February 28, 2012

TO: Members of the MAG Standard Specifications and Details Committee

FROM: Troy Tobiasson, City of Goodyear, Chair

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Wednesday, March 7, 2012 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 Troy Tobiasson at 623-882-7979 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. Several cases are scheduled for action, so your attendance at the meeting is strongly encouraged.

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

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

MAG Standard Specifications and Details Committee
TENTATIVE AGENDA
March 7, 2012

COMMITTEE ACTION REQUESTED

1. Call to Order and Introductions

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

   2. Information.

3. Approval of February 1, 2012, Meeting Minutes

   3. **Review and approve minutes of the February 1, 2012 meeting.**

Cases Carried Forward from 2011

4. Case 11-02:
   Add an Asphalt Pavement Safety Edge option to Detail 201.

   4. Information and discussion.
   Sponsor: Bob Herz, Maricopa County

5. Case 11-03:
   Replace cadmium plated bolts referenced in Section 610.13 with zinc plated bolts as described in ASTM-B633.

   5. Information and discussion.
   Sponsor: Paul Nebeker, Javier Setovich

6. Case 11-12:
   Modifications to Regulatory Requirements, MAG Section 107.

   6. Information and discussion.
   Sponsor: Peter Kandaris

7. Case 11-14:
   Update Fire Hydrant Detail 360-1, and add Wet Barrel Option (360-2) and Details (360-3).

   7. Information and discussion.
   Sponsor: Scott Zipprich

8. Case 11-16:
   Modify Section 415: Steel Flexible Metal Guardrail.

   8. Information and discussion.
   Sponsor: Peter Kandaris

9.	Case 11-18: Update Section 350: Removal of Existing Improvements.	9. Information and discussion. Sponsor: Peter Kandaris
10.	Case 11-21: Add new Section 623: Special Bedding for Mainline Storm Drain Pipe.	10. Information and discussion. Sponsor: Syd Anderson
11.	Case 11-30: Update Section 702: Base Material. Revise Section 310: Untreated Base Course.	11. Information, discussion and possible action. Sponsors: Brian Gallimore, AGC Peter Kandaris, SRP

New Cases for 2012

12.	Case 12-01 Miscellaneous Corrections: A. Typographic corrections in Section 108.8.	12. Information and discussion.
13.	Case 12-02: Modify Section 710 Asphalt Concrete to include low traffic gyration levels.	13. Information and discussion. Sponsor: Jeff Benedict, ARPA
14.	Case 12-03: Revisions to Details 260-2: Driveway Entrances.	14. Information and discussion. Sponsor: Bob Herz, Maricopa County
15.	Case 12-04: Revisions to Section 317: Asphalt Milling.	15. Information and discussion. Sponsor: Jeff Benedict, ARPA
16.	Other New and Potential Cases for 2012 Discussion about new cases and that could be brought forward in 2012.	16. Information and discussion.

General Discussion

17.	Working Group Reports	17. Information and discussion.
	A. Water/Sewer Working Group Report on 2/21/2012 meeting.	A. Water/Sewer Chair: Jim Badowich, Avondale,
	B. Outside Right-of-Way Working Group Report on 2/21/2012 meeting.	B. Outside ROW Chair: Peter Kandaris, SRP
	C. Asphalt Working Group Report on 2/23/2012 meeting.	C. Asphalt Chair: Jeff Benedict, AGC
	D. Materials Working Group Report on 2/23/2012 meeting.	D. Materials Chair: Brian Gallamore, AGC
	E. Concrete Working Group Report on 2/23/2012 meeting.	E. Concrete Chair: Jeff Hearne, ARPA

18.	Staff Report ADA Workshop.	18. Information and discussion.
19.	Open General Discussion Members can report on any items of interest to the committee.	19. Information and discussion.
20.	Request for Future Agenda Items Topics or issues of interest that the Standard Specifications and Details Committee would like to have considered for discussion at a future meeting will be requested.	20. Information and discussion.
	Adjournment	

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

February 1, 2012

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

AGENCY MEMBERS

Jim Badowich, Avondale
Scott Zipprich, Buckeye
Warren White, Chandler
* Lance Calvert, El Mirage
Greg Crossman, Gilbert
Mark Ivanich, Glendale
Troy Tobiasson, Goodyear, Chair
Bob Herz, MCDOT
Bob Draper, Mesa
Javier Setovich, Peoria
* Syd Anderson, Phoenix (St. Trans.)
Jami Erickson, Phoenix (Water)
* Marc Palichuk, Queen Creek
Rodney Ramos, Scottsdale
Jason Mahkovtz, Surprise
Tom Wilhite, Tempe, Vice Chair
Jim Fox, Youngtown

ADVISORY MEMBERS

Jeff Benedict, ARPA
Tony Braun, NUCA
* Kwigs Bowen, NUCA
Brian Gallimore, AGC
Adrian Green, AGC
Jeff Hearne, ARPA
Peter Kandaris, SRP
* Paul R. Nebeker, Independent

MAG ADMINISTRATIVE STAFF

Gordon Tyus

* Members not attending or represented by proxy.

GUESTS/VISITORS

Arturo Chavarria, Hanson Pipe and Precast
Bob Erdman, Cutler Repaving
Art Glover, Flood Control District, Maricopa County
Michael Hook, ACPA
Yvonne Martinez, SRP

1. Call to Order

   Chairman Troy Tobiasson called the meeting to order at 1:30 p.m.

2. Call to the Audience

   No public comment was provided.

3. Approval of Minutes

   The members reviewed the January 4, 2012 meeting minutes. Jami Erickson noted that in the last paragraph in section 15 should read AUCC instead of ACI. Greg Crossman introduced a motion to accept the minutes with the correction provided by Ms. Erickson. Scott Zipprich seconded the motion. A voice vote of all ayes and no nays was recorded.

Review of 2011 Carry Forward Cases

4. Case 11-02 – Safety Edge Detail

   Add an Asphalt Pavement Safety Edge option to Detail 201. Bob Herz handed out a new detail drawing dated 2/1/12 that showed revised safety edge sections for both overlay and new pavement based on the county's experience with a shoe recently received. He said the revisions were based on the edge produced by the shoe with dimensions of 8" wide and 5" deep. He also said they tried constructing the edge without a shoe, and had difficulty getting compaction. Maricopa County decided to keep the thickened edge detail and add the safety edge overlay. They will be testing this method on a demonstration project in March. Mr. Benedict asked Mr. Herz about existing construction projects. He replied that they will likely be sending out revised details similar to the one provided to the committee, but that the details were still a work in progress. Tom Wilhite asked if there would be changes to the written specifications. Mr. Herz said that there likely would, but that he was going to wait until after their demonstration project and make changes based on their experience with it.

5. Case 11-03 – Replace Cadmium Plated Bolts.

   Replace cadmium plated bolts referenced in Section 610.13 with zinc plated bolts as described in ASTM-B633. Paul Nebeker was not present; however, Scott Zipprich said this case was discussed at the last water/sewer working group meeting. He suggested the working group make updates to the case and resubmit it to the committee. Jim Badowich agreed. It was discussed to not just remove cadmium bolts, but provide options for several types of bolts used in the field including specifications for stainless steel bolts used by Phoenix.

6. Case 11-12 – Modifications to Regulatory Requirements, MAG 107

   Add references to Arizona native plant requirements and update references to state statutes. Mr. Kandaris said this case was discussed at the last outside right-of-way meeting. Since contractors must follow all state statutes, he suggested that maybe this section should be

more general in nature, rather than specifying certain specific regulatory requirements. It also is difficult to keep up-to-date as laws change, and there has been difficulty getting a legal review from member agencies. Mr. Kandaris said specific references could be removed and that he would review it to see about making it more general.

7. Case 11-14: Update Fire Hydrant Details

   Update Detail 360-1, and add Wet Barrel Option (360-2) and Details (360-3). Scott Zipprich said he did not have updated details yet, but that the case was discussed during the water/sewer meeting. The working group is working on a red-lined version, and he'd like to get comments back from the agencies and fire departments. Jim Badowich said the group discussed providing minimum clearances around hydrants. Mr. Herz suggested finding the most common to use as a default. Mr. Zipprich said Paul Nebeker suggested following the national fire code guidelines. Mr. Badowich mentioned that the group discussed removing thrust blocks and using joint restraints instead. He also discussed the concrete base for wet and dry barrel hydrants, which were added to ensure the hydrants shear if hit. He said the concrete bases also help maintain the correct grade height. Mr. Zipprich said they would continue to work on the details at the next working group meeting.

8. Case 11-16: Modify Section 415: Steel Flexible Metal Guardrail

   Update Section 415 based on the Maricopa County Supplement. Reference New Details. Peter Kandaris said recently updated guardrail details from Maricopa County were included in the packet. He said the county also updated one line in the specifications, which he would add. Scott Zipprich said Buckeye is putting in quite a few guardrails, and they use the county guardrail details along with ADOT's terminal details. Mr. Kandaris asked if the committee wanted to just reference the county details. Mr. Herz said an option would be for MAG to incorporate the county's entire guardrail specifications and details, and then MCDOT could remove it from their supplement. When asked if he expected any additional changes soon, Mr. Herz said he thought the height might change to 31" next year.

9. Case 11-18: Update Section 350: Removal of Existing Improvements

   Add language in Section 350.2 for utility removal, and payment requirements. Mr. Kandaris said he was waiting for comments from someone within SRP, and that it was discussed at the last working group meeting. He said one issue discussed was to look at the blue stake law regarding abandonments. Mr. Kandaris asked for comments and said he plans to have a revision ready for the next meeting.

10. Case 11-21: Add new Section 623: Special Bedding for Mainline Storm Drain Pipe

    Incorporate City of Phoenix supplement 623 into the MAG standards. Mr. Tyus said Syd Anderson emailed him a message that he would be unable to attend the meeting, and that he had not made any updates from the case in the packet. Jim Badowich said the water/sewer group discussed this case during their January meeting. They received comments from contractors and suppliers including representatives from Hanson Concrete Pipe. Much of the

discussion at the working group meeting was about the need to create trench system specifications based on two design scenarios: for rigid pipe, and flexible pipe. When MAG began to allow flexible pipe such as HDPE, it did not necessarily consider the difference in the trench, bedding and backfill for different materials. He said there needed to be more discussion about the pipe zones and clarify definitions. He also invited flexible pipe suppliers to attend the working group meetings. Warren White asked if this was an option, but not a requirement. The final intent was not clear. Troy Tobiasson said he liked the idea of thinking of it as a complete trench system.

11. Case 11-30: Update Section 702: Base Material and Section 310 Untreated Base Course

Update Section 702: Base Material. Revise for current standards. Brian Gallimore said he received comments from Goodyear about two weeks ago, and comments from Glendale before the meeting. To address Goodyear's comments, he said the latest version of the case changed the fractured face requirement from 30% back to 50% as it currently is. This was an issue with Glendale and Mesa as well. He asked Glendale and other agencies to review and provide any further comments. Mark Ivanich said the lab personnel in Glendale were reviewing the case now. Bob Draper of Mesa asked about the reference to a P.I. value white paper. Mr. Kandaris said it was included in the August 2011 agenda, and that he could provide him a copy. Mr. Gallimore asked for any more comments and said he would like to vote on the case at the next meeting

New 2012 Cases

12. Case 12-01: Miscellaneous Corrections

A. Correct Warrantee to Warranty in Section 108.8. Gordon Tyus said that he received comments from a former MAG employee, noting the spelling of WARRANTEE in Section 108.8 should be WARRANTY since it is referring to the warranty itself, not the person receiving the warranty. Warrantees also should be spelled warranties, and he noted a space was needed to fix a typographic error. This was submitted as the first of the miscellaneous corrections cases for 2012.

13. Case 12-02: Asphalt Concrete Low Traffic Gyration Levels

Modify Section 710 Asphalt Concrete to include low traffic gyration level specifications. Jeff Benedict said a rough draft was included in the packet, but that they are working on revising and clarifying the language, with the intent to bring back an updated version including a cover memo as a case at the next meeting. Mr. Benedict also asked Mr. Herz to have Jon Shu at the county review the draft, and also invited Mr. Shu to attend the asphalt working group meetings.

14. Case 12-03: Revisions to Detail 250-2 DRIVEWAY ENTRANCES

Update Sidewalk Widths to 4' in Detail 250-2 Driveway Entrances. Bob Herz introduced this case based on the access board's likely recommended change of a minimum of 4' width of sidewalks for ADA requirements. Scott Zipprich said the committee should consider revising the details to allow a 4' width parallel to the edge of the slope line to reduce the total amount of concrete and size needed. The larger size could affect right-of-way, and placement of things such as street lights. Warren White said Chandler has a detail that drops the sidewalk down to keep it parallel. He said this was a good option for retrofit areas, and would supply it for review.

15. Other Potential Cases

Peter Kandaris introduced Yvonne Martinez, and said she was working on updating the rest of the ASTM references outlined by Mr. Tyus at the last meeting. He said she would eventually become his replacement as SRP's representative on the committee, and they expected to have the ASTM case ready to submit to the committee in April.

Jim Badowich asked about the milling and overlay technique used to reduce dust that was discussed at the last meeting. Brian Gallimore and Jeff Benedict did not expect a case to come out of it right away, but that it may be an option in the future.

16. Working Group Reports

Chair Tobiasson asked for reports from the working groups.

a. **Water/Sewer Issues Working Group**
Jim Badowich said the group met on January 17th, and that there was a good turnout. Much of the discussion was about the cases discussed earlier in the meeting. In addition, Scott Zipprich gave a presentation on his visit to a manufacturer of pre-cast manhole bases, and included information on methods of wet and dry casting. Bob Herz asked if the pre-cast bases were being considered for sewer or storm drain manholes. Mr. Badowich replied that they were developing them for sewer, but they would work for storm drain manholes as well. Scott Zipprich answered a question about how the floatation ring worked. Other discussion included alternative backfill methods. Mr. Zipprich commented that the table in Section 601 specifies bedding around the manhole but not underneath, so this should be updated. Mr. Herz said he believes they address bedding under structures in their supplement. Mr. Badowich also said pipe connections and overall updates to the manhole details are also being reviewed. The next meeting is scheduled for Thursday February 21st at 1:30 p.m. at the MAG office.

b. **Specifications and Details Outside the Right-of-Way Working Group**
Peter Kandaris said they met after the water/sewer group on January 17th. In addition to the cases already discussed, new potential cases being reviewed by the group include updating the geogrid specifications with ASTM modifications and other

updates. He noted that a popular type of geogrid will lose patent protection and become available from more suppliers this year.

