

April 30, 2013

TO: Members of the MAG Standard Specifications and Details Committee

FROM: Tom Wilhite, City of Tempe, Chair

SUBJECT: MEETING ADDENDUM

Wednesday, May 1, 2013 at 1:30 p.m.
MAG Office, Suite 200 (Second Floor), Ironwood Room
302 North 1st Avenue, Phoenix

The packet includes the following updated agenda items;

- Updated Case List
- Updated Case 13-05
- New Case 13-12
- New Case 13-13
- New Case 13-14
- Asphalt Working Group Notes
- Concrete Working Group Notes
- Updated Member Contact List

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 | |
|-------|--|-------------|---|---------------------------------|------------------------------|-------------|----------------------|
| | CARRY FORWARD CASES FROM 2012 | | | | | | |
| 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 |
| | NEW CASES FOR 2013 | | | | | | |
| 13-01 | Case 13-01: Miscellaneous Corrections: 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 05/01/2013 | | 0 0 0 | Yes No Abstain |



Chandler • Arizona
Where Values Make The Difference

MEMORANDUM

Case # 13-05

DATE: May 1st, 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 > > May Update

The Section 740 specification for polypropylene (PP) pipe was originally drafted by editing the existing Section 738 specification for HDPE pipe. Since then, comments have been received and incorporated from various MAG members. John Kanzlemer (Contech) and Dan Currance (ADS) have maintained communication to assure that, where appropriate, revisions made to Section 740 were also incorporated into the new Section 739 specification for SRPE pipe and vice versa. The attached specification has also been updated to reflect all comments received through the Water & Sewer Working Group meeting on April 23, 2013.

Primary revisions to Section 740, since its original draft include the following:

- Incorporated references to the various installation specifications for flexible pipe (Sections 603, 615, & 618) that are being developed and updated.
- 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.

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. 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 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.

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

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

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

740.3 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 10.8 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 sealability. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

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

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.

740.5 CERTIFICATION:

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

740.6 MARKINGS:

Markings on pipe and fittings shall be per ASTM F2736, ASTM F2764 or AASHTO M330. The markings shall be clearly shown on the pipe, at least, at each end of each length of pipe and spaced at intervals of not more than 10 feet. Markings shall include the following information: the manufacturer's 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 manufacturer's identification symbol.

740.7 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 covered in a factory applied protective wrap or stored in a cool, dark place until ready for use.

- End of Section -

DATE: April 27, 2013

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, Advisory Member

RE: Revisions to Section 430 – Concrete Curb, Gutter, Sidewalk, Sidewalk Ramps, Driveway and Alley Entrance

Purpose: Update standard identified by Concrete Working Group. This standard has not been significantly changed since 1999. Numerous agencies have created supplements to this standard and some agencies have complete replacement sections.

Revisions: The changes include incorporation of supplement sections from many MAG agency members and subsectioning the Construction Methods portion of the standard into a logical work process. The Concrete Working Group has also made updates as needed and wording improvements for clarity. Major changes are summarized below:

- a. A new subgrade preparation subsection has been created which includes methods for handling expansive subgrade (including a new table).
- b. Curing requirements have been added.
- c. A deficiencies subsection has been added.
- d. Measurement and payment sections have been expanded to provide specific clarity for curb ramps, curb terminations/transitions, and payment for unsuitable material removal/replacement.

Agencies are requested to review the proposed changes (specifically in comparison to agency supplements) and provide feedback to the Concrete Working Group for any needed modifications.

SECTION 340

CONCRETE CURB, GUTTER, SIDEWALK, SIDEWALK RAMPS, DRIVEWAY AND ALLEY ENTRANCE

340.1 DESCRIPTION:

The various types of concrete curb, gutter, sidewalk, sidewalk ramps, driveways, and alley entrances shall be constructed to the dimensions indicated on the plans and standard detail drawings.

340.2 MATERIALS:

Concrete shall be ~~class B unless otherwise~~ noted on the standard details. Concrete shall conform to the requirements of Section 725.

Expansion joint filler shall be 1/2-inch thick preformed bituminous material in compliance ~~comply~~ with Section 729, unless otherwise noted.

340.2.1 Detectable Warnings: Truncated dome dimensions and spacing for detectable warnings are defined by the Americans with Disabilities Act Accessibilities Guidelines (ADAAG) for optimal detectability and public safety. Detectable warnings shall consist of raised truncated domes aligned in a square grid pattern in conformity to the ADAAG. Truncated domes shall have the following nominal dimensions: base diameter of 1.0 inches (0.9 inches minimum) top diameter of 50 percent of the base diameter minimum to 65 percent of the base diameter maximum, and height of 0.2 inches. Dome center-to-center spacing of 2.35 inches, measured between the most adjacent domes on the square grid. Dome center-to-center spacing for radial installations shall be 1.6 inches minimum and 2.4 inches maximum with a base-to-base spacing of 0.65 inches minimum. Detectable warning edges shall be sized and installed so that dome spacing is maintained across adjoining edges. Each dome shall have a minimum static friction of coefficient of 0.8 as tested per ASTM C1028.

340.2.1.1 Color and Contrast: Detectable warnings shall contrast visually with adjoining surfaces, either light-on-dark or dark-on-light. Specific colors to be used shall be approved by the local jurisdictional agency prior to installation. Detectable warnings shall have integral color throughout.

340.2.1.2 Materials: Detectable warning materials shall be durable with a non-slip surface not subject to spalling, chipping, delamination, or separation. All detectable warnings shall be approved by the local jurisdictional agency prior to installation.

340.2.1.3 Attachment System: Detectable warnings shall be either placed in freshly poured concrete (wet-set) or recessed into pre-formed concrete. Detectable warnings using wet-set placement shall have an anchoring method that assures constant contact of the detectable warning bottom surface with the concrete as it cures, thus rendering the ramp a single monolithic structure. The thicker and heavier detectable warnings lowered into pre-formed recesses in the concrete substrate must demonstrate a firm fitting into metal reinforced frames without gaps along the edges that can channel water, sand, or debris. They must also be able to resist movement (i.e. sliding, rocking, or lifting) once in service. All attachment systems shall be approved by the local jurisdictional agency.

340.3 CONSTRUCTION METHODS:

~~Existing pavements and concrete that are joined by new construction shall be cut in accordance with Section 601.~~

340.3.1 Subgrade Preparation: The subgrade shall be constructed and compacted true to grades and lines shown on the plans and as specified in Section 301. All soft, expansive or unsuitable material shall be removed to a depth of not less than 6 inches below subgrade elevation and replaced with material satisfactory to the Engineer. Removal and replacement of soft, expansive or unsuitable material will be paid for as extra work.

