropriately cover the SRPE pipe that is currently in production and that has been proven in the field local and nationally. As a result, the manufacturer's pipe certifications and pipe markings will match 739 requirements and wording. This will eliminate confusion in the field with inspectors when comparing certification wording to specification wording.

- Streamlined language used in the Material Specifications for Gaskets and Water Stop to simply reflect ASTM requirements.
- Streamlined language for the Certification subsection to simply reflect ASTM requirements.
- Removed the subsection for Dimensions & Tolerances, since this is completely covered by the ASTM specifications.
- Corrected errors in the Markings subsection to reflect current ASTM requirements.
- Deleted language near the end of the Fitting subsection that attempted to communicate requirements for structural connections, and replaced it with a new subparagraph added to the Joining subsection entitled "Pipe to Concrete Structure Connections". The content of this subparagraph was then edited to allow for pending revisions to the manhole standards.

**STEEL REINFORCED POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN, SANITARY SEWER & IRRIGATION****739.1 GENERAL:**

This specification covers the requirements of Steel Reinforced Polyethylene Pipe (SRPE) pipe manufactured per ASTM F2562 for storm drains, irrigation and sanitary sewer systems. When noted on the plans or in the special provisions, storm drains, irrigation and sanitary sewers may be constructed using SRPE pipe. The SRPE pipe will be of the sizes 24 inch diameter through 120 inch diameter. Trench excavation, backfilling and compaction for this flexible pipe shall be in accordance with Section 603. Construction and installation shall be in accordance with Section 618 for storm drain and irrigation water and Section 615 for sanitary sewers.

The size of the SRPE pipe to be furnished shall be specified by the Engineer and shown on the plans or in the project specifications. The pipe stiffness class shall be Class 1, per Table 1 of ASTM F2562, unless otherwise specified.

**739.2 MATERIALS:**

**739.2.1 Base Steel Materials:** Continuous high strength *galvanized* ribs shall be cold rolled steel meeting the requirements of either ASTM A1008 or ASTM A1011 with minimum yield strength of 80,000 psi. Steel ribs shall be completely encased within the HDPE profile.

**739.2.2 HDPE Material Composition:** SRPE pipe HDPE material and fittings shall, in accordance with ASTM 2562, be made from HDPE plastic compound meeting the minimum requirements of cell classification 335464C or higher cell classification, in accordance with ASTM D3350.

**739.2.3 Gaskets:** Elastomeric gaskets shall comply with the requirements in ASTM F477 and be as recommended by the pipe manufacturer.

**739.2.4 Water Stops:** Elastomeric Water stop gaskets shall conform to the requirements of ASTM C923.

**739.2.5 Thermal Welding Material:** The material used for thermally welding the pipe material shall be compatible with the base material.

**739.2.6 Lubricant:** The lubricant used for assembly shall comply with manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

**739.3 JOINING SYSTEMS:**

**739.3.1 Gasket Type:** *Steel reinforced* bell and spigot joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F477. Gasketed watertight pipe joints shall meet a minimum laboratory test pressure of 10.8 psi when tested in accordance with ASTM D3212.

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The bell and spigot configurations for the fittings shall be compatible to those used for the pipe.

Joints shall provide a seal against exfiltration and infiltration. All surfaces of the joint upon which the gasket may bear, shall be smooth and free of any imperfections, which would adversely affect seal ability. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

**739.3.2 Thermal Weld Type:** Thermal weld joints, when specified, shall utilize plain ended pipe welded together by internal pressure testable couplers. The internal couplers shall have a minimum wall thickness equal to or greater than the pipe wall thickness as defined in pipe specification, ASTM F2562. The assembly of the welded joints shall

be in accordance with the manufacturer's recommendations. Thermal welded pipe joints shall meet a minimum laboratory test pressure of 10.8 psi or 1.5 times the allowable pressure rating for the pipe, whichever is greater, when tested in accordance with ASTM D3212.

**739.3.3 Pipe To Concrete Structure Connections:** An approved flexible connector, mechanical seal or water stop shall be provided at manhole entry or concrete structure connection to reduce infiltration and exfiltration. When grouting is necessary at a water stop connection, non-shrink grout shall be used.

**739.4 FITTINGS:**

Fittings for SRPE pipe may include tees, elbows, manhole adapter rings, plugs, caps, adapters and increasers. Fittings shall be joined by gasket type or thermal weld type joints in accordance with Subsection [739.3](#).

**739.5 CERTIFICATION:**

The manufacturer shall furnish a certification that all materials delivered shall comply with the minimum requirements of ASTM F2562. The certification shall also identify the steel as galvanized, with 80,000 psi yield strength and the cell classification of the HDPE material as 335464C minimum.

**739.6 MARKINGS:**

Markings on pipe and fittings shall be per ASTM F2562. The markings shall be clearly shown on the pipe, at least, at the end of each length of pipe and spaced at intervals of not more than 10 feet. Markings shall include the following information: ASTM F2562, the nominal pipe size in inches, the pipe stiffness class, the manufacturer's name, trade name or trademark, the manufacturer's production code: identifying plant location, machine, and date of manufacture.

**739.7 CARE OF PIPE AND MATERIALS:**

All pipe and materials shall be manufactured, handled, loaded, shipped and unloaded in such a manner as to be undamaged and in sound condition, in the completed work. Particular effort shall be exercised to protect the ends of the pipe. Repairs on damaged pipe shall be made to the satisfaction of the Engineer otherwise they shall not be used in the work and shall be replaced with an equal pipe or special in an acceptance condition. At all times, rubber gaskets shall be covered in a factory applied protective wrap or stored in a cool, dark place until ready for use.

*- End of Section -*

**SECTION 337****CRACK SEALING****337.1 DESCRIPTION:**

This work consists of furnishing and placing sealant material in Contractor prepared cracks and joints of asphalt concrete or Portland cement concrete pavements. All cracks and joints, including the space between asphalt concrete pavement and the curb and gutter, which have a clear opening of one-quarter inch (1/4") or greater, shall be sealed for the length of the crack that equals or exceeds one-eighth inch (1/8") in width. The Contractor shall notify the Engineer when cracks are encountered that have an opening greater than one inch (>1"). The Engineer shall ~~identify what is to be done with~~ specify the treatment requirements for cracks having an average clear opening greater than one inch (>1").