Another potential case is to update the traffic control specifications, and possibly reference other agencies' barricade standards manuals. Phoenix is a popular one, although Mr. Herz said they update the MAG standards with their own standards. Brian Gallimore said the 2009 Manual on Uniform Traffic Control Devices (MUTCD) changed many "mays" to "shalls" and "wills." He explained that ADOT has an approved supplement to the MUTCD, which agencies should adopt in addition to the national manual in order to meet state law, and provide more flexibility. Peter Kandaris said he would get information from the county on its supplement.

Standardizing street sign bases was also an area that could help reduce agency supplements. Scott Zipprich asked if anyone had a detail for placing signs in the pavement, so that they would shear if hit. Some streets have stop signs in the street such as in Sun City and in areas with multiple lanes and no medians.

Finally, another case discussed (that may be ready later in the year) was updating chain link fence details to offer a choice of link gages and height options. The next meeting will follow the Water/Sewer Working Group meeting on February 21st.

c. **Asphalt Working Group**
Jeff Benedict said at the January 18th meeting the group outlined a to-do list for the year. This included collecting data for penalties required by different agencies, work on Section 710 as previously discussed, and a possible warm mix asphalt specification. He referenced a handout inviting members to attend a workshop put on by the Arizona AGC about this issue, on February 28th. Bob Herz asked if local suppliers could provide warm mix. Adrian Green said there would be many, and described how it has become a very popular method worldwide, and mentioned some other benefits.

There was also discussion at the working group meeting about new RAP specifications and using recycled materials in general. It was decided to move the discussion of recycled materials to the materials working group.

d. **Materials Working Group**
Brian Gallimore said they did not meet in person, but members did discuss updates to Section 310 via phone and email to address Goodyear's concerns. He is not planning a meeting this month unless additional comments on Case 11-30 are received. Mr. Gallimore did say they were planning to meet in March, and the agenda would include the topic of recycled materials including asphalt, concrete, base materials and CLSM.

e. **Concrete Working Group**
Jeff Hearne said the group met on January 18th at 1:30 p.m. at the ARPA office. Revisions to Section 702 were discussed, including whether to add recycled materials, but it was decided to complete the current case and tackle recycled materials as a separate issue. The group went over a list of sections for review and divided them up

with volunteers shown in the meeting notes included in the agenda packet. Mr. Hearne encouraged agency members to attend, and said the next meeting was scheduled for February 23rd at 1:30 p.m. at the ARPA office.

17. Staff Reports

Gordon Tyus said new members may want to speak with him after the meeting to have accounts set-up for ASTM access. He also said members not present at the January meeting can talk to him about getting a copy of the 2012 book.

18. Open General Discussion

Jeff Hearne suggested a method of tracking the review of the MAG book. The current table of contents shows when the section was last updated, but he said there may be sections that are reviewed by the committee or working groups, and determined that they were okay as they are. It would be nice to track the review of all the sections so members would know when a section was last looked at, and also when it may be due for another review.

He also said they have been getting good feedback about the online version of the MAG book. Jim Badowich asked if there was a way to quickly return to the table of contents in the specifications part of the book. Mr. Tyus said you can open the bookmarks side panel in Adobe Reader to have a quick link to the contents.

Tom Wilhite asked if any agencies had supplements for removable bollards. Warren White said Chandler had one that he would share. Mr. Wilhite said he did receive one from the flood control district.

Troy Tobiasson brought up the issue of testing procedures for asphalt materials. He said they have had problems in Goodyear with certain materials, and did not have any good tests available to diagnose material problems after construction. Adrian Green said his company uses a CALTRANS testing procedure (CT_227) for materials to determine their "cleanliness." It is a method for testing aggregates that doesn't require most labs to get new equipment, and should be used and as "indicator". Mr. Kandaris said that testing the mineralogy would help determine what is actually in the aggregate. The goal is to find testing methods to identify issues relating to inconsistent materials supplied from pits, before they are used by the contractors and become problems in the field.

19. Adjournment:

Mr. Tobiasson adjourned the meeting at 3:15 p.m.

2012 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 2011						
11-02	Case 11-02: Add an Asphalt Pavement Safety Edge option to Detail 201.	MCDOT	Bob Herz	01/05/2011 02/01/2012		0 0 0	Yes No Abstain
11-03	Case 11-03: Replace cadmium plated bolts referenced in Section 610.13 with zinc plated bolts as described in ASTM-B633.	Peoria	Paul Nebeker/ Javier Setovich	02/02/2011 07/13/2011		0 0 0	Yes No Abstain
11-12	Case 11-12: Modifications to Regulatory Requirements, MAG 107.	OROW WG/ SRP	Peter Kandaris	05/04/2011 02/23/2012		0 0 0	Yes No Abstain
11-14	Case 11-14: Update Fire Hydrant Detail 360-1, and add Wet Barrel Option (360-2) and Details (360-3).	Water/Sewer WG/ Buckeye	Scott Zipprich	07/13/2011 01/04/2012		0 0 0	Yes No Abstain
11-16	Case 11-16: Modify Section 415: Steel Flexible Metal Guardrail.	OROW WG/ SRP	Peter Kandaris	07/13/2011 02/23/2012		0 0 0	Yes No Abstain
11-18	Case 11-18: Update Section 350: Removal of Existing Improvements.	OROW WG/ SRP	Peter Kandaris	07/13/2011 02/23/2012		0 0 0	Yes No Abstain
11-21	Case 11-21: Add new Section 623: Special Bedding for Mainline Storm Drain Pipe.	Phoenix	Syd Anderson	07/13/2011 01/04/2012		0 0 0	Yes No Abstain
11-30	Case 11-30: Update Section 702: Base Material. Moved all ABC material to Section 310. Revise Section 310: Untreated Base Course. Revise for current standards. Update all references to Section 702. (Combined with previous Case 11-35.)	AGC/ Materials WG	Brian Gallimore	07/13/2011 02/13/2012	03/07/2012	0 0 0	Yes No Abstain

2012 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	
	NEW CASES FOR 2012						
12-01	Case 12-01: Miscellaneous Corrections A. Section 108 typographic errors	Goodyear	Troy Tobaisson	02/01/2012		0 0 0	Yes No Abstain
12-02	Case 12-02: Modify Section 710 Asphalt Concrete to include low traffic gyration levels.	ARPA/ Asphalt WG	Jeff Benedict	02/01/2012 02/24/2012		0 0 0	Yes No Abstain
12-03	Case 12-03: Revisions to Details 260-2: Driveway Entrances	MCDOT	Bob Herz	02/01/2012		0 0 0	Yes No Abstain
12-04	Case 12-04: Revisions to Section 317: Asphalt Milling	ARPA/ Asphalt WG	Jeff Benedict	02/28/2012		0 0 0	Yes No Abstain
12-05						0 0 0	Yes No Abstain

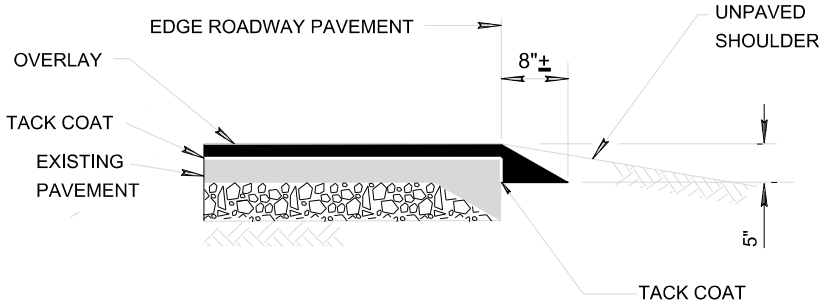
Add the following to Section 321:

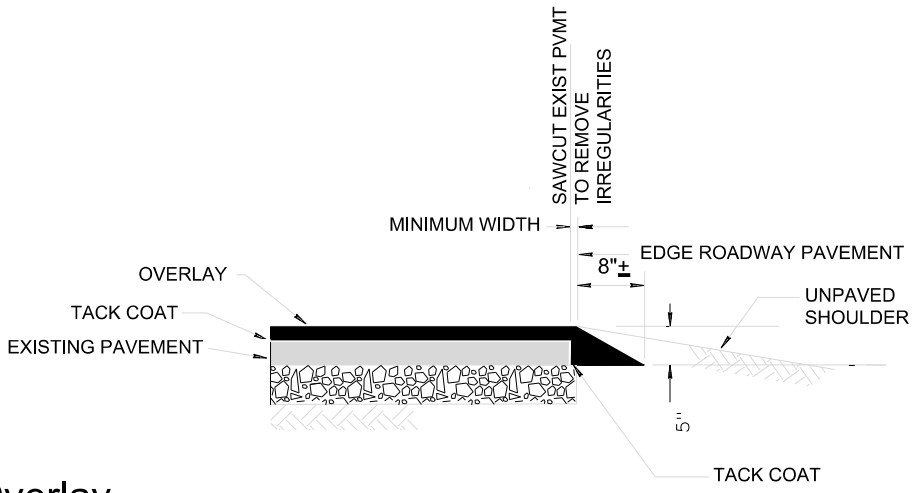
321.8.8 Safety Edge: Prior to commencing paving operations that require construction of a safety edge, the Contractor shall submit for the Engineer's approval construction procedures to be used for placement and compaction of the safety edge.

The finished safety edge slope shall be planar and form a 30° ± 5° angle with the horizontal plane. Due to the required final edge slope of the safety edge, compaction as required by sections 321.8.4 and 321.10 may not be attainable. When the approved procedures for placement and compaction of the safety edge are followed, the safety edge compaction shall be considered acceptable.

When the depth of the safety edge extends two inches or more below the bottom of the asphalt pavement base course, the portion below the base course shall be placed and compacted as a separate construction operation. The remaining portions of the safety edge shall be constructed as part of each successive asphalt lift (base, intermediate, and finishing courses). Construction of the base course may immediately follow compaction of the lower portion of the safety edge.

When the depth of the safety edge extends less than two inches below the bottom of the asphalt pavement base course, the portion below the base course may be placed and compacted with the base course in a single operation. The remaining portions of the safety edge shall be constructed as part of each successive asphalt lift (intermediate and finishing courses).





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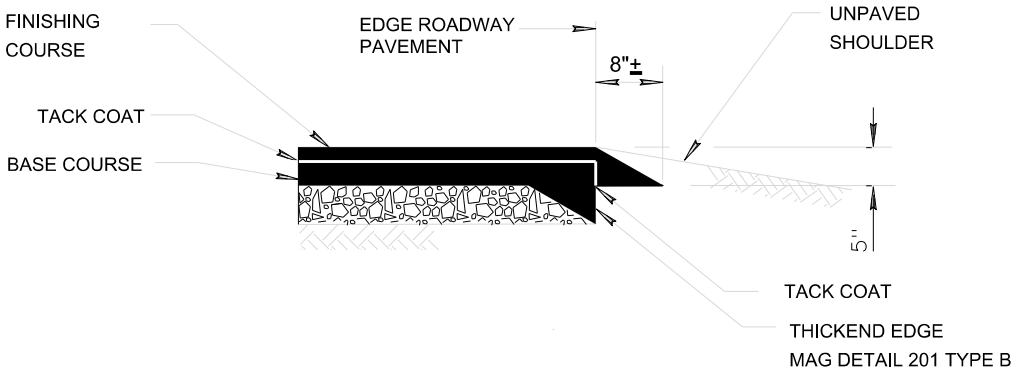


New and Widened Pavements

	ASPHALT PAVEMENT SAFETY EDGE	DATE: 2/1/2012	CASE 11-02

P.O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

Case 11-12

DATE: February 23, 2012

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, SRP Representative
Outside of Right-of-Way Working Group

RE: **Modifications to Regulatory Requirements, MAG 107**

Purpose: Section 107.1 selects arbitrary state statutes to highlight and has not kept up with changes to state statue changes. Delete specific ARS references and keep the general requirements. This section is typically covered by agency T&C, but should be kept to act as a generic default.

Revisions: Delete all paragraphs after the first in MAG 107.1. Modify the language to include materials. Simplify the indemnification language as there is a separate section for indemnification (Section 103.6.2). Provide language to allow the agency the option to request information verifying contractor compliance.

Note: Subsections 107.2 through 107.14 are not modified by this case.

SECTION 107

LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

107.1 COMPLIANCE WITH LAWS ~~TO BE OBSERVED~~:

The Contractor shall keep fully informed of, observe and comply with all Federal and State laws, County and City ordinances, regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. ~~He shall at all times observe and comply~~ The Contractor warrants that all items supplied and work performed under the contract have been sold, produced, delivered and furnished in strict compliance with all such laws, ordinances, regulations, codes, orders and decrees~~; and~~ to which the items, work and Contractor are subject. Upon request, Contractor shall execute and deliver to the Agency such documents as may be required by the Agency to evidence compliance with such laws, ordinances, regulations, codes, orders and decrees.

~~shall protect and indemnify~~Because the Contractor will be acting as an independent contractor, the Contracting Agency ~~and its representatives against any claim or liability arising from or based on the violation of such, whether by himself or his employees~~assumes no responsibility for the Contractor's acts.

