



City of Flagstaff

December 4, 2018

**CITY OF FLAGSTAFF
Engineering Division**

**RE: City of Flagstaff
Engineering Design and Construction Standards and Specifications
Administrative Revisions**

The most recent revision to the Engineering Standards were adopted by City Council in July of 2017. Since the adoption of these standards Engineering staff continues to identify sections of the standards that need to be changed due to current practices or new technologies. Rather than make a full revision to the standards for a few changes Engineering has administratively adopted the following Engineering Standards revisions. This list is expected to grow over time and these revisions will be officially adopted as part of the next round of revisions.

This document, as well as the attached supporting documentation, shall serve as a supplement to the Engineering Standards until these revisions are officially adopted.

Should you have any additional questions about these supplemental revisions please contact the Development Engineer, Gary Miller, at 928-213-2704.

Sincerely,
ENGINEERING SECTION

Richard A. Barrett, P.E.
City Engineer

Revision Description	Pg	Engineering Standards Sections Revised	Justification
Revise the layout of plans submitted to the City to accommodate a City approval stamp on each sheet.	3	13-06-002-0005	With the use of electronic plan reviews and submittal it has become clear that staff needs to more clearly identify and distinguish plans that have been approved.
Revise General Notes to include survey monument protection	4	13-06-007-0001	Place note on all construction plans making contractors aware of newly adopted standard.
Revision to Driveways standard to make reference to nationally recognized standard.	5	13-10-010-0001	Engineering staff has had safety concerns with previously constructed driveways. Adoption and enforcement of this revision would improve safety within newly constructed driveways and drive aisles.
Revise line of site definition within ROW Landscaping chapter to refer to a previous definition provided in Chapter 10.	7	13-18-004-0001.2	Removal of multiple definitions to limit or eliminate conflict within the standards.
Revise MAG Standard Trench Plating Dtl to limit plate use during the same time frame as the winter parking ordinance.	8	New Section 13-21-002-0211	Revise MAG Standard Trench Plating Dtl to accommodate unique weather conditions of Flagstaff as it relates to snow operations
Remove steps from Manholes	9	13-21-02-0420, 13-21-02-0421, 13-21-002-0422	Built in manhole steps corrode and become unsafe over time. Maintenance crews utilize ladders to access all manholes regardless of whether steps are installed. Other minor revisions made to be consistent with newly adopted MAG details.

Replace Trash Enclosure Detail with corrected detail	11	13-23 Detail PW-50-10 1 of 2	Some of the dimensions were incorrect, and additional detail was added for clarification.
--	----	------------------------------	---

13-06-002-0005 Cover Sheets

(Add the following section)

O. Provide a 2-1/2" wide by 1-1/2" tall blank space in the lower right-hand corner or in the title block, in the same location on each sheet, for a City approval stamp.

13-06-007-0001 General Notes

A. The following notes are to appear on applicable plans:

(Add the following General Note:)

21. All survey monuments within or around the construction area shall be protected in place. Any monuments that are disturbed or displaced by construction shall be reset by the RLS at the contractor's expense in accordance with City of Flagstaff Engineering Standards section 13-03-005-0004 and A.R.S. 33-103.

Division 13-10-010

Driveways

Sections:

- 13-10-010-0001 Driveways
- 13-10-010-0002 Right Turn Deceleration Lane Warrants

13-10-010-0001 Driveways

- A. Driveways shall be designed and constructed in accordance with the current MAG Standards and Details.
- B. The City Engineer shall review and permit all new driveways onto the public street system. While the primary purpose of local streets is for access to adjacent properties, the primary purpose of the collector and arterial streets is the safe and efficient movement of the traffic thereon.
 - 1. Access drives onto local streets will be reviewed and permitted as necessary to facilitate convenient and safe access to on-site circulation.
 - a. The City Engineer shall limit the number, location, and design of access points from adjacent developments to arterials and collectors based on operation and safety considerations [\(reference NCHRP Report 659, Guide for the Geometric Design of Driveways\)](#). Access to major arterials should be limited to major driveways only, while access to minor arterials and major collectors should be major or combined driveways, and access to minor collectors may be individual but head-out only. The minimum spacing of driveways where practicable shall be in accordance with Table 13-10-010-0001.

