



# TOWN OF GEORGETOWN CONSTRUCTION STANDARDS

## Chapter 6 Streets & Roads

## TABLE OF CONTENTS

### CHAPTER 6

#### STREETS & ROADS

	Page
<b>6.00.0 GENERAL PROVISIONS .....</b>	<b>1</b>
6.01.0 APPLICABILITY .....	1
6.02.0 PRIVATE STREETS and PARKING .....	1
6.03.0 CITY CAPITAL IMPROVEMENT PROJECTS .....	1
<b>6.10.0 STREET DESIGN AND TECHNICAL CRITERIA .....</b>	<b>1</b>
6.11.0 LOCAL STREET .....	1
6.12.0 COLLECTOR STREET .....	3
6.14.0 DRAINAGE .....	6
6.14.1 Crosspans .....	6
6.14.2 Inlets .....	6
6.14.3 Sidewalk Chases .....	6
6.14.4 Temporary Erosion Control .....	7
6.15.0 HORIZONTAL ALIGNMENT .....	7
6.15.1 Horizontal Curves .....	7
6.15.2 Curb Return Radius .....	7
6.15.3 Design Speed.....	7
6.15.4 Spiral Curves.....	8
6.15.5 Small Deflection Angles.....	8
6.15.6 Compound Curves.....	8
6.15.7 Reversing Curves.....	8
6.15.8 Broken-Back Curves.....	8
6.15.9 Alignment at Bridges.....	8
6.15.10 Coordination with Vertical Alignment.....	9
6.16.0 VERTICAL ALIGNMENT .....	9
6.16.1 Permissible Roadway Grade .....	9
6.16.2 Permissible Intersection Grades (Public Rights-of-Way).....	9
6.16.3 Changing Grades .....	10
6.16.4 Vertical Curves.....	10
6.16.5 Intersections .....	10
6.16.6 Curb Returns .....	11
6.16.7 Curb Return Profiles.....	11
6.16.8 Connection with Existing Roadways .....	12
6.17.00 SIGHT DISTANCES .....	12
6.17.1 General.....	12
6.17.2 Sight Distance Triangle .....	13
6.18.0 ROADWAY CROWN.....	13
6.18.1 Cross Slope.....	13
6.18.2 Superelevation .....	14

6.19.0	SIDEWALKS, CURB AND GUTTERS, AND ADA RAMPS .....	15
6.20.0	CUL-DE-SACS .....	16
6.21.0	DECELERATION LANES .....	16
6.22.0	ACCELERATION LANES .....	17
6.23.0	OFF-SIIB DESIGN .....	17
6.24.0	DEAD-END ROADS .....	18
6.25.0	INTERSECTION SPACING .....	18
<b>6.30.0</b>	<b>PAVEMENT DESIGN AND TECHNICAL CRITERIA .....</b>	<b>18</b>
6.31.0	GENERAL .....	18
6.32.0	SUBGRADE INVESTIGATION .....	18
6.32.1	Field investigation .....	18
6.32.2	Classification Testing .....	18
6.32.3	Soil Grouping .....	19
6.32.4	Subgrade Support Testing .....	19
<b>6.40.0</b>	<b>STREET CONSTRUCTION STANDARDS .....</b>	<b>19</b>
6.41.0	GENERAL .....	19
6.42.0	COMPACTION in UTILITY TRENCHES .....	19
6.43.0	EXCAVATION AND EMBANKMENT .....	20
6.43.1	General .....	20
6.43.2	Clearing and Grubbing .....	20
6.43.3	Removal of Existing Structures .....	21
6.43.4	Salvage .....	22
6.43.5	Disposal .....	22
6.43.6	Excavation and Embankment .....	22
6.43.7	Select Borrow Material .....	23
6.44.0	SUBGRADE PREPARATION and GRADING .....	23
6.44.1	General .....	23
6.44.2	Subgrade Stabilization .....	23
6.44.3	Lime and Cement Treated Subgrade .....	24
6.45.0	SUBBASE CONSTRUCTION .....	24
6.45.1	General .....	24
6.45.2	Placement and Compaction .....	24
6.46.0	BASE CONSTRUCTION .....	24
6.46.1	General .....	24
6.46.2	Base Course .....	24
6.46.3	Placement and Compaction .....	25
6.46.4	Base Surface Tolerance .....	25
6.47.0	BITUMINOUS CONSTRUCTION .....	25
6.47.1	Hot Bituminous Pavement .....	25
6.47.2	Tack Coat .....	25
6.47.3	Seal Coat .....	26
6.47.4	Rejuvenating Agent .....	26
6.47.5	Heating and Scarifying .....	26
6.47.6	Grinding .....	26
6.48.0	APPURTENANT CONCRETE STRUCTURES .....	27
6.48.1	Curb and Gutter Section .....	27
6.48.2	Sidewalks .....	27
6.48.3	Crosspans and Curb Return Fillets .....	27
6.48.4	Curb Cuts and Driveways .....	27

6.48.5	<i>Curb Ramps</i> .....	27
6.48.6	<i>Construction Stakes</i> .....	28
6.48.7	<i>Backfilling</i> .....	28
6.48.8	<i>Connections with Existing Concrete Curb. Gutter. and Drives</i> .....	28
6.49.0	MONUMENTATION .....	28
<b>6.60.0</b>	<b>BRIDGES AND MAJOR DRAINAGE STRUCTURES.....</b>	<b>28</b>
6.60.1	<i>General</i> .....	28
<b>6.70.0</b>	<b>CONSTRUCTION TRAFFIC CONTROL.....</b>	<b>29</b>
<b>6.80.0</b>	<b>MATERIAL SPECIFICATIONS.....</b>	<b>29</b>
6.81.0	SUBBASE .....	29
6.82.0	BASE.....	29
6.83.0	BITUMINOUS MATERIALS.....	30
6.83.1	<i>Prime Coat</i> .....	30
6.83.2	<i>Hot Bituminous Pavement</i> .....	30
6.83.3	<i>Tack Coat</i> .....	30
6.83.4	<i>Seal Coat</i> .....	30
6.83.5	<i>Rejuvenating Agent</i> .....	31
6.83.6	<i>Appurtenant Structures Concrete</i> .....	31
6.84.0	STRUCTURE BACKFILL MATERIAL.....	31

## **CHAPTER 6 STREETS**

### **6.00.0 GENERAL PROVISIONS**

#### **6.01.0 APPLICABILITY**

This chapter contains minimum criteria to be met on all new streets and parking designed and constructed in the Town of Georgetown, by both the Developing Party and/or by the Town. All work referenced in this section must comply with the general requirements in Chapter 1 and the acceptance requirements of Chapter 10. It is understood that in certain historic or topographically challenged areas of Town, compliance with these CONSTRUCTION STANDARDS will require variance with the prior approval of the Town.

#### **6.02.0 PRIVATE STREET SYSTEMS AND PARKING**

Private street systems and parking shall be subject to all minimum requirements of these CONSTRUCTION STANDARDS. Traffic studies may be required by the Town, refer to Chapter 8 for the requirements of such study.

#### **6.03.0 TOWN CAPITAL IMPROVEMENT PROJECTS**

It is recognized that the minimum requirements contained in these STANDARDS are not necessarily sufficient for plans, specifications, and contract administration purposes for street capital improvement projects. Accordingly, the Town Administrator is authorized to develop and/or approve such additional requirements and procedures necessary for bidding, awarding, and administering for such projects, provided said additional requirements and procedures are substantially consistent with these CONSTRUCTION STANDARDS and applicable provisions of other Town ordinances and resolutions.

#### **6.10.0 ROADWAY DESIGN AND TECHNICAL CRITERIA**

This section sets forth the minimum design and technical criteria and specifications to be used in the preparation of all roadway plans. Within this chapter, **AASHTO** "Green Book" refers to "A Policy on Geometric Design of Highways and Streets -- 2004" as published by the American Association of State Highway and Transportation Officials.

#### **6.11.0 LOCAL STREET**

A local street is a general term denoting a roadway designed or operating with the following characteristics:

- (A) **Posted Speed Limit.** Between 15 and 30 miles per hour. Posted speeds for the various street classifications are normally five (5) to ten (10) miles per hour less than the design speed of that street.
- (B) **Traffic Volumes.** Less than 2,500 vehicles per day.
- (C) **Limited Continuity.**

- (D) **Safety.** Designed for the safety of pedestrians and bicyclists and the ease of access to adjacent parcels of land.
- (E) **Traffic Control.** Stop signs. Traffic requirements in other than residential areas may require special design consideration by the applicant's engineer and the Town.
- (F) **Function.** Local streets provide direct access to adjacent property. Traffic carried by local streets should have an origin or a destination with the neighborhood. Local streets are utilized in single family residential areas. Utility line easements shall be provided. Easements shall be a minimum of 20 feet on each side of the street.
- (G) **Right-of-Way.** Fifty feet (50') minimum.
- (H) **Number of Moving Lanes.** Two.
- (I) **Access Conditions.** In accordance with Chapter 8 of these STANDARDS.
- (J) **Type of Curb and Gutter.** Six-inch (6") vertical curb and twenty-four (24") inch gutter. The use of the combination curb, gutter and sidewalk is strongly discouraged and may only be used on local streets with prior approval from the Town. Combination curb, gutter and sidewalk shall conform to the standard detail in the appendix of this chapter.
- (K) **Sidewalk Width.** Five-foot (5') minimum. Detached from curb or as per combination curb, gutter and sidewalk detail in the Appendix of this chapter.
- (L) **Cul-De-Sacs.** In accordance with Section 6.20.00 of these STANDARDS
- (M) **Street Widths.** Dependent on the application of on-street parallel parking. For no on-street parking, twenty-foot (20') paved width plus two (2) two-foot (2') gutter pans. For parking allowed on one side of the street, thirty-four-foot (34') paved width plus two (2) two-foot (2') gutter pans.
- (N) **Historic Georgetown.** All above road characteristics apply to new roadway construction. New roadway design in Historic Georgetown will require variance and approval by the Town.

