



**MARICOPA COUNTY**  
*Department of Transportation*

MEMORANDUM

**Date:** January 28, 2015  
**To:** MAG Specifications and Details Committee  
**From:** Robert Herz, MCDOT Representative  
**Subject:** Proposed Revision to Section 601.4.5 Final Backfill **Case 15-03**

**PURPOSE:** Revise trench final backfill placement requirement from 2 feet to layers not exceeding eight inches in depth.

**REVISIONS:**

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

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

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

**DISCUSSION:**

An uncompacted layer depth of eight inches is a MAG standard used elsewhere in the specifications to provide a high confidence level that the required compaction will be obtained, see MAG Sections 206.4.2(C), 211.3, and 355.3.1. Section 211.3 for fill construction states "The loose thickness of each layer of fill material before compacting shall not exceed 8 inches". Section 206.4.2 (C) for placement of structure backfill states "Shall be placed in layers not more than 8 inches in depth before compaction, when compacted by pneumatic or mechanical tamping devices." Section 355.3.1 Backfill Using Mechanical Compaction states "Backfill shall be aggregate base per Section 702 or native soil per Section 601.4.3, placed in maximum 6 to 8-inch loose lifts."

## **ADOT Standard Specifications**

The 2008 Arizona Department of Transportation (ADOT) Standard Specifications for Road and Bridge Construction also requires placement in loose layers not exceeding eight inches in depth see sections 203-5.03 (B) (3) and 501-3.04 (B) (1)

### **SECTION 203 EARTHWORK**

#### **203-5.03 Construction Requirements**

##### **(B) Backfill**

##### **(3) Placement of Backfill**

*{paragraph 6}:*

Backfill compacted by pneumatic or mechanical tamping devices, shall be placed in layers not more than eight inches in depth before compaction.

### **SECTION 501 PIPE CULVERT AND STORM DRAINS:**

#### **501-3 Construction Requirements:**

##### **501-3.04 Backfilling and Compacting:**

##### **(B) Placement of Backfill Material:**

##### **(1) General:**

All trash, forms, sheeting, bracing, and loose rock or loose earth shall be removed from the areas to be backfilled before backfill material is placed.

Backfill compacted by pneumatic or mechanical tamping devices, shall be placed in layers not more than eight inches in depth before compaction.

Pipe backfill shall be brought up evenly on both sides of the pipe for the full length to an elevation one foot above the top of the pipe.

Trench backfill shall be placed from one foot above the top of the pipe to the elevation at which base or surfacing materials are to be placed or to the top of the trench.

Backfill material shall be placed around and over arches in accordance with the requirements of Section 502.

*{Subsections (2) Standard Aggregate Slurry and (3) Cement-Treated Slurry have been omitted.}*

##### **(C) Compaction of Backfill Material:**

Backfill material shall be compacted to at least 95 percent of the maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

Jetting shall not be used to compact pipe backfill, trench backfill or any material placed more than one foot above the top of the pipe.

Ponding will not be allowed in any case.

If trench backfill or pipe backfill is placed as an aggregate slurry, the contractor shall excavate holes in the compacted slurry to the depths and at the locations designated by the Engineer. These holes shall be of such size as to allow the required density tests to be performed in a safe manner. Upon completion of the tests, the contractor shall refill the excavated areas and compact the material to the required density in a manner satisfactory to the Engineer.

*{Paragraphs regarding cement-treated slurry have been omitted.}*

## **AASHTO 2008 Guide Specifications for Highway Construction**

The AASHTO 2008 Guide Specifications for Highway Construction requires trench backfill to be placed in layer not exceeding six inches in depth [section 206.03].

### **SECTION 206 EXCAVATION AND BACKFILL FOR CONDUITS AND MINOR STRUCTURES**

#### **206.03 Construction**

*{Paragraph 4 reads as follows:}*

Distribute backfill in uniform lifts less than [6 in. (150 mm)]. Compact each lift to specified density before placing successive lifts.