



**MARICOPA COUNTY**  
*Department of Transportation*

**MEMORANDUM**

**Date:** January 8, 2014

**To:** MAG Specifications and Details Committee

**From:** Robert Herz, MCDOT Representative

**Subject:** Revision to Section 405 MONUMENTS and Detail 120

**Case 14-02**

**Revised 2014-04-29**

**PURPOSE:** Update specification to match current details and requirements.  
Deleted Type C Monument and modified Type B Monument to have the depth recessed six inches below finished grade when located in an unpaved roadway or alley.

**REVISION:** See the attached redlined strike-out version of the specification followed by the proposed modified specification in final form and the proposed revised Detail 120.

**SECTION 405****SURVEY MONUMENTS****405.1 DESCRIPTION:**

This work shall consist of furnishing and installing ~~Portland cement concrete right-of-way monuments and~~ survey monuments at the locations shown on the plans or directed by the Engineer ~~and as specified~~. The work also includes the preparation and recording of a corner record or results of survey in accordance with the Arizona State Board of Technical Registration requirements.

Monuments shall conform to the standard details or details shown on the plan.

**405.2 MATERIALS:**

The concrete portion of monuments shall be constructed in accordance with the provisions in Sections 725 and 505.

Concrete shall be Class B.

Brass caps for survey monuments ~~will~~ shall be furnished by the Contractor unless otherwise specified ~~in the special provisions~~.

**405.3 CONSTRUCTION:**

~~In constructing precast monuments, the forms shall not be removed until after the concrete has hardened. Monuments that are warped will be rejected. The exposed surface of the finished monuments shall be uniform, of even texture, and shall be free from holes, cracks and chipped edges. The precast monuments shall not be transported to the work site until the concrete has cured.~~

~~Cast in place~~ Monuments shall may be cast in drilled holes without the use of forms.

Survey monuments shall be set vertically in the ground.

The brass caps assembly shall be firmly embedded in the concrete cylinder ~~placed in survey monuments~~ before the concrete ~~block~~ has acquired its initial set ~~and shall be firmly bedded in the concrete~~. The concrete ~~block cylinder~~ shall be so located that, the reference point will fall within a 1 inch circle in the center of the brass cap.

**405.4 INSTALLATION:**

~~Right-of-way monuments shall be set firmly and vertically in the ground to a depth of at least 3 feet.~~

The tops of survey monument covers shall be set flush with the pavement surface.

~~Survey monuments shall be set in position after the first course of asphalt concrete.~~

**405.4 MEASUREMENT:**

Survey monuments will be measured by the number of units of each type of monument constructed and accepted.

**405.5 PAYMENT:**

Payment for monuments will be ~~at the contract unit price made on the basis of the prices bid~~ and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the monuments, complete in place, ~~including asphalt seal and necessary excavation and backfill,~~ as shown on the plans or as directed by the Engineer ~~including preparing and recording a corner record or results of survey.~~

***– End of Section –***

PROPOSED SPECIFICATION IN FINAL FORM:

**SECTION 405**  
**SURVEY MONUMENTS**

**405.1 DESCRIPTION:**

This work shall consist of furnishing and installing survey monuments at the locations shown on the plans or directed by the Engineer. The work also includes the preparation and recording of a corner record or results of survey in accordance with the Arizona State Board of Technical Registration requirements.

Monuments shall conform to the standard details or details shown on the plan.

**405.2 MATERIALS:**

The concrete portion of monuments shall be constructed in accordance with the provisions in Sections 725 and 505. Concrete shall be Class B.

Brass caps for survey monuments shall be furnished by the Contractor unless otherwise specified.

**405.3 CONSTRUCTION:**

Monuments may be cast in drilled holes without the use of forms.

Survey monuments shall be set vertically in the ground.

The brass cap assembly shall be firmly embedded in the concrete cylinder before the concrete has acquired its initial set. The concrete cylinder shall be so located that, the reference point will fall within a 1 inch circle in the center of the brass cap.

The tops of survey monument covers shall be set flush with the pavement surface.

**405.4 MEASUREMENT:**

Survey monuments will be measured by the number of units of each type of monument constructed and accepted.