**337.2 MATERIALS:**

Sealant materials shall be a premixed, single component mixture of asphalt cement, aromatic extender oils, polymers, and granulated rubber in a closely controlled manufacturing process. Materials shall conform to the following specifications when heated in accordance with ASTM D5078 and the manufacturer's maximum safe heating temperature.

<b>TEST</b>	<b>REQUIREMENT</b>
Cone Penetration (ASTM D5329)	20-40
Resilience (ASTM D5329)	30% Minimum
Softening Point (ASTM D113)	210°F (99°C) Minimum
Ductility, 77°F (25°C) (ASTM D113)	30 cm Minimum
Flexibility (ASTM D3111 *Modified)	Pass at 30°F (-1°C)
Flow 140°F (60°C) (ASTM D5329)	3 mm Maximum
<del>Brookfield Viscosity, 380°F (193°C) (ASTM D2669)</del>	<del>40-90 Poise</del>
Brookfield Viscosity, 400°F (204°C) (ASTM D2669)	100 Poise Maximum
Asphalt Compatibility (ASTM D5329)	Pass
Bitumen Content (ASTM D4)	60% Minimum
Tensile Adhesion (ASTM D5329)	400% Minimum
Maximum Heating Temperature	400°F (204°C)
Minimum Heating Temperature	380°F (193°C)
Flash Point (ASTM D92)	450°F Minimum

\*Specimen bent 90° over a 1-inch mandrel within 10 seconds.

**337.2.1 Certification and Quality Assurance:** Prior to application, the Contractor shall submit certification of compliance to the Engineer for all materials to be used in the work.

**337.3 EQUIPMENT:**

The melter applicator unit shall be a self-contained double boiler device with the transmittal of heat through heat transfer oil. It must be equipped with an on board automatic heat controlling device to permit the attainment of a predetermined temperature, and then maintain that temperature as long as required. The unit shall also have a means to vigorously and continuously agitate the sealant to meet the requirements of Appendix X1.1 of ASTM D6690. The sealant shall be applied to the pavement under pressure supplied by a gear pump with a hose and wand and direct connecting applicator tip. The pump shall have sufficient pressure to apply designated sealant at a rate of at least three (3) gallons (11.4 L) per minute. Melter applicators shall be approved for use by the sealant manufacturer.

**337.4 CLEANING AND PREPARING CRACKS AND JOINTS:**

Immediately prior to application of sealant, all cracks and joints shall be cleaned of debris and dust. Cracks and joints shall be vacuumed during final cleaning.

**337.4.1 Routing:** Routing, when specified, shall create a sealant reservoir. Cutting should remove at least 1/8" from each side and produce vertical, intact surfaces with no loosely bonded aggregate. Routing of joints and cracks shall produce a reservoir having a nominal size of 3/4" wide x 3/4" deep. Variations from the nominal size are subject to acceptance or rejection at the engineer's discretion.

**337.4.2 Vacuuming:** Final cleaning shall thoroughly clean cracks and joints to a minimum depth of 1". The vacuum unit shall use high pressure 90 psi minimum, dry oil free compressed air to remove remaining dust. The high pressure tool shall be integral with a vacuum unit to collect the dust and residue. Both sides of the crack or joint shall be cleaned. Surfaces will be inspected to assure adequate cleanliness and dryness.

### **337.5 APPLICATION:**

**337.5.1 Weather:** In no case shall sealant be placed during damp roadway conditions such as wet roadway surfaces or damp material inside the cracks. Operations stopped by the Engineer, due to weather, shall be at no additional cost to the contracting Agency. If installing at night, ensure that dew is not forming on the pavement surface.

Sealant material shall only be applied when pavement temperature exceeds 40°F (4°C). If pavement temperature is lower than 40°F (4°C), it may be warmed using a heat lance that puts no direct flame on the pavement.

**337.5.2 Temperature:** Sealant temperatures should be maintained at the maximum heating temperature recommended by the manufacture.

**337.5.3 Placement of Sealant:** The sealant shall be applied in cracks, joints, and sealant reservoirs uniformly from bottom to top and shall be filled without formation of entrapped air or voids.

Cracks and joints shall be slightly overfilled then leveled with a 3" sealing disk or v-shaped squeegee to create a neat band extending approximately 1" on each side of the crack or joint for surface waterproofing. The band shall be as thin as possible and shall not extend more than 1/8 inch above the pavement surface.

If the pavement is to be overlaid with Hot Mix Asphalt within six months of sealant application, cracks shall be routed, and sealant placement shall be recessed 1/4" in the crack or joint reservoir with no over band. If routing is not used, the sealant over band thickness and width should be kept as narrow and thin as possible.

During and after placement of the sealant, the Contractor shall protect against harm to persons or animals that may be exposed to the hot material.

**337.5.4 Unacceptable Work:** The Contractor, at no additional cost to the contracting Agency, shall correct unacceptable work. Unacceptable work shall include, but not be limited to, unsealed cracks, material wastage on the sides of the roadway, and excess quantities of material on the roadway that adversely affects driving.

Correction of unacceptable work shall be accomplished within five working days after notification from the Engineer of the unacceptable work. The Contractor shall not progress to a new area until the unacceptable work is corrected to the satisfaction of the Engineer.

**337.5.5 Reporting Requirements:** The Contractor shall meet with the Engineer or the Engineer's designated representative on a daily basis and supply a signed daily report indicating the amount of crack sealant material applied for the day in total pounds and total square yards of pavement sealed. In addition, the Contractor shall supply the Engineer with the dates of completion of each road segment.

### **337.6 OPENING TO TRAFFIC:**

Sealant material shall not be exposed to traffic until fully cured. If the sealed area must be open to traffic, blotter material shall be applied to the surface of all uncured sealant material.