#### 6.12.0

#### COLLECTOR STREET

A collector is a general term denoting a roadway designed or operating with the following characteristics:

- (A) **Posted Speed Limit.** Between 25 and 35 miles per hour. Posted speeds for the various street classifications are normally five (5) to ten (10) miles per hour less than the design speed of that street.
- (B) **Traffic Volumes.** Generally, less than 7000 vehicles per day.
- (C) **Continuous.** For less than two (2) miles.
- (D) **Safety.** Designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.

- (E) **Traffic Control.** Regulation of traffic accomplished using stop signs and channelization.
- (F) **Driveways.** No back-out drives permitted without Town approval
- (G) **Function.** Collector streets collect and distribute traffic between local streets and serve as main connectors within the community, linking one neighborhood with another. Traffic carried by collector streets should have an origin or a destination within the community. 20-foot-wide utility easements shall be provided on each side of the street.
- (H) **Right-of-Way Width.** Sixty-foot (60') minimum.
- (I) **Number of Moving Lanes.** A minimum of two (2).
- (J) **Access Conditions.** In accordance with Chapter 8 of these STANDARDS.
- (K) **Planning Characteristics.** Collector streets should have continuity throughout a neighborhood but need not extend beyond the neighborhood intersections with collectors at least one-quarter (1/4) mile apart.
- (L) **Type of Curb and Gutter.** Six (6) inch vertical and twenty-four (24") inch gutter.
- (M) **Sidewalk Width.** Five-foot (5') minimum. Detached from curb.
- (N) **Street Widths.** Thirty-eight-foot (38') paved width plus two (2) - two foot (2') gutter pans.
- (O) **Historic Georgetown.** All above road characteristics apply to new roadway construction. New roadway design in Historic Georgetown will require variance and approval by the Town.

#### **6.14.0 DRAINAGE**

##### **6.14.1 Crosspans**

Crosspans shall be constructed in accordance with the detail drawing. Crosspans are not permitted across collector or arterial roadways. Double crosspans may be used parallel to collectors to convey storm runoff across local roads. The use of double crosspans elsewhere, or the use of any crossspan on roadways where the vertical grade exceeds four-and-one-half percent (4.5%) will be considered only after all alternatives have been exhausted.

##### **6.14.2 Inlets**

Inlets shall be located to intercept the curb flow at the point curb flow capacity is exceeded by storm runoff. Inlets shall also be installed to intercept cross-pavement flows at points of transition in superelevation. Due to the presence of handicap ramps, inlets shall not be allowed in the curb return but shall be located outside the tangent points of the curb returns. Gutter transition sections abutting inlets shall not be within the curb return.

##### **6.14.3 Sidewalk Chases**

Storm water from concentrated points of discharge shall not be allowed to flow over sidewalks

but shall drain to the roadway or storm inlet by use of chase sections. Sidewalk chase sections shall not be located within a curb cut or driveway. Sidewalk chase sections shall be constructed in accordance with the detail drawing.

#### **6.14.4 Temporary Erosion Control**

Temporary erosion control is required along and at the ends of all roadways that are not completed due to project phasing, subdivision boundaries, etc., in accordance with Chapter 2 of these STANDARDS.

### **6.15.0 HORIZONTAL ALIGNMENT**

#### **6.15.1 Horizontal Curves**

The minimum horizontal curves for roadway alignment shall be in accordance with Table 6.15.1 below.

TABLE 6.15.01  
Horizontal Curves

<u>Design Speed {MPH}</u>	<u>Average Running Speed {MPID}</u>	<u>Maximum Degree of Curvature</u>	<u>Minimum Curve Radius* (Feet)</u>
20	20	57.3	100
25	24	32.7	175
30	28	22.9	300
35	32	14.3	475
40	36	8.8	650

\* AASHTO Figure 111-18 - for low speed urban street - normal crown.

#### **6.15.2 Curb Return Radius**

Minimum return radius shall be as shown in Table 6.15.02 below.

TABLE 6.15.02  
Curb Return Radii  
(Measured Along Flowline)

<u>Through Street</u>	<u>Intersecting Streets</u>	
	<u>Collector</u>	<u>Local Service</u>
Collector	30 Feet	25 Feet
Local Service	25 Feet	20 Feet

#### **6.15.3 Design Speed**

Horizontal alignment design speed shall be consistent with the requirement for vertical alignment design speed. If normal crown section exists, the horizontal curve data as shown in Table 6.15.01 shall be used.



#### **6.15.4 Small Deflection Angles**

For small deflection angles, curves should be sufficiently long to avoid the appearance of a kink. Curves should be at least five hundred (500) feet long for a central angle of five degrees ( $5^\circ$ ), and the minimum length should be increased one hundred feet (100') for each one-degree ( $1^\circ$ ) decrease in the central angle. Horizontal curves should not be used when the central angle is fifty-nine minutes (59') or less.

#### **6.15.5 Compound Curves**

A compound curve on collectors should be avoided, particularly where a simple curve can be obtained. Where topography makes their use necessary, the radius of the flatter curve should not be more than fifty percent (50%) greater than the radius of the sharper curve. When this is not feasible, an intermediate curve or spiral should be used to provide the necessary transitions. Spiral curves are only to be used upon written approval of the Town Administrator.

#### **6.15.6 Reversing Curves**

True reversing curves should not be used. In cases of reversing curves, a sufficient tangent should be maintained to avoid overlapping of the required tangent runout. The following is the minimum tangent lengths that shall be used for each roadway classification:

- (A) Local -- Fifty feet (50') minimum.
- (B) Collector -- One hundred feet (100') minimum.

#### **6.15.7 Broken-Back Curves**

A broken-back curve consists of two (2) curves in the same direction joined by a short tangent, of length less than one thousand five hundred feet (1500'). Broken-back curves are undesirable. If the length of intervening tangent is less than one thousand five hundred feet (1500'), a simple curve, or a compound curve should be used. Spiral curves are only to be used upon written approval of the Town Administrator.

#### **6.15.8 Coordination with Vertical Alignment**

To avoid the possibility of introducing serious traffic hazards, coordination is required between horizontal and vertical alignment. Care must be exercised to maintain proper sight distance at all times. Sharp horizontal curves introduced at or near the top of pronounced crest or bottom of sag vertical curves should be avoided. Vertical curvature superimposed upon horizontal curves, or vice versa, generally results in a more pleasing facility.

## 6.16.0

## VERTICAL ALIGNMENT

### Vertical Alignment Control Table

Design Controls for vertical alignment are shown on Table 6.16.00.

TABLE 6.16.00  
Vertical Alignment Controls

Description	Design Speed*	Maximum Grade**	K Value Ranges		Minimum VCL	
			Crest	Sag	Crest	Sag
Local	35	10	40-50	50-50	50	50
Minor Collector	40	10	60-80	60-70	50	50

\* The design speed is a minimum of 5 miles per hour over the posted speed for each classification.

\*\* The maximum grades indicated should only be used in extreme topographic conditions. The designer should strive to minimize the use of these grades for considerable lengths and on north-facing slopes.

\*\*\* K values exceeding 125 on curbed streets should be checked for drainage. Multiple inlets may be required within long sag on vertical curves, and where the longitudinal slope is less than 0.4 percent.

### 6.16.1 Permissible Roadway Grade

The minimum allowable grade for roadways is one-half percent (0.5%). The minimum allowable grade for bubbles and cul-de-sacs within the bulb is one percent (1 %). The maximum allowable grade for any roadway is shown in Table 6.16.00 above. In extreme terrain, defined as having existing slopes of 10% or greater, where it is difficult to maintain the maximum grades shown, steeper grades (up to 10%) may be designed into the road profile. In these circumstances, the grade shall be decreased to 6% for 50 feet before entering a switchback and decreased to 4% for 50 feet before approaching a road intersection as measured from the intersecting street flowline.

### 6.16.2 Permissible Intersection Grades {Public Rights-of-Way}

The maximum permissible grade at intersections shall be 4% and extend a minimum of 50 feet in each direction from the flowline of the existing street. Desirable intersection grades should be in the range of one percent (1%) to four percent (4%) of all intersecting streets with the limit of two percent (2%) for arterials.

