



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 2014-01-30](#)

PURPOSE: Update specification to match current details and requirements.

[Add note to Type B Monument in Detail 120 to have the depth recessed six inches below finished grade when located in an unpaved roadway or alley.](#)

REVISION: See [proposed revised detail 120 and](#) the attached redlined strike-out version of the specification for revisions followed by the proposed modified specification in final form. [Changes to specification 405 made after the January meeting have yellow highlighting.](#)

SECTION 405

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~~.

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:

QUESTION: DOES ANY AGENCY USE PRECAST MONUMENTS; IS THE FOLLOWING PARAGRAPH NEEDED OR SHOULD IT BE DELETED?

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 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.

- End of Section -

PROPOSED SPECIFICATION IN FINAL FORM:

SECTION 405

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.

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:

QUESTION: DOES ANY AGENCY USE PRECAST MONUMENTS; IS THE FOLLOWING PARAGRAPH NEEDED OR SHOULD IT BE DELETED?

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 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.

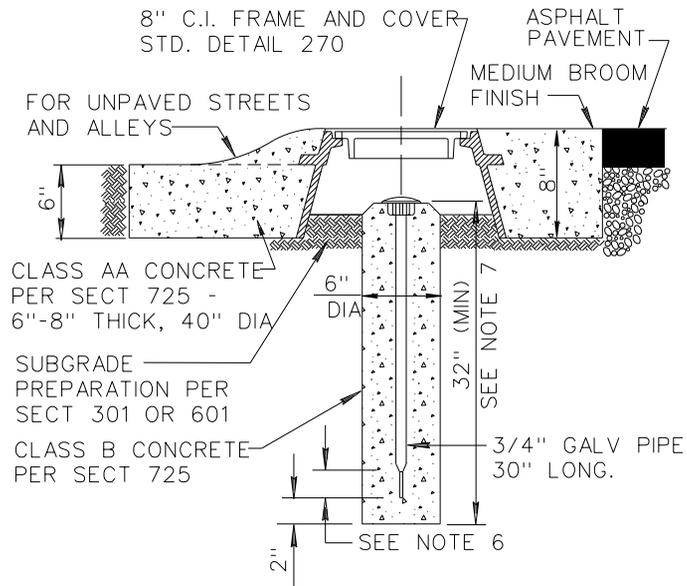
405.5 PAYMENT:

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.

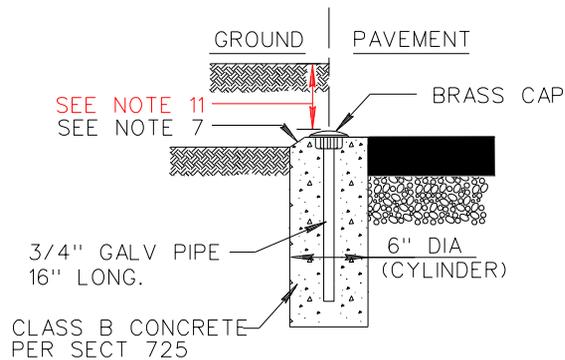
- End of Section -

NOTES:

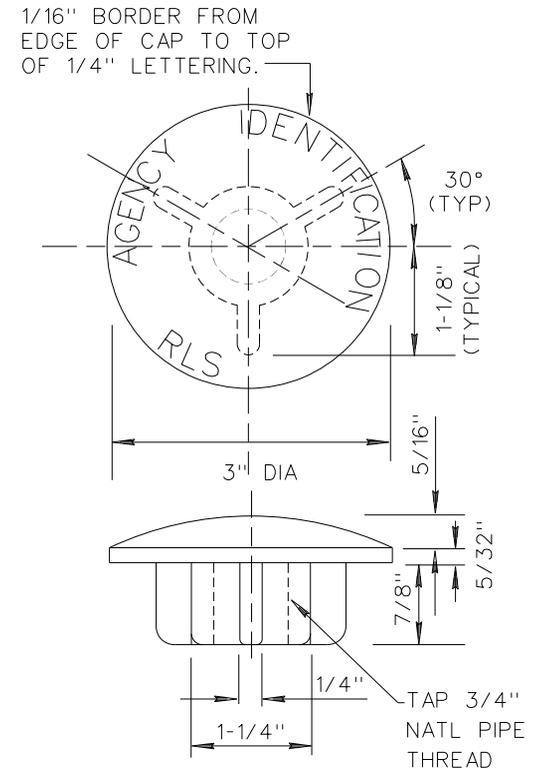
1. TYPE 'A' TO BE USED AT INTERSECTIONS OF MAJOR STREETS & COLLECTOR STREETS, SECTION CORNERS, SECTION 1/4 CORNERS, CENTER OF SECTIONS, AND AT OTHER POINTS AS SHOWN ON PLANS.
2. TYPE 'B' TO BE USED (EXCEPT WHERE TYPE 'A' IS SPECIFIED) AT INTERSECTION OF STREET CENTERLINES, PC'S, PT'S AND PI'S OF CURVES, SECTION 1/16 CORNERS, SUBDIVISION CORNERS, CHANGE IN ALIGNMENT OF SUBDIVISION BOUNDARIES, AND AT OTHER POINTS AS SHOWN ON PLANS.
3. TYPE 'C' TO BE USED AT CORNERS OF AND CHANGE IN ALIGNMENT OF SUBDIVISION BOUNDARIES WHERE CORNERS OR CHANGES IN ALIGNMENT FALL OUTSIDE OF PAVED AREAS OR UNPAVED ALLEYS AND STREETS.
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.
11. FOR UNPAVED STREETS AND ALLEYS SET TOP OF MARKER SIX INCHES BELOW FINISHED GRADE



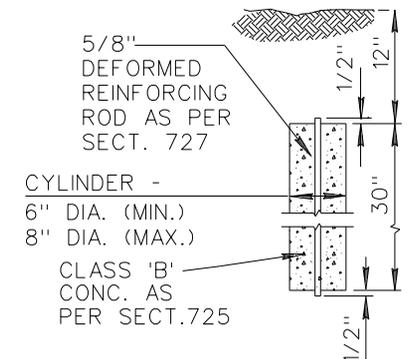
TYPE 'A'
(WITH FRAME)



TYPE 'B'
(WITHOUT FRAME)



CAP DETAIL



TYPE 'C'

DETAIL NO.
120



STANDARD DETAIL
ENGLISH

SURVEY MARKER

REVISED
01-01-2014

DETAIL NO.
120