All sealed cracks that have an average clear opening of 1½ inches or greater shall have blotter material applied prior to opening to traffic.

**337.6.1 Blotter:** On two lane roads or where traffic may come in contact with the hot sealant before it cures, a blotter or specialized bond breaking material shall be used to prevent asphalt bleeding and/or pickup of sealant by vehicular traffic. Blotter material shall be compatible with the crack sealant and any surface treatment being used.

**337.7 MEASUREMENT:**

Accepted pavement crack sealing shall be measured as indicated in the fee proposal by one of the following methods: square yards of pavement surface area sealed, pounds of sealant placed, or linear feet of cracks sealed.

**337.8 PAYMENT:**

Payment for pavement crack sealing at the contract unit price shall be full compensation for all labor, materials, equipment, tools, and incidentals used for surface preparation, placement of crack sealant and blotter materials, and cleanup.

**- End of Section -**

**CHANGES since the last submittal are HIGHLIGHTED IN YELLOW**

**321.8.6 Asphalt Concrete Overlay:** Asphalt concrete overlay consists of the placing and compacting plant mix asphalt concrete over existing pavement. The mix design and thickness of the overlay shall be as shown on the plans or as specified in the special provisions.

Except when the existing asphalt surface is to be preheated and remixed, pavement surfaces shall be prepared as follows:

- (a) Areas designated for pavement repair by the contract documents (which may include severely raveled areas, severely cracked areas, over-asphalted areas, and other defects) shall be cut out and replaced. Pavement repairs shall be completed and approved before placing asphalt concrete overlay.
- (b) Before placing asphalt concrete overlay, milling shall be done as shown on the plans or specified in the special provisions and shall be in accordance with Section 317.
- (c) After pavement repairs and milling have been completed the entire surface shall be cleaned with a power broom.
- (d) After surfaces have been prepared to the satisfaction of the Engineer, they shall receive a tack coat per Section 321.4. Traffic will not be permitted to travel over surfaces which have received a tack coat, except when tack coat is applied to milled surfaces in compliance with section 317.2 for dust control purposes. When the overlay is to extend onto a concrete gutter, the gutter shall be thoroughly cleaned of loose dust and cement particles and shall be tack coated.

Asphalt concrete overlay shall be placed as specified in Section 321.8.1 and compacted as specified in Section 321.8.4. The surface smoothness shall meet the tolerances specified in Section 321.8.5.

Frames and covers of manholes, survey monuments, valve boxes, clean-outs and other existing structures shall be adjusted in accordance with Section 345 to set flush with the finished surface of the new pavement. During adjustment if pavement or base materials are removed or disturbed, they shall be replaced with approved materials installed in a manner acceptable to the Engineer.

On roads without curb and gutter, the existing unpaved shoulder elevation shall be adjusted by the Contractor to match the elevation at the edge of the new overlay and slope away from the new pavement surface at a rate that the existing quantity of shoulder material will allow. Shoulder material shall be compacted to a minimum of 95% of maximum density, determined in accordance with section 301.3. Shoulder adjustment to match the new pavement surface elevation shall not be measured. The cost of shoulder adjustment shall be included in the price paid for the asphalt concrete overlay or other related pay items. When the Engineer determines an insufficient amount of material is available for shoulder adjustment, the Engineer may require the Contractor to provide additional material. Acceptable material for shoulders includes the existing shoulder material, millings, untreated base materials, or a granular material approved by the Engineer. Engineer requested imported material for shoulder adjustment is not included in the price paid for the asphalt concrete overlay.

**321.13 PAYMENT:**

The asphalt concrete measured as provided above will be paid for at the contract price per ton or square yard, as adjusted per Section 321.10, which price shall be full compensation for the item complete, as herein described and specified.

Payment for tack coat will be by the ton diluted, based on the rate of application, as directed by the Engineer.

No payment will be made for any overrun in quantity of asphalt concrete in excess of 10 percent based on actual field measurement of area covered, design thickness, and the mix design unit weight. The calculations and payment for overrun will be by individual pay item. To compensate or adjust for a thickness deficiency in an underlying asphalt concrete course, the Engineer may authorize a quantity increase in excess of 10 percent for a subsequent asphalt concrete course. In such cases, the quantity in excess of 10 percent will be paid for at the lowest unit price.

Agency required repairs of existing pavement prior to roadway overlay operations will be paid for as a separate pay item.

Except as otherwise specified no separate payment will be made for work necessary to construct miscellaneous items or surfaces of asphalt concrete.

### **Redlined Strikeout Version:**

**321.8.6 Asphalt Concrete Overlay:** Asphalt concrete overlay consists of the placing and compacting plant mix asphalt concrete over existing ~~asphalt concrete paving~~pavement. The mix design and thickness of the overlay shall be as shown on the plans or as specified in the special provisions. ~~Preliminary preparation of existing surfaces will be required except when accomplished by the Contracting Agency, and it is so stipulated in the special provisions. With the exception of those which have been preheated and remixed only, existing surfaces shall receive a tack coat.~~

~~Asphalt concrete mix aggregate gradation and percentage of asphalt binder shall be in accordance with Section 710 using a 1/2 inch Marshall Low Traffic asphalt concrete mix designation for overlay more than one and one half inch in thickness and a 3/8 inch Marshall Low Traffic asphalt concrete mix designation for overlay one and one half inch or less in thickness, unless otherwise shown or specified in the special provisions.~~

Except when ~~they have been~~the existing asphalt surface is to be preheated and remixed, pavement surfaces shall be prepared as follows:

(a) ~~Before placing asphalt concrete overlay, Areas designated for pavement repair by the contract documents (which may include severely raveled areas, severely or cracked areas, that are depressed more than 3/4 inch from the adjoining pavement shall be cut out and patched at least 48 hours prior to the resurfacing operation. over-asphalted areas, and other defects) or rough high spots shall be cut out and replaced. Pavement repairs shall be either milled or cut out and patched completed and approved before placing asphalt concrete overlay. Large shrinkage cracks shall be filled with asphalt sealing compound acceptable to the Engineer. The entire surface shall be cleaned with a power broom. Raveled areas that do not require removing shall be cleaned by hand brooming. The above are incidental, and the cost thereof shall be included in the bid items.~~

(b) Before placing asphalt concrete overlay, milling shall be done as shown on the plans or specified in the special provisions and shall be in accordance with Section 317.