The intersection grade of the major (through) street at the intersection may be dictated by design considerations for the street. However, if the major street intersection grade exceeds three percent (3%), the type of access and access control will be as directed by the Town Administrator.

All private commercial driveways with curb return radii shall follow the standards set forth for a local street. The length of the maximum grade for the commercial driveway shall be a minimum of fifty feet (50') measured from the flowline intersection of the public roadway.

### **6.16.3 Changing Grades**

The use of grade breaks in lieu of vertical curves is discouraged. However, if a grade break is necessary and the algebraic difference in grade does not exceed eight-tenths of a percent (0.008 ft./ft.) along the roadway, the grade break will be permitted. The maximum grade break allowed at the point of tangency at a curb return for local and collector roads shall be two percent (2%) and for arterial roadways a maximum of one percent (1%).

### **6.16.4 Vertical Curves**

When the algebraic difference in grade (A) is at, or exceeds, eight-tenths of a percent, a vertical curve is to be used. Design criteria for vertical curves is found in Table 6.16.00 of this chapter. The minimum gradients into and out of a sag (sump) vertical curve is five-tenths of a percent (0.005 ft./ft.). Minimum length of a vertical curve is shown in Table 6.10.00 of this chapter. All vertical curves shall be labeled in the profile with length of curve (L),  $K=U$  A values, VPC, VPT, VPI, and stationing and elevation of these components. In addition, the low point or high point of the vertical curve shall be shown.

### **6.16.5 Intersections**

In addition, the following criteria shall apply at intersections.

- (A) The grade of the "through" street shall take precedence at intersections. At the intersections of roadways with the same classification, the more important roadway, as determined by the Town Representative, shall have this precedence. The design should warp side streets to match through streets with as short a transition as possible.
- (B) The key criteria for determining the elevation of the curb return on the side street and the amount of warp needed on a side street transitioning to a through street are:
  - 1. Permissible grade in the stop/start lane. See Section 6.16.02 of these STANDARDS.
  - 2. Pavement cross slope at the PCR's on the side street and permissible warp in pavement cross slope.
  - 3. Normal vertical curve criteria.
  - 4. Vertical controls within the curb return itself.
- (C) The elevation at the PCR of the curb return on the through street is always set by the grade of the through street in conjunction with pavement cross slope.
- (D) Carrying the crown at a side street into the through street is permitted only when drainage considerations warrant such a design.
- (E) Whenever possible, intersections shall be made at right angles or radial to a curve. No intersecting angle of less than seventy-five degrees (75°) will be allowed.

#### 6.16.6 Curb Returns

Minimum fall around curb returns for flow along the curb line shall be as follows:

Table 6.16.06

Curb Returns

<u>Radius</u>	<u>Minimum Fall</u>
20 Feet	Feet
25 Feet	0.3 Feet
30 Feet	0.4 Feet
50 Feet	0.5 Feet
All Others	1.2 Percent Around the Return

## **6.17.0 SIGHTDISTANCES**

### **6.17.1 General**

The major considerations in alignment design are safety, grade, profile, road area, design speed, sight distance, topography, drainage, and performance of heavy-duty vehicles. The road alignment should provide for safe and continuous operation at a uniform design speed. New road layout shall bear a logical relationship to existing or platted roads in adjacent properties. Design for site distances shall be in accordance with the following:

Adequate intersection design necessitates the provision of safe ingress and egress from one street or driveway to the other, based in part on the ability of a driver to see oncoming vehicles or pedestrians. The following guidelines shall be used in the design of intersections, private driveways and public streets that intersect other traffic carrying facilities.

### **6.17.2 Sight Distance Triangle**

At the intersection of two public streets or a private driveway and a public street, sight distance shall be evaluated across a "sight distance triangle" where obstructions are restricted according to the following criteria. Within the area of the triangle there shall be no wall, fence, sign, foliage, or other structure which will obscure the driver's view of traffic approaching that intersection. The structures or berms within the sight distance triangle can extend no higher than 24 inches above the curb elevation and no lower than eight feet above the curb. Exceptions to this requirement exist for public facilities such as fire hydrants, utility poles and traffic control devices. These facilities must be located to minimize visual obstruction.

The sight distance triangle shall comply with the drawings found in detail contained in the appendix of this chapter. The sight distance triangle is based on the classification of the intersecting street and is based on the property lines of the adjacent parcels.

When street grades are steeper than 3.0%, adjustments must be made to compensate for the different distances required to reach the speed of highway traffic. Adjustment factors are provided in Table 6.17.01.

TABLE 6.17.01

Factors for the Effect of Grade on Sight Distance

Grade	Downgrade Factor 1	Upgrade Factor2
0-3%	1.0	1.0
3.1 -5%	0.6	1.4
5.1 - 8%	0.5	1.7

When the highway in the section to be used for acceleration after leaving the access descends, sight distance in the direction of approaching descending highway traffic should be reduced by these factors.

When the highway in the section to be used for acceleration after leaving the access ascends, then sight distance in the direction of approaching ascending should be increased by these factors.

## **6.18.0 ROADWAY CROWN**

### **6.18.1 Cross Slope**

Except at intersections or where superelevation is required, roadways shall be level from top of curb to top of curb (or flowline to flowline) and shall have a minimum two percent (2%) crown. Within one-hundred-fifty feet (150') of an intersection, the maximum elevation difference between flowlines shall be dictated by the allowable intersection grade and the actual distance between flowlines.

- (A) Parabolic or curved crowns are not allowed. In no case shall the pavement cross slope at warped intersections exceed the grade of the through street.
- (B) The rate of change in pavement cross slope when warping side streets at intersections shall not exceed one percent (1%) every twenty-five feet (25') horizontally on a local roadway, one percent (1%) every thirty-seven-and-one-half feet (37.5') horizontally on a collector roadway, or one percent (1%) every fifty-six-and-one-half feet (56.5') horizontally on arterial roadway.

## **6.19.0 SIDEWALKS, CURB AND GUTTERS, AND ADA RAMPS**

- (A) Roadway typical sections shall be as specified by these STANDARDS.
- (B) Sidewalks or bicycle paths shall be constructed on both sides of all roadways unless approved by the Town.
- (C) All sidewalks used in conjunction with vertical curb and gutter shall have a minimum width of five feet (5').
- (D) Vertical curb, gutter, and detached walk shall be used on all occasions. Combination curb, gutter, and walk may be approved for use only on local streets and in certain circumstances and must be approved in advance by the Town Administrator. No monolithic pours of vertical curb, gutter and sidewalk will be permitted without approval from the Town Administrator.
- (E) Expansion joints shall be used for every 100 lineal feet of concrete poured and at every change in concrete thickness.
- (F) State law requires that handicap ramps be installed at all intersections and at certain mid-block locations for all new construction of curb and sidewalk [CRS 43-2-107(2)]. Handicap ramps shall be constructed in accordance with the most current ADA requirements and the detail drawings in these STANDARDS. If there is a conflict between these STANDARDS and the ADA requirement, the ADA requirements shall supersede the details contained herein. Handicap ramps shall be shown at all intersections. The detail drawing in the Appendix of this chapter indicates the preference of the location of Handicap ramps. Placement of a ramp at any location other than the most preferred location shall require prior approval by the Town representative. Handicap ramps to be poured monolithic with the abutting curb and gutter.
- (G) Drainage structures shall not be placed in line with handicap ramps. Location of handicap ramps shall take precedence over location of the drainage structure.
- (H) Detectable warnings as specified by the ADA will be required at all locations where pedestrians are required to cross a vehicle travel way without tactile cues. Detectable warnings shall be 'wet set' into a freshly finished concrete surface for each new curb ramp. Surface applied detectable warnings shall only be used for retrofitting existing curb ramps in acceptable condition. 'Wet Set' mats shall be cast iron detectable warning plates manufactured by East Jordan Iron Works,

Neenah Foundry Company and Castings. Retrofit systems shall be a heat applied thermoplastic. All detectable warnings, except cast iron plates, shall be brick red in color. All detectable warnings shall be installed according to manufacturer's instructions.

- (l) All handicap ramps shall have a 4-foot landing at the top of the ramp with a cross slope no greater than ¼"/foot or shall be constructed using the alternative shown in the detail drawings.

#### **6.20.0 CUL-DE-SACS**

Cul-de-sacs shall be in accordance with the details in the appendix of this chapter. Vertical alignment shall be in accordance with Section 6.16.00 of these STANDARDS.

#### **6.23.0 OFF-SITE DESIGN**

- (A) The design grade, and existing ground at that design grade, of all roadways that dead end due to project phasing, subdivision boundaries, etc., shall be continued in the same plan and profile as the proposed design for at least three hundred feet (300') or to its intersection with an arterial roadway.
- (B) If the off-site roadway adjacent to the proposed development is not fully improved, the Developing Party is responsible for the design and construction of a transition for the safe conveyance of traffic from his improved section to the existing roadway. The following formula shall be applied to the taper of lane change necessary for this transition:

$$L = WS^2/60$$

Where:

L = Length of Transition in Feet

W = Width of Offset in Feet

S = Speed Limit or 85th Percentile Speed

- (C) The Town should be contacted to establish unusual transition criteria. This contact is the responsibility of the applicant.

