

## Section 621 Landmark Reference Monuments

### 621.1 Description

- (1) This section describes constructing landmark reference monuments, with or without covers.

### 621.2 Materials

- (1) Furnish materials conforming to the following:

Concrete .....	<a href="#">501</a>
Reinforcement .....	<a href="#">505.2</a>
Miscellaneous metals .....	<a href="#">506.2.3</a>
Brick and concrete brick or block masonry .....	<a href="#">519.2</a>
Mortar .....	<a href="#">519.2.3</a>
Foundation backfill .....	<a href="#">520.2</a>

- (2) Use castings used for cast iron covers conforming to [611.2](#) for castings.
- (3) Make aluminum monuments and monument covers from an aluminum and magnesium alloy as the manufacturer determines.
- (4) Furnish grade A, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to [501](#) as modified in [716](#). Provide QMP for class III ancillary concrete as specified in [716](#).

### 621.3 Construction

#### 621.3.1 Monument Location

- (1) Preserve in their original position all landmarks within the construction limits of the work under contract and that require reference monuments until construction and marking of the landmark reference monuments.
- (2) In general, construct monuments in the landmark's near vicinity, outside the construction limits of the work under contract, and at the exact locations, the engineer determines. However, if the contract specifies or the engineer directs, construct monuments at the exact locations of, and to replace, landmarks disturbed by the construction.

#### 621.3.2 Placing Monuments

##### 621.3.2.1 General

- (1) Under the Landmark Reference Monuments bid item, construct cast in place or precast reinforced concrete monuments or aluminum monuments in holes excavated in the ground or, in the case of type C aluminum monuments, driven into the ground.
- (2) Place a department-furnished metal marker on all monuments, except aluminum monuments. Place a contractor-furnished metal marker, conforming to plan details, on all aluminum monuments.
- (3) Except if driving aluminum monuments, place or construct the monuments in holes excavated in the ground. Make the holes the size and depth the plans show or as the engineer directs.
- (4) Remove and dispose of all surplus excavation and materials as specified in [205.3.12](#).

##### 621.3.2.2 Cast In Place Concrete Monuments

- (1) Fill holes with concrete and strike off flush with the ground surface. Place a steel reinforcement rod in the concrete as the plans show. Place the metal marker while the concrete is still plastic.

##### 621.3.2.3 Precast Concrete and Non-Driven Aluminum Monuments

- (1) Level and thoroughly compact the bottom of the holes at the proper elevation. Place the monument and backfill with suitable material and thoroughly compact in 6-inch layers.

##### 621.3.2.4 Aluminum Drive-In Monuments

- (1) If the plans or the engineer specifies aluminum drive-in monuments for use in unstable soils, drive the monuments into the ground to the minimum depth the plans show and drive the top flush with the surface.
- (2) Increase the depth as the engineer directs to obtain a suitable foundation for the monument.

##### 621.3.2.5 Monument and Cover

- (1) Under the Landmark Reference Monuments and Cast Iron Covers and Landmark Reference Monuments and Aluminum Covers bid items, construct cast in place or precast reinforced concrete monuments in holes excavated in the ground and covered with cast iron covers or, if specified, aluminum monuments excavated or driven into the ground and covered with aluminum covers.
- (2) Construct cast in place or precast concrete monuments or aluminum monuments as specified in the above subsections, except as follows:

- Place 12 inches of granular backfill to an elevation at least 3 inches below the top of concrete monuments according to plan details.
- If using cast in place concrete monuments, form at least the top 3 inches of the monument.

(3) Place and adjust the cover as specified in [611](#).

**621.3.3 Protecting and Curing**

- (1) Cure exposed portions of cast in place concrete monuments as specified in [415.3.12](#) except the contractor may use curing compound conforming to [501.2.9](#). Wait at least 72 hours before loading.
- (2) Protect placed concrete monuments as specified for concrete pavement in [415.3.14](#)
- (3) Protect cast in place concrete monuments from freezing for 7 days.

**621.4 Measurement**

- (1) The department will measure bid items under this section as each individual monument acceptably completed.

**621.5 Payment**

- (1) The department will pay for measured quantities at the contract unit price under the following bid items:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
621.0100	Landmark Reference Monuments	EACH
621.1100	Landmark Reference Monuments and Cast Iron Covers	EACH
621.1200	Landmark Reference Monuments and Aluminum Covers	EACH

- (2) Payment for the Landmark Reference bid items is full compensation for excavating; for providing concrete; for providing aluminum monuments, including markers; for providing steel rod; for placing department-furnished markers; for providing and adjusting iron or aluminum covers; for backfilling; and for disposing of surplus materials.
- (3) The department will not pay for the increased depth of monument if the engineer directs this to obtain suitable foundation.