~~The attention of the Contractors is directed to the provisions of the following sections, Arizona Revised Statutes.~~

~~(A) Arizona Revised Statutes 23-373. Contracts negotiated between public Contractors and public employers shall contain the following contractual provisions:~~

~~In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color or national origin. The aforesaid provision shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the contracting officer setting forth the provision of the nondiscrimination clause.~~

~~The Contractor further agrees to insert the foregoing provision in all subcontracts, except subcontracts for standard commercial supplies or raw materials.~~

~~(B) When Federal aid funds are used on a project, the prevailing basic hourly wage rates and fringe benefit payments, as determined by the Secretary of Labor pursuant to the provisions of the Davis-Bacon Act, shall be the minimum wages paid to the described classes of laborers and mechanics employed to perform the contract.~~

~~(C) Arizona Revised Statutes 40-360.22 Excavations: determining location of underground facilities; providing information. This statute requires that no person shall begin excavating before the location and marking are complete or the excavator is notified that marking is unnecessary and requires that upon notification, the owner of the facility shall respond as promptly as practical, but in no event later than two working days. The "Blue Stake Center" (263-1100) was formed to provide a more efficient method of compliance with this statute.~~

~~This section is not applicable to an excavation made during an emergency which involves danger to life, health or property if reasonable precautions are taken to protect underground facilities.~~

~~(D) Arizona Revised Statutes 40-360.23. Making excavations in careful, prudent manner: liability for negligence. This statute states that obtaining information as required does not excuse any person making any excavation from doing so in a careful and prudent manner nor shall it excuse such persons from liability for any damage or injury resulting from his negligence.~~

~~(E) Arizona Revised Statutes 40-360.28 Civil penalty; liability. If the owner or operator fails to locate, or incorrectly locates the underground facility, pursuant to this article, the owner or operator becomes liable for resulting damages, costs and expenses to the injured party.~~

~~(F) Arizona Revised Statutes 32-2313. Business license; business name; branch office registration; renewal. No person, partnership, corporation or association shall engage in the business of general pest or weed control without being duly licensed/certified by the Structural Pest Control Board.~~

P.O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

Case 11-16

DATE: February 23, 2012

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, SRP Representative
Outside of Right-of-Way Working Group

RE: **Section 415: Steel Flexible Metal Guardrail**

Purpose: The existing MAG guardrail standard (Section 415) is outdated and generally not followed by MAG agencies.

Revisions: Adopt MCDOT supplemental Section 415 in whole as a replacement section.

Work still needed: The MCDOT standard references an end buffer detail deleted from last year's MAG. It is recommended that the need for temporary end buffers reference the MUTCD for approach protection (sand or water filled drums).

Note: The revisions include standard modern guardrail materials and construction, but exclude oncoming traffic terminal end options as these seem to be where the most variety exists between agencies.

SECTION 415

FLEXIBLE METAL GUARDRAIL

415.1 DESCRIPTION:

~~This~~ The work under this section shall consist of furnishing all materials, constructing ~~metal beam~~new guard ~~rail~~ing, and delineating guardrail sections at the locations ~~and in accordance with the details~~ shown on the plans, and as ~~specified in the special provisions~~ per the requirements of this section.

415.2 MATERIALS ~~AND CONSTRUCTION~~:

~~Materials and construction for the railings shall conform to the following requirements:~~

The rail elements, ~~terminal sections,~~ bolts, nuts and other fittings shall conform to the specifications of AASHTO M-180, except as modified in this specification. ~~The edges and center of the rail element shall contact each post or block. Rail element joints shall be lapped not less than 12 1/2 inches and bolted.~~ The rail metal shall be open hearth, electric furnace, or basic oxygen steel and, in addition to conforming 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.

~~The ends of each length of railing shall be fitted with terminal sections.~~

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

All material shall be new.

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. Nails for retainer strap shall be 10 penny common, galvanized.

Bolts shall have shoulders of such shape as will 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.

Prismatic guardrail reflector tabs shall have a minimum thickness of 3/16", and be either galvanized steel or ultraviolet-resistant plastic. Prismatic guardrail-mounted barrier markers shall have an ultraviolet-resistant reflective surface, be secured to the body in accordance with the manufacturer's recommendations, and have a trapezoidal-shaped body as shown in the Reflector Tab Detail of Maricopa County Department of Transportation Standard Detail 3002.

~~Posts, including blocks, shall be construction grade, Douglas Fir, free of heart center.~~

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 8¼" 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 ½" 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". Only one type of post and block shall be used for any one continuous length of guardrail.

~~The posts and blocks~~All timber shall ~~be pressure treated~~have a preservative treatment ~~after fabrication with oil borne pentachlorophenol, or coppernaphthenate,~~ as ~~provided in~~per the requirements of Section 779.

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 requested by the Engineer. All materials shall be new except as provided for under the project plans.

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 where other post materials to be used are 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. ~~The~~ All metal work shall be fabricated in the shop.~~, and n~~No punching, cutting or welding ~~will be permitted~~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 ½" 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 ~~Rail elements shall be lapped so that the~~ exposed end~~s~~ toward oncoming ~~will not face approaching~~ traffic~~.~~ shall have a buffer end section (***MAG Standard Detail 135-4, Detail No. 5 Buffer End Section***) bolted securely in place together with approved overnight traffic control devices 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 directed by the Engineer. 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. The rail element shall have full bearing at joints. When the radius of curvature is 150 feet or less, the rail element~~s~~ shall be ~~shaped in the~~ shop curved.

~~Posts shall be placed at equal intervals, as shown on the plans, except that the end posts may be spaced closer to adjacent posts if directed by the Engineer.~~

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

~~Railing parts furnished under these specifications shall be interchangeable with similar parts regardless of source.~~

415.3.4 Bolted Guardrail Anchors: Where the elevation of the top surface of a 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 Details 3010-1 and 3010-2 at the locations shown on the plans.

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, including all materials, in accordance with the requirements of the project plans.

Nested guardrail consists of additional steel W-beam sections attached as an appurtenance to guardrail.

415.3.6 Guardrail to Structure Transitions: Guardrail transitions shall be constructed in accordance with the details shown on the project plans, at the locations shown on the plans

415.4 MEASUREMENT:

The limits of measurement for roadway guardrail shall be as detailed in Maricopa County Department of Transportation Standard Detail 3016 and as shown on the project plans. 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 end posts, exclusive of guardrail terminals, guardrail end terminal assemblies, and guardrail transitions and anchor assemblies.

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

The accepted quantities of bolted guardrail anchors, will be measured by the unit each, 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.

Nested guardrail, Type 1, 2, or 3, installed as an appurtenance to new guardrail, shall be measured by the linear foot of additional steel W-beam, installed using guardrail hardware, complete in place and accepted, as shown on the plans.

Guardrail transitions will be measured by the unit each, complete and accepted as shown on the project 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.

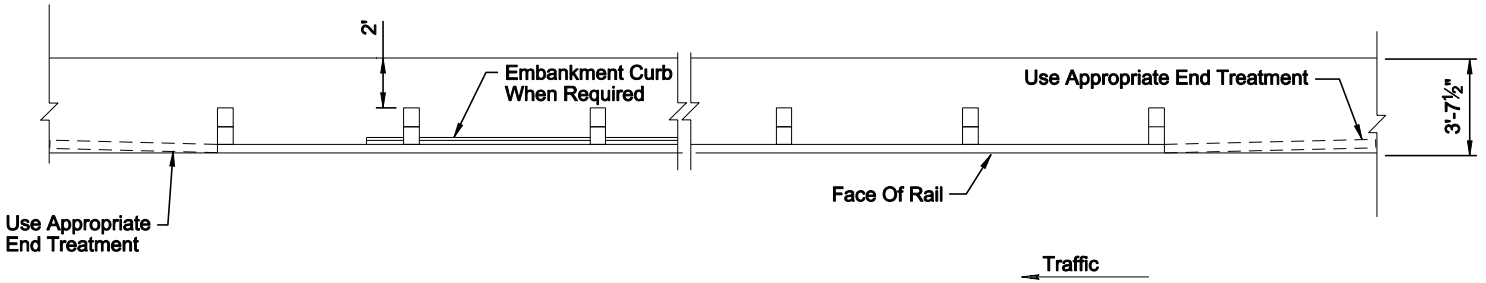
Payment for Bolted Guardrail Anchors will be at the contract unit price, and shall be full compensation for the work, complete in place, including steel brackets, hardware, excavation, backfill, removing and replacing surfacing, cutting and fitting steel beam posts or timber posts, drilling anchor bolt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

Payment for Additional Steel W-beam will be at the contract unit price.

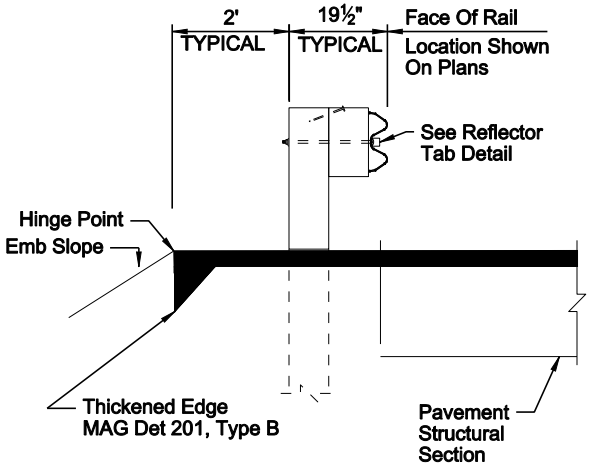
Payment for guardrail transitions will be at the contract unit price.

~~**415.3 PAINTING:**~~

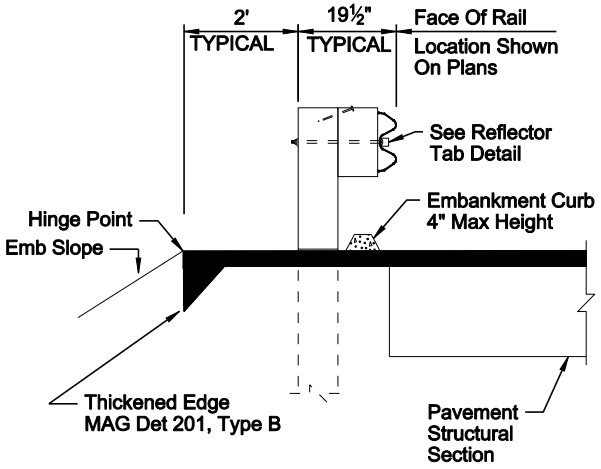
~~All metal surfaces of the guard rails shall have a zinc chromate prime coat and two coats of white enamel. The exposed portions of the wood posts shall have a wood primer and two coats of finish paint. Materials and application shall be as specified in Sections 790 and 530. Colors shall be as directed by the Engineer.~~



PLAN

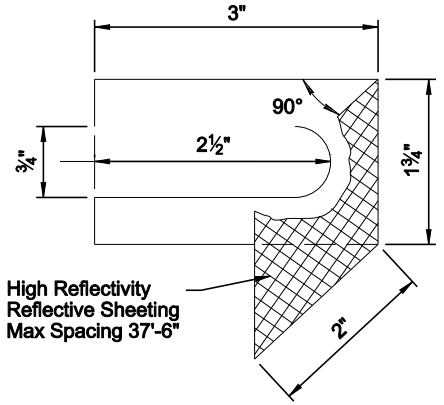


Without Curb



With Curb

SECTION



REFLECTOR TAB DETAIL

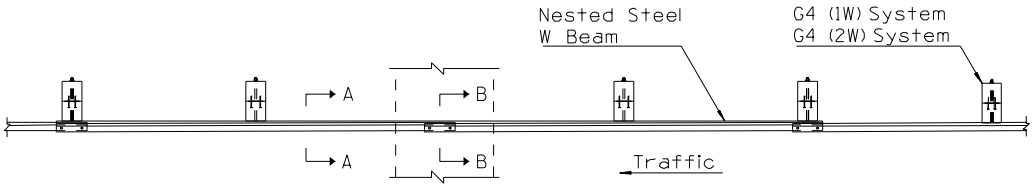
GENERAL NOTES

1. All Embankment Curb Shall Be Protected By Guard Rail.
2. Guard Rail Shall Extend Beyond The Limits Of Embankment Curb.
3. See Std. 3016 For Measurement Limits.
4. Asphalt Pavement Behind Face Of Rail Shall Be ≥ 2 Inches in Thickness

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION STANDARD DETAIL	GUARDRAIL INSTALLATION	DATE: 1/1/2011	DETAIL NO. 3002

GENERAL NOTES

1. ⬢ - Indicates ARTBA designation.