Table 13-10-010-0001

Minimum Drive Spacing (Measured Edge to Edge) on Arterials and Collector Streets	
Street Type	Minimum Spacing (ft.)
Major Arterial	230
Minor Arterial and Major Collector	150
Minor Collector	125

- b. Mitigation of problems created by such access points may also be required such as raised medians, turn restrictions, or right turn lanes.
 - c. When a property fronts on more than one (1) street, its access drives may be restricted to the lower classification street(s).
- C. Residential driveways are defined as those serving single-family or duplex housing. Those serving more than two (2) dwelling units are classed as commercial driveways. Residential driveways shall be located a minimum of ten (10) feet from the curb return of an intersection.
 - 1. Residential driveway access to arterial and major collector streets is prohibited.
- D. Unless the City Engineer determines that it is not feasible, commercial driveways on opposite sides of arterial or major collector streets with two (2) through lanes shall be either lined up directly opposite each other or separated, center to center by one hundred twenty (120) feet along the street.
- E. Parking areas shall not be designed to require backing maneuvers out of driveways onto arterial or collector streets, or any commercial driveway on any street.

13-21-002-0220 MAG Detail No. 220 – Curb and Gutter – Types A, B, C, and D

Revise all curb types to show that roadway widths are measured to the back of the curb. Revise the class of concrete from Class B to Class A. (Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-21-002-0230 MAG Detail No. 230 – Sidewalks

Change the length of the sidewalk from ten (10) feet to twelve (12) feet on four (4) foot wide S/W between contraction joint.

Change the score mark note to read:

Score mark (1/2 inch minimum depth) every 5 feet for 5 foot S/W and 4 foot S/W. Revise the class of concrete from Class B to Class A.

(Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-21-002-0240 MAG Detail No. 240 – Valley Gutter

Detail No. 240 shall not be used. Use City of Flagstaff Detail No. 8-06-010. (Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-21-002-0250 MAG Detail Nos. 250 and 251 – Driveway Entrances/Return Type Driveways

Revise to include the following notes:

The revised depth of concrete for residential driveways shall be 6" minimum.

Class of concrete on all driveways shall be Class A.

The radius on Detail 251 shall be 5 feet or designed to complement the adjoining parkway and sidewalk.

Commercial driveway widths shall be based on operation and safety considerations of the development (reference NCHRP Report 659, Guide for the Geometric Design of Driveways).

Revise Note No. 5 by deleting "or score mark."

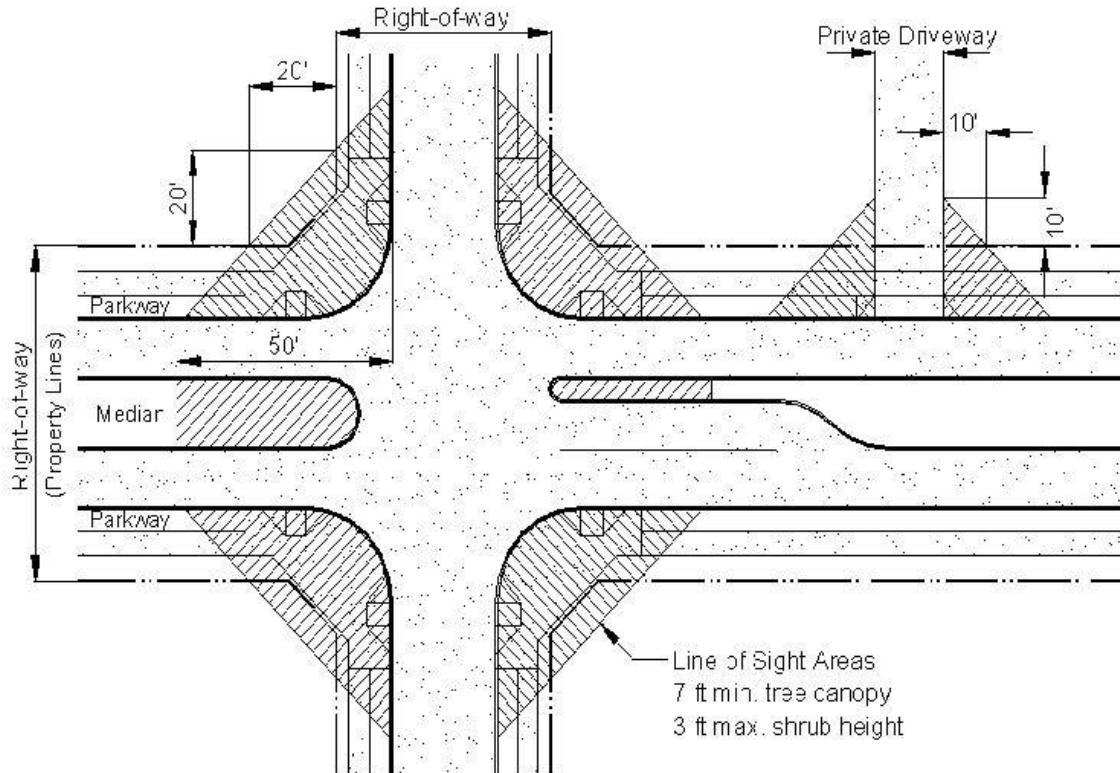
(Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-18-004-0001.2 Safety