(c) After pavement repairs and milling have been completed the entire surface shall be cleaned with a power broom.

(ed) After surfaces have been prepared to the satisfaction of the Engineer, they shall receive a tack coat per Section 321.4. Traffic will not be permitted to travel over surfaces which have received a tack coat, except when tack coat is applied to milled surfaces in compliance with section 317.2 for dust control purposes. When the overlay is to extend onto ~~the a~~ concrete gutter, the gutter shall be thoroughly cleaned of loose dust and cement particles and shall be tack coated.

Asphalt concrete overlay shall be placed as specified in Section 321.8.1 and compacted as specified in Section 321.8.4. The surface smoothness shall meet the tolerances specified in Section 321.8.5.

~~Frames and covers of manholes, survey monuments, valve boxes, clean-outs and other existing structures shall be built up and the frames adjusted in accordance with Section 345 to set flush with the finished surface of the new paving pavement, and tops of valve boxes, clean-outs and other existing structures shall be adjusted to finish grade. In the event the base course and original paving During adjustment if pavement or base materials have been removed or disturbed in order to build up the manhole, they shall be replaced with approved materials which shall be thoroughly compacted installed in a manner acceptable to the Engineer. The asphalt concrete around the manhole frame shall be completed and made flush with the adjacent overlay.~~

On roads without curb and gutter, the existing unpaved shoulder elevation shall be adjusted by the Contractor to match the elevation at the edge of the new overlay and slope away from the new pavement surface at a rate that the existing quantity of shoulder material will allow. Shoulder material shall be compacted to a minimum of 95% of maximum density, determined in accordance with section 301.3. Shoulder adjustment to match the new pavement surface elevation shall not be measured. The cost of shoulder adjustment shall be included in the price paid for the asphalt concrete overlay or other related pay items. When the Engineer determines an insufficient amount of material is available for shoulder adjustment, the Engineer may require the Contractor to provide additional material. Acceptable material for shoulders includes the existing shoulder material, millings, untreated base materials, or a granular material approved by the Engineer. Engineer requested imported material for shoulder adjustment is not included in the price paid for the asphalt concrete overlay.

**321.13 PAYMENT:**

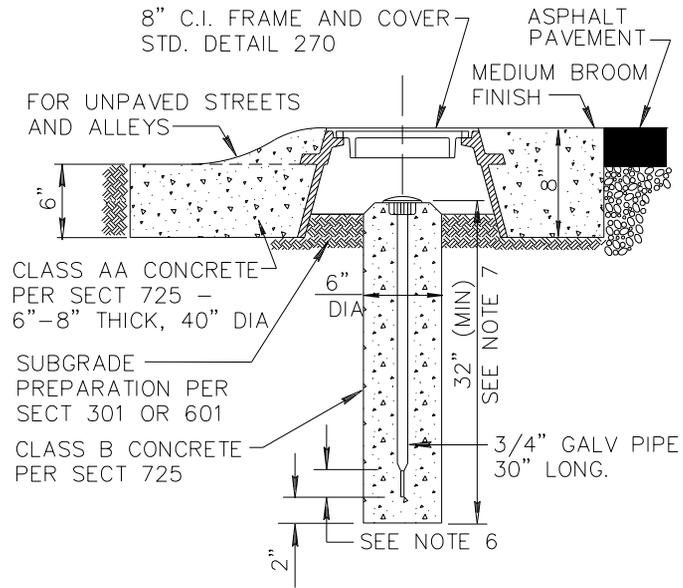
The asphalt concrete measured as provided above will be paid for at the contract price per ton or square yard, as adjusted per Section 321.10, which price shall be full compensation for the item complete, as herein described and specified.

Payment for tack coat will be by the ton diluted, based on the rate of application, as directed by the Engineer.

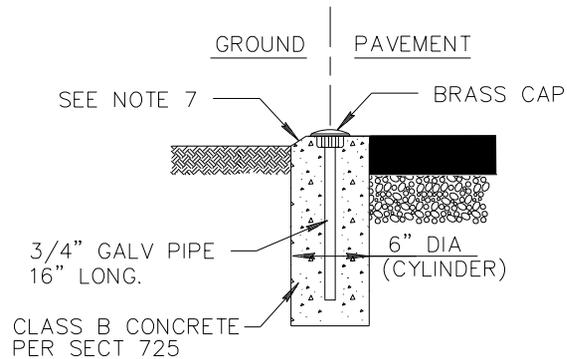
No payment will be made for any overrun in quantity of asphalt concrete in excess of 10 percent based on actual field measurement of area covered, design thickness, and the mix design unit weight. The calculations and payment for overrun will be by individual pay item. To compensate or adjust for a thickness deficiency in an underlying asphalt concrete course, the Engineer may authorize a quantity increase in excess of 10 percent for a subsequent asphalt concrete course. In such cases, the quantity in excess of 10 percent will be paid for at the lowest unit price.

Agency required repairs of existing pavement prior to roadway overlay operations will be paid for as a separate pay item.

Except as otherwise specified ~~in the special provisions~~, no separate payment will be made for work necessary to construct miscellaneous items or surfaces of asphalt concrete.