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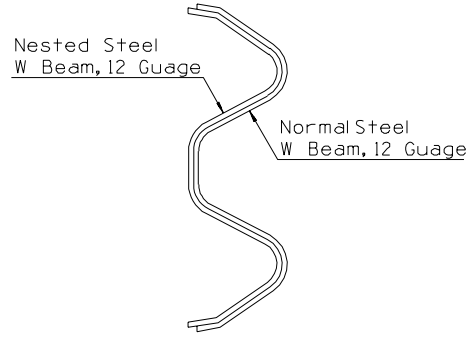
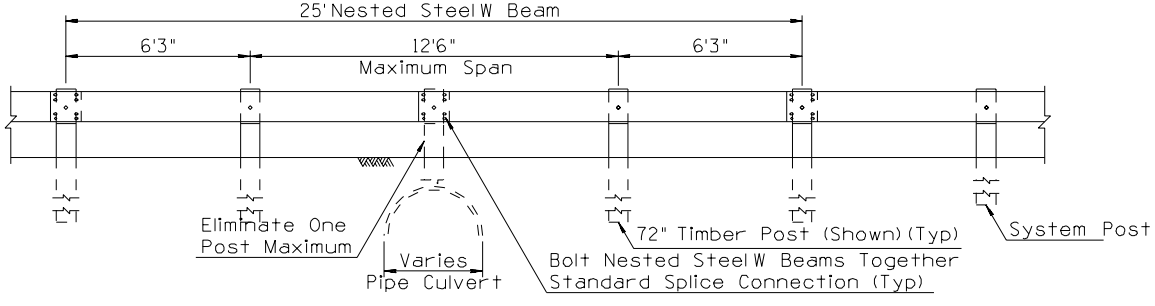
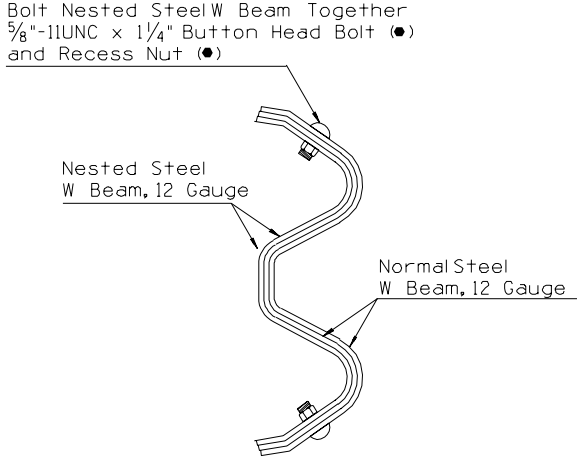


SECTION A-A



NESTED STEEL W BEAM - TYPE 1 - SHORT SPAN
(Splice Connection Inside Span) Length = 25'

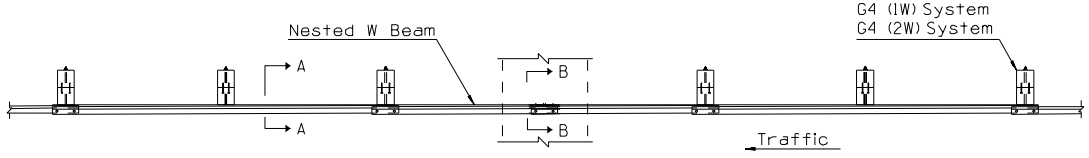
ELEVATION



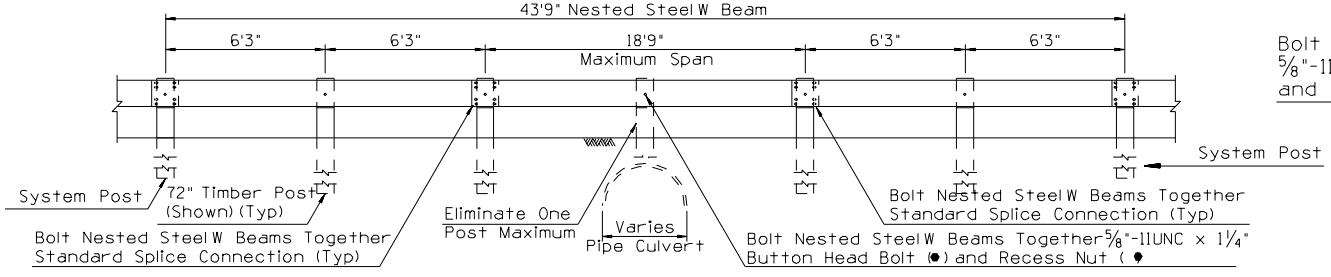
SECTION B-B

Base Drawing Courtsey of ADOT 2/25/00

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION **STANDARD DETAIL**	**NESTED GUARDRAIL TYPE 1**	**DATE:** 5/02/01	**DETAIL NO.** **3008–1**



PLAN

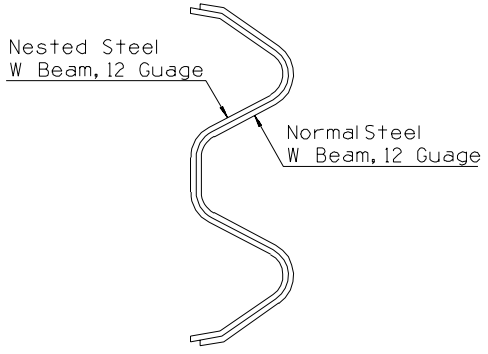


NESTED STEEL W BEAM - TYPE 2 - LONG SPAN
(Splice Connection Outside Span) Length = 43'9"

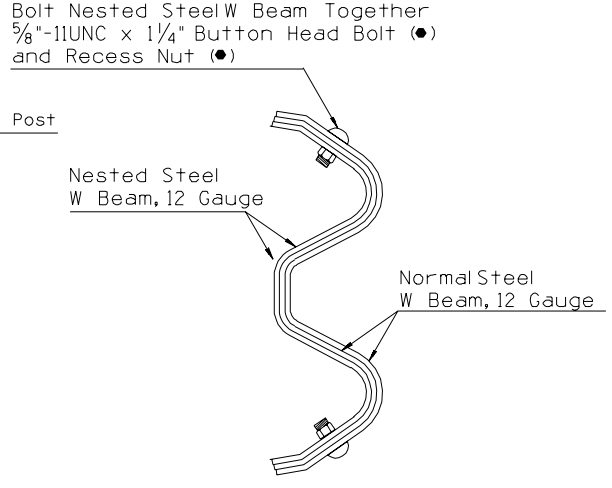
ELEVATION

GENERAL NOTES

1. ● - Indicates ARTBA designation.



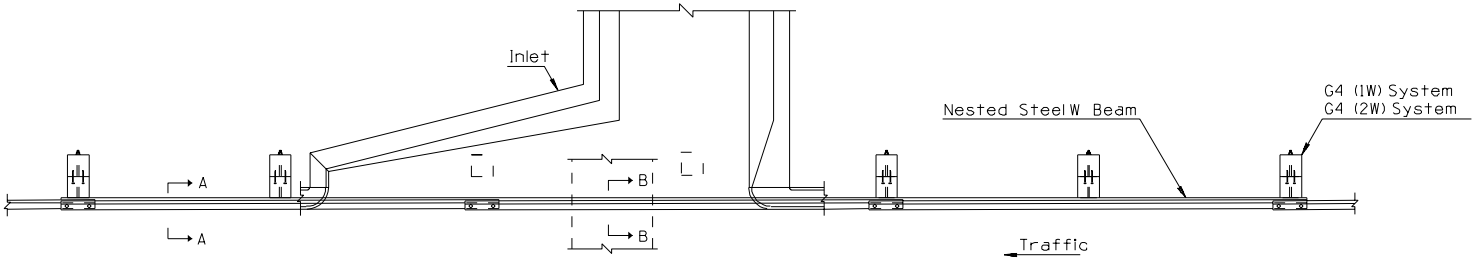
SECTION A-A



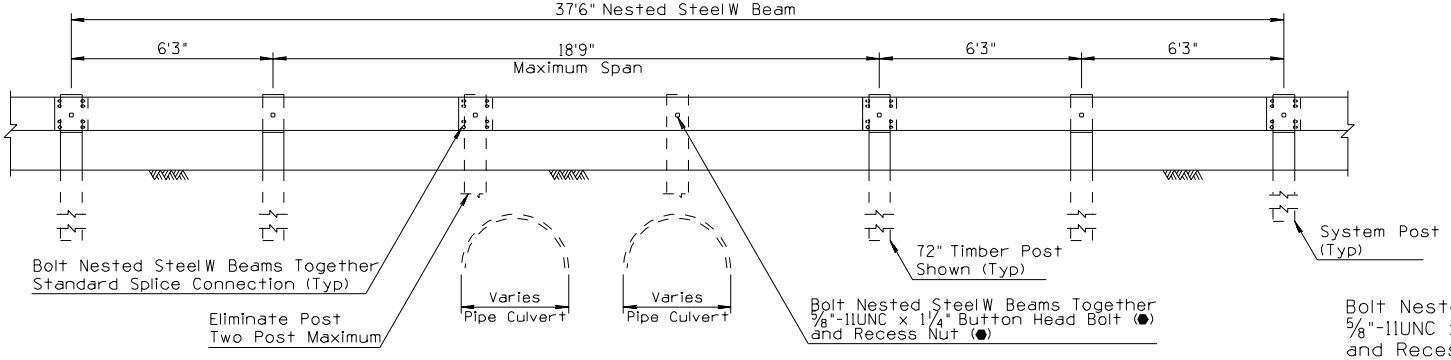
SECTION B-B

Base Drawing Courtsey of ADOT 2/25/00

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION **STANDARD DETAIL**	**NESTED GUARDRAIL TYPE 2**	**DATE: 6/27/01**	**DETAIL NO. 3008–2**



PLAN

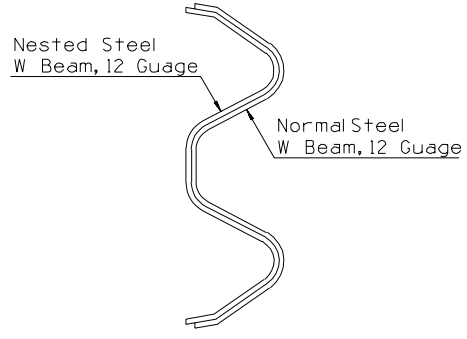


NESTED STEEL W BEAM - TYPE 3 - LONG SPAN
Length = 37'6"

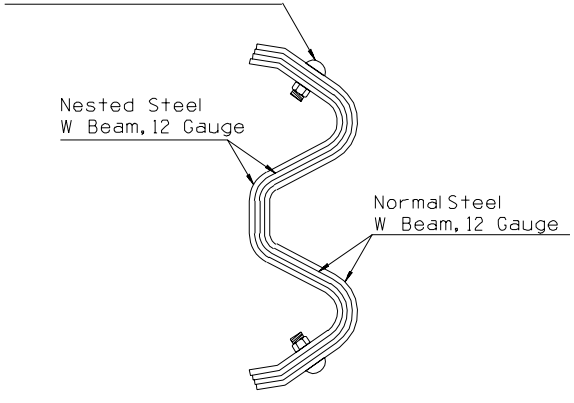
ELEVATION

GENERAL NOTES

1. Use Type 3 Nested Steel W Beam to span downdrain or spillway inlets as shown in the plan view.
2. Use Type 3 to span multiple obstructionsas shown in the elevation view.
3. See Std 3008-1 for additional information and dimensions



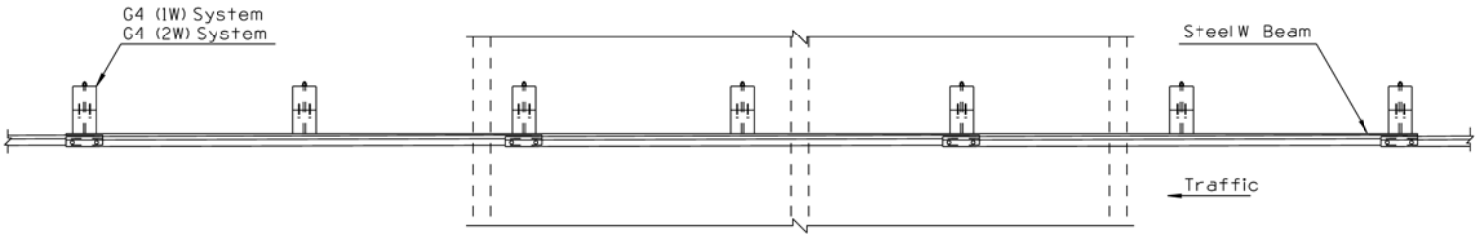
SECTION A-A



SECTION B-B

Base Drawing Courtsey of ADOT 2/25/00

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION **STANDARD DETAIL**	**NESTED GUARDRAIL TYPE 3**	**DATE:** 5/01/01	**DETAIL NO.** **3008–3**



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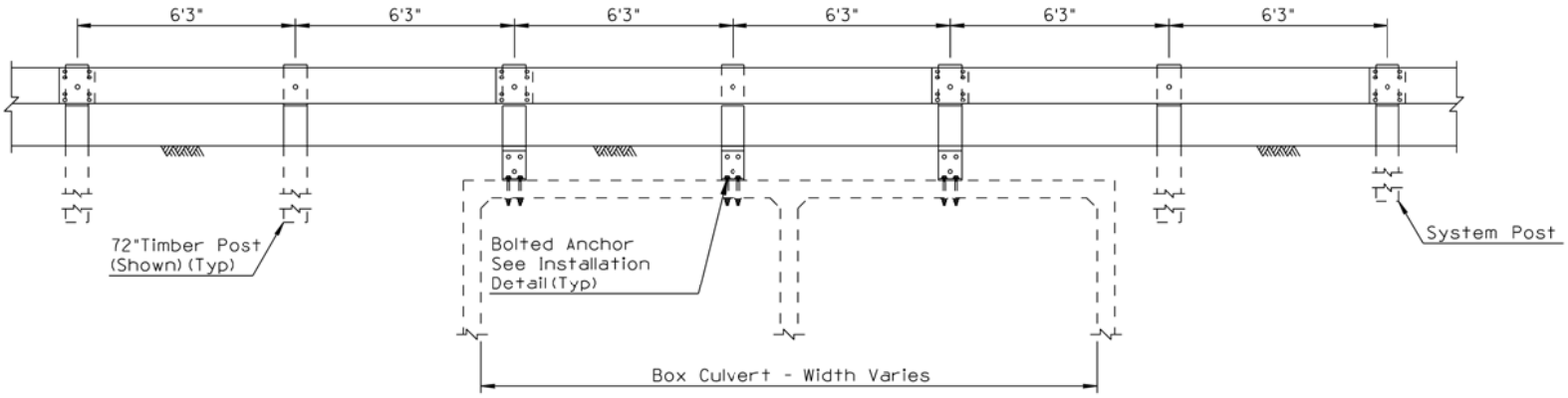