~~When the Engineer determines that the existing subgrade consists of soils with have questionable swelling characteristics, the soils shall be tested to determine if they are non-expansive, marginally expansive, or expansive. Testing shall be in accordance with ASTM D4546 (one-dimensional swell test) remolded to 95% of maximum density at optimum moisture. Maximum density and optimum moisture shall be determined in accordance with ASTM D698(A). Based on the test results, the subgrade removal and compaction requirements of Section 301.3 shall be modified as noted in Table 340-1, the moisture content shall be brought as close as possible to the optimum required for compaction. This shall be done by the addition of water, by the addition and blending of dry suitable material or by the drying of existing material. The subgrade shall then be compacted to a relative density of 75% minimum to 85% maximum with 80% as ideal.~~

| <u>Table 340-1</u> | | | |
|--------------------|-----------------------------|--|--|
| <u>% Swell</u> | <u>Description</u> | <u>Required Corrective Action ⁽¹⁾</u> <u>Section 301.1 Type "A" Subgrade</u> | <u>Required Corrective Action ⁽¹⁾</u> <u>Section 301.1 Type "B" Subgrade</u> |
| <u><1</u> | <u>Non-expansive</u> | <u>No Change</u> | <u>No Change</u> |
| <u>1 to 3</u> | <u>Marginally expansive</u> | <u>Compact to between 90% and 95% of maximum density at a moisture content between 0% to 3% above optimum moisture per ASTM D698</u> | <u>Compact to between 85% and 90% of maximum density at a moisture content between 0% to 3% above optimum moisture per ASTM D698</u> |
| <u>>3</u> | <u>Expansive</u> | <u>Remove the upper 24 inches of subgrade and replace with non-expansive material per this table and Section 301.3.</u> | |

(1) Note: Alternate corrective measures may be submitted to the Agency by the Contractor for review. The submittal must include recommendation affixed with the professional seal of an Arizona registered engineer

~~Material removed due to expansive potential or otherwise found to be unsuitable displaced in the construction shall not be placed on the base and/or surfacing material already in place on the roadway nor shall the excavated material be placed in such a manner as to interfere with access to property or traffic flow in the street.~~

~~Existing concrete sidewalks and driveways which abut the new sidewalks and driveway entrances shall be removed to a distance required to maintain a slope as indicated by standard details or not to exceed 1 inch per foot where sidewalks are concerned. Sawcutting is required at the match lines and payment will be made under the respective pay items as provided in the proposal.~~

340.3.2 Formwork: Concrete curbs, gutters and sidewalks shall be constructed by the conventional use of forms, or may be constructed by means of an appropriate machine when approved by the Engineer.

If machines designed specifically for such work and approved by the Engineer are used, the results must be equal to or better than that produced by the use of forms. If the results are not satisfactory to the Engineer, the use of the machine shall be discontinued and the Contractor shall make necessary repairs at

his own expense. All applicable requirements of construction by use of forms shall apply to the use of machines.

Forms conforming to the dimensions of the curb, gutter, sidewalk, sidewalk ramps, driveway, and alley entrance shall be carefully set to line and grade, and securely staked in position. The forms and subgrade shall be watered immediately in advance of placing concrete.

Forms shall be thoroughly cleaned each time they are used, and shall be coated with a light oil, or other releasing agent of a type which will not discolor the concrete.

340.3.3 Concrete Placement: The concrete shall be thoroughly spaded away from the forms so that there will be no rock pockets next to the forms. The concrete may be compacted by mechanical vibrators approved by the Engineer. Tamping or vibrating shall continue until the mortar flushes to the surface, and the coarse aggregate is below the concrete surface. The surface shall then be struck off and worked to grade and cross section with a wood float.

If machine placement is used, the machine shall place, consolidate and finish the concrete in one complete pass, requiring a minimum of hand finishing producing a dense and homogeneous section. A form shall trail behind the machine for such a distance that no appreciable concrete slumping will occur. Final finishing shall be as specified hereinafter.

340.3.4 Joints: Shall be constructed in a straight line, vertical plane and perpendicular to the longitudinal line of the sidewalk, curb and gutter, single curb, etc., except in cases of curved alignment, where they shall be constructed along the radial lines of the curve.

340.3.4.1 Expansion Joints: ~~Unless otherwise specified, expansion joints shall be installed at all radius points, at both sides of each driveway, at both sides of each alley entrance, at adjoining structures and at every change of depth in the concrete and shall provide for complete separation of adjoining structures. The maximum distance between expansion joints shall be 50 feet, except in radii such as doglegs and cul-de-sacs where the maximum distance between expansion joints shall be 25 feet. Expansion joints shall be constructed in a straight line, vertical plane and perpendicular to the longitudinal line of the sidewalk, curb and gutter, single curb, etc., except in cases of curved alignment, where they will be constructed along the radial lines of the curve. Expansion joints shall be placed to match the joints of the adjacent concrete such as sidewalk to the curb and gutter or single curb, etc.~~

Expansion joints shall be constructed to the full depth and width of the concrete and shall match joints in adjacent pavement, sidewalk, curb or gutter. The expansion joint material shall extend fully through the concrete and one inch into the subgrade with the top of the expansion joint material one-quarter inch below the top surface ~~as depicted in Detail 230~~. Expansion joint material shall be secured in place prior to placement of concrete. ~~Unless otherwise specified, all expansion joints installed against newly placed concrete, sawcut or other smooth surfaces shall comply with Section 729.1—Premolded Joint Filler per ASTM D1751, ½ inch, Bituminous Type. Expansion joints installed against existing uneven surfaces shall be per Section 729.2—Pour Type Joint Filler.~~

340.3.4.2 Contraction Joints: ~~Contraction joints, unless otherwise specified, the large aggregate in contraction joints shall be separated to either side of the joint for a minimum depth equal to 25% of the concrete thickness; the finished depth shall be a minimum of ¾ inch, shall be constructed in accordance with the standard details, and in a straight line and vertical plane perpendicular to the longitudinal line of the sidewalk, sidewalk ramp or curb and gutter, except in cases of curved alignment when they will be constructed along the radial lines of the curb.~~

~~Sidewalk or sidewalk ramp score marks, unless otherwise specified, shall be constructed in accordance with the standard detail.~~

~~**340.3.5 Edges:** All exposed edges shall be shaped with a suitable tool so formed ~~as to round the~~ edges ~~to a radius~~ having the shape as indicated on the ~~standard~~ referenced details.~~

~~**340.3.1 Detectable Warnings:** The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches minimum and 8 inches maximum back from the face of curb. Detectable warning surfaces for railroads shall be located so that the edge nearest the rail crossing is 6 inches minimum and 8 inches maximum from the vehicle dynamic envelope.~~

~~**340.3.6 Detectable Warnings:** Detectable warnings shall be installed perpendicular to the direction of pedestrian/wheelchair travel and have a minimum width of 24 inches measured perpendicular to the edge of the roadway or rail crossing. The base surface of detectable warnings shall be installed flush with the adjacent walkway surface; the truncated domes shall extend above the walkway surface. The boundary between detectable warnings and the adjacent walkway shall provide a flush uniform surface that will not cause ponding of water nor present a tripping hazard. Partial domes at the edge of the detectable warning shall be made flush to match the base surface of the detectable warning. Detectable warnings installed on curb ramps shall extend the full width of the ramp depression.~~

~~Detectable warnings installed on sidewalk ramps shall modify the sidewalk concrete thickness at the detectable warning to provide a minimum concrete thickness of four-inches (4"). When detectable warnings are modules inset into the sidewalk ramp, the bottom surface of the sidewalk shall be lowered a distance equal to or greater than the module thickness to maintain the minimum sidewalk thickness. The sidewalk bottom surface shall have a minimum transition taper length of 12" between the thickened and normal depth sections of sidewalk. The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches minimum and 8 inches maximum back from the face of curb.~~

~~Detectable warning surfaces for pedestrian at-grade rail crossings not located within a street or highway shall be installed on each side of the rail crossing, located as shown on plans. Detectable warnings shall extend the full width of the pedestrian walkway.~~

~~Repair of ADA ramps shall be done in such a way as to maintain a single monolithic structure, such as installation of #4 dowel rods spaced at 8 inches on center or other methods as determined by the Engineer.~~