**TYPE 'A'**  
(WITH FRAME)

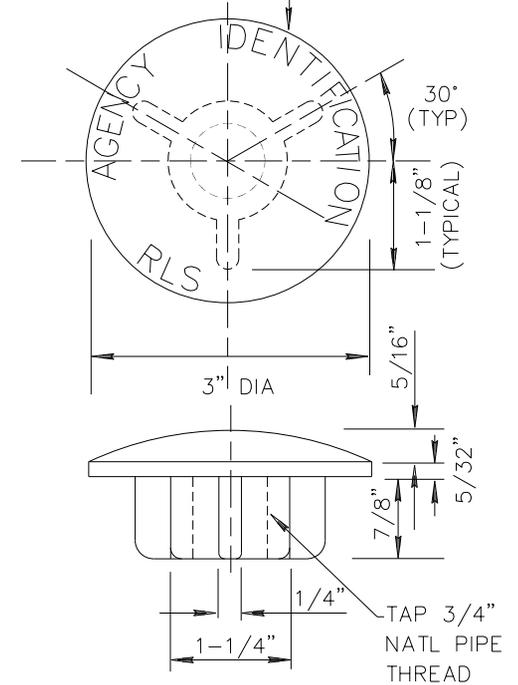


**TYPE 'B'**  
(WITHOUT FRAME)

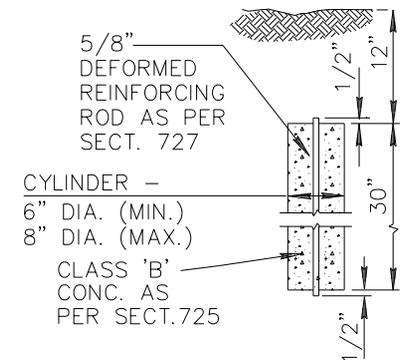
**NOTES:**

1. TYPE 'A' TO BE USED AT INTERSECTIONS OF MAJOR STREETS & COLLECTOR STREETS, SECTION CORNERS, SECTION 1/4 CORNERS, CENTER OF SECTIONS, AND AT OTHER POINTS AS SHOWN ON PLANS.
2. TYPE 'B' TO BE USED (EXCEPT WHERE TYPE 'A' IS SPECIFIED) AT INTERSECTION OF STREET CENTERLINES, PC'S, PT'S AND PI'S OF CURVES, SECTION 1/16 CORNERS, SUBDIVISION CORNERS, CHANGE IN ALIGNMENT OF SUBDIVISION BOUNDARIES, AND AT OTHER POINTS AS SHOWN ON PLANS.
3. TYPE 'C' TO BE USED AT CORNERS OF AND CHANGE IN ALIGNMENT OF SUBDIVISION BOUNDARIES WHERE CORNERS OR CHANGES IN ALIGNMENT FALL OUTSIDE OF PAVED AREAS OR UNPAVED ALLEYS AND STREETS.
4. CAP TO BE CONSTRUCTED OF RED BRASS OR BRONZE.
5. LETTERS TO BE APPROX. 1/32" WIDE & 1/32" DEEP.
6. FLATTENING THE BOTTOM 2" OF THE GALVANIZED PIPE IS OPTIONAL.
7. TOP OF CONCRETE POST IS CHAMFERED 3/4" EXCEPT WHEN SET FLUSH WITH PAVEMENT.
8. THE CAP SHALL SHOW THE POINT SURVEYED BY A PUNCH MARK OR SCRIBED CROSS AND THE CAP SHALL BE STAMPED WITH THE YEAR AND THE REGISTERED LAND SURVEYOR'S (RLS) REGISTRATION NUMBER.
9. WHEN APPLICABLE, THE CAP SHALL BE STAMPED WITH THE APPROPRIATE PUBLIC LAND MARKING PER CURRENT MANUAL OF INSTRUCTIONS FOR THE SURVEY OF PUBLIC LANDS OF THE UNITED STATES, PREPARED BY THE BUREAU OF LAND MANAGEMENT.
10. SUBMIT TO THE ENGINEER A COPY OF THE RECORDED CORNER RECORD OR RESULTS OF SURVEY TO DOCUMENT COMPLIANCE WITH THE ARIZONA BOARD OF TECHNICAL REGISTRATION REQUIREMENTS.

1/16" BORDER FROM  
EDGE OF CAP TO TOP  
OF 1/4" LETTERING.



**CAP DETAIL**



**TYPE 'C'**



**Chandler • Arizona**  
*Where Values Make The Difference*

**MEMORANDUM**

**Case # 13-05**

**DATE:** April 3rd, 2013

**TO:** MAG Specifications and Details Committee Members

**FROM:** Warren White, City of Chandler Representative

**SUBJECT:** Proposed MAG Section 740, Polypropylene Pipe and Fittings for Gravity Storm Drain and Sanitary Sewer > > April Update

Updated case material based on previous Committee and Working Group meetings. Included is both the redline version (based on Section 738) and clean version for the proposed Section 740. Here are some points that were addressed in this update:

- Changed all Subsections to have 740 Section referenced (as opposed to 738).
- Revised all references to AASHTO MP21-11 to AASHTO M330. AASHTO MP21-11 was a provisional standard. AASHTO has since voted to move to a full standard and has assigned a number (M330). New standard should be published in a month or so.
- Section 740.4 Fittings – changed reference to 740.3 for gasket type.
- Section 740.9 Care of Pipe and Materials – Instead of referencing 736.5 – that language has now been incorporated.
- Added reference to Section 615 and 618 in the General notes.
- Moved 740.2.5 Thermal Welding Material language to under 740.4 Fittings.
- Made consistent with Case # 12-12 for SRPE material

**SECTION 740**  
**POLYPROPYLENE PIPE & FITTINGS FOR STORM DRAIN & SANITARY SEWER**

**740.1 GENERAL:**

This specification covers the requirements of profile wall (both dual wall and triple wall) (Type S or Type D) polypropylene (PP) pipe manufactured per ASTM F2736, ASTM F2764, AASHTO M330 for storm drain and sanitary sewer systems. When noted on the plans or in the special provisions, storm drains, irrigation and sanitary sewers may be constructed using PP pipe. The PP pipe will be of the sizes 12 inch diameter through 60 inch diameter. Construction and installation shall be in accordance with Section 615 for storm drain and irrigation water and Section 618 for sanitary sewers.

The size of the PP pipe to be furnished shall be designed by the Engineer and shown on the plans or in the project specifications.

**740.2 MATERIALS:**

**740.2.1 Base Material Composition:** Profile pipe base material and fittings shall meet polypropylene materials requirements as stated in Section 4, Table 1 of ASTM F2736, Section 5, Table 1 of ASTM F2764 or Section 6, Table 1 AASHTO M330.

