



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

Case 11-04

DATE: May 23, 2011
TO: MAG Specifications and Details Committee Members
FROM: Peter Kandarlis, SRP Representative
Outside of Right-of-Way Working Group
RE: **Rock Correction Procedure – Revised for Comments**

Purpose: MAG Detail 190, “Rock Correction Procedure for Maximum Density Determination,” is not a construction detail, but a design guide for use by quality control technicians. The procedure does not belong in a construction specification. MAG 190 is referenced only in MAG Section 301 and can be replaced by the standard Arizona rock correction method, ARIZ 227c.

Revisions:

- Replace reference to MAG Detail 190 in MAG Section 301 with ARIZ 227c.
- Replace reference to ASTM D2922 & 3017 in MAG Section 301 with ASTM D6938 (superseded in 2007).
- Delete MAG 190.
- Include the following in Section 101, “Abbreviations and Definitions”

101.1 ABBREVIATIONS:

ARIZ Arizona Department of Transportation test method

101.2 DEFINITIONS AND TERMS:

Arizona Test Method: Arizona Department of Transportation Materials Testing Manual test method.

SECTION 301

SUBGRADE PREPARATION

301.1 DESCRIPTION:

This section shall govern the preparation of natural, or excavated areas prior to the placement of sub-base material, pavement, curbs and gutters, driveways, sidewalks or other structures. It shall include stripping and disposal of all unsuitable material including existing pavement and obstructions such as stumps, roots, rocks, etc., from the area to be paved.

301.2 PREPARATION OF SUBGRADE:

With the exception of areas where compacted fills have been constructed as specified in Section 211, in the areas where new construction is required, the moisture content shall be brought to that required for compaction by the addition of water, by the addition and blending of dry, suitable material or by the drying of existing material. The material shall then be compacted to the specified relative density. If pumping subgrade should become evident at any time prior to paving, the Engineer may require proof rolling with a pneumatic-tire roller or other approved equipment in order to identify the limits of the unacceptable area. The proof rolling will be performed at no additional cost to the Contracting Agency.

Subgrade preparation shall also include preparing the subgrade to the required line and grade for paved or unpaved shoulders, tapers, turnouts, and driveways, and at all other project locations where aggregate base and/or select material courses are used in accordance with the Project Plans.

301.2.1 The Contractor may use removed existing asphalt concrete and other existing bituminous roadway surfacing materials originating on the project site, as embankment fill. All materials used shall be thoroughly crushed to sizes not exceeding four inches, or as approved by the Engineer. These asphalt/bituminous materials shall be placed not less than two feet below finished subgrade elevation.

Project earthwork quantities when included as separate contract pay items will include removed asphalt/bituminous material volumes, unless otherwise specified in the Special Provisions.

All unsuitable material and all excess material shall be disposed of in accordance with the requirements of Sections 205.2 and 205.6, respectively. When additional material is required for fill, it shall conform to Section 210.

301.3 RELATIVE COMPACTION:

The subgrade shall be scarified and loosened to a depth of 6 inches. Rock 6-inches or greater in size that becomes exposed due to scarification shall be removed from the scarified subgrade. When fill material is required, a layer of approximately 3 inches may be spread and compacted with the subgrade material to provide a better bond. The subgrade cut and fill areas shall be constructed to achieve a uniform soil structure having the following minimum compaction, measured as a percentage of maximum dry density when tested in accordance with AASHTO T-99, Method A, and T-191 or ~~ASTM D-2922 and D-3017~~ [ASTM D-6938](#) with the percent of density adjusted in accordance with the rock correction procedures for maximum density determination, ~~Standard Detail 190~~ [ARIZ 227c^{\(1\)}](#), to compensate for the rock content larger than that which will pass a No. 4 sieve. Unless otherwise noted in the project plans or project

⁽¹⁾ [Arizona Department of Transportation test method](#)

specifications, compaction shall be performed within 2 percentage points of the optimum moisture content.

- (A) Below pavement, curb & gutter, attached sidewalk, roadway shoulders, and other areas within right-of-way subject to vehicular traffic 95 percent
- (B) Below detached sidewalk not subject to vehicular traffic 85 percent

301.4 SUBGRADE TOLERANCES:

Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be directly placed shall not vary more than 1/4 inch from the specified grade and cross-section. Subgrade upon which sub-base or base material is to be placed shall not vary more than 3/4 inch from the specified grade and cross-section. Variations within the above specified tolerances shall be compensating so that the average grade and cross-section specified are met.

301.5 GRADING OF AREAS NOT TO BE PAVED:

Areas where grade only is called for on the plan shall be graded to meet the tolerances for the subgrade where subbase or base material is to be placed. The surface shall be constructed to a straight grade from the finished pavement elevations shown on the plans to the elevation of the existing ground at the extremities of the area to be graded.

301.6 PROTECTION OF EXISTING FACILITIES:

The Contractor shall exercise extreme caution to prevent debris from falling into manholes or other structures. In the event that debris should fall into a structure it shall immediately be removed.

301.7 MEASUREMENT:

Measurement for Subgrade Preparation will be by the square yard. The area to be measured will be the total accepted area of new asphalt or Portland cement pavement, including paved shoulders, tapers, and turnouts, and unpaved roadway shoulders. Measurement will also include driveways that are paved or are surfaced with aggregate base or select materials. The area under concrete curb and gutter, sidewalk, concrete driveway entrances, and concrete alley entrances will not be included in this pay item.

Project earthwork quantities for Roadway Excavation, Borrow Excavation, and Fill Construction shall not be separately measured when they are not listed as separate line items on the fee proposal form. In such case, unless otherwise specified, payment for said earthwork items shall be included in the unit price for Subgrade Preparation.

301.8 PAYMENT:

Payment for Subgrade Preparation will be made only when it is performed for street or roadway paving projects.

Payment shall be compensation in full for stripping, scarifying, grading, excavating, hauling, filling, compacting, and disposing of excess or unsuitable materials, together with all costs incidental thereto.