~~**340.3.7 Form Removal and Finishing:** The front face form shall not be removed before the concrete has taken the initial set and has sufficient strength to carry its own weight. ~~g~~ Gutter forms and rear forms shall not be removed until concrete has hardened sufficiently to prevent damage to the edges. ~~Special care shall be taken to prevent any damage.~~ Any portion of concrete damaged while stripping forms shall be repaired or ~~if the damage is severe,~~ replaced at no additional cost to the Contracting Agency.~~

~~After the forms are removed, the joints shall be tooled and the surface finished with a float to remove all imperfections. In all cases, the resulting surface shall be smooth and of uniform color with all rough spots, projections, and form stakes removed. No plastering of the concrete will be allowed. The concrete work shall have a true surface; shall be free from sags, twists, or warps; have a uniform appearance; and be true to the lines, grades, and configurations indicated on the drawings.~~

~~Surfaces shall be sweat finished by means of a steel trowel or light brooming.~~

The Contractor shall stamp ~~his~~the company name and year ~~on all work done by him~~, on each end of the curb, gutter, sidewalk or sidewalk ramp constructed. The letters shall not be less than 3/4 inch in height.

340.3.8 Curing: As soon after the completion of the finishing operations as the condition of the concrete will permit, all exposed surface shall either be sprayed with a pigmented curing compound or sealed with a material conforming to Section 726. Curing compound shall be applied under pressure through a spray nozzle in such manner and quantity as to entirely seal all exposed concrete surfaces with a uniform film. The membrane shall be applied in two applications for a total coverage of 150 square feet per gallon. Concrete surfaces shall be kept damp until the curing compound is applied. Should the curing compound seal be broken or damaged before the expiration of 10 days after the placing of the concrete, the break shall be immediately repaired by the application of additional curing compound over the damaged area.

If due to weather conditions, materials used, or for any other reason, there is any likelihood of the fresh concrete checking or cracking before the curing operations, it shall be kept damp (not wet) by indirect fine spray of water until such danger is past, or until curing operations are started in the particular area affected. The need for adequate continuous curing is greatest during the first few hours after placement of concrete.

340.4.9 Tolerances: The face, top, back, and flow line of the curb and gutter shall not deviate in excess of 1/4-inch over 10 feet, as ~~be~~ tested with a 10-foot straightedge or curve template, longitudinally along the surface. ~~Any deviation in excess of 1/4 inch shall be corrected at no additional cost to the Contracting Agency.~~

The surface of concrete sidewalk or sidewalk ramp shall not deviate in excess of 1/8-inch over 5 feet as ~~be~~ tested with a 5-foot straightedge except for the 1/4-inch recess of the preformed material in expansion joints. ~~Any deviation in excess of 1/8 inch shall be corrected at no additional cost to the Contracting Agency.~~

All finished concrete elevations shall not deviate from the elevations shown on the plans, or indicated by typical sections or standard details referenced within the construction documents, by more than 1/4 inch.

When required by the Engineer, gutters ~~having a slope of 0.8 foot per hundred feet or less, or where unusual or special conditions cast doubt on the capability of the gutters to drain, they~~ shall be water tested. ~~Water testing shall consist of~~The Contractor shall establishing flow in the length of gutter to be tested by supplying and distributing water from a hydrant, tank truck or other source. ~~One hour a~~After the supply of water is shut off; and water has stopped flowing, the gutter shall be inspected for evidence of ponding or improper shape. The work shall be deemed deficient if ~~In the event~~ water is found ponded in the gutter to a depth greater than 1/2 inch; or ponding extends onto the adjacent asphalt pavement; ~~the defect or defects shall be corrected in a manner acceptable to the Engineer without additional cost to the Contracting Agency.~~

Areas between elevations shown on the plans shall be straight graded or smoothly transitioned through a vertical curve in a manner approved by the Engineer or as otherwise indicated on the construction documents.

340.3.10 Deficiencies: Any section of the work deficient in depth or not conforming to the plans or specifications shall be removed and replaced by the Contractor at no additional cost to the Contracting Agency. Replacement or reconstruction shall be from joint to joint.

Concrete work that deviates in straightness as specified in Section 340.3.9 shall be removed and replaced.

Remove and replace gutters that exceed the ponding tolerance in Section 340.3. (no grinding allowed).

Remove and replace all work that exceeds the elevation tolerance in Section 340.3.

Finishing and Curing of the concrete shall be done in the manner specified in Section 505.

~~340.3.1 Detectable Warnings: The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches minimum and 8 inches maximum back from the face of curb. Detectable warning surfaces for railroads shall be located so that the edge nearest the rail crossing is 6 inches minimum and 8 inches maximum from the vehicle dynamic envelope.~~

~~Detectable warnings shall be installed perpendicular to the direction of pedestrian/wheelchair travel and have a minimum width of 24 inches measured perpendicular to the edge of the roadway or rail crossing. The base surface of detectable warnings shall be installed flush with the adjacent walkway surface; the truncated domes shall extend above the walkway surface. The boundary between detectable warnings and the adjacent walkway shall provide a flush uniform surface that will not cause ponding of water nor present a tripping hazard. Partial domes at the edge of the detectable warning shall be made flush to match the base surface of the detectable warning. Detectable warnings installed on curb ramps shall extend the full width of the ramp depression.~~

~~Detectable warnings installed on sidewalk ramps shall modify the sidewalk concrete thickness at the detectable warning to provide a minimum thickness of four inches (4"). When detectable warnings are modules inset into the sidewalk ramp, the bottom surface of the sidewalk shall be lowered a distance equal to or greater than the module thickness to maintain the minimum sidewalk thickness. The sidewalk bottom surface shall have a minimum transition taper length of 12" between the thickened and normal depth sections of sidewalk.~~

340.4 BACKFILLING:

Unless otherwise specified the Contractor shall backfill behind the curbs, sidewalk or sidewalk ramps with soil native to the area to the lines and grades shown on the plans.

340.5 MEASUREMENT:

Concrete curbs and gutters of the various types shown on the plans and in the proposal, will be measured along gutter flow line through inlets, catch basins, driveways, sidewalk ramps, etc., by the lineal foot to the nearest foot for each type, complete in place. Measurement for curb terminations and transitions shall be included with the linear measurement of the various types of curb or curb and gutter as shown on the plans and in the proposal.

Curb and gutter type shall be based on the configuration of the final exposed surfaces. The increased curb and gutter depth required at valley gutter aprons or driveways shall not be measured as a separate pay item; any additional Contractor cost shall be included in the unit cost associated with the valley gutter, driveway or other associated item

Concrete sidewalks, ~~sidewalk ramps~~, driveways, alley intersections, valley gutters and aprons will be measured to the nearest square foot complete in place. ~~When concrete sidewalk, sidewalk ramps, driveways, alley intersections, valley gutters, and/or aprons are cut during trenching operations, the square foot measurement for payment will be in accordance with Section 336.~~

Detectable warnings shall not be measured for payment. Detectable warnings are considered integral to the walking surface that they form a part of and the cost is included in the related pay item.

Curb ramp installations shall be measured as complete installed units and shall include the ramp curb and the walking surfaces between the ramp curb and back of curb and gutter or single curb. Single curb or curb and gutter located at the edge of roadway shall be paid for separately. The surface area of curb ramps shall not be included in the measured quantity for sidewalks.