#### **6.24.0 DEAD-END ROADS**

Whenever a roadway terminates due to project phasing, subdivision boundaries, etc., a temporary cul-de-sac or barricades or both will be required as outlined in the Municipal Code. Design and construction of the barricades shall comply with the requirements of the MUTCD, most recent edition. Design and construction of the temporary cul-de-sac shall comply with the standard detail at the end of this chapter. Details shall be shown on the construction drawings and installation shall be provided by the Developing Party.

#### **6.25.0 INTERSECTION SPACING**

Four legged intersections shall be spaced at least 300 feet apart. Where T-intersections are used, the centerlines of streets not in alignment shall be offset a minimum of 150 feet and be 150 feet from the nearest four-legged intersection. If the left turn storage requirements for adjacent intersections overlap, the minimum spacing must be increased to provide adequate left turn storage in both directions.

## **6.30.0 PAVEMENT DESIGN AND TECHNICAL CRITERIA**

### **6.31.0 GENERAL**

This section provides the basic criteria and design procedures for roadway pavements. Recommended design methodologies for asphalt and Portland cement concrete are addressed and essentially follow the Colorado Department of Transportation methodology. Some standardization of criteria has been made in design procedures.

For all Town land development approvals that involve roadway construction, the applicant shall have a subgrade investigation and pavement design report prepared by a Professional Engineer registered in the State of Colorado and practicing in the field of soils mechanics that recommends typical pavement structural section based on the known site soil conditions and the valid traffic study. This pavement design serves as a justification of the roadway improvements agreement in addition to determining roadway structural requirements.

### **6.32.0 SUBGRADE INVESTIGATION**

#### **6.32.1 Field Investigation**

The field investigation shall consist of borings or other suitable methods of sampling subgrade soils to a depth of at least three feet (3') below proposed subgrade elevation at spacings of not more than two hundred fifty feet (250') unless otherwise accepted by the Town's Representative. Samples shall be taken after grading is completed and the subgrade is rough cut.

#### **6.32.2 Classification Testing**

Each subgrade sample shall be tested to determine liquid limit, plastic limit, plasticity index, Atterberg limits, and the percentage passing the U.S. Standard No. 200 sieve. Samples of sands and gravels may require gradation analysis for classification determination. This data shall be determined using the following methods:

Liquid Limit	AASHTO T 89 (ASTM D 4318)
Plastic Limit	AASHTO T 90 (ASTM D 4318)
Percent Passing #200 Sieve	AASHTO T 11 (ASTM C 117)
Gradation	AASHTO T 27 (ASTM D 422)

The results of these tests shall be used to calculate the AASHTO classification and group index using AASHTO M 145.

#### **6.32.3 Soil Grouping**

To facilitate subgrade support testing, soil samples collected in the field investigation can be combined to form soil groups. These groups shall be based upon the AASHTO classification group index and location within the area investigated. Groupings shall not consist of samples with different AASHTO classifications. (Note: There may be more than one group within a given classification.) Composite samples can be manufactured by combining small portions of each subgrade sample contained within the group and mixing to provide a uniform composite sample of the soil group. Composite samples shall be subjected to classification testing as outlined in AASHTO M 145.



#### **6.32.4 Subgrade Support Testing**

Individual subgrade or composite samples shall be tested to determine the subgrade support value using Hveem stabilometer (R-value) testing. Tests shall be conducted in accordance with the procedures listed below.

(A) **R-Value Tests.** Hveem stabilometer tests shall be conducted in accordance with AASHTO T 190. The design R-value shall be at 300 psi erudition pressure. The reported data shall consist of:

1. Dry density and moisture content for each sample.
2. Expansion pressure for each sample.
3. Erudition pressure -- corrected R-value curve showing the 300 psi design R-value.

#### **6.40.0 STREET CONSTRUCTION STANDARDS**

##### **6.41.0 GENERAL**

The purpose of this section is to set forth the criteria to be used in the construction of all streets and appurtenances within the Town of Georgetown.

## **6.43.0 EXCAVATION AND EMBANKMENT**

### **6.43.1 General**

The intent of this section is to specify methods and standards to be used in the construction of embankments or excavations for Town streets or for other purposes, as indicated on the approved drawings or contract documents. The work will include excavation, embankment, grading; compacting; clearing and grubbing; removal of topsoil, trees, stumps, or other vegetation; removal and/or resetting of minor obstructions; subgrade preparations; and any other work incidental for the construction of excavations and embankments. All workmanship and materials shall be in accordance with the requirements of these STANDARDS and in conformity with the lines, grades, quantities, and the typical cross-section shown on the plans or as directed by the Town's Representative.

### **6.43.2 Clearing and Grubbing**

Work shall consist of clearing, grubbing, removing and disposing of all vegetation and debris within the limits of the project, and such other areas as may be indicated on the approved plans or required by the work except such objects as are designated to remain or are to be removed in accordance with other sections of these STANDARDS. All surface objects and trees, stumps, roots, and other protruding obstructions not designated to remain shall be cleared and/or grubbed as required except large rocks and non-perishable solid objects which shall be a minimum of two feet (2') below subgrade.

Except in areas to be excavated, stump holes and other holes from which obstructions are removed shall be backfilled with suitable material and compacted in accordance with these STANDARDS. Materials and debris shall be disposed of in a manner acceptable to the Town Representative. Burning shall not be permitted.

The Developing Party shall make all necessary arrangements for obtaining suitable disposal locations. If disposal will be at other than established dump sites, the Town Administrator may require the Developing Party to furnish written permission from the property owner on whose property the materials and debris will be placed. Branches on trees or shrubs shall be removed as directed. Branches of trees extending over the road bed shall be trimmed to give a clear height of sixteen (16') above the road bed surface. All trimming shall be done by skilled workmen and in accordance with good treesurgery practices.

The Developing Party shall scalp areas where excavation or embankment is to be made. Scalping shall include the removal of material such as brush, roots, sod, grass, residue of agricultural crops, sawdust, and other vegetable matter from the surface of the ground. Hedges shall be pulled or grubbed in such a manner as to assure complete and permanent removal. Sod not required to be removed will be thoroughly disked before construction of embankment.

### **6.43.3 Removal of Existing Structures**

- (A) The Developing Party shall raze, remove, and dispose of all foundations, signs, structures, fences, old pavements, abandoned pipe lines, traffic signal materials, and other obstructions which are within the project limits except for utilities and for those items which other provisions have been made for removal. Traffic signals and related materials will include all attachment hardware and other incidental materials such as, but not limited to, mast arms and span wire. Concrete adhering to sign posts shall be removed, and pedestals and bases shall be removed to one foot (1 ') below the surrounding ground or subgrade.

Where portions of structures are to be removed, the remaining portions shall be prepared to fit new construction. The work shall be done in accordance with plan details and in such a manner that materials to be left in place will be protected from damage. The Developing Party at their expense shall repair all damage to portions of structures that are to remain in place. Reinforcing steel, projecting from the remaining structure, shall be cleaned and aligned to provide bond with new extension. Dowels shall be securely grouted with approved grout.

Removal of sign panel shall include all work necessary to remove the panel and its attachment hardware from the existing installation. Where culverts or sewers are to be left in place and plugged, the ends shall be filled with concrete. In addition, the entire length of pipe to be left in place shall be blown full of sand. Materials used in detour structures and supplied by the Developing Party shall be the property of the Responsible Party. After the detour is abandoned, the Developing Party shall completely remove the detour structures and shall dispose of materials according to these STANDARDS.

- (B) Bridges, culverts, and other drainage structures in use by traffic shall not be removed until satisfactory arrangements have been made to accommodate traffic. Unless otherwise directed, the substructures of existing structures shall be removed to one foot (1 ') below natural stream bottom or ground surface. Where such portions of existing structures lie wholly or in part within the limits of a new structure, it shall be removed as necessary to accommodate the construction of the proposed structure. Steel, precast concrete, and wood bridges shall be carefully dismantled without unnecessary damage. Steel members to be salvaged shall be match-marked with waterproof paint.
- (C) Unless otherwise provided, all pipe shall be carefully removed and cleaned. Every precaution shall be taken to avoid breaking or damaging the pipe. Pipes to be re-laid shall be removed and stored, when necessary, so that there will be no loss or damage before relaying. When removing manholes, catch basins, and inlets, any live sewer connected to these items shall be properly reconnected and satisfactory bypass service shall be maintained during such operation.
- (D) Concrete or asphalt concrete that is to remain shall be cut in a straight, true line with a vertical face. The Developing Party shall be responsible for the cost of removal and replacement of all overburden. Sawing shall be done carefully, and all damages to concrete or asphalt to remain in place, which are caused by the Developing Party's operations, shall be repaired by the Developing Party at their expense. The minimum depth of saw cuts in concrete shall be two inches (2"). If the removed portion falls

within five feet (5') of an existing joint or edge, the concrete shall be removed to that joint or edge.