A. Lines of Sight. At intersections and driveways, landscaping proposed to be located within the line of sight-triangular area on a corner lot formed by measuring twenty (20) feet along both street side property lines from their intersection, or ten (10) feet from the intersection of a property line adjacent and parallel to a public street and a private street or driveway, shall be selected for and maintained at a maximum thirty-six (36) inch top height. Trees located within or overhanging these triangular areas shall have canopies selected for and maintained at seven (7) feet above street level. The end fifty (50) feet of mMedians, measured parallel to the directions of traffic, shall be treated in the same manner (see diagram below).

Note: Refer to section 13-10-006-0002 for determining line of sight.

Figure 13-18-004-01



13-21-02-0211 MAG Detail No. 211 – Standard Trench Plating Detail

Add the following note:

7. The use of trench plating shall be prohibited from November 1st to April 1st unless specifically allowed by the City Engineer or their authorized representative.

13-21-02-0420 MAG Detail No. 420-1 – ~~Pre-Cast Concrete~~ Sanitary Sewer Manhole
~~Delete the Note "steps not required in 60" M.H."~~

Revise to include the following:

Manholes that have either two or more inlets or inlet/outlet pipes ranging between 12" and 18" in diameter shall be constructed using 60" inside diameter manhole material. Manholes having inlet/outlet pipes 24" to 36" in diameter shall be constructed using 72" inside diameter manhole material. Manholes for pipes greater than 36" in diameter shall be specially designed.

~~Steps shall be installed in 60" manhole in accordance with 48" manhole standard.~~

~~Steps in all m~~Manholes access point shall be placed oriented so that climber faces traffic and the steps are is on the same side of the manhole the sewer pipe enters or exits the manhole.

For new manholes, the maximum dimension from the top of the lid to the top of the cone shall be 22". The maximum dimension from the top of the lid to the bottom of the flat top shall be 24".

The manhole base of all manholes shall be reinforced with #4 rebar 8" on center both ways and placed 4" above subgrade elevation.

A 1" vertical clearance shall be provided between the top of the sewer pipe and the bottom edge of all manhole barrel sections. A suitable radius shall be provided where the manhole floor joins the vertical edge of the invert channel.

Precast manhole bases may be allowed if sufficient design information is provided to enable a thorough review of the design for a recommendation of approval by the City Engineer.

Manhole bases shall be placed on a minimum 8" aggregate base course compacted to 100%.

See COF Standard Detail 9-02-092 for additional requirements of the manhole base geometry.

(Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-21-02-0421 MAG Detail No. 421 – ~~Offset Manhole for 8" to 30" Pipe~~
~~Remove the Note beginning "1:3 Cement . . ."~~

Revise to include the following notes:

The manhole base shall be reinforced with #4 rebar 8" on center both ways and placed 4" above subgrade.

Manhole bases shall be placed on a minimum 8" aggregate base course compacted to 100%.

See COF Standard Detail 9-02-092 for additional requirements of the manhole base geometry.