340.6 PAYMENT:

Payment ~~for the above named items~~ will be made in accordance with the unit prices or lump sums as set forth in the proposal. Such payment shall include full compensation for furnishing all labor, material, tools and equipment and accomplishing all work in conformance with the contract documents.

Payment for curb ramps shall include the ramp curb and the walking surfaces between the ramp curb and back of curb and gutter or single curb.

Over-excavation of soft, expansive or unsuitable materials and installation granular materials will be paid as a separate pay item, not included with the above measured pay items.



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: April 29, 2013

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: Revision to Section 415 Flexible Metal Guardrail

Case 13-13

PURPOSE: 1. Allow use of either 8" by 8" wood posts or 6" by 8" wood posts for any continuous length of guardrail when a specific wood post size is not identified by plans, standard details, or special provisions.
2. Delete reference to manufacturer's recommendations regarding installation of guardrail delineation. All requirements are contained in the specifications and standard details.

REVISIONS: See attached file with changes noted in red-lined strike-out format.

SECTION 415
FLEXIBLE METAL GUARDRAIL

415.1 DESCRIPTION:

The work under this section shall consist of furnishing all materials, constructing new guardrail, and delineating guardrail sections at the locations shown on the plans.

Guard rail end treatments shall be as specified on the plans or special provisions.

415.2 MATERIALS:

The rail elements, bolts, nuts and other fittings shall conform to the specifications of AASHTO M 180, except as modified in this section. The rail metal shall conform to AASHTO M 180, Type I, Class A and in addition to the requirements of AASHTO M 180, shall withstand a cold bend, without cracking of 180 degrees around a mandrel of a diameter equal to 2 1/2 times the thickness of the plate.

Three certified copies of mill test reports of each heat from which the rail element is formed shall be furnished to the Engineer.

All materials shall be new, except as otherwise noted on the plans or special provisions.

Railing Parts furnished under these specifications shall be interchangeable with similar parts regardless of source. All surfaces of guardrail elements that are exposed to traffic shall present a uniform, pleasing appearance and shall be free of scars, stains or corrosion.

Nails shall be 16 penny common galvanized.

Bolts shall have shoulders shaped to prevent the bolts from turning.

Unless otherwise specified the rail elements, terminal sections, bolts, nuts, and other fittings shall be galvanized in accordance with Section 771. Where galvanizing has been damaged, the coating shall be repaired in accordance with Section 771.

Guardrail reflector tabs shall be either 3003-H14 Aluminum strip 0.063 ± 0.004 inches thick, or steel strip 0.078 ± 0.008 inches thick galvanized in accordance with ASTM A-653 coating designation G 90. The reflector material shall be high-reflectivity sheeting, either silver-white or yellow and shall conform to the requirements of Arizona State Department of Transportation Standard Specifications for Road and Bridge Construction. Adhesive for sheeting attachment to the metal tab shall be of the type and quality recommended by the sheeting manufacturer. Reflector tabs shall conform to the Reflector Tab Detail of Maricopa County Department of Transportation Standard Detail 3002.

Timber for posts and blocks shall be rough sawn (unplanned) or S4S with the nominal dimensions indicated. Any species or group of woods graded in accordance with the requirements for Timber and Posts of the Western Wood Products Association may be used. Timber shall be No. 1 or better, and the stress grade shall be as follows:

| | |
|---------------------------|----------|
| 6" by 8" Post and Block | 1200 psi |
| 8" by 8" Post and Block | 900 psi |
| 10" by 10" Post and Block | 900 psi |

When the plans show guardrail systems using 8" by 8" timber posts and blocks, the Contractor may use 8 1/4" nominal size posts and blocks with a stress grade of 825 pounds per square inch. ~~Substitution of 8" by 8" posts for 6" by 8" post may be approved on a per project basis by the Engineer.~~

At the time of installation, the dimensions of timber posts and blocks shall vary no more than plus or minus 1/2" from the nominal dimensions as specified on the project plans. The size tolerance of rough sawn block in the direction of the bolt holes shall vary no more than plus or minus 3/8".

All timber shall have a preservative treatment as per the requirements of AASHTO M 133.

Structural steel shapes shall conform to the requirements of ASTM A36 and be galvanized in conformance with the appropriate requirements of AASHTO M 111. Dimensions shall meet the dimensional requirements of the American Institute of Steel Construction.

Steel tubes shall conform to the material requirements of ASTM A500 or A501 and be galvanized in conformance with the requirements of AASHTO M 180, Type 1.

415.3 CONSTRUCTION REQUIREMENTS:

415.3.1 General: The construction of the various types of guardrail shall include the assembly and erection of all component parts complete at the locations shown on the project plans or as directed by the Engineer.

Posts shall be as indicated by plans, standard details, or special provisions. Only one type and size of post and block shall be used for any one continuous length of guardrail.

Terminal sections shall be installed in accordance with the manufacturer's recommendations.

Workmanship shall be equivalent to good commercial practice and all edges, bolt holes and surfaces shall be free of torn metal, burrs, sharp edges and protrusions.

The various types of guardrail shall be constructed with wood posts and wood blocks, except as otherwise noted on the plans.

The bolted connection of the rail element to the post shall withstand a 5,000 pound pull at right angles to the line of the railing. All metal work shall be fabricated in the shop. No punching, cutting or welding shall be done in the field, except as provided for by the project plans. All metal cut in the field shall be cleaned and the galvanizing repaired in accordance with Section 771.

Where field cutting or boring of wood posts and blocks is permitted, the affected areas shall be thoroughly swabbed with at least two passes of the same type of wood preservative as initially used.

Where wood posts with rectangular sections are used, the posts shall be set so that the longest dimension is perpendicular to the rail.

All bolts shall extend beyond the nuts a minimum of two threads, except that all bolts adjacent to pedestrian traffic shall be cut off flush to the nut.

Bolts extending more than 2" beyond the nut shall be cut off to less than 1/2" beyond the nut.

Unless otherwise shown on the plans, bolts shall be torqued as follows:

| Diameter of Bolt | Torque, Foot/Pounds |
|------------------|---------------------|
| 5/8" | 45-50 |
| 3/4" | 70-75 |
| 7/8" and larger | 120-125 |

All bolts, other than those specified to be torqued, shall be securely tightened.

When guardrail is being constructed under traffic, the work shall be conducted so as to constitute the least hazard to the public. Guardrail work shall be performed in the direction of traffic flow when feasible.

Any section of guardrail that is removed for modification shall be replaced within five calendar days of the date the guardrail is removed, unless otherwise directed by the Engineer. At the end of each day, incomplete guardrail sections having an exposed end toward oncoming traffic shall have an appropriate temporary protective end treatment acceptable to the Engineer set securely in place together with approved overnight traffic control devices set in place.

415.3.2 Delineation: The maximum spacing between reflector tabs shall not exceed six posts. The slotted part of the tab shall be installed under the mounting bolt head so that the Reflectorized surface of the tab faces oncoming traffic. The exposed ends of the slotted part of the tab shall be bent up against and then over the top of the bolt head. The color of the reflective portion of the barrier markers shall conform to the color of the adjacent edge line. Silver-faced reflector tabs shall be installed on the right hand side of all roadways, and yellow-faced tabs shall be installed on the left-hand side of one-way, or median divided roadways.