**740.2.3 Gaskets:** Rubber gaskets shall be manufactured from a natural rubber, synthetic elastomer or a blend of both and shall comply in all respects with the physical requirements in ASTM F477, unless the project specifies a special gasket, such as nitrile.

**740.2.4 Water Stops:** Water stops shall be manufactured from a natural or synthetic rubber and shall conform to the requirements of ASTM C923. The water stop shall have expansion rings, a tension band, or a take-up device used for mechanically compressing the water stop against the pipe.

**740.2.5 Lubricant:** The lubricant used for assembly shall comply to manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

**738.3 JOINING SYSTEMS:**

**740.3.1 Gasket Type:** Joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F477. Gasketed watertight joints shall meet laboratory test pressure of 10.8psi when tested in accordance with ASTM D3212.

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The bell and spigot configurations for the fittings shall be compatible to those used for the pipe.

Joints shall provide a seal against exfiltration and infiltration. All surfaces of the joint upon which the gasket may bear, shall be smooth and free of any imperfections, which would adversely affect sealability. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

**740.4 FITTINGS:**

Fittings for PP pipe may include tees, elbows, manhole adapter rings, plugs, caps, adapters and increasers. Fittings shall be joined by gasket type joints in accordance with Subsection 740.3.

The material used for thermally welding the pipe material shall be compatible with the base material.

A clamp gasket or approved method shall be provided at manhole entry or connection to reduce infiltration and exfiltration. Where precast manholes are used, entrance holes must be large enough to allow for proper grouting around the manhole gasket. A non-shrink grout shall be used for grouting.

**740.5 CERTIFICATION:**

The manufacturer shall furnish an affidavit (certification) that all materials delivered shall comply with the requirements of ASTM F2736, ASTM F2764 or AASHTO M330.

**740.6 DIMENSIONS AND TOLERANCES:**

Polypropylene pipe dimensions shall comply with dimensions given in Section 6.2 of ASTM F2736, Section 6.2 of ASTM F2764 or Section 7.2 of AASHTO M330.

**740.7 CLASSIFICATIONS:**

PP pipe (Type S or Type D) shall meet the minimum Pipe Stiffness (PS) requirements of ASTM F2736, ASTM F2764 or AASHTO M330. The PS test shall be conducted in accordance with ASTM D2412 with the exceptions listed in accordance with ASTM F2736, ASTM F2764 and AASHTO M330.

**740.8 MARKINGS:**

Markings on pipe shall be per ASTM F2736, ASTM F2764 or AASHTO M330. These markings shall be clearly shown on the pipe at intervals of approximately 12 feet and include but not limited to the following: the manufacturers name or trademark, nominal size, the specification designation, plant designation code, date of manufacture or an appropriate code. All fittings shall be marked with the designation number of the specification and with the manufacturers identification symbol.

**740.9 CARE OF PIPE AND MATERIALS:**

All pipe and materials shall be manufactured, handled, loaded, shipped and unloaded in such manner as to be undamaged and in sound condition, in the completed work. Particular effort shall be exercised to protect the ends of pipe. Repairs on damaged pipe shall be made to the satisfaction of the Engineer otherwise they shall not be used in the work and shall be replaced with an equal pipe or special in an acceptable condition. At all times rubber gaskets shall be stored in a cool, dark place until ready for use.

*- End of Section -*

**SECTION 740**  
**POLYPROPYLENE PIPE & FITTINGS FOR STORM DRAIN & SANITARY SEWER**

**740.1 GENERAL:**

This specification covers the requirements of profile wall (both dual wall and triple wall) (Type S or Type D) polypropylene (PP) pipe manufactured per ASTM F2736, ASTM F2764, AASHTO M330 for ~~gravity flow, low pressure~~ storm drain and sanitary sewer systems. When noted on the plans or in the special provisions, ~~gravity flow, low pressure~~ storm drains, irrigation and sanitary sewers may be constructed using PP pipe. The PP pipe will be of the sizes 12 inch diameter through 60 inch diameter. ~~For the purpose of this specification, low pressure is defined as the test pressures of 3.5 psi of air or 4 feet of water as specified in Section 615.11. Construction and installation shall be in accordance with Section 615 for storm drain and irrigation water and Section 618 for sanitary sewers.~~

~~All pipe joints shall conform to the controlled pressure lab test of 10.8 psi of air or 25 feet of water as stipulated in ASTM D3212.~~

~~Installation for storm drainage applications shall be per Section 615. For sanitary sewer applications, installation shall be per Section 618.~~

The size of the PP pipe to be furnished shall be designed by the Engineer and shown on the plans or in the project specifications.

**740.2 MATERIALS:**

**740.2.1 Base Material Composition:** Profile pipe base material and fittings shall meet polypropylene materials requirements as stated in Section 4, Table 1 of ASTM F2736, Section 5, Table 1 of ASTM F2764 or Section 6, Table 1 AASHTO M330.

**740.2.3 Gaskets:** Rubber gaskets shall be manufactured from a natural rubber, synthetic elastomer or a blend of both and shall comply in all respects with the physical requirements in ASTM F477, unless the project specifies a special gasket, such as nitrile.

**740.2.4 Water Stops:** Water stops shall be manufactured from a natural or synthetic rubber and shall conform to the requirements of ASTM C923. The water stop shall have expansion rings, a tension band, or a take-up device used for mechanically compressing the water stop against the pipe.

**740.2.5 Lubricant:** The lubricant used for assembly shall comply to manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

**738.3 JOINING SYSTEMS:**

**740.3.1 Gasket Type:** Joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F477. Gasketed watertight joints shall meet laboratory test pressure of 10.8psi when tested in accordance with ASTM D3212.

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The bell and spigot configurations for the fittings shall be compatible to those used for the pipe.