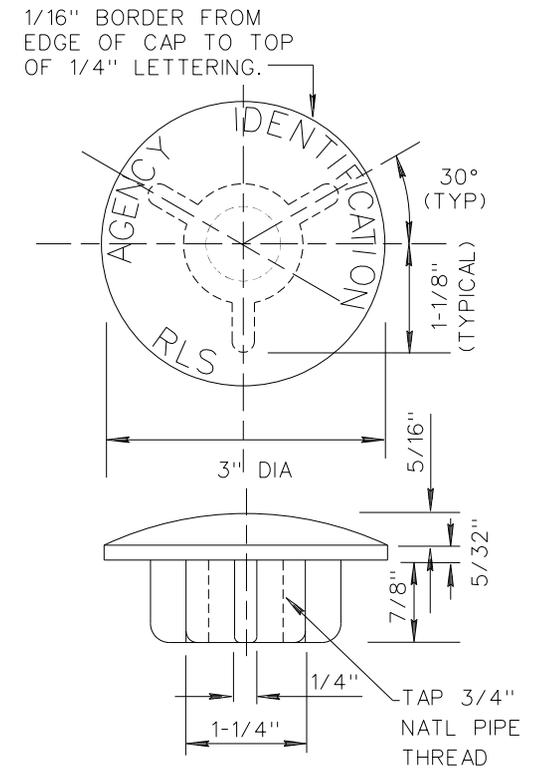
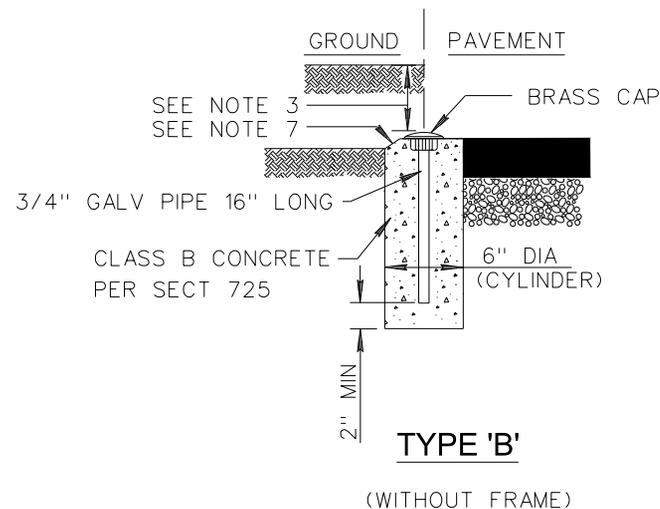
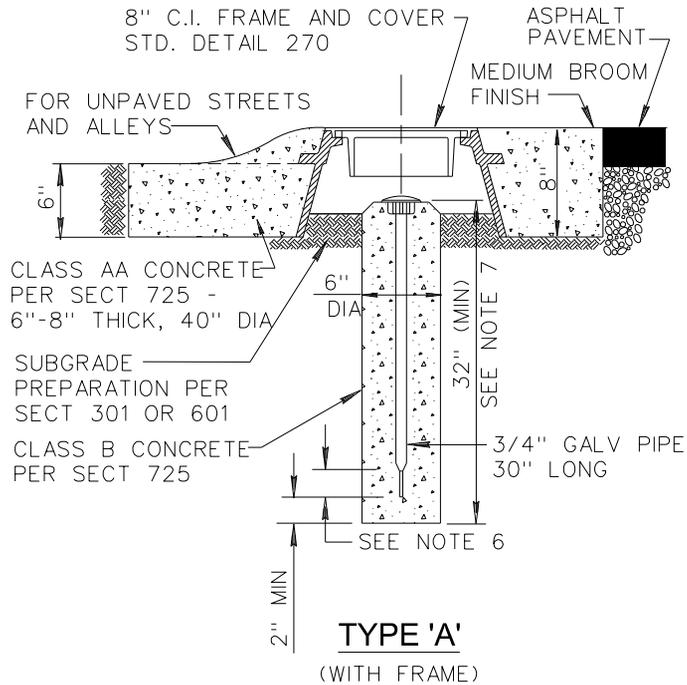
**405.5 PAYMENT:**

Payment for monuments will be at the contract unit price and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the monuments, complete in place, as shown on the plans or as directed by the Engineer including preparing and recording a corner record or results of survey.

**– End of Section –**

**NOTES:**

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



DETAIL NO.  
**120**



STANDARD DETAIL  
**ENGLISH**

**SURVEY MARKER**

REVISED  
**01-01-2014**

DETAIL NO.  
**120**