~~All guardrail delineation shall be installed in accordance with the manufacturer's recommendations and as specified herein.~~

415.3.3 Roadway Guardrail: Wood posts shall be used for new guard rail installations unless otherwise indicated by plans or special provisions. Wood posts shall either be driven or placed in manually or mechanically dug holes; however, driven posts will not be permitted at locations where damage to the curb, gutter, sidewalk, buried items, shoulders or pavement might occur. The Engineer will be the sole judge as to whether driving of posts will be allowed. Driving of posts shall be accomplished in a manner that will prevent battering, burring, or distortion of the post. Any post which is damaged to the extent it is unfit for use in the finished work, as determined by the Engineer, shall be removed and replaced at no additional cost to the Agency.

The posts shall be firmly placed in the ground. The space around posts shall be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer shall be moistened and thoroughly compacted to the density of the surrounding material.

Where pavement is disturbed in the construction of guardrail, the damaged surfacing shall be repaired as approved by the Engineer.

Where a culvert or other obstacle is at an elevation which would interfere with full depth post placement, guardrail installation shall comply with requirements of Section 415.3.4 Bolted Guardrail Anchors or Section 415.3.5 Nested Guardrail.

Wood blocks shall be toe nailed to the wood post with one 16 penny galvanized nail on each side of the top of the block. Wood blocks shall be set so that the top of the block is no more than ½" above or below the top of the post, unless otherwise shown on the project plans.

Rail elements shall be spliced at 25 foot intervals or less. Rail elements shall be spliced at posts unless otherwise shown on the project plans and shall be spliced by lapping in the direction of traffic in the nearest adjacent lane. Rail elements at joints shall have full bearing. When the radius of curvature is 150 feet or less, the rail elements shall be shop curved.

The Contractor shall dispose of surplus excavated material remaining after the guard railing has been constructed.

415.3.4 Bolted Guardrail Anchors: Where the elevation of the top surface of a concrete box culvert or other similar installation prevents the placement of a post of the specified length, the posts shall be shortened and anchored in accordance with Maricopa County Department of Transportation Standard Detail 3010.

415.3.5 Nested Guardrail: This work shall consist of furnishing and constructing nested guardrail, Type 1, 2, or 3, as shown in Maricopa County Department of Transportation Standard Details 3008-1 through 3008-3.

415.3.6 Guardrail to Structure Transitions: Guardrail transitions shall be constructed in accordance with requirements shown on the plans and special provisions.

415.4 MEASUREMENT:

The limits of measurement for roadway guardrail shall be as detailed in Maricopa County Department of Transportation Standard Detail 3016, except as otherwise noted on the plans or special provisions. Guardrail, of the type shown on the project plans, will be measured by the linear foot along the face of the rail element from center to center of posts, exclusive of guardrail terminals, guardrail end terminal assemblies, nested guardrail (Types 1, 2 and 3) and guardrail transitions.

Delineation is considered a part of installation of guardrail and hence will not be measured as a separate item.

The accepted quantities of guardrail posts secured with bolted guardrail anchors will be measured by the unit each.

Nested guardrail, Types 1, 2, or 3, and guardrail transitions will be measured by the unit each, complete in place and accepted as shown on the plans.

415.5 PAYMENT:

Payment for accepted quantities of each type of guardrail will be made at the contract unit price. Payment shall be full compensation for furnishing materials and installing guardrails, complete in place including excavation, backfill, and disposal of surplus material.

Payment for Bolted Guardrail Anchors will be at the contract unit price, and shall be full compensation for the work, complete in place, including steel brackets, hardware, excavation, backfill, removing and replacing surfacing, cutting and fitting steel beam posts or timber posts, drilling anchor bolt holes in steel posts, timber posts, and box culverts, and disposal of surplus materials.

Payment for guardrail transitions will be at the contract unit price. Payment shall be full compensation for furnishing materials and installing guardrail transitions, complete in place including excavation, backfill, and disposal of surplus material.

- End of Section -

Case 13-14:

Section 711 Paving Asphalt

Changes to this section are as follows:

In the table 711-1 (existing table) the temporary AASHTO tests are replaced with the current final test procedure numbers. They are crossed out.

AASHTO tests are used here to assure that the latest specifications are used.

The new polymer modified section is added at the end of the current section. It is printed in table 711-2. The same format that is used in 711-1 is used with three modified asphalt materials. Two polymer modified materials and a current TR product.

The section was reviewed by two labs that do most of the liquid testing in the valley. Their comments are incorporated in this edition.

PAVING ASPHALT

711.1 GENERAL:

The asphalt shall be produced from crude asphalt petroleum or a mixture of refined liquid asphalt and refined solid asphalt. It shall be free from admixture with any residues obtained by the artificial distillation of coal, coal tar, or paraffin oil and shall be homogeneous and free from water.

Polymer modified asphalt cement shall be produced from crude asphalt petroleum and a polymer or blend of polymers mixed to produce a homogeneous material free from water.

Asphalt shall not be heated during the process of its manufacture, storage, or during construction so as to cause injury as evidenced by the formation of carbonized particles.

711.2 TESTING REQUIREMENTS:

Paving asphalt shall be classified by the Performance Grading System and shall conform to the requirements set forth in Table and ASTM D6376-AASHTO M-320 with the PAV temperature changes noted herein in this table.

| TABLE 711-1 | | | | |
|--|----------|----------|----------|----------|
| PERFORMANCE GRADING SYSTEM | | | | |
| | PG 58-22 | PG 64-16 | PG-70-10 | PG 76-16 |
| Original Asphalt | | | | |
| Viscosity, <u>ASTM D4402-AASHTO T316</u> (Note 1) Max. 3 Pa-s, Test Temp, °C | 135 | 135 | 135 | 135 |
| Dynamic Shear <u>ASTM D7175-AASHTO T315</u> (Note 2) G*/Sin δ, Min., 1.0 kPa Test Temp. @ 10 rad/s, °C | 58 | 64 | 70 | 76 |
| Rolling Thin Film Oven Residue (<u>ASTM D2872-AASHTO T240</u>) | | | | |
| Mass Loss, Maximum % | 1.0 | 1.0 | 1.0 | 1.0 |
| Dynamic Shear <u>ASTM D7175-AASHTO T315</u> G*/Sin δ, Min., 2.20 kPa Test Temp. @ 10 rad/s, °C | 58 | 64 | 70 | 76 |
| Pressure Aging Vessel Residue (<u>ASTM D6521-AASHTO R28</u>) | | | | |
| PAV Aging Temperature, °C | 100 | 100 | 110 | 110 |
| Dynamic Shear <u>ASTM D7175-AASHTO T315</u> G*·Sin δ, Max., 5000 kPa Test Temp. @ 10 rad/s, °C | 22 | 28 | 34 | 34 |
| Creep Stiffness, <u>ASTM D6648-AASHTO T313</u> (Note 3) S, Maximum, 300.0 Mpa m-value, Minimum, 0.300 Test Temp. @60s, °C | -12 | -6 | 0 | -6 |

| | | | | |
|--|-----|----|---|----|
| Direct Tension, ASTM D6723 AASHTO T314 (Note 3) Failure Strain, Minimum 1.0% Test Temp. @ 1.0 mm/min. °C | -12 | -6 | 0 | -6 |
|--|-----|----|---|----|

On all Grades Flash Point Temperature [ASTM D92](#)[AASHTO T48](#): Minimum 230 °C and Mass Loss, Maximum 1.00 percent.

NOTES:

(1) This requirement may be waived at the discretion of the specifying agency if the supplier warrants that the asphalt binder can be adequately pumped and mixed at temperatures that meet all applicable safety standards.