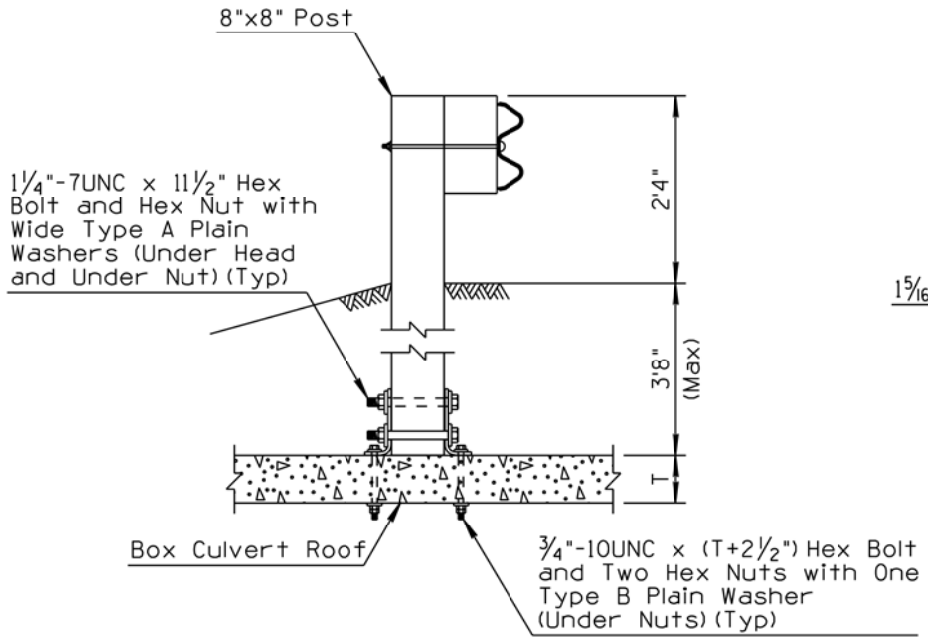
ELEVATION

BOLTED ANCHOR
BOX CULVERT INSTALLATION

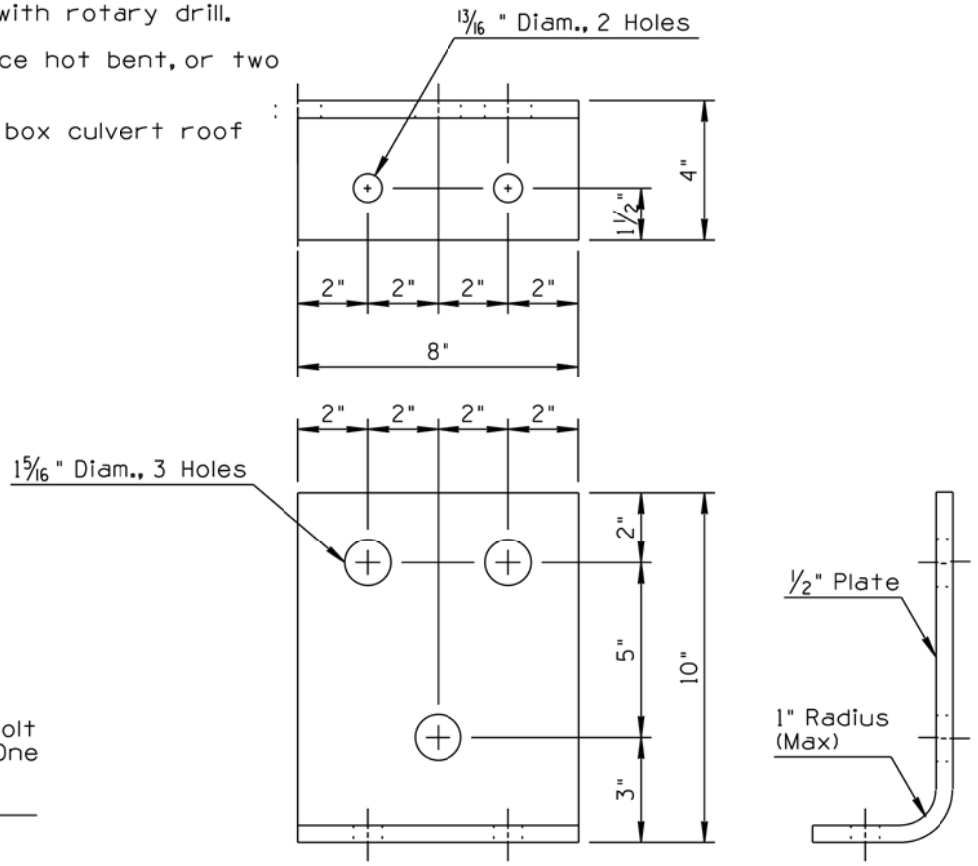
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION **STANDARD DETAIL**	**BOLTED GUARDRAIL ANCHORS**	**DATE:** 11/19/09	**DETAIL NO.** **3010–1**

GENERAL NOTES

1. Drill through top of box culvert with rotary drill.
2. Bracket may be made of one piece hot bent, or two pieces welded together.
3. Short timber posts anchored to box culvert roof shall be 8" x 8" only.



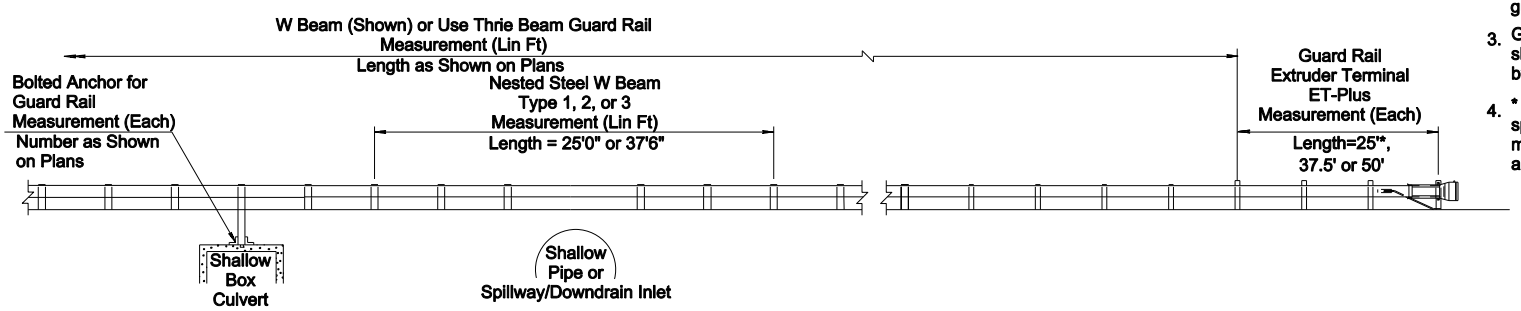
INSTALLATION DETAIL



BRACKET DETAIL

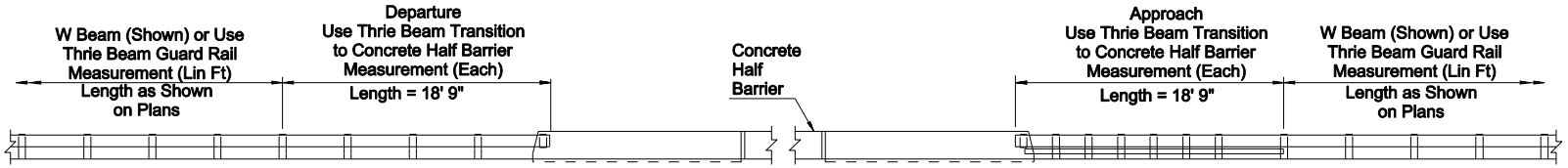
BOLTED ANCHOR
TIMBER POST INSTALLATION DETAIL

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION **STANDARD DETAIL**	**BOLTED GUARDRAIL ANCHORS**	**DATE:** 11/19/09	**DETAIL NO.** **3010–2**

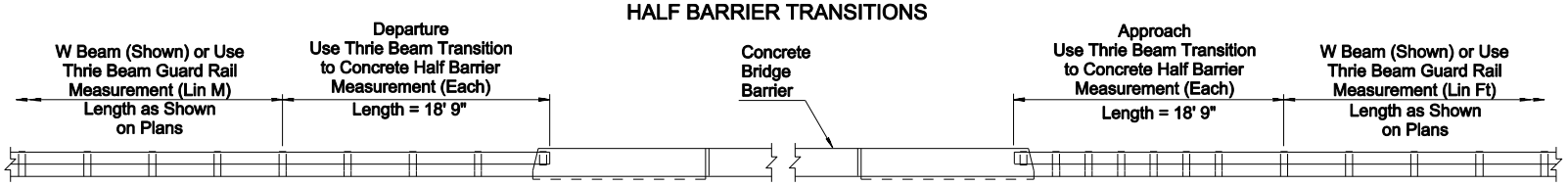


GENERAL NOTES

1. Length shall be as shown unless otherwise indicated on project plans.
2. Post type for transitions shall match post type of adjoining guardrail.
3. Guardrail Extruder Terminals may be shortened to 37' 5" as approved by the Engineer.
4. * 25' Length can be used for design speed @ or below 45 mph and as per manufacture's recomendations for TL2 and as approved by the engineer.



HALF BARRIER TRANSITIONS



BRIDGE BARRIER TRANSITIONS

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION STANDARD DETAIL	GUARDRAIL MEASUREMENT	DATE: 6/09	DETAIL NO. 3016

P.O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

Case 11-18

DATE: February 23, 2012

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, SRP Representative
Outside of Right-of-Way Working Group

RE: **Section 350: Removal of Existing Improvements**

Purpose: Section 350 needs updating to include detailed information on handling utilities when renovations occur within the right-of-way and backfill of voids left from removals where structures are to be installed (manholes, vaults, etc.). Additionally, payment for removals should delineate specific removal items to insure that the scope is understood during the bid process.

Revisions: a) Add new language in Section 350.2.1 for utility locating, abandonment and removal.

b) Make the paragraph referencing Section 336 more generic to include all requirements, not just pavement cuts.

c) Include language in Section 350.2.3 to define backfill and compaction requirements for voids left from removals. Present language only provides for trench backfill and compaction.

d) Identify payment for removals for each item.

SECTION 350

REMOVAL OF EXISTING IMPROVEMENTS

350.1 DESCRIPTION:

This work shall consist of removal and disposal of various existing improvements, such as pavements, structures, pipes, conduits, curbs and gutters, and other items necessary for the accomplishment of the improvement.

350.2 CONSTRUCTION METHODS:

350.2.1 Utilities

The removal of existing improvements shall be conducted in such a manner as not to injure active utilities or any portion of the improvement that is to remain in place. ~~See Section 107.~~

Removal work shall comply with the requirements of Arizona Revised Statutes-40-360.21 through 40-360.29 (one call system, Blue Stake) in notification to the interested utility owners prior to start of work. The Contractor shall resolve all problems with the utility owners concerned.

Utilities shall not be abandoned in place below new structures that are part of the work. In all other cases, any in-place utility abandonment shall be allowed if abandonment is noted on the plans. Otherwise, abandoned utilities shall be removed.

Utilities to be removed shall be disconnected and taken out in accordance with the requirements of the utility owner to the limits shown on the plans. Utility removal shall not be performed until a release has been obtained from the utility stating that their respective service connection and appurtenant equipment have been disconnected, removed or sealed and plugged in a safe manner.

The Engineer shall be contacted if utilities are encountered during the work that are not shown on the plans. These previously unknown utilities shall be marked on the installation record drawings.

350.2.2 Others

Sidewalks shall be removed to a distance required to maintain a maximum slope for the replaced portion of sidewalk, for one inch per foot and all driveways shall be removed to a distance as required by standard details.

Existing concrete driveway curbs and gutters shall be removed to the right-of-way line and the new end of curb faced.

Portland cement concrete pavements, curbs and gutters and sidewalks designated on the plans for removal shall be saw-cut at match lines, in accordance with Section 601 and removed.

Asphalt concrete pavements designated on the plans for removal shall be ~~cut in accordance with~~meet the requirements of Section 336.

Removal of trees, stumps, roots, rubbish, and other objectionable materials in the right-of-way shall be done in accordance with Section 201.

350.2.3 Backfill and Disposal

Backfill of all excavated areas below structures shall be in accordance with Section 206.4. Backfill and compaction of all other excavated areas shall be compacted to the densities as prescribed in Section 601 (trenches) or Section 211 (holes, pits or other depressions).

All surplus materials shall be immediately hauled from the jobsite and disposed of in accordance with Section 205.6.

350.3 MISCELLANEOUS REMOVAL AND OTHER WORK:

This work shall include, but not be limited to the following, where called for on the plans:

(A) Relocate existing fence and gate.

(B) Remove and reset mail boxes.

(C) Remove signs and bases in right-of-way.

(D) Remove planter boxes, block walls, concrete walls, footings, headwalls, irrigation structures, and storm water inlets.

(E) Install plugs for pipes and remove existing plugs as necessary for new construction.
(F) Remove wooden and concrete bridges.

(G) Remove median island slabs.

(H) Remove pavements and aggregate base where called for outside the roadway prism.

350.4 PAYMENT:

Payment for removals will be made at the unit ~~bid~~ proposal price~~s bid in the applicable proposal pay~~for each removal item~~s~~, which price shall be full compensation for the item complete, as described herein or on the plans.

P.O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

Case 11-30

DATE: January 18, 2012

TO: MAG Specifications and Details Committee Members

FROM: Peter Kandaris, SRP Representative

RE: **Revisions to Section 702 – Base Materials**

Purpose: Update standard identified by Outside ROW WG

Revisions: The purpose of the changes is to simplify base material requirements with physical properties shown in a single table. Delete information that is redundant to Section 701 (re-defining general aggregate requirements) and remove language that is vague and cannot be enforced through objective tests.

Major changes are summarized below:

(a) Delete references to specific aggregate materials such as decomposed granite, slag, etc., as these should be covered by Section 701 requirements.

(b) Add functional descriptions for ABC and Select Material.

(c) Consolidate all material requirements into Table 702-1. This includes PI, fractured face and LA abrasion testing.

(d) Fractured face for ABC was changed from 50% to 30% to match ADOT requirements. Fractured Face was left at existing 50% - moved from 701.2.1

(e) Change from 1-1/4” sieve to 1” sieve in Table 702-1 as plants do not have the capability to separate at 1-1/4”. Modify the gradation requirement for the 1” sieve to meet the same gradation as before.

(f) Include a referee test for aggregates that exceed a PI of 5. A white paper was prepared by the Materials Working Group to give the rational for using an R-value of 70 if the PI is too high (to be provided to the committee at the next meeting).

SECTION 702 – REVISED 02-13-2012

BASE MATERIALS

702.1 GENERAL:

Base materials shall be as defined in Section 701, consisting of appropriately sized coarse and fine aggregates, other inert materials, and/or aggregates that have been treated for plasticity index mitigation, as approved by the Engineer.