Joints shall provide a seal against exfiltration and infiltration. All surfaces of the joint upon which the gasket may bear, shall be smooth and free of any imperfections, which would adversely affect sealability. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

#### **740.4 FITTINGS:**

Fittings for PP pipe may include tees, elbows, manhole adapter rings, plugs, caps, adapters and increasers. Fittings shall be joined by gasket type joints in accordance with Subsection 740.3.

The material used for thermally welding the pipe material shall be compatible with the base material.

A clamp gasket or approved method shall be provided at manhole entry or connection to reduce infiltration and exfiltration. Where precast manholes are used, entrance holes must be large enough to allow for proper grouting around the manhole gasket. A non-shrink grout shall be used for grouting.

#### **740.5 CERTIFICATION:**

The manufacturer shall furnish an affidavit (certification) that all materials delivered shall comply with the requirements of ASTM F2736, ASTM F2764 or AASHTO M330.

#### **740.6 DIMENSIONS AND TOLERANCES:**

Polypropylene pipe dimensions shall comply with dimensions given in Section 6.2 of ASTM F2736, Section 6.2 of ASTM F2764 or Section 7.2 of AASHTO M330.

#### **740.7 CLASSIFICATIONS:**

PP pipe (Type S or Type D) shall meet the minimum Pipe Stiffness (PS) requirements of ASTM F2736, ASTM F2764 or AASHTO M330. The PS test shall be conducted in accordance with ASTM D2412 with the exceptions listed in accordance with ASTM F2736, ASTM F2764 and AASHTO M330.

#### **740.8 MARKINGS:**

Markings on pipe shall be per ASTM F2736, ASTM F2764 or AASHTO M330. These markings shall be clearly shown on the pipe at intervals of approximately 12 feet and include but not limited to the following: the manufacturers name or trademark, nominal size, the specification designation, plant designation code, date of manufacture or an appropriate code. All fittings shall be marked with the designation number of the specification and with the manufacturers identification symbol.

#### **740.9 CARE OF PIPE AND MATERIALS:**

All pipe and materials shall be manufactured, handled, loaded, shipped and unloaded in such manner as to be undamaged and in sound condition, in the completed work. Particular effort shall be exercised to protect the ends of pipe. Repairs on damaged pipe shall be made to the satisfaction of the Engineer otherwise they shall not be used in the work and shall be replaced with an equal pipe or special in an acceptable condition. At all times rubber gaskets shall be stored in a cool, dark place until ready for use.

*- End of Section -*



**City of Phoenix**  
Water Services Department

Date: April 4, 2013

Case: 13-6

To: MAG Specification & Details Committee

From : Jami Erickson

**RE: Part 600: Water and Sewer**

Purpose: Modify Part 600 title to include Storm Drain and Irrigation

Revisions:

**Part 600: ~~WATER AND SEWER~~ WATER, SEWER, STORM DRAIN AND IRRIGATION**



**MARICOPA COUNTY**  
*Department of Transportation*

MEMORANDUM

**Date:** March 18, 2013

Revised 4/4/2013

**To:** MAG Specifications and Details Committee

**From:** Robert Herz, MCDOT Representative

**Subject:** Revision to Section 321.8.8 Thickened Edge

Case 13-08

**PURPOSE:** Eliminate references to 'base course' to clarify the surface being referenced and to delete an unnecessary Contractor submittal.

**REVISIONS:**

Proposed changes:

**321.8.8 Thickened Edge:** ~~Prior to commencing paving operations that require construction of a thickened edge, the Contractor shall submit for the Engineer's approval construction procedures to be used for placement and compaction of the thickened edge.~~

When the depth of the thickened edge extends two inches or more below the bottom of the asphalt pavement ~~base course~~, the portion below the asphalt pavement ~~base course~~ shall be placed and compacted as a separate construction operation. Construction of the asphalt pavement ~~base course~~ may immediately follow compaction of the lower portion of the thickened edge.

When the depth of the thickened edge extends less than two inches below the bottom of the asphalt pavement ~~base course~~, the portion below the asphalt pavement ~~base course~~ may be placed and compacted with the asphalt pavement ~~base course~~ in a single operation.

Proposed Modified Specification in final form:

**321.8.8 Thickened Edge:** When the depth of the thickened edge extends two inches or more below the bottom of the asphalt pavement, the portion below the asphalt pavement shall be placed and compacted as a separate construction operation. Construction of the asphalt pavement may immediately follow compaction of the lower portion of the thickened edge.

When the depth of the thickened edge extends less than two inches below the bottom of the asphalt pavement, the portion below the asphalt pavement may be placed and compacted with the asphalt pavement in a single operation.



**MARICOPA COUNTY**  
*Department of Transportation*

**MEMORANDUM**

**Date:** April 16, 2013

**To:** MAG Specifications and Details Committee

**From:** Robert Herz, MCDOT Representative

**Subject:** Delete Section 737 ASBESTOS-CEMENT PIPE AND FITTINGS FOR **Case 13-11**  
STORM DRAIN AND SANITARY SEWER

**PURPOSE:** Prevent the use of asbestos-cement pipe for storm drain and sanitary sewer installations.

**REVISIONS:** Delete Section 737 in its entirety and revise all references to section 737. Section 737 is only referenced in section 605.3.

**Proposed Section 605 Changes:**

**SECTION 605**  
**SUBDRAINAGE**

**605.1 DESCRIPTION:**

The subdrainage system shall be constructed in accordance with the notes and details shown on the plans and the applicable provisions of these specifications except as modified in the special provisions.

**605.2 CONCRETE:**

All concrete placed in drainage structures, subdrain outlets, pipe collars, and similar features of the subdrainage system shall conform to the applicable provisions of Section 725.

**605.3 SUBDRAINAGE PIPE:**

Subdrainage pipe, both perforated and non-perforated, shall be either bell and spigot concrete, bell and spigot vitrified clay, or corrugated metal pipe, ~~or asbestos cement pipe~~ as shown on the plans or specified in the special provisions. However, if the particular kind of pipe is not shown on the plans nor specified in the special provisions, subdrainage pipe shall be concrete pipe of at least standard strength quality and shall conform to the requirements of Section 736. Vitrified clay pipe shall conform to the requirements of Section 743. ~~Asbestos cement pipe shall conform to the requirements of Section 737.~~ Corrugated metal pipe shall conform to the requirements of Section 760.