(2) For quality control of unmodified asphalt cement production, measurement of the viscosity of the original asphalt cement may be substituted for dynamic shear measurements of $G^*/\sin(\delta)$ at test temperatures when the asphalt is a Newtonian fluid. Any suitable standard means of viscosity measurement may be used, including capillary or rotational viscometer ([ASTM D4402](#)-[AASHTO T210](#) or [AASHTO T202](#)).

(3) If the Creep Stiffness is below 300 MPa, the direct tension test is not required. If the Creep Stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the Creep Stiffness requirement. Direct tension test is recommended for polymer modified asphalt binders. The m-value requirement must be satisfied in all cases.

Polymer modified paving asphalt shall be classified by the Performance Grading System and shall conform to the requirements set forth in Table 711-2 and AASHTO M320 with the PAV temperature changes noted herein this table.

| TABLE 711-2 | | | |
|---|-------------------------|-------------------------|-------------------------|
| PERFORMANCE GRADING SYSTEM | | | |
| | <u>PG 64-28P</u> | <u>PG-76-22P</u> | <u>PG76-22TR</u> |
| <u>Viscosity AASHTO T316 (Note 1)</u> <u>Max. 3 Pa-s, Test Temp, °C</u> | <u>135</u> | <u>135</u> | <u>135</u> |
| <u>Dynamic Shear AASHTO T315 (Note 2)</u> <u>G*/Sin δ, Min., 1.0 kPa</u> <u>Test Temp. @ 10 rad/s, °C</u> | <u>64</u> | <u>76</u> | <u>76</u> |
| <u>Elastic recovery D-6084 procedure</u> <u>"B" @ 25°C</u> <u>"B" @ 10°C</u> | <u>65</u> | <u>65</u> | <u>55</u> |
| <u>Phase Angle, Max</u> | <u>75</u> | <u>75</u> | <u>75</u> |
| <u>Separation test, Texas 540 % Max</u> | <u>4</u> | <u>4</u> | <u>4</u> |
| <u>Dynamic Shear AASHTO T315</u> <u>G*/sin δ, Min., 2.20 kPa</u> <u>Test Temp. @ 10 rad/s, °C</u> | <u>64</u> | <u>76</u> | <u>76</u> |
| <u>PAV Aging Temperature, °C</u> | <u>100</u> | <u>110</u> | <u>110</u> |
| <u>Dynamic Shear AASHTO T315</u> <u>G* sin δ, Max., 5000 kPa</u> <u>Test Temp. @ 10 rad/s, °C</u> | <u>22</u> | <u>31</u> | <u>31</u> |
| <u>Mass Loss, AASHTO T240 Weight % Max</u> | <u>1.0</u> | <u>1.0</u> | <u>1.0</u> |
| <u>M-value AASHTO T313 0300 Min</u> | <u>-18</u> | <u>-12</u> | <u>-12</u> |

| | | | |
|---|------------|------------|------------|
| <u>Creep Stiffness, AASHTO T313</u> <u>S, Maximum, 300.0 Mpa</u> <u>m-value, Minimum, 0.300</u> <u>Test Temp. @60s, °C</u> | <u>-18</u> | <u>-12</u> | <u>-12</u> |
| <u>Direct Tension, AASHTO T314 (Note 3)</u> <u>Failure Strain, Minimum 1.0%</u> <u>Test Temp. @ 1.0 mm/min. °C</u> | <u>-18</u> | <u>-12</u> | <u>-12</u> |

On all Grades Flash Point Temperature AASHTO T48: Minimum 230 °C and Mass Loss, Maximum 1.00 percent.

NOTES:

(1) This requirement may be waved at the discretion of the specifying agency if the supplier warrants that the asphalt binder can be adequately pumped and mixed at temperatures that meet all applicable safety standards.

(2) For quality control of unmodified asphalt cement production, measurement of the viscosity of the original asphalt cement may be substituted for dynamic shear measurements of $G^*/\sin(d)$ at test temperatures when the asphalt is a Newtonian fluid. Any suitable standard means of viscosity measurement may be used, including capillary or rotational viscometer (AASHTO T210 or AASHTO T202).

(3) If the Creep Stiffness is below 300 MPa, the direct tension test is not required. If the Creep Stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the Creep Stiffness requirement. Direct tension test is recommended for polymer modified asphalt binders. The m-value requirement must be satisfied in all cases.

~~Design Note: Performance Grade Asphalts are selected for certain reliabilities with respect to high and low pavement temperatures. The specified characteristics are based upon a loading frequency that approximates vehicle speeds of approximately 90 km/hr. Since all binders are frequency dependent, the designer may consider increasing the high temperature requirement for slow transient and standing loads, such as intersection loading. The high temperature requirement may also be increased for excessive numbers of equivalent single axle loads.~~

711.3 TEST REPORT AND CERTIFICATION:

At the time of delivery of each shipment of asphalt, the supplier supplying the material shall deliver to the purchaser 3 certified copies of the test report which shall indicate the name of the refinery and supplier, type and grade of asphalt delivered, date and point of delivery, quantity delivered, delivery ticket number, purchase order number, and results of the above specified tests. The test report shall be signed by an authorized representative of the supplier certifying that the product delivered conforms to the specifications for the type and grade indicated.

Until the certified test reports and samples of the material have been checked by the Engineer, that material will be only tentatively accepted by the Contracting Agency. Final acceptance will be dependent upon the determination of the Engineer that the material involved fulfills the requirements prescribed. The certified test reports and the testing required in connection with the reports shall be at no additional cost to the Contracting Agency.

711.4 TEMPERATURES:

Paving asphalt shall be heated in such a manner that steam or hot oils will not be introduced directly into the paving asphalt during heating.

711.5 CONVERSION OF QUANTITIES:

When pay quantities of paving asphalt are determined from volumetric measurements, the volumetric measurement at any temperature shall be reduced to the volume the material would occupy at 60 degrees F. in accordance with ASTM D-1250. In converting volume to weight, the computations shall be based on Table 711-3.

| TABLE 711-3 | | |
|------------------------------------|-------------------------|------------------------|
| ASPHALT CEMENT QUANTITY CONVERSION | | |
| Grade of Material | Gals. Per Ton of 60 °F. | Lbs. Per Gal at 60 °F. |
| PG 58-22 | 236 | 8.47 |
| PG 64-16 | 235 | 8.5 |
| PG 70-10 | 235 | 8.5 |
| <u>PG 64-28P</u> | <u>236</u> | <u>8.47</u> |
| <u>PG 76-22P,TR</u> | <u>236</u> | <u>8.47</u> |
| <u>PG 76-16</u> | <u>233</u> | <u>8.6</u> |

- End of Section -

Report to MAG Technical committee
Meeting on April 25th 2013 Working Group meeting
By chairman, Jeff Benedict

The meeting was called to order at noon on April 25th.

In attendance: Scott Thompson (ATC), Mike Whitman (WTI), Phil Feliz (WTI), Trey Billingsley (Southwest Asphalt), Brian Galimore (WSP), Terry Reiben (S&S Paving), Brad Parker (Mesa Materials), Syd Anderson (Phoenix), Peter Kandarlis (DGA Consulting), Jeff Hearne, James Carusone (SRMG), Bob Herz, (MCDOT), Dan Selby (Asphalt Busters) and Gordon Tyus (MAG)

Introductions were made and goals were reviewed.