When base material without further qualification is specified, the Contractor shall supply Aggregate Base Course as defined in Table 702-1. When a particular classification of base material is specified, the Contractor may substitute Aggregate Base Course for Select material when approved by the Engineer.

The Contractor shall provide the Engineer, in writing, material information and the source location at least 10 business days prior to use of the material unless the material is currently accepted for use, as determined by the Engineer.

702.1.1 Aggregate Base Course shall be used primarily in roadway applications or where otherwise specified by project plans or special provisions.

702.1.2 Select Material shall be primarily used, but not limited to applicable structure and pipe backfill installations, shoulders, turnouts, driveways, and tapers or where otherwise specified by project special provisions.

702.2 PHYSICAL PROPERTIES:

702.2.1 Base material shall meet the physical properties listed in Table 702-1.

Table 702-1

Sieve Analysis Test Methods AASHTO T-27, T-11			
Sieve Size	Accumulative Percentage Passing Sieve, by Weight		
	Select Material		Aggregate Base Course
	Type A	Type B	
3 in.	100	- -	- -
1-1/2 in.	- -	100	100
1 in.	- -	- -	90 – 100
No. 4	30 - 75	30 - 70	38 - 65
No. 8	20 - 60	20 - 60	25 – 60
No. 30	10 - 40	10 - 40	10 – 40
No. 200	0 - 12	0 - 12	3 – 12
Plasticity Index Test Methods AASHTO T-89 Method A, T-90, T146 Method A			
Maximum allowable value	5	5	5
Fractured Face, One Face Test Method ARIZ 212, Percent by Weight of the Material Retained on a #4 Sieve			
Minimum required value	50	50	50
Resistance to Degradation and Abrasion by the Los Angeles Abrasion Machine Test Method AASHTO T-96, Percent Loss by Weight			
Maximum allowable value at 100 revolutions	10	10	10
Maximum allowable value at 500 revolutions	40	40	40

702.2.2: When tested for acceptance, Base material that does not meet Table 702-1 properties for gradation or PI may be approved at the Engineer's discretion if the R-Value is at least 70 when determined by test method AASHTO T-190 (see Table 310-1).

End of Section

SECTION 702 – REVISED ~~1/18/12~~02-13-2012

BASE MATERIALS

702.1 GENERAL:

Base materials shall be as defined in Section 701, consisting of appropriately sized coarse and fine aggregates, other inert materials, and/or aggregates that have been treated for plasticity index mitigation, as approved by the Engineer.

When base material without further qualification is specified, the Contractor shall supply Aggregate Base Course as defined in Table 702-1. When a particular classification of base material is specified, the Contractor may substitute ~~any higher classification of base material for the specified classification~~Aggregate Base Course for Select material when approved by the Engineer.

The Contractor shall provide the Engineer, in writing, material information and the source location at least 10 business days prior to use of the material unless the material is currently accepted for use, as determined by the Engineer.

702.1.1 Aggregate Base Course shall be used primarily in roadway applications or where otherwise specified by project plans or special provisions.

702.1.2 Select Material shall be primarily used, but not limited to applicable structure and pipe backfill installations, shoulders, turnouts, driveways, and tapers or where otherwise specified by project special provisions.

702.2 PHYSICAL PROPERTIES:

702.2.1 Base material shall meet the physical properties listed in Table 702-1.

Table 702-1			
Sieve Analysis Test Methods AASHTO T-27, T-11			
Sieve Size	Accumulative Percentage Passing Sieve, by Weight		
	Select Material		Aggregate Base Course
	Type A	Type B	
3 in.	100	- -	- -
1-1/2 in.	- -	100	100
1 in.	- -	- -	90 – 100
No. 4	30 - 75	30 - 70	38 - 65
No. 8	20 - 60	20 - 60	25 – 60
No. 30	10 - 40	10 - 40	10 – 40
No. 200	0 - 12	0 - 12	3 – 12
Plasticity Index Test Methods AASHTO T-89 Method A, T-90, T146 Method A			
Maximum allowable value	5	5	5
Fractured Face, One Face Test Method ARIZ 212, Percent by Weight of the Material Retained on a #4 Sieve			
Minimum required value	50	50	50
Resistance to Degradation and Abrasion by the Los Angeles Abrasion Machine Test Method AASHTO T-96, Percent Loss by Weight			
Maximum allowable value at 100 revolutions	10	10	10
Maximum allowable value at 500 revolutions	40	40	40

702.2.2: When tested for acceptance, Base material that does not meet Table 702-1 properties for gradation or PI may be approved at the Engineer's discretion if the R-Value is at least 70 when determined by test method AASHTO T-190 (see Table 310-1).

End of Section

SECTION 310

PLACEMENT AND CONSTRUCTION OF AGGREGATE BASE COURSE

310.1 DESCRIPTION:

Aggregate base course shall comply with Subsection 702 unless the use of a different type of material is specifically authorized in the special provisions.

310.2 PLACEMENT AND CONSTRUCTION:

The compacted lift thickness shall not exceed 6 inches, unless approved by the Engineer. Based on the type of material, type of equipment and compaction methods used, the Contractor may propose a greater lift thickness.

After distributing, the aggregate base course material shall first be watered and then graded to a uniform layer that will net, after compacting, the required thickness. The grading operation shall be continued to such extent as may be necessary to minimize segregation. The quantity of water applied shall be that amount which will assure proper compaction resulting in the density required by Section 310.3.

After placement, the aggregate base course surface shall be true, even and uniform conforming to the grade and cross-section specified. In no case shall the aggregate base course vary by more than ½ inch above or below required grade.

310.3 COMPACTION

The contractor is responsible for providing appropriate equipment and techniques to achieve the compaction results required by this specification. The aggregate base course shall be compacted in lift thicknesses as allowed by Section 310.2.

The laboratory maximum dry density and optimum moisture content for the aggregate base course material shall be determined in accordance with AASHTO T-99. Field 'one-point' maximum dry density and optimum moisture procedures shall only be allowed upon approval of the Engineer.

The in-place density shall be determined in the field by nuclear density testing in accordance with AASHTO T-310 or sandcone density testing in accordance with AASHTO T-191. In the event nuclear density testing is selected, a minimum of one sandcone correlation shall be performed for each 10 nuclear density tests.

A rock correction, to compensate for rock content larger than the #4 or ¾ inch sieves (as required by the laboratory maximum dry density and optimum moisture procedure selected), shall be performed in accordance with AASHTO T-224. Care should be taken to account for the specific gravity of the oversize particles particularly if recycled materials are utilized for aggregate base course. The specific gravity shall be determined in accordance with AASHTO T-85, as applicable.

For roadway construction, one field density test shall be performed per lift per 660 feet per lane. For other aggregate base course applications, a minimum of 1 field density test shall be performed for each 800 square yards. ~~More or less frequent testing may be performed at the approval of the Engineer.~~

Unless otherwise noted in the project plans or project specifications, the moisture content of the aggregate base course at the time of compaction shall be the optimum moisture content +/- 3%.

The following percent compaction is required:

(A) Below asphalt concrete pavement	100%
(B) Below Portland cement concrete pavement, curb & gutter, attached sidewalk, roadway Shoulders, and other areas of the right-of-way subject to vehicular traffic	95%
(C) All other areas not subject to vehicular traffic	85%

Areas which fail initial testing for density and/or moisture content shall be reworked until passing tests for density and/or moisture content are achieved. Lower moisture content percentages at the time of field density testing may be allowed if significant time has passed since the time of compaction and the required density has been achieved.

310.4 THICKNESS AND/OR PLASTICITY INDEX DEFICIENCY:

When in the opinion of the Engineer there is reason to believe that a deficiency in thickness, or an excess of plasticity exists, measurements or samples will be taken in the same pattern as that defined in Section 321. If the base has been covered or it is otherwise impractical to correct the deficiency, the corrective measures in Table 310-1 shall be taken by the Contractor at no additional cost to the Contracting Agency.

TABLE 310-1

THICKNESS AND PLASTICITY DEFICIENCY

Type	Deficiency	Corrective Measure
I	Less than ½ inch of the required thickness	No corrective measure required.
II	½ inch or more but less than 1inch of the required thickness	(1) The contractor may choose to add additional material and rework the grade to meet the specification requirements. (2) The contractor may choose to increase the thickness of asphalt concrete by the amount of the aggregate base course thickness deficiency at no additional cost to the Owner. Required grade shall be met.
III	Thickness deficiency by greater than 1 inch	(1) The contractor will remove the aggregate base course and regrade the subgrade to allow the required aggregate base course layer thickness to be constructed. (2) If grades allow, the contractor may propose that the thickness of asphalt concrete be increased by the amount of the aggregate base course deficiency at no additional cost to the Owner.
IV	A plasticity index of 6 to 7 inclusive	(1) An Engineering Analysis (EA) may be prepared by the contractor to evaluate the expected performance of the aggregate base course layer. The EA may provide mitigation options for the Engineer to consider. If the Engineer accepts the plasticity index as a result of the EA, the material will be accepted at full payment. If the Engineer rejects the EA, the contractor will perform either option 2 or 3

		below. (2) The contractor may choose to reprocess or treat the existing material to bring it within specification limits or remove deficient material from affected area and replace with material complying with the specifications. (3) If grades allow, the contractor may increase the thickness of asphalt concrete by ½-inch at no additional cost to the Owner.
V	A plasticity index of over 7	(1) The contractor may choose to reprocess or treat the existing material to bring it within specification limits or remove deficient material from affected area and replace with material complying with the specifications.

310.4 PAYMENT:

Payment for aggregate base course will be made on the basis of the contract unit price per ton unless an alternate basis of payment is provided in the proposal.

Case 12-02
02/24/2012

MAG 710 proposed changes to the low volume gyratory table.

The proposed changes will allow mix designers to follow national standards for low volume pavement mix designs. It will in effect allow more binder in the mix that should create a more durable pavement.

The tables were formatted only. Nothing in the tables has been changed.

ASPHALT CONCRETE

710.1 GENERAL:

Asphalt concrete shall be a mixture of asphalt cement and mineral aggregates. Mineral admixture shall be included in the mixture when required by the mix design or by the Engineer. Asphalt concrete shall be produced in accordance with Section 321.

The designation for asphalt concrete mixes shall be based on the nominal maximum aggregate size of the mix. The applicable mix designations are 3/8 inch, ½ inch, ¾ inch and Base (1") mix.

Each mix shall be designed using Marshall or Gyratory compaction methods. Either Gyratory or Marshall Mixes may be used for low or high traffic conditions, as determined by the agency. Low traffic conditions are conditions where the asphalt mix will be subject to low volume and low weight vehicle usage. Examples of this condition are residential streets, most parking lots and residential minor collector streets. High traffic conditions are conditions where the asphalt mix will be subject to high volume and/or heavy weight vehicle usage as found on major collector, arterial and commercial streets. Street classifications (i.e. minor collector and major collector) shall be determined by the specifying agency.

The following table (Table 710-1) displays the recommended lift thickness for various asphalt concrete mix designations found within Section 710. Please note that these recommended lift thicknesses are minimums based on each mix designation's "Nominal Aggregate Size" and the relative coarseness of its gradation. The compacted thickness of layers placed shall not exceed 150% of the Minimum Lift Thickness of Table 710-1 except as otherwise provided in the plans and specifications, or if approved in writing by the Engineer.

TABLE 710-1

RECOMMENDED MINIMUM LIFT THICKNESS'S for ASPHALT CONCRETE MIXES

Asphalt Concrete Mix Designation (inches)	Minimum Lift Thickness Marshall Mixes	Minimum Lift Thickness Gyratory Mixes
3/8"	1.0 inches	1.5 inches
½"	1.5 inches	2.0 inches
3/4"	2.5 inches	3.0 inches
Base	3.0 inches	n/a

710.2 MATERIAL:

710.2.1 Asphalt Binder: The asphalt binder specified in this section has been developed for use in desert climate conditions. Should it be utilized in other climates, consideration should be given to adjustments in the asphalt binder selection. The asphalt binder shall be Performance Grade Asphalt conforming to the requirements of Section 711 for PG 70-10, unless otherwise approved by the Engineer or specified differently in the plans or special provisions.

710.2.2 Aggregate: Coarse and Fine aggregates shall conform to the applicable requirements of this section. Coarse mineral aggregate shall consist of crushed gravel, crushed rock, or other approved inert material with similar characteristics, or a combination thereof, conforming to the requirements of these specifications.

Coarse aggregate for hot mix asphalt is material retained on or above the No. 4 sieve and Fine aggregate is material passing the No. 4 sieve. Aggregates shall be relatively free of deleterious materials, clay balls, and adhering films or other material that

prevent coating with the asphalt binder. Coarse and Fine aggregates shall conform to the following requirements when tested in accordance with the applicable test methods.

TABLE 710-2 COARSE/FINE AGGREGATE REQUIREMENTS			
Characteristics	Test Method	Low Traffic	High Traffic
Fractured Faces, % (Coarse Aggregate Only)	Arizona 212	75, 1 or more	85, 1 or more 80, 2 or more
Uncompacted Voids, % Min.	AASHTO T-304, Method A	42	45
Flat & Elongated Pieces, % 5:1 Ratio	ASTM D 4791	10.0 Max.	10.0 Max.
Sand Equivalent, %	AASHTO T-176	50 Min.	50 Min.
Plasticity Index	AASHTO T-90	Non-plastic	Non-plastic
L.A. Abrasion, %Loss	AASHTO T-96	9 max. @ 100 Rev. 40 max. @ 500 Rev.	9 max. @ 100 Rev. 40 max. @ 500 Rev.
Combined Bulk Specific Gravity	AI MS-2/SP-2	2.35 – 2.85	2.35 – 2.85
Combined Water Absorption	AI MS-2/SP-2	0 – 2.5%	0 – 2.5%

Tests on aggregates used in asphalt concrete outlined above, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation.

Blend sand (naturally occurring or crushed fines) shall be clean, hard and sound material which will readily accept asphalt binder coating. The blend sand grading shall be such that, when it is mixed with the other mineral aggregates, the combined product shall meet the requirements of Table 710-2.