(Ord. 2017-22, Rep&ReEn, 07/05/2017)

13-21-002-0422 MAG Detail No. 422 – ~~Sewer Manhole~~ Frame and Cover ~~Frame~~ Adjustment
~~Remove the notes beginning "1:3 Cement . . ." and "M.H. step in 48" . . ."~~

Revise to include the following notes:

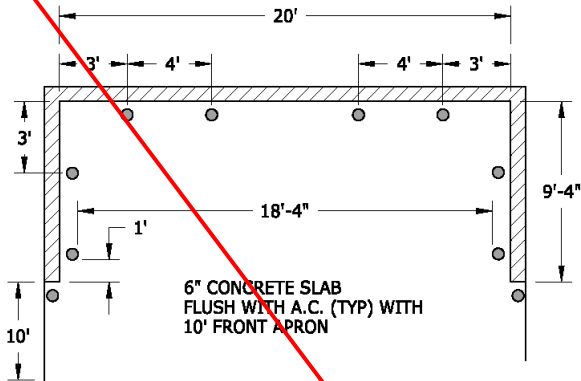
~~Steps shall be installed in 60" manholes in accordance with 48" manhole standard.~~

The manhole base shall be reinforced with #4 rebar 8" on center, placed 4" both ways above subgrade.

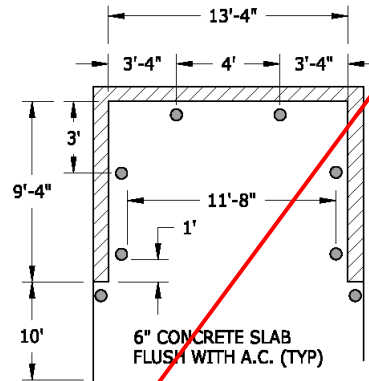
All manhole frame and cover adjustments shall be made in accordance with City of Flagstaff
Detail 9-03-062.

(Ord. 2017-22, Rep&ReEn, 07/05/2017)

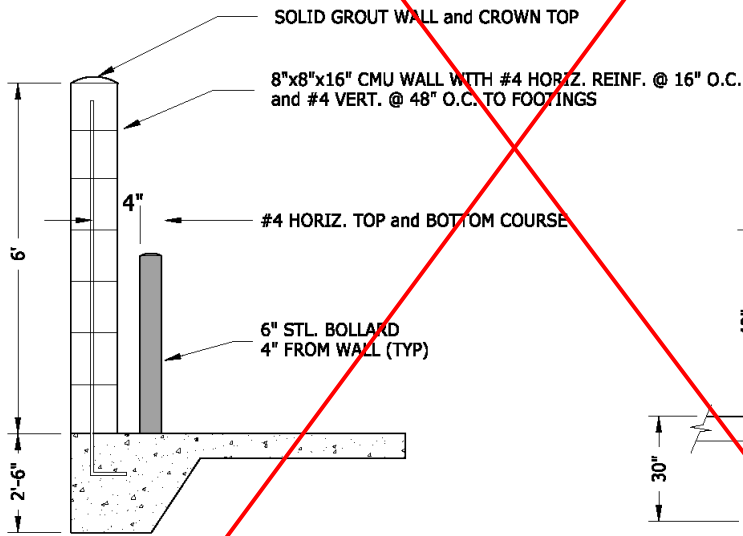
PW 50.10 Single and Double Trash Enclosure