Case 13-02 No changes were recommended, the case should be voted on in the main committee next month.

Case 13-03 Asphalt concrete overlay section 321.8.6 is to be voted on next month.

Case 13-09 A discussion on 321's penalty tables took place it was recommended that Brian Galimore and James Carusone will meet with Bob Draper (Mesa) and work up a version to bring to the full committee. The draft of the City of Mesa's was reviewed and it was viewed as a good starting point. The group further decided that in lieu of an "engineering analysis" a third party lab evaluation is recommended to be included.

Section 711 with new Polymer modified Asphalt specifications was discussed. It is decided to change some formatting issues and to send it to the full committee.

Section 325 "Rubber Overlay" was discussed. Syd Anderson will ask for a meeting to review the section and bring any recommended changes to the working group. Phil Feliz and Jeff Benedict will meet with the City personnel to discuss.

Adjustments to utility frames and covers were discussed. It was agreed that it should stay in section 345 and detail 422 with language to allow for overlay construction. Brian Galimore is going to provide the language.

The meeting was adjourned at 1:00 p.m.

The next working group meeting will be May 25th 2013 at 12:00 p.m. at the ARPA meeting room.

MAG Concrete Working Group

Thursday, April 25, 2013, 1:30 pm at the ARPA Offices

Meeting Notes

Present:

See attached attendance sheet.

Discussion:

- 1) MAG Section 340 Draft Revision – Peter Kandaris. We reviewed the last revision and discussed some additional clarification wording to several items – particularly comments by McDOT and Table 340-1. Peter will work on a final revision to bring to the MAG Committee for Case introduction.
- 2) Revision of Section 324 on Portland Cement Concrete Paving – Jeff Hearne. We discussed the relationship between flexural and compressive strength in response to Bob Herz concerns on the design of pavement sections. Jeff Hearne will investigate and provide documentation on the relationship to substantiate the proposed revision to compressive strength in the Standard. Work will continue on determining the appropriate ASTM Standards for joint materials.

Date for Next Meeting:

The next meeting is scheduled for **May 23, 2013 @ 1:30 pm** in the ARPA offices.
(Following the Asphalt and Materials Working Group meetings)

Any and all participants are welcome and encouraged to be involved.

Attendance
Initials

MAG Concrete Working Group

Thursday, April 25, 2013

| | | | | | |
|-----------|-----------------|--------------------|-------------------------------------|--------------|--|
| GT | Gordon Tyus | MAG | Maricopa Association of Governments | 602-254-6300 | GTyus@azmag.gov |
| BH | Bob Herz | McDOT | Maricopa County | 602-506-4760 | rherz@mail.maricopa.gov |
| | John Shi | McDOT | Maricopa County | | johnshi@mail.maricopa.gov |
| | Jacob Rodriguez | Utility | Salt River Project | 602-236-8613 | jacob.rodriguez@srpnet.com |
| SA | Syd Anderson | Municipality | City of Phoenix | 602-495-2047 | syd.anderson@phoenix.gov |
| | Don Hansen | Municipality | City of Chandler | 480-215-9264 | don.hansen@chandleraz.gov |
| | Bob Draper | Municipality | City of Mesa | 480-644-3822 | bob.draper@mesaaz.gov |
| | Rob Godwin | Municipality | City of Goodyear | 623-693-2457 | rob.godwin@goodyearaz.gov |
| | Troy Tobiasson | Municipality | City of Goodyear | 623-882-7979 | troy.tobiasson@goodyearaz.gov |
| | Brian Barnes | Municipality | City of Goodyear | 623-882-7501 | brian.barnes@goodyearaz.gov |
| | Scott Zipprich | Municipality | Town of Buckeye | 623-547-4661 | scott@scoutten.com |
| | Brandon Forrey | Municipality | City of Peoria | 623-773-7201 | brandon.forrey@peoriaaz.gov |
| BG | Brian Gallimore | Contractor | WSP Inc | 623-434-5050 | bgallimore@wspinc.net |
| | Kwigs Bowen | NUCA | Fishel Contracting | 480-775-3943 | hlbowen@teamfishel.com |
| JH | Jeff Hearne | Producer | Salt River Materials Group | 480-850-5757 | jhearne@srmaterials.com |
| | Mike Kohout | Producer | Cemex | 602-220-5631 | mkohout@cemexusa.com |
| | Robert Barkley | Producer | Hanson Aggregates of Arizona | 602-685-3436 | robert.barkley@hansen.biz |
| | Tom Romero | Producer | CPC Southwest Materials | 520-744-3222 | tromero@calportland.com |
| | Adrian Green | Producer | Vulcan Materials | 602-528-8692 | greenaj@vmcmail.com |
| | Tom Villa | Producer | Drake Materials | 480-607-3999 | tvilla@drakematerials.com |
| | Angelo Trujillo | Producer | BASF Admixtures | 480-824-3733 | angelotrujillo@cox.net |
| | Charles Moses | Producer | Jensen Precast | 775-287-7275 | cmoses@jensenprecast.com |
| | David Allen | Producer | Boral Materials | 602-861-5100 | david.allen@boral.com |
| JB | Jeff Benedict | Producer | Valero Energy Corp | 520-777-2456 | Jeff.Benedict@valero.com |
| | Nathan Angel | Producer | Superlite Block | 602-818-3937 | Nathan.Angel@oldcastle.com |
| | Charles Taylor | Producer | Oldcastle | 770-715-8901 | chuck.taylor@oldcastle.com |
| | Matthew Marcus | Testing Laboratory | Ninyo & Moore | 602-243-1600 | mmarcus@ninyoandmoore.com |
| | William Smith | Testing Laboratory | Terracon | 480-897-8200 | whsmith@terracon.com |
| ST | Scott Thompson | Testing Laboratory | Cardno ATC | 602-290-0840 | scott.thompson@cardno.com |
| | Don Cornelison | Testing Laboratory | Speedie and Associates | 602-997-6391 | dcornelison@speedie.net |
| | Greg Creaser | Testing Laboratory | Speedie and Associates | 602-447-6391 | gcreaser@speddie.net |
| | Raphael Tixier | Testing Laboratory | Western Technologies Inc. | 602-437-3737 | r.tixier@wt-us.com |
| | Mike Whitman | Testing Laboratory | Western Technologies Inc. | 602-437-3737 | mike.w@wt-us.com |
| | Phillip Feliz | Testing Laboratory | Western Technologies Inc. | 602-437-3737 | phil.f@wt-us.com |
| | Ed Weaver | Consultant | ASU - CIM | 480-297-7501 | Edwin.Weaver@asu.edu |
| PK | Peter Kandaris | Consultant | DGA | 602-236-8613 | pkandaris@dgacon.com |
| | Jim Willson | Consultant | Consultant | 602 290-9585 | cementaz@cox.net |
| | Steve Trussel | ARPA | Arizona Rock Products Association | 602-271-0346 | steve@azrockproducts.org |
| | | | | | |
| | | | | | |
| | | | | | |

LIST OF MEMBERS
For
MAG Standard Specifications and Details Committee

Page 1 of 4
April 2013

AGENCY MEMBERS

CITY OF AVONDALE

Engineering Department
11465 W. Civic Center Drive, Suite 120
Avondale, Arizona 85323-6804

Jim Badowich (Vice Chair)
Phone: (623) 333-4222
Fax: (623) 333-0420
E-mail: jbadowich@avondale.org