#### **6.43.4 Salvage**

All salvageable material shown on the plans shall be removed without unnecessary damage in sections or pieces that may be readily transported and shall be stored by the Developing Party in locations approved by the Town's Representative. The Developing Party shall be required to replace any materials lost from improper storage methods or damaged by negligence.

#### **6.43.5 Disposal**

The Developing Party shall make all necessary arrangements for obtaining suitable disposal locations, and the cost involved shall be included in the work. If disposal will be at other than established dump sites, the Town's Representative may require the Developing Party to furnish written permission from the property owner on whose property the materials will be placed.

#### **6.43.6 Excavation and Embankment**

Excavation of whatever substances are encountered within the limits of the project shall be performed to the lines and grades indicated on approved plans. All excavated areas shall be graded in a manner that will permit adequate drainage. Whenever practicable, all suitable material removed from the excavations shall be used in the formation of embankments, for backfilling, and for other approved purposes. Where material encountered within the limits of the work is considered unsuitable, such material shall be excavated below the grade shown on the approved drawings or as directed by the Town's Representative and replaced with suitable material. All unsuitable excavated materials and any surplus or excavated material that is not required for embankments shall be disposed of by the Developing Party.

Before any embankment is placed, clearing, tree removal, sod and topsoil removal over the entire area shall be performed in accordance with these STANDARDS. The base of fill areas shall be scarified to a depth of not less than six inches (6") prior to placement of embankment material. Each layer shall be wetted or aerated, if necessary. No embankment material shall be placed upon organic, spongy, or frozen material or other material unsuitable for the placement thereof in the opinion of the Town's Representative. When an embankment is to be placed on slopes, it shall be continuously benched in horizontal layers to key to the existing slopes.

The construction of embankments by deposition, placing, and compacting materials of acceptable quality above the natural ground or other surface shall be in accordance with the lines, grades, and cross-sections shown on the approved plans and/or as required by the Town's Representative. Each lift of the embankment material shall not exceed eight inches (8") in loose depth. The Developing Party shall thoroughly mix the different materials to secure a uniform moisture content and to insure uniform density and proper compaction. Each layer shall be thoroughly compacted by roller or vibratory equipment that is suitable for the type of embankment material to the densities specified in table found in the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 203.07.

#### **6.43.7 Select Borrow Material**

In the event the material found on site is unsatisfactory for constructing subgrade, embankments, or filling excavations, the Developing Party shall provide material from off-site. The selected borrow material shall be a well-graded mixture of sound mineral aggregate particles containing sufficient quality bonding material to secure a firm stable foundation when placed and compacted on the roadway. The R-value of the borrow shall be equal to or greater than the design R-value required for the street. The R-value of the borrow shall be provided to the Town's Representative prior to placing borrow. If tests reveal that material being placed is not of suitable quality and structural value, the Developing Party shall provide other material as approved by the Town's Representative.

### **6.44.0 SUBGRADE PREPARATION AND GRADING**

#### **6.44.1 General**

The work covered by this section concerns the furnishing of all labor, equipment, supplies, and materials needed to perform preparation of subgrade within the public right-of-way. The bottom of the excavation for the pavement, or top of the fill, will be known as the pavement subgrade and shall conform to the lines, grades, and cross-sections shown on the approved plans. Prior to the street being excavated, all service cuts shall be checked to see if the backfill meets density requirements. If deficient, they shall be recompacted and brought up to the density as specified in Chapter 8, Trenching, Backfilling and Compaction.

#### **6.44.2 Subgrade Stabilization**

Embankment and subgrade soils shall be compacted to ninety-eight percent (98%) of maximum standard density at plus or minus two percent ( $\pm 2\%$ ) optimum moisture or as recommended in the approved soils report. Maximum density shall be determined by ASTM D 698-78. Soft and yielding material and other portions of the subgrade that will not compact when rolled or tamped shall be removed as directed by the Town's Representative and replaced with suitable material or, if written approval by the Town's Representative, fabric material may be used. Material shall be approved by the Town prior to purchase and installation.

Subgrade surfaces below excavated areas such as cut areas and undisturbed areas shall require additional preparation. Said subgrade shall be scarified to a minimum depth of twelve inches (12"), wetted or aerated as needed, and compacted until the required density is obtained, unless otherwise approved by the Town's Representative. No paving, subbase, or base shall be placed on soft, spongy, or frozen unstable subgrade which is considered unsuitable by the Town's Representative.

The Developing Party shall, when requested by the Town's Representative, furnish the necessary equipment to proof roll, even though density tests may indicate compliance. Heavy construction equipment or loaded trucks acceptable to the Town shall be driven over the finished subgrade and deflections noted. Soft and yielding material and portions of the subgrade which show deflection shall be scarified and re-rolled or shall be removed and replaced with subgrade course material and then placed and compacted as specified herein. Subgrade shall not be approved for base course construction or paving until it is uniformly stable and unyielding.

### **6.44.3 Lime and Cement Treated Subgrade**

When recommended by the approved soils report and/or pavement design, the surface of the road bed shall be bladed to the established lines, grades, and cross-sections as shown on the approved plans. The prepared road bed shall be scarified to the depth and width required for the subgrade stabilization. The material thus obtained shall be pulverized. Application, mixing, and finishing shall be in accordance with Colorado Department of Transportation Specifications, 2005 Edition, Section 307.02 through 307.12. Hydrated lime shall conform to the requirements of ASTM C 207, Type N.

## **6.45.0 SUBBASE CONSTRUCTION**

### **6.45.1 General**

The subbase shall consist of a foundation course composed of granular material constructed on the prepared subgrade in accordance with these STANDARDS and in reasonable conformity to the lines and grades and typical cross-sections as shown on the approved plans.

### **6.45.2 Placement and Compaction**

Each layer of subbase material shall be placed in layers not to exceed twelve inches (12") in compacted depth. Each layer shall be wetted or aerated, if necessary, and compacted to ninety-eight percent (98%) maximum density standard proctor at plus or minus two percent ( $\pm 2\%$ ) of optimum moisture as determined by ASTM D 698-78. No subbase material shall be placed upon a soft, spongy, or frozen subgrade or other subgrade, the stability of which is unsuitable for the placement thereof in accordance with the approved soils report.

## **6.46.0 BASE CONSTRUCTION**

### **6.46.1 General**

The intent of this section is to specify methods to be used for the construction, overlaying, sealcoating, and pavement rejuvenating of streets, parking lots, walks, drainageways, and other miscellaneous work requiring the use of aggregates. The work covered shall include general requirements that are applicable to aggregate base course, bituminous base, and pavements of the plant-mix type, bituminous prime coat, bituminous tack coat, rejuvenating applications, and asphalt concrete overly. All workmanship and material shall be in accordance with requirements of these STANDARDS and in conformity with the lines, grades, depths, and the typical cross-section shown on the approved plans or as directed by the Town's Representative.

### **6.46.2 Base Course**

This item shall consist of a foundation course composed of crushed gravel or crushed stone and filler, constructed on the prepared subgrade or subbase course. Construction shall be in accordance with the requirements of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 304 and the approved pavement design. The composite base course material shall be free from vegetation and lumps or balls of clay.

### **6.46.3 Placement and Compaction**

The base course material shall be deposited and spread in a uniform layer without segregation of size to a compacted depth not to exceed six inches (6"). The material shall be compacted to a minimum ninety percent (90%) density modified proctor as determined by ASTM D 1557-78. No base course material shall be placed upon a soft, spongy, or frozen subgrade or subbase with an unsuitable stability. Base material shall not be placed on a dry or dusty foundation where the existing condition would cause rapid dissipation of moisture from the base material and hinder or preclude its proper compaction. Such dry foundations shall have water applied and shall be reworked and recompacted.

Rolling shall be continuous until the base material has been compacted thoroughly in accordance with these STANDARDS. Water shall be uniformly applied as needed during compaction to obtain optimum moisture content and to aid in consolidation. The surface of each layer shall be maintained during the compaction operations in such a manner that a uniform texture is produced and the aggregates are firmly placed.

### **6.46.4 Base Surface Tolerance**

The prepared surface of the base shall not vary from the approved grade by more than one-half inch (1/2").

## **6.47.0 BITUMINOUS CONSTRUCTION**

### **6.47.1 Hot Bituminous Pavement**

All pavement shall be hot bituminous pavement of the plant mix type unless otherwise approved in writing by the Town's Representative and shall be a minimum of four (4") inches thick placed in two, 2" lifts on local and collector streets. Construction shall be in accordance with the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 403, and the following requirements:

- (A) The asphalt cement shall be 85-100 penetration grade.
- (B) The gradation of the mineral aggregate shall be Grading SG (1" maximum) for the first base 2" lift and Grading SX (1/2" maximum) for the top 2" lift. Grading SX may be used for overlay or in special cases as authorized in writing by the Town's Representative

### **6.47.2 Tack Coat**

When tack coat is specified on the approved plans or required by the Town's Representative, all construction shall be in accordance with the requirements of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 407. Bituminous material shall be applied at the rate of five one-hundredths (0.05) to fifteen one-hundredths (0.15) gallons per square yard.