The natural sand shall not exceed 20 percent for the Marshall mixes and 15 percent for the Gyratory mixes by weight of the total aggregate for a mix.

710.2.3 Mineral Admixture: Mineral admixture when used as an anti-stripping agent in asphalt concrete shall conform to the requirements of AASHTO M-17. Mineral admixture used in asphalt concrete shall be dry hydrated lime, conforming to the requirements of ASTM C1097 or Portland cement conforming to ASTM C150 Type II or ASTM C595 Type IP. The amount of hydrated lime or Portland cement used shall be determined by the mix design. The minimum Mineral admixture content within a mix will be 1.00 percent, by weight of total aggregate.

710.3 MIX DESIGN REQUIREMENTS:

710.3.1 General: The mix design for asphalt concrete shall be prepared by a laboratory that is accredited through the AASHTO Accreditation Program (AAP) in Hot Mix Asphalt Aggregates and Hot Mix Asphalt. The laboratory shall be under the direct supervision of a Civil Engineer, registered by the State of Arizona, and who is listed by ADOT as a "Qualified Asphaltic Concrete Mix Design Engineer" within ADOT's latest list of approved laboratories. The latest list of approved laboratories is available on ADOT's web page www.azdot.gov. The date of the design shall not be older than one year from the date of submittal, unless supportive documentation is provided and approved by the Engineer.

The mix design report shall include the following elements as a minimum.

(1) The name and address of the testing organization and the person responsible for the mix design report.

(2) The mix plant identification and/or location, as well as the supplier or producer name.

(3) A description of all products that are incorporated in the asphalt concrete along with the sources of all products, including admixtures and asphalt binder, and their method of introduction.

(4) The supplier and grade of asphalt binder, the source and type of mineral aggregate, and the percentage of asphalt binder and mineral admixture used.

(5) The mix design report, whether Gyratory or Marshall, shall state the traffic condition (low or high traffic) and size designation. ~~In all cases Gyratory based mix designs shall be designated as high traffic mixes. Marshall based mix design shall be designated either low or high traffic mixes.~~

(6) The results of all testing, determinations, etc., such as: specific gravity and gradation of each component, water absorption, sand equivalent, loss on abrasion, fractured coarse aggregate particles, Tensile Strength Ratio (AASHTO T-283), Marshall stability and flow, asphalt absorption, percent air voids, voids in mineral aggregate, and bulk density. Historical abrasion values may be supplied on existing sources. The submittal should include a plot of the gradation on the Federal Highway Administration's 0.45 Power Gradation Chart, plots of the compaction curves and the results of moisture sensitivity testing.

(7) The laboratory mixing and compaction temperature ranges for the supplier and grade of asphalt binder used within the mix design.

(8) A specific recommendation for design asphalt binder content and any limiting conditions that may be associated with the use of the design, such as minimum percentages of crushed or washed fine aggregate.

(9) The supplier's product code, the laboratory Engineer's seal (signed and dated), and the date the design was performed.

The mix design shall be submitted to the Agency or Engineer by the Contractor/Supplier for which it was developed as part of his project submittals. Once the mix design has been approved by the agency or Engineer, the Contractor and/or his supplier shall not change plants nor utilize additional mixing plants without prior approval of the Engineer. Any changes in the plant operation, the producer's pit, the asphalt binder, including modifiers in the asphalt binder, or any other item that will cause an adjustment in the mix, shall be justification for a new mix design to be submitted.

710.3.2 Mix Design Criteria: The mix design shall be performed by one of two methods, Marshall Mix Design or Gyratory Mix Design. The method shall be specified on the plans, special provisions, or by the Engineer. A minimum of 4 points will be used to establish the mix design results. The oven aging period for both Marshall and Gyratory mix design samples shall be 2 hours.

710.3.2.1 Marshall Mix Design: The Marshall Mix Design shall be performed in accordance with the requirements of the latest edition of the Asphalt Institute's Manual, MS-2 "Mix Design Methods for Asphalt Concrete." The mix shall utilize the compactive effort of 75 blows per side of specimen. The mix shall comply with the criteria in Table 710-3.

TABLE 710-3					
MARSHALL MIX DESIGN CRITERIA					
Criteria	**Requirements**				**Designated Test Method**
	3/8" Mix	**½" Mix**	**3/4" Mix**	**Base Mix**	
1. Voids in Mineral Aggregate: %, min	15.0	14.0	13.0	12.0	AI MS-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI MS-2
3. Absorbed Asphalt: %, Range *	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	AI MS-2
4. Dust to Eff. Asphalt Ratio, Range **	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	AI MS-2
5. Tensile Strength Ratio: %, Min.	65	65	65	65	AASHTO T-283
6. Dry Tensile Strength: psi, Min.	100	100	100	100	AASHTO T-283
7. Stability: pounds, Minimum	2,000	2,500	2,500	3000	AASHTO T-245
8. Flow: 0.01-inch, Range	8 - 16	8 - 16	8 – 16	8 – 16	AASHTO T-245
9. Mineral Aggregate Grading Limits				AASHTO T-27	

	Percent Passing with Admix			
Sieve Size	**3/8 inch Mix**	**½ inch Mix**	**3/4 inch Mix**	**Base Mix**
1-1/4 inch				100
1 inch			100	90-100
3/4 inch		100	90 – 100	85-95
½ inch	100	85 – 100	---	---
3/8 inch	90-100	62 – 85	62 – 77	57-72
No. 8	45-60	40 – 50	35 – 47	33-43
No. 40	10-22	10 – 20	10 – 20	9-18
No. 200	2.0 – 10.0	2.0 – 10.0	2.0 – 8.0	1.0 – 7.0

* Unless otherwise approved by the Engineer.

** The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the indicated range.

710.3.2.2 Gyratory Mix Design: Gyratory Mix Designs shall be performed in accordance with the requirements of latest edition of the Asphalt Institute's SP-2 manual. Mix design laboratory compacted specimens shall be prepared using a gyratory compactor in accordance with AASHTO T-312.

The mix design shall be formulated in a manner described for volumetric mix designs in the current edition of the Asphalt Institute Manual SP-2, except the number of trial blend gradations necessary will be determined by the mix design laboratory. Duplicate gyratory samples shall be prepared at a minimum of four (4) binder contents to select the recommended binder content. The gyratory specimens shall be compacted to 160 gyrations. Volumetric data for the design number of gyrations, N_{des}, and the initial number of gyrations, N_{ini}, are then back calculated based on the bulk specific gravity, G_{mb}, of the N_{max} specimens and the height data generated during the compaction process of those same specimens.

For Low Taffic designs, volumetric data for 115 gyrations, N_{max} for Low Traffic designs, is also back calculated from the specimens compacted to 160 gyrations.~~The completed mix design shall meet all the mineral aggregate and mix design criteria specified herein.~~

~~For purposes of design, the number of gyrations shall be 8 for Nini, 100 for Ndes, and 160 for Nmax.~~ The corrected density of the specimens shall be less than 89.0 percent of maximum theoretical density at ~~8 gyrations~~Nini. The corrected density of the specimens shall be less than 98.0 percent of maximum theoretical density at ~~160 gyrations~~N_{max}. The Gyratory mix shall comply with the criteria in Table 710-4.

~~The Gyratory mix shall comply with the criteria in Table 710-4.~~

TABLE 710-4

GYRATORY MIX DESIGN CRITERIA

Criteria	Requirements			Designated Test
	3/8" Mix	**½" Mix**	**3/4" Mix**	**Method**
1. Voids in Mineral Aggregate: %, Min.	15.0	14.0	13.0	AI SP-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI SP-2
3. Absorbed Asphalt: %, Range *	0 - 1.0	0 - 1.0	0 - 1.0	AI SP-2
4. Dust to Eff. Asphalt Ratio, Range **	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	AI SP-2
5. Tensile Strength Ratio: %, Min.	75	75	75	AASHTO T-283
6. Dry Tensile Strength: psi, Min.	75	75	75	AASHTO T-283
7. Mineral Aggregate Grading Limits				AASHTO T-27

	Percent Passing with Admix		
Sieve Size	**3/8 inch Mix**	**½ inch Mix**	**3/4 inch Mix**
1 inch			100
3/4 inch		100	90-100
½ inch	100	90-100	43-89
3/8 inch	90-100	53-89	-
No. 8	32-47	29-40	24-36
No. 40	2-24	3-20	3-18
No. 200	2.0-8.0	2.0-7.5	2.0-6.5

8. Number of Gyrations	**Low Traffic**	**High Traffic**
N_{ini}	7	8
N_{des}	75	100
N_{max}	115	160

* Unless otherwise approved by the Engineer.

** The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the indicated range.

710.3.2.3 Moisture Sensitivity Testing: Moisture sensitivity testing will be performed in accordance with AASHTO Test Method T-283 for both Marshall and Gyratory mix designs, without the freeze/thaw cycle(s). The minimum required Tensile Strength Ratio is indicated in the tables above.

- End of Section -

MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: February 1, 2012

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

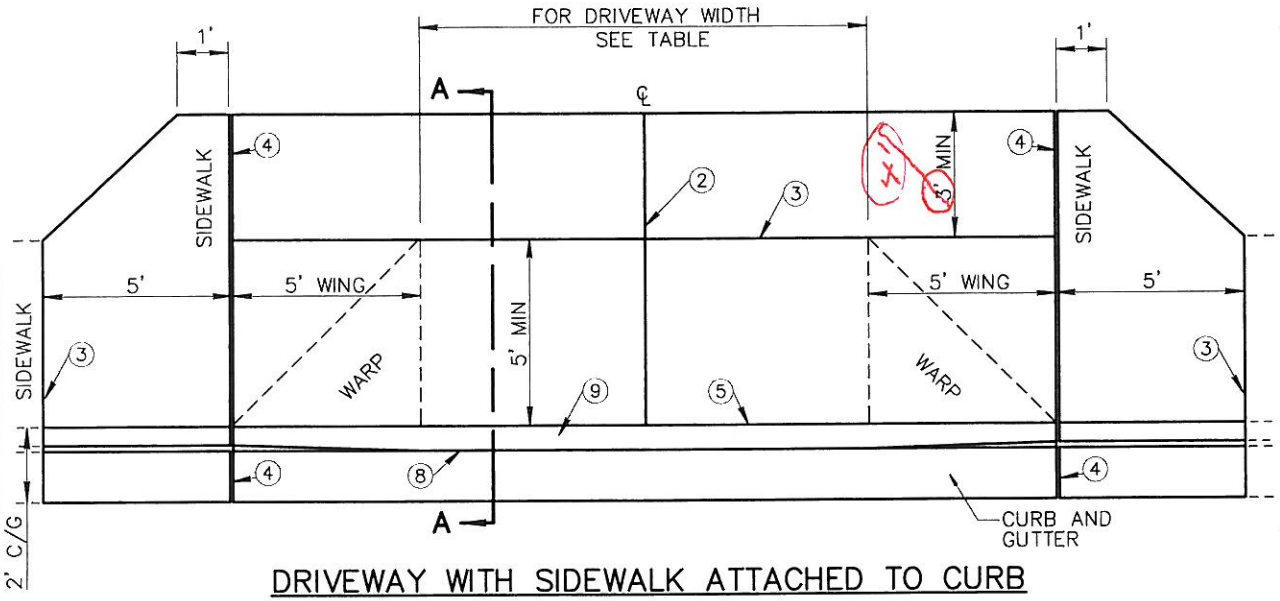
Subject: Proposed revision to Standard Detail 250-2 DRIVEWAY ENTRANCES WITH SIDEWALK ATTACHED TO CURB **Case 12-03**

PURPOSE: Revise the minimum sidewalk width to comply with the modified ADA requirement contained in the Proposed Guidelines for Public Rights-of-Way.

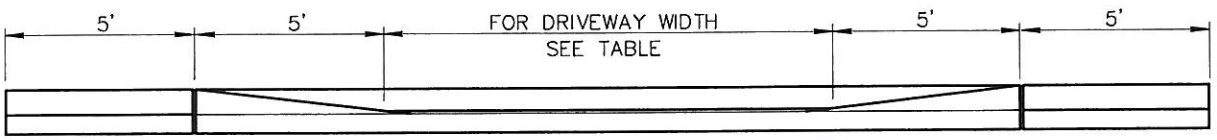
REVISION: Change the minimum width shown at two locations in Detail 250-2 from 3' to 4'.

2901 West Durango Street Phoenix, Arizona 85009 Phone: 602-506-4760 Fax: 602-506-5969

CASE 12-03 2/1/2012

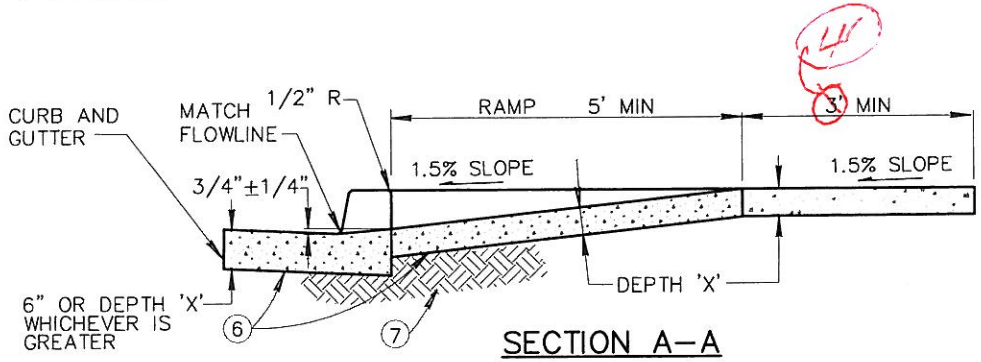


DRIVEWAY WITH SIDEWALK ATTACHED TO CURB



NOTES:

1. DEPRESSED CURB SHALL BE PAID FOR AT THE UNIT PRICE BID FOR THE TYPE OF CURB USED AT THAT LOCATION.
2. CONTRACTION JOINT ON D/W CENTERLINE.
3. CONTRACTION JOINT.
4. 1/2-INCH EXPANSION JOINTS SHALL COMPLY WITH SECTION 340.
5. BACK OF CURB – CONSTRUCTION JOINT.
6. CONCRETE CLASS AS NOTED IN TABLE. CONCRETE PER SECTION 725.
7. SUBGRADE PREPARATION, SECT. 301.
8. FLOW LINE OF GUTTER.
9. DEPRESSED CURB.
10. SECT. A–A AND ELEVATION: D/W SHOWN WITH VERTICAL CURB AND GUTTER, ROLL TYPE CURB AND GUTTER TREATED SIMILARLY.
11. ROUGH BROOM FINISH FULL WIDTH OF RAMP AND WINGS. TROWEL AND USE LIGHT HAIR BROOM FINISH FOR WALKWAY AREA.