TOWN OF BUCKEYE

530 East Monroe Avenue
Buckeye, AZ 85326

Scott Zipprich
Phone: (623) 349-6217
FAX: (623) 349-6221
E-mail: szipprich@buckeyeaz.gov

CITY OF CHANDLER

Public Works Department
Mail Stop 411, P.O. Box 4008
Chandler, Arizona 85244-4008

Warren White, P.E.
Phone: (480) 782-3337
FAX: (480) 782-3350
E-mail: warren.white@chandleraz.gov

CITY OF EL MIRAGE

Engineering Department
12145 NW Grand Avenue
El Mirage, AZ 85335

Antonio Hernandez
Phone: (623) 980-9987
E-mail: ahernandez@cityofelmirage.org

TOWN OF GILBERT

90 E. Civic Center Dr.
Gilbert, Arizona 85296

Tom Condit, PE
Phone: (480) 503-6815
FAX: (480) 503-6170
E-mail: tom.condit@gilbertaz.gov

CITY OF GLENDALE

Engineering Department
5850 West Glendale Avenue – Suite 315
Glendale, Arizona 85301

Mark Ivanich, P.E.
Phone: (623) 930-3654
FAX: (623) 915-2861
E-mail: mivanich@glendaleaz.com

CITY OF GOODYEAR

Engineering Department
195 N. 145th Avenue, Building D
Goodyear, Arizona 85338

Troy Tobiasson
Phone: (623) 882-7979
FAX: (623) 882-7949
E-mail: troy.tobiasson@goodyearaz.gov

**MARICOPA COUNTY DEPARTMENT OF
TRANSPORTATION**

2901 West Durango
Phoenix, Arizona 85009-6357

Bob Herz
Phone: (602) 506-4760
FAX: (602) 506-5969
E-mail: rherz@mail.maricopa.gov

LIST OF MEMBERS
For
MAG Standard Specifications and Details Committee

Page 2 of 4
April 2013

CITY OF MESA

Engineering Design Division
20 E. Main Street, PO Box 1466
Mesa, Arizona 85211-1466

Bob Draper, P.E.
Phone: (480) 644-3822
FAX: (480) 644-3392
E-mail: Bob.Draper@mesaaz.gov

CITY OF PEORIA

Public Works / Utilities Department
8401 West Monroe Street
Peoria, Arizona 85345

Javier Setovich
Phone: (623) 773-7734
FAX: (623) 773-7223
E-mail: Javier.Setovich@peoriaaz.gov

CITY OF PHOENIX

Water Services Department
200 W. Washington Street, 8th Floor
Phoenix, Arizona 85003

Jami Erickson
Phone: (602) 261-8229
FAX: (602) 495-5843
E-mail: jami.erickson@phoenix.gov

CITY OF PHOENIX

Street Transportation Department
200 W. Washington Street, 5th Floor
Phoenix, Arizona 85003-1611

Syd Anderson
Phone: (602) 495-2047
FAX: (602) 495-2016
E-mail: syd.anderson@phoenix.gov

CITY OF SCOTTSDALE

9191 E. San Salvador Drive
Scottsdale, Arizona 85258

Rodney Ramos, P.E.
Phone: (480) 312-5641
FAX: (480) 312-5539
E-mail: rros@scottsdaleAZ.gov

CITY OF SURPRISE

Public Works Department
16000 N Civic Center Plaza
Surprise, Arizona 85374-7470

Jason Mahkovtz, P.E.
Phone: (623) 222-6147
FAX: (623) 222-6006
E-mail: Jason.Mahkovtz@surpriseaz.gov

CITY OF TEMPE

Public Works Department
31 E. 5th Street
Tempe, Arizona 85281

Tom Wilhite, P.E. (Chair)
Phone: (480) 350-2921
FAX: (480) 350-8591
E-mail: tom_wilhite@tempe.gov

TOWN OF YOUNGTOWN

12030 Clubhouse Square
Youngtown, Arizona 85363

Gregory Arrington
Phone: (623) 933-8286
Cel: (623) 640-8441
E-mail: garrington@youngtownaz.org

VALLEY METRO

101 N. First Avenue, Suite 1100
Phoenix, Arizona 85003

Harvey Estrada
Phone: (602) 495-4514
E-mail: hestrada@valleymetro.org

LIST OF MEMBERS
For
MAG Standard Specifications and Details Committee

Page 3 of 4
April 2013

ADVISORY MEMBERS

ASSOCIATIONS:

ARIZONA ROCK PRODUCTS ASSOCIATION

1825 W. Adams, Phoenix, Arizona 85007

Phone: (602) 271-0346 FAX: (602) 252-5870

Valero Energy Corp.
P.O. Box 2179
Coolidge, AZ 85128

Jeff Benedict
Phone: (520) 777-2456
Cell: (602) 989-6121
E-mail: Jeff.benedict@valero.com

Salt River Materials Group
8800 E. Chaparral Road, Ste 155
Scottsdale, Arizona, 85250

Jeff Hearne
Phone: (480) 850-5757
Mobile: (602) 321-6040
FAX: (480) 850-5758
E-mail: jhearne@srmaterials.com

ASSOCIATED GENERAL CONTRACTORS:

1825 W Adams Street, Phoenix, Arizona

Phone: (602) 252-3926

WSP, Inc.
7777 N. 70th Avenue
Glendale, Arizona 85027

Brian Gallimore
Phone: (623) 434-5050
FAX: (623) 434-5059
E-mail: bgallimore@wspinc.net

Vulcan Materials Company
2526 East University Drive
Phoenix, AZ 85034

Adrian Green
Phone: (602) 528-8692
Cell: (602) 721-1456
E-mail: greenaj@vmcmail.com

LIST OF MEMBERS
For
MAG Standard Specifications and Details Committee

Page 4 of 4
November 2012

NATIONAL UTILITY CONTRACTORS ASSOCIATION OF ARIZONA:

P.O. Box 66935, Phoenix, Arizona 85082
Phone: (480) 775-3943 FAX: (602) 532-7573

NUCA
P.O. Box 66935
Phoenix, AZ 85082

Slade Ottney
Phone: (480) 775-3943
E-mail: sladeottney@yahoo.com

ALB Piping
27 S. Stapley Dr. Ste: A
Mesa, AZ 85204

Anthony Braun
Phone: (480) 753-1719
FAX: (480) 753-1799
E-mail: tbraun@albpiping.com

PUBLIC UTILITIES:

SALT RIVER PROJECT
P.O. Box 52025
Mail Station XCT317
Phoenix, Arizona 85072

Jacob Rodriguez
Phone: (602) 236-6459
E-mail: jacob.rodriguez@srpnet.com

INDEPENDENT:

DGA Consulting, PLLC
325 E. Southern, #109
Tempe, AZ 85282

Peter Kandarlis
Phone: (480) 273-9445
E-mail: pkandarlis@dgacon.com

PIPE RIGHT NOW, LLC.
7349 W. Camron Dr.
Peoria, AZ 85345

Paul R. Nebeker
Phone: (623) 979-5154
FAX: (623) 878-4484
E-mail: pnebeker@cox.net

MAG ADMINISTRATIVE STAFF

**MARICOPA ASSOCIATION
OF GOVERNMENTS**
302 N. 1st Avenue, Suite 300
Phoenix, Arizona 85003

Gordon Tyus
Phone: (602) 452-5035
FAX: (602) 254-6490
E-Mail: gtvus@azmag.gov