### **6.47.3 Seal Coat/Chip Seal**

When seal coat is required, all construction shall be in accordance with the requirements of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 409. The type of bituminous material, cover aggregate, and rate of application shall be as shown on the approved construction plans.

### **6.47.4 Rejuvenating Agent**

When a rejuvenating agent is specified on the approved construction plans or required by the Town's Representative, all materials and construction shall be in accordance with the requirements of the Colorado Department of Highways' Standard Specifications for Road and Bridge Construction, Section 407. The rejuvenating agent shall be as shown on the approved construction plans or as specified by the Town's Representative.

### **6.47.5 Heating and Scarifying**

When heating and scarifying treatment is specified on the approved construction plans or required by the Town's Representative, all materials and construction shall be in accordance with requirements of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 405.

### **6.47.6 Grinding**

Grinding shall consist of milling, grinding, or cold planing the existing pavement surface to establish a new surface profile and cross-section in preparation for a bituminous overlay. After grinding, the surface shall have a grooved or ridged finish, uniform, and resistant to raveling or traffic displacement. This textured surface shall have grooves of one-quarter inch (1/4") plus or minus one-eighth inch ( $\pm 1/8$ ).

Wedge cut grinding shall consist of grinding the existing pavement surface a minimum of six feet (6') wide at the existing concrete gutter and at all existing concrete crosspans. The edge of the gutter end or crossspan end of the finished wedge cut shall be one-and-one-half inches (1-1/2") below the edge of the existing concrete gutter or lip of pan. The centerline of the street edge of the wedge cut will be cut one-eighth inch (1/8"). The depth of cut shall be determined by measuring to the top of the ridges by placing a five-foot (5') straight edge perpendicular to the grooving pattern. Full-width grinding shall consist of grinding the existing pavement surface from edge of gutter to edge of gutter to a minimum depth of two inches (2") unless otherwise directed by the Town's Representative.

In grinding around utility castings, the Developing Party may choose to remove the entire existing bituminous pavement around the castings where grinding is not completed and replace it with bituminous surface course placed and compacted in two, two-inch (2") lifts. The Developing Party shall vertically cut the limits of the area to be patched, mechanically compact the existing base course, and prime the bottom and vertical edges before backfilling. The Responsible Party shall remove the cuttings immediately behind the grind machine by belt loader, end loader, power sweeper, and/or by hand. The removed material shall be disposed of as approved by the Town's Representative.

The grinding machine shall be a power-operated, self-propelled machine having a cutting drum



with lacing patterns that will attain a grooved surface and produce grinding chips of less than one inch (1 ") in size. The grinding machine shall be equipped with a pressurized watering system for dust control. The equipment shall be a type that has successfully performed similar work.

The cleaning equipment shall be a type that will efficiently remove all loosened material and load into trucks for hauling and spreading. Because of the nature of the streets to be ground and the traffic restrictions, a belt loader followed by a power sweeper and manual sweeper is the most desirable method. Flushing into the Town's storm sewer system or drainage ditches as a means of clean-up will not be allowed.

## **6.48.0 APPURTENANT CONCRETE STRUCTURES**

### **6.48.1 Curb and Gutter Section**

The section to be constructed shall be as identified on the approved plans or as shown on the STANDARD DETAILS.

### **6.48.2 Sidewalks**

Sidewalks shall be four inches (4") thick and constructed to the dimensions shown on the approved construction plans. All areas of sidewalk that will be crossed by driveways will be constructed with six-inch (6") thick concrete in residential areas and eight-inch (8") thick concrete in commercial areas. Sidewalk shall have four inches (4") thick aggregate base course foundation uniformly placed and compacted as in Section 6.46.03.

### **6.48.3 Crosspans and Curb Return Fillets**

Crosspans and curb return fillets shall be constructed and reinforced as shown in the STANDARD DETAILS. Where unusual conditions prevail, additional reinforcing steel and special joints may be required by the Town's Representative.

### **6.48.4 Curb Cuts and Driveways**

Curb cuts shall be provided at all driveway locations and at additional locations, as shown on the approved plans. Construction of curb cuts shall be as shown on the STANDARD DETAILS and in compliance with the requirements in Chapter 8. Spacing will be as shown on the approved plans or as approved by the Town's Representative.

### **6.48.5 Handicap Ramps**

Curb ramps for the handicapped shall be installed at locations designated by the STANDARD DETAILS in this chapter. Placement of a ramp at any location other than the most preferred location shall require prior approval by the Town's representative and at all intersections unless approved otherwise by the Town's representative. Curb ramp design shall comply with the most current ADA requirements. Detectable warnings shall be used on the ramp as required by the most current ADA requirements.

#### **6.48.6 Construction Stakes**

The Developing Party's surveyor shall provide all stakes required for curbs, gutters, walks, and structures and shall furnish all necessary information relating to lines and grades. The Developing Party shall be held responsible for the reasonable preservation of all such stakes. The Developing Party shall not remove stakes until three (3) working days after placement of concrete unless approved by the Town's Representative.

#### **6.48.7 Backfilling**

When side forms are removed, the space adjoining the concrete shall be backfilled, by the Developing Party, in a timely manner with suitable material properly compacted and brought flush with the surface of the concrete and adjoining ground surface. In embankments, the backfill shall be level with the top of the concrete for at least two feet (2') and then sloped to the property line. Maximum slope shall be four horizontal to one vertical (4H:1V). Where detached walks occur, the space between the curb and walk shall be backfilled on a straight line from the top of walk to the top of curb.

#### **6.48.8 Connections with Existing Concrete Curb, Gutter, and Drives**

Where new construction abuts existing, the work shall be accomplished so that no abrupt change in grade between the old and new work results.

### **6.49.0 MONUMENTATION**

Centerline monuments shall be set in accordance with Section 1.25.3 of these STANDARDS. If an existing street is to be resurfaced, monuments shall be reset, restored, or set as necessary. In paved streets, the bar and cap shall be set in concrete and shall be set under a valve box cover labeled "survey", in accordance with the STANDARD DETAILS in this Chapter. The cover shall be set at finished grade.

### **6.60.0 BRIDGES and MAJOR DRAINAGE STRUCTURES**

#### **6.60.1 General**

- (A) All culvert pipe, box culverts, and bridges that will ultimately be maintained by the Town shall conform to the following:
  - 1. AASHTO "Standard Specifications for Highway Bridges," latest edition, and applicable interims.
  - 2. Colorado Department of Transportation's "Standard Specifications for Road and Bridge Construction," latest edition.
  - 3. Colorado Department of Transportation's "Bridge Manual," Volumes I and II.

- (B) All structures shall be designed to an HS-20 loading.
- (C) All box culvert and bridge designs shall be certified by a Professional Engineer registered in the State of Colorado who is competent to perform such designs.

## **6.70.0 CONSTRUCTION TRAFFIC CONTROL**

Traffic control devices shall be maintained in a safe operating condition at all times. The Developing Party shall provide for approval by the Town, a traffic control plan, and shall comply with Chapter 8 of these STANDARDS and the MUTCD. If the Town's Representative finds the construction area to be inadequately barricaded, the Town's Representative has the authority to stop work and direct that corrective measures be taken prior to proceeding with work.

## **6.80.0 MATERIAL SPECIFICATIONS**

### **6.81.0 SUBBASE**

Subbase material shall be composed of granular material consisting, essentially, of sand, gravel, rock, slag, disintegrated granite, or a combination of such materials. The coarse portions of the material shall be sound fragments of the crushed or uncrushed materials enumerated above. Supplied material shall be a well-graded mixture containing sufficient soil mortar, crushed dust, or other proper quality binding material which, when placed and compacted in the roadway structure, will result in a firm, stable foundation. Material composed of uniform size particles, or which contains pockets of excessively fine or excessively coarse material, will not be acceptable for use.

This material need not be crushed but shall be graded within the following limits:

TABLE 6.81.00

<u>Standard-Size of Sieve</u>	<u>Percent by Weight Passing Sieve</u>
4 Inch	100
3 Inch	95 -100
No. 200	5 - 15

Liquid Limit -- 35 Maximum  
Plasticity Index -- 6 Maximum

### **6.82.0 BASE**

Base shall consist of a foundation course composed of crushed gravel or crushed stone and filler constructed on the prepared subgrade or subbase course. Materials and construction shall be in accordance with the requirements of Table 703-3 of the Colorado Department of Transportation's "Standard Specifications for Road and Bridge Construction," Section 703. Gradation shall be Class 6 (3/4-inch maximum) in accordance with the Table 703-3.

## **6.83.0 BITUMINOUS MATERIALS**

### **6.83.1 Prime Coat**

Materials shall be in accordance with the requirements of the Colorado Department of Transportation's "Standard Specifications for Road and Bridge Construction," Section 702. Bituminous material shall be MC-70 or cut-back AC-10 may be used if approved by the Town.