**605.3.1 Pipe Joints:** Unless the pipe joints are of a self-aligning type, have the bottom half of the bell joint filled with mortar to securely hold the pipe in alignment and to bring the inner surface of abutting pipes flush and even. Where a tight joint for non-perforated pipe is required, the bell joint shall be completely filled with mortar.

~~Asbestos cement pipe joints shall be made with couplings in accordance with the recommendations of the pipe manufacturer.~~

**605.4 SUBDRAINAGE MANHOLES:**

Subdrainage manholes, including inlets, outlets, flap gates, gate boxes, and drop steps, shall comply with the requirements of the plans and the special provisions.

# Water/Sewer Working Group Meeting

Meeting Notes

April 23, 2013

## **Opening:**

A meeting of the Specifications and Details Water/Sewer Working Group was called to order by chair Jim Badowich on April 23, 2013, at 1:35 p.m. in the MAG Cholla Room.

## **1. Introductions/Attendance**

Jim Badowich (Avondale), Arturo Chavarria (Hanson), Dan Currence (ADS), Bill Davis (ADS), Scott Dahne (Infra-Tect), Jami Erickson (Phoenix), Rob Godwin (Goodyear), Mike Hook (ACPA), John Kanzlemer (Contech), Paul Nebeker (Pipe Right Now), Mike Neill (Infra-Tect), Matt Savage (Ferguson) Craig Sharp (Buckeye), Gordon Tyus (MAG), Arvid Veidmark (SSC Boring), Stew Waller (Rinker), Steven K Wolff (Infra-Tect).

## **2. Precast Manhole Specifications**

Craig Sharp handed out updated detail drawings for precast manhole bases, and reviewed the changes. These included using ABC rock, and adding connection details so it works with any type of pipe. Mr. Sharp also worked on revising the specifications, which are under review by agency members. Mr. Badowich asked Mr. Sharp to see if Buckeye representative Scott Zipprich would be willing to sponsor the case.

## **3. Manhole Revisions/Update**

Mr. Badowich also asked members to review the manhole detail 424 and provide updates. He also led a discussion on types of lining materials.

## **4. Pipe Materials and Installation Specifications**

Jim Badowich summarized discussion during the main committee meeting regarding changes to the materials specs based on feedback from Bob Herz and others. John Kanzlemer handed out an updated version of Section 739 (Steel Reinforced Polyethylene Pipe) that addressed the committee's concerns. It was determined that some of the material specifications would be higher than the ASTM minimums since agencies wanted to make sure materials used matched current industry standards for pipe currently being installed. The pressure testing was left at the ASTM minimum of 10.8 psi. There was also discussion on water stops and other connectors specific to the type of pipe.

Representatives from ADS said proposed Section 740 for Polypropylene Pipe was updated to match the changes requested in Section 739. Questions were raised about HDPE pipe, including solid wall HDPE. Industry representatives said they would be willing to come up with a new materials section for it, as well as revising existing 738 to be consistent with the proposed 739 and 740.

Arturo Chavarria handed out a revised draft to Section 601 for rigid pipe. The trench width table was discussed, including questions about adding smaller diameter (6" and 8") pipe to the table. The city of Phoenix has a supplement to this table, so Mr. Badowich suggested that it be reviewed and incorporated if possible. He also noted that ductile iron pipe should be included.

Mr. Nebeker commented that the trench widths to a degree are determined by backhoe bucket sizes. Mr. Chavarria noted that reinforced concrete pipe would be installed according to ASTM C1479. He also handed out a revised Section 618 that included a new subsection on inspection that included laser deflection in addition to video and mandrel testing. It was a very thorough addition and Mr. Tyus suggested that this topic be introduced as a separate case rather than bundled with the other minor installation changes to 618. Mr. Badowich said he appreciated their work and wanted agencies to review it.

The changes to 601, 603, 610, 615 and 618 are planned to be introduced as a case. Warren White of Chandler is a possible sponsor, and the industry representatives working on various aspects of the case were encouraged to contact him.

### **5. HDPE Pipe Bevels**

Representatives from Infra-Tect provided new specifications for including HDPE bevels in pipe joints in Section 610.13 and Section 750 for ductile iron pipe. Mr. Tyus explained the process for sponsoring a case and alerted the industry representative that typically MAG did not add standards unless they were in standard use by agency members.

### **6. Water Testing/Flushing**

Rob Godwin of Goodyear handed out an outline of proposed changes to Section 610 to make the testing section be more consistent with current practice and AWWA standards. He reviewed proposed changes. Areas highlighted in yellow were anticipated to require updates. Section 610.5 Testing was thoroughly revised to meet the process currently used by Goodyear. Members suggested using track changes in the document to clarify what was moved, deleted, changed and added so the revisions would be clear to committee members in a future case. Phoenix also has a supplement to 610 and it was suggested to review it as well.

Mr. Nebeker described how the current testing method came to be used as combined pressure and leakage test. Other agency representatives described their processes. Other areas of discussion included whether to include PVC and AC pipe in the revised specifications. Mr. Godwin asked about incorporating Section 611 into 610.

### **7. Encasement of Water or Sewer Pipe by Jacking or Tunneling Operation**

Arvid Veidmark of SSC Boring provided a comprehensive update to Section 602. The section was revised to match current industry practices. It included a new title to better reflect the process, removed out-of-date specifications and added information about spacers. Members discussed types of bulkheads and the use of pea gravel rather than grout to fill the encasement. Mr. Sharp suggested specifying the size of the gravel. Mr. Veidmark said it typically was 5/16" to 3/8". Mr. Badowich said once the revisions were made he would be willing to sponsor the case.

### **8. Next Meeting Date**

The next meeting of the Water/Sewer working group is tentatively scheduled for Tuesday, May 21st at 1:30 p.m. at the MAG office.

The meeting was adjourned at 4:25 p.m.