SECTION A–A

COMMERCIAL AND INDUSTRIAL				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH 'X'
COMMERCIAL	✱ 16'	40'	A	9"
INDUSTRIAL	✱ 16'	40'	A	9"
✱24' MIN. FOR TWO WAY TRAFFIC				

RESIDENTIAL				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH 'X'
MAJOR STREET	16'	30'	B	5"
COLLECTOR STREET	✱ 12'	30'	B	5"
LOCAL STREET	12'	30'	B	5"
✱16' DESIRABLE				

DETAIL NO.			REVISED	DETAIL NO.
250–2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	DRIVEWAY ENTRANCES WITH SIDEWALK ATTACHED TO CURB	01–01–2009	250–2

New case No. 12-04_MAG 317 (milling) with language for dust abatement.

Purpose:

To have language included in this section to make the engineer address dust control in new milled surfaces that are opened to traffic for a short period before the new surface is installed.

Issues: None. Engineers can direct the contractor to omit the tack application for dust control at their risk.

SECTION 317

ASPHALT MILLING

317.1 DESCRIPTION:

The work under this section shall consist of milling existing asphalt concrete pavement where shown on the Plans or requested by the Engineer.

317.2 CONSTRUCTION REQUIREMENTS:

Contractor is responsible for locating all milling hazards on and below the surface within the areas to be milled including areas requiring special milling. Special milling is not a separate pay item and shall be paid for as Asphalt Milling.

The milling cut depth shall be the depth indicated on the Plans plus or minus 1/8 inch. The milling machine shall have electronic grade controls. Contractor shall remove the milled material and sweep the roadway clean with a power pick-up broom to the satisfaction of the Engineer.

Asphalt pavement adjacent to manholes, valve boxes, small radius curbs and other fixed objects that produce confined area shall be removed with milling equipment specifically designed to operate in constricted areas. The equipment shall be capable of removing asphalt concrete of the specified thickness without damage to, or displacement of, the adjacent object(s).

The Contractor shall be responsible for continually checking the milling operation to determine that the proper depth of milling has been achieved, that the proper profile and cross slope are achieved, and that the surface texture is (a) free from longitudinal ridges, and (b) has a uniform pattern.

The Contractor shall immediately notify the Engineer when:

- The existing pavement thickness is found to be less than anticipated and breaking of the underlying material occurs.
- Delamination of underlying material occurs.

The work shall result in a clean milled surface to the specified depth for the area indicated by the construction documents including the areas immediately around and next to any individual hazard within the area to be milled. The edge of milled area shall form a straight clean cut line.

Tack shall be applied to the milled surface at the prescribed rate as directed by the engineer after sweeping and prior to traffic per MAG 329 (-tack coat) for surfaces that will be open to traffic for short periods of time. This application is to mitigate dust from the milled surface.

317.3 MEASUREMENT AND PAYMENT:

Measurement for Asphalt Milling will be by the square yard and shall only include area milled to the required depth and cross-section.

Payment for Asphalt Milling at the contract unit price shall be full compensation for the work, complete-in-place, including all asphalt milling, milling around structures, removal and disposal of milled materials, and sweeping.

- End of Section -

Water/Sewer Working Group Meeting

Meeting Notes
February 21, 2012

Opening:
A meeting of the Specifications and Details Water/Sewer Working Group was called to order by chair Jim Badowich on February 21, 2012, at 1:35 p.m. in the MAG Agave Room.

1. Participants
Jim Badowich (Avondale), Tony Braun (NUCA), Bill Davis (ADS), Jami Erickson (Phoenix), Brian Gallimore (AGC), Mike Hook (ALPA), Mark Ivanich (Glendale), Peter Kandaris (SRP), Kelly Kokesh (ADS), Paul Nebeker (Pipe Right Now), Matt Savage (Ferguson), Javier Setovich (Peoria), Gordon Tyus (MAG), Scott Zipprich (Buckeye)

2. Cadmium Plated Bolts (Case 11-03)
This case was referred back to the working group to provide specifications for the type of plated bolts currently used in industry. The case was initiated when Mr. Savage approached Mr. Nebeker about inconsistent enforcement of the MAG standard, and the typical use of zinc plated bolts instead of the more expensive and potentially hazardous cadmium plated bolts. The revision to 610 was sponsored by Jesse Gonzales of Peoria, and later revisited by Peoria's current representative Javier Setovich. Mr. Setovich said he provided a white paper that showed cadmium was only really hazardous when airborne. Mr. Badowich said the specs should reflect what is actually being used, which typically is zinc plating, and Phoenix's use of stainless steel. Tony Braun said typically Grade A zinc plated bolts are used for underground applications. The reference is ASTM 307A. Mr. Setovich said cadmium is specified in Sections 505 and 610. Mr. Tyus said it was also specified on Detail 302-2. One suggestion was to delete Details 302-1 and 302-2 since they are out of date. The group thought preparing a new bolt section that provided options and references for the different types would be useful. Jami Erickson was asked to find the ASTM reference for the stainless steel bolts they use. There was also discussion about whether to use grade A as is typically done, or grade B as is currently shown in the specifications. Mr. Braun said mechanical joints typically use core 10 steel bolts. There were also questions about the different grades of flanges and if the bolts were designed to match them. Mr. Setovich said he will review the section and make revisions. Mr. Kandaris said while making the changes he should remove the brand name products currently listed in 610.

3. Wet Barrel Fire Hydrant Spec and Detail Update (Case 11-14)
Scott Zipprich said he had no changes made yet. He does have redlined drawings that he needs his CAD operators to update. He also asked members to send any comments. He noted at the last meeting it was decided to remove the thrust blocks and specify joint restraints as the default. Tony Braun said he was going to get CAD drawings of dry and wet barrel hydrants from manufacturers.

4. Pre-Cast Manhole Bases
Scott Zipprich said that Buckeye has developed standards for wet cast bases, and listed some of the specifications developed for Buckeye's supplement. Mr. Ivanich said that Glendale was not planning to use precast bases, and suggested the option for using them could be done in written

specifications rather than details. Mr. Zipprich did show a generic precast base detail developed for Buckeye, but agreed that it could be done in specifications, and should include the foundation and connections. He said the base preparation is similar to what is done in Flagstaff. Peter Kandaris said using 100% AB – 57 rock (as shown in the materials sections), would require a relative density test.

5. Manhole Detail Updates

Mark Ivanich suggested MAG follow Glendale's policy of only allowing 30" manholes. Ms. Erickson said Phoenix does still have 24" manholes. Comments included the difficulty of workers entering 24" size manholes when ladders and harnesses are used to meet today's safety standards. It was agreed that the MAG manhole specifications and details did need to be updated.

6. Special Bedding for Mainline Storm Drain Pipe (Case 11-21)

Case sponsor, Syd Anderson, was not present to represent Phoenix's proposed Section 623 supplement, however, several pipe manufactures did attend the meeting to provide their feedback on the proposed change. Mr. Badowich reminded members that the last discussion focused on the need to review the complete pipe, trench and bedding systems for both rigid and flexible pipe. Bill Davis of Advanced Drainage Systems, and Engineer Kelly Kokesh, also of ADS, said their flexible pipe system uses ASTM backfill standards, and is not necessarily designed to be used with a slurry backfill. Floating of the pipe could also be a problem. Other members argued that getting the necessary compaction under the haunches of the pipe safely was difficult. There was also concern that given the nature of flexible pipe's deflection, it may not be suitable under streets, where settling could be problematic. Mark Ivanich described problems they had along Northern Avenue. Jami Erickson said they had a different problem with Fiberglass pipe in North Phoenix. Jim Badowich said the bedding and design differences of flexible and rigid pipe should be taken into account in the specifications. Mr. Davis volunteered to provide a 30 minute presentation at the next working group meeting on flexible pipe design and installation practices.

7. Next Meeting Date

Members agreed to tentatively schedule the next meeting on Tuesday, March 20, 2012 at 1:30 at the MAG office. Mr. Tyus said he would try to reserve a larger room for the next meeting.

MAG Asphalt Working Group Meeting

Jeff Benedict (Valero) chaired the meeting. It was convened at noon on Thursday February 23rd at the ARPA meeting room. Present were Scott Thompson (ATC), Doug Laquey (Fisher) Don Cornelison(Speedie), Adrian Green (Vulcan), Brian Galimore (WSP),Syd Anderson (C.O.P.) Peter Kandaris (SRP), Jacob Rodriguez(SRP)

MAG 317 (milling) section was reviewed and a minor addition to the document was recommended to include an application of tack on the milled surface prior to opening the surface to traffic. The proposed language will be distributed to the sub-committee and if it is agreed upon it will also go to the whole MAG technical committee.

MAG 710 was reviewed and the recommended changes for a low volume gyratory design. These will be forwarded to the whole MAG technical committee.

MAG 719 (Recycled asphalt in hot mix) was reviewed and discussed. It was agreed that the current version is unusable.
The committee will wait to review the FHWA guidelines for this.
ADOTs documents were discussed and decided that they were too burdensome and too long (50 Pages)

MAG 321 (Hot mix application) Discussion on the language in 321.10 “compaction” that was decided it was too vague. Language will be developed to help correct this. The proposed language will be distributed to the sub-committee and if it is agreed upon it will also go to the whole MAG technical committee.

The group had a discussion on “warm mix” which was helpful to the group. The recommendation from the sub-committee is to wait to review the ADOT recommendations on warm mix and then decide if it should be included in the MAG as a new section (322?)
This will be distributed and discussed at the next sub-committee meeting.

It was decided that the next sub-committee meeting will be March ~~22~~ 21st at noon at ARPA.

The meeting was adjourned at 1:15 the concrete sub-committee meeting followed this meeting.

Materials Working Group Meeting Held 02-23-12

Brian Gallimore (WSP), chairman. It was convened at 1:00pm on Thursday, February 23, 2012 at an ARPA meeting room. Present were Scott Thompson (ATC), Doug Laquey (Fisher), Don Cornelison (Speedie), Jeff Benedict (Valero) and Adrian Green (Vulcan). It was discussed and recommended that we start gathering information on a specification for possible cases for reclaimed material in the following sections:

MAG 725 – Red-Mix Concrete

MAG 710 – Hot Mix Asphalt (possibly absorbing 709 and 719)

MAG 728 – Controlled Low Strength Material (CLSM)

MAG 702 – Aggregate Base Course (ABC)

MAG 325 / MAG 717 – Rubber Asphalt

It was decided that the next sub-committee meeting will be March 22nd after asphalt working group meeting at ARPA.

MAG Concrete Working Group

Meeting Notes

Thursday, February 23, 2012, 1:30 pm at the ARPA Offices

Present:

See attached attendance sheet.

Discussion:

The following were handed out to members for review and comments:

	Minutes from the last meeting on 1-18-12
340	Concrete Curb, Gutter, Sidewalk, etc.
	City of Gilbert revisions to Section 340
342	Decorative Concrete Paving Stone – Detail 225
525	Shotcrete
	SRP Standard Specifications on Shotcrete – Peter Kandaris
	ADOT and Pinal County Specifications on Recycled Base

1) Section 340 and the Gilbert revisions – The Group discussed the proposed City of Gilbert revisions along side of the current MAG Section 340. It was determined that Jeff Hearne will work on providing some specific comments back to Brian Gallimore to pass on to his contacts. Several members of the Group will work on a targeted re-organization and clarification through additional charts and subdivision of MAG 340 by application.
2) Section 342 and Detail 225 - The Group went over the proposed revisions to the section from last year and looked at the current Detail from Scott Zipprich and Buckeye. No issues were found with the revised language but some additional clarification separating foot traffic design parameters from those needed only in vehicular traffic area were discussed with Scott agreed to work on those changes to the detail.
3) Jeff Hearne commented that he had made contact with the Masonry Guild Executive Director to enlist their expertise in the review/revision of Sections 510, 511, 775, and 776. Word document copies of the current Section versions were passed on to them for their use.
4) Section 525 on Shotcrete – The group received copies of the last revision version and 2 different current specifications from SRP (Peter Kandaris) for information and review. After some discussion regarding the elimination of references to the “dry method” or Gunite, Peter agreed to take the SRP specifications and modify them to the MAG format to bring back to the Group for discussion.
5) Recycled Materials – additional copies of some current recycled base specifications from ADOT and Pinal County were distributed to the Group for their information. The Materials Group is working on the Recycle issue at this time but member are encouraged to be involved with the process.

6) A Pervious Concrete Group is in the process of getting organized and meeting to work on the specifics involved in the local certification of Contractors in the application and curing and we will ask them to also develop a proposed Specification.
7) The next meeting date was discussed and it was determined that it is beneficial for most of the members of this Group to meet directly following the Asphalt Working Group.

Date for Next Meeting:

The next meeting is scheduled for **Wednesday, March 21st at 1:30 PM** in the ARPA offices following the Asphalt Working Group at 12:00 PM. Any and all participants are welcome and encouraged to be involved.

MAG Concrete Working Group

Thursday, February 23, 2012

Attendance Initials					
	Gordon Tyus	MAG	Maricopa Association of Governments	602-254-6300	GTyus@azmag.gov
	Bob Herz	McDOT	Maricopa County	602-506-4760	rherz@mail.maricopa.gov
	Gant Yasanayake	McDOT	Maricopa County	602-506-4636	gantyasanayake@mail.maricopa.gov
PK	Peter Kandaris	Utility	Salt River Project	602-236-8613	pmkandar@srpnet.com
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