### **6.83.2 Hot Bituminous Pavement**

All pavement shall be hot bituminous pavement of the plant mix type unless otherwise approved in writing by the Town Representative. Materials shall be in accordance with the Colorado Department of Transportation's "Standard Specifications for Road and Bridge Construction," Sections 702 and 703, and the following requirements:

- (A) The asphalt cement shall be 85-100 penetration grade.
- (B) The gradation of the mineral aggregate shall be grading SG (1-inch maximum) for new street construction. Grading SX (1/2-inch maximum) may be used for overlay or in special cases as authorized in writing by the Town's Representative.
- (C) When tested in accordance with the requirements of ASTM D-1559, the mixture will conform to the following limits:

Stability (minimum)	1,000
Flow (minimum) hundredths of an inch	8
Flow (maximum) hundredths of an inch	16
Percent Voids	3-5
Percent Voids Filled with Bitumen	75-85

### **6.83.3 Rejuvenating Agent**

When a rejuvenating agent is specified on the approved construction plans or required by the Town Representative, all materials shall be in accordance with the requirements of the Colorado Department of Transportation's "Standard Specifications for Road and Bridge Construction," Section 702. The rejuvenating agent shall be as shown on the approved construction plans or as specified by the Town Representative.

### **6.83.4 Appurtenant Structures Concrete**

Concrete used in the construction of curb, gutter, sidewalk, drive cuts, and other appurtenant roadway concrete structures shall be in accordance with Chapter 7 of these CONSTRUCTION STANDARDS.

## **6.84.0 STRUCTURE BACKFILL MATERIAL**

Structure backfill shall comply with Colorado Department of Transportation's specifications for Class II material and meet the following requirements from laboratory sieves:

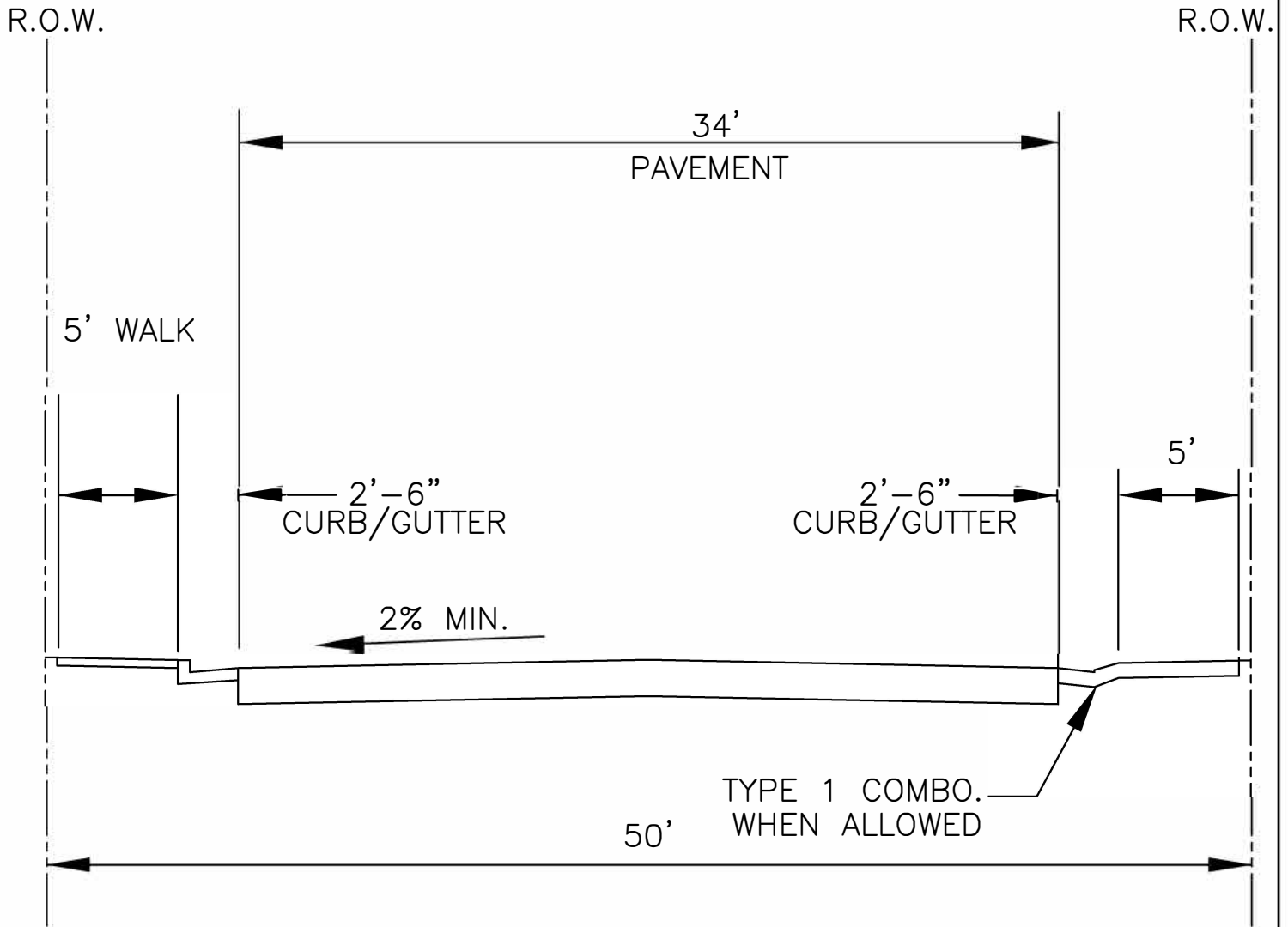
TABLE 6.84.0

<u>Sieve Designation</u>	<u>Percent by Weight Passing Lab Sieve</u>
4 Inch	100
3 Inch	95 -100
No. 200	3 - 15



# TOWN OF GEORGETOWN CONSTRUCTION STANDARDS

## Chapter 6 – Street Standard Details



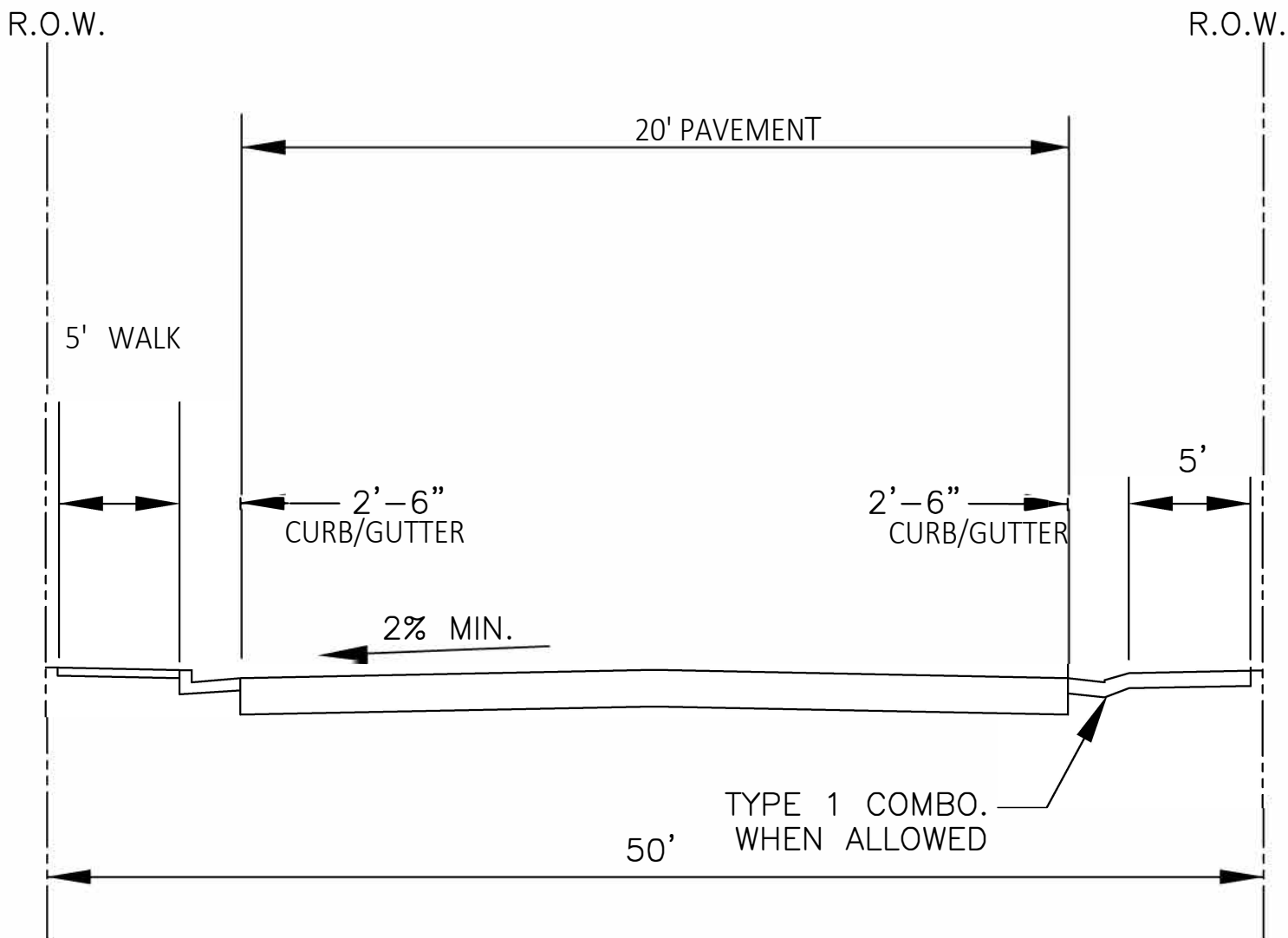
- PARKING ALLOWED ON BOTH SIDES OF STREET
- UTILIZED IN SINGLE FAMILY RESIDENTIAL AREAS
- CURB, GUTTER & SIDEWALK SHALL BE TYPE 2 VERTICAL  
(THE USE OF THE TYPE 1 COMBINATION IS STRONGLY DISCOURAGED  
AND MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE TOWN)