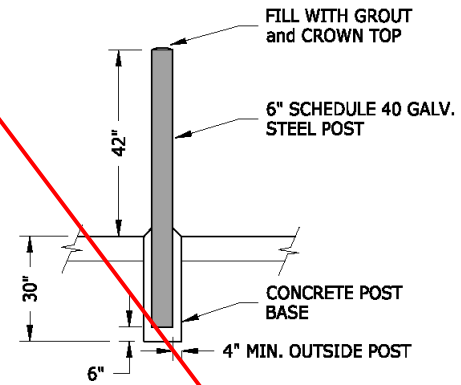
DOUBLE ENCLOSURE



SINGLE ENCLOSURE



TYP. WALL SECTION




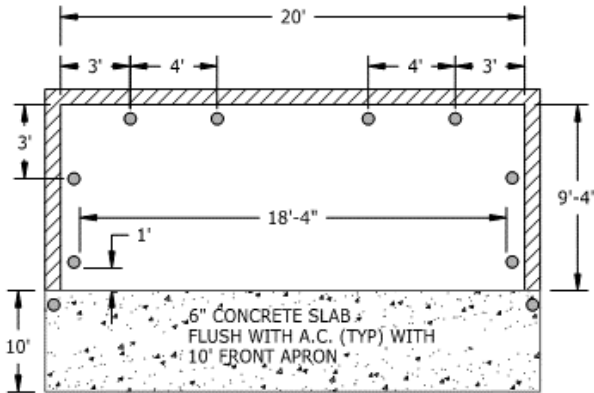
TYP. STEEL BOLLARD

NOTES:

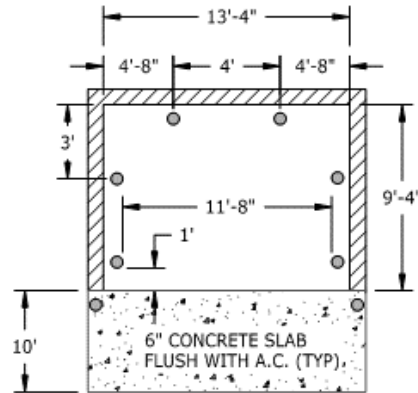
WHEN THE ENCLOSURE INCLUDES GATES, THE PLANS SHALL PROVIDE A WAY TO SECURE THE GATES OPEN AND CLOSED.

NTS

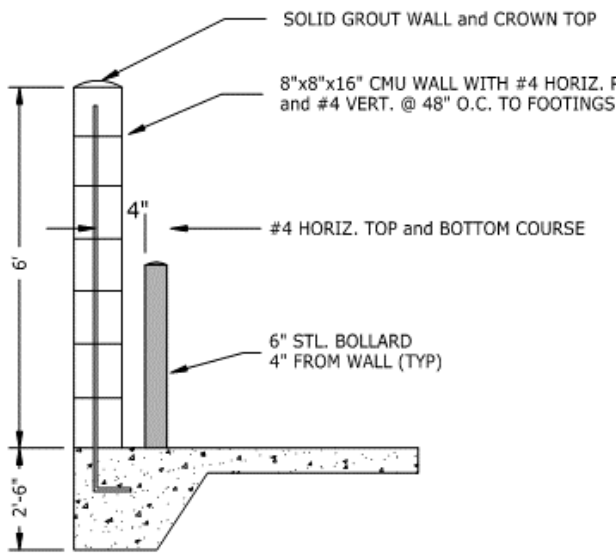
 <p>City of Flagstaff ENGINEERING DETAIL</p>	<p>SINGLE and DOUBLE TRASH ENCLOSURE</p>		
	<p>DETAIL NO. PW-50-10</p>	<p>REVISION DATE: 11/22/16</p>	<p>1 2</p>



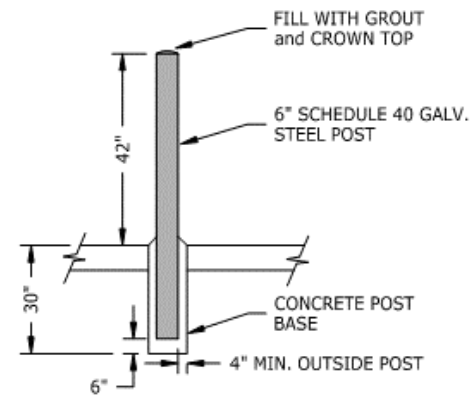
DOUBLE ENCLOSURE



SINGLE ENCLOSURE



TYP. WALL SECTION




TYP. STEEL BOLLARD

NOTES:

WHEN THE ENCLOSURE INCLUDES GATES, THE PLANS SHALL PROVIDE A WAY TO SECURE THE GATES OPEN AND CLOSED.

NTS

 <p>City of Flagstaff</p> <p>ENGINEERING DETAIL</p>	<p>SINGLE and DOUBLE TRASH ENCLOSURE</p>		
	<p>DETAIL NO.</p> <p style="font-size: 24pt; font-weight: bold;">PW-50-010</p>	<p>REVISION DATE:</p> <p style="text-align: center;">2/4/19</p>	<p>1</p> <hr/> <p>2</p>