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

LOCAL STREET - PARKING ONE SIDE  
TYPICAL SECTION

DATE: OCTOBER, 2017

SHEET 6-01A OF 24



- PARKING ALLOWED ON BOTH SIDES OF STREET
- UTILIZED IN SINGLE FAMILY RESIDENTIAL AREAS
- CURB, GUTTER & SIDEWALK SHALL BE TYPE 2 VERTICAL  
(THE USE OF THE TYPE 1 COMBINATION IS STRONGLY DISCOURAGED  
AND MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE TOWN)

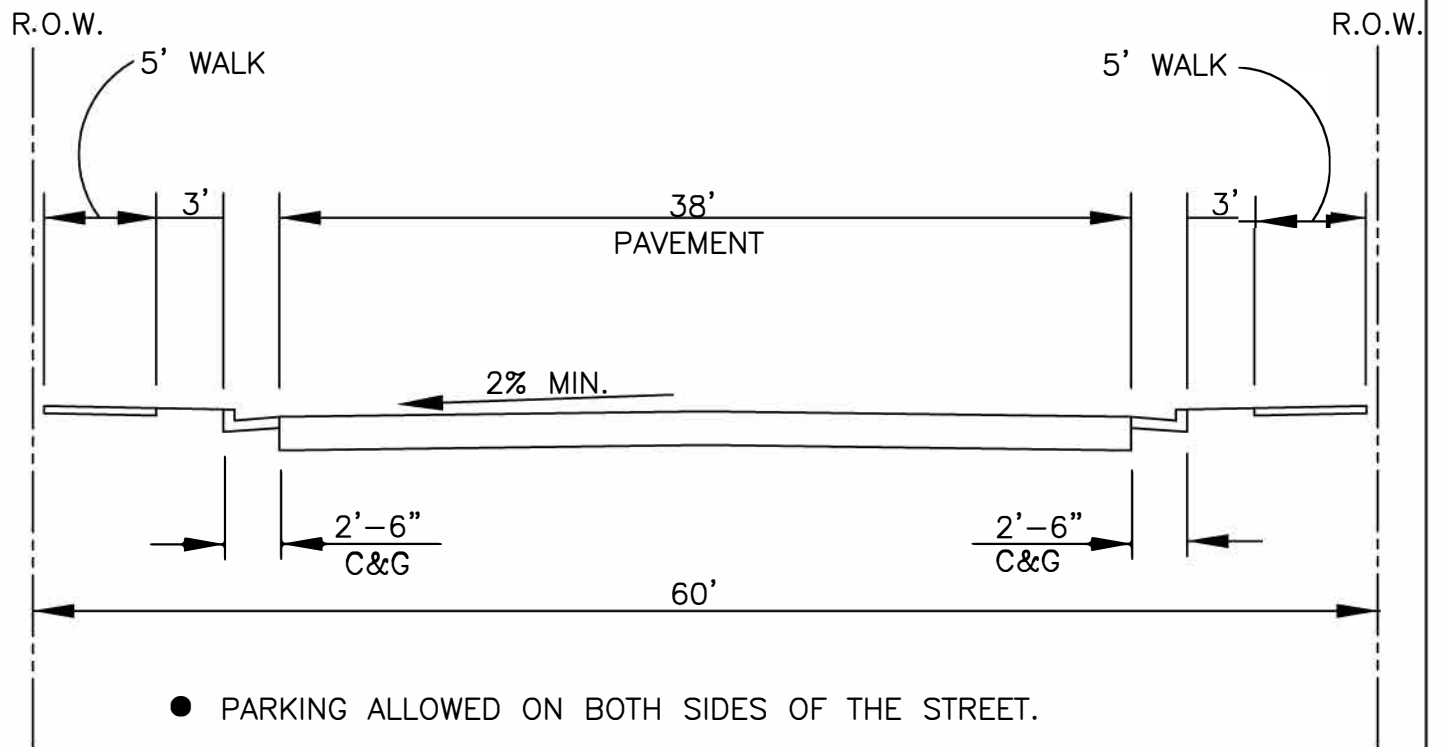
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

LOCAL STREET - NO PARKING  
TYPICAL SECTION

DATE: OCTOBER, 2017

SHEET 6-01B OF 24



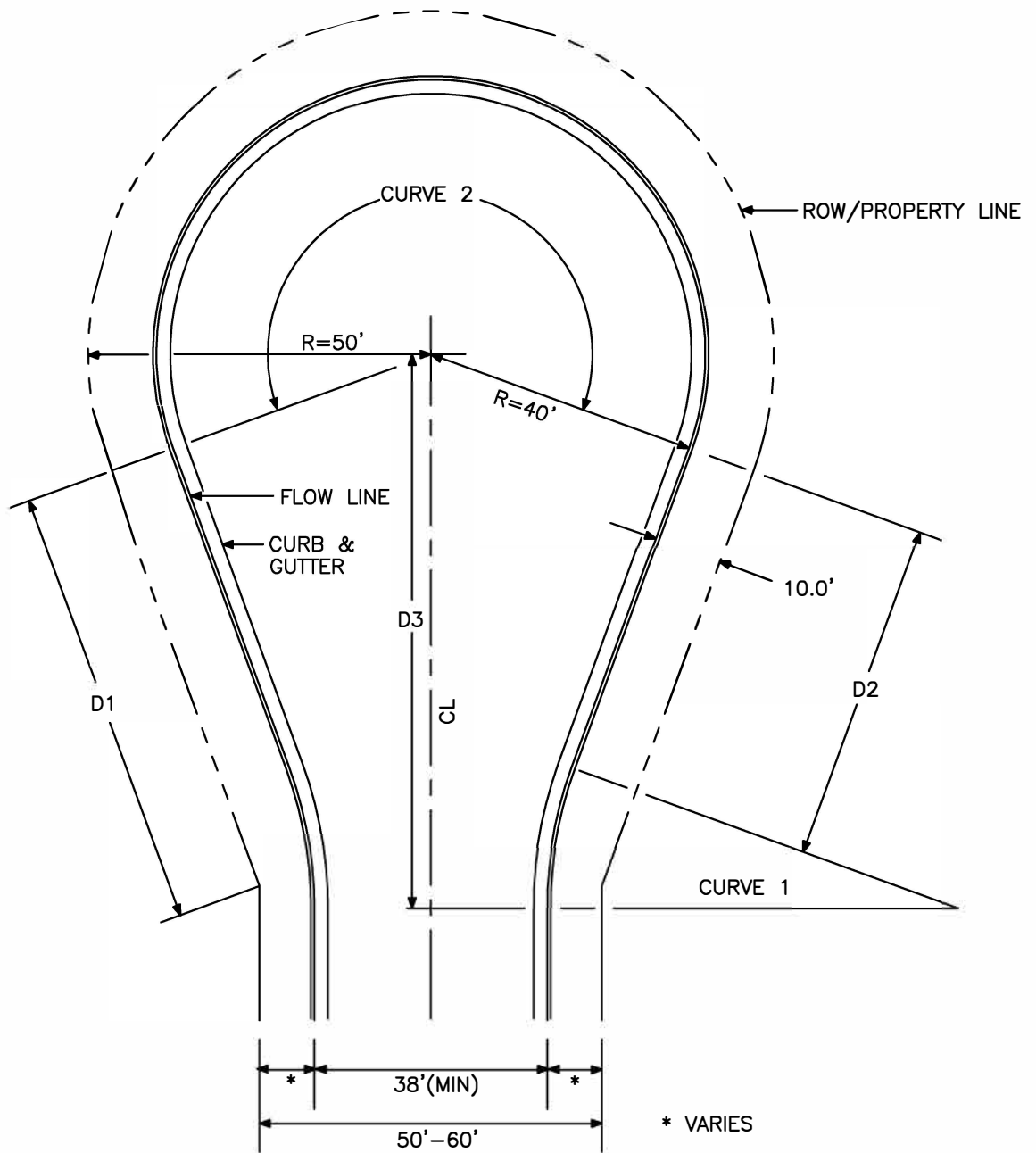


TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

COLLECTOR  
STREET SECTION

DATE: JUNE, 2017

SHEET 6-02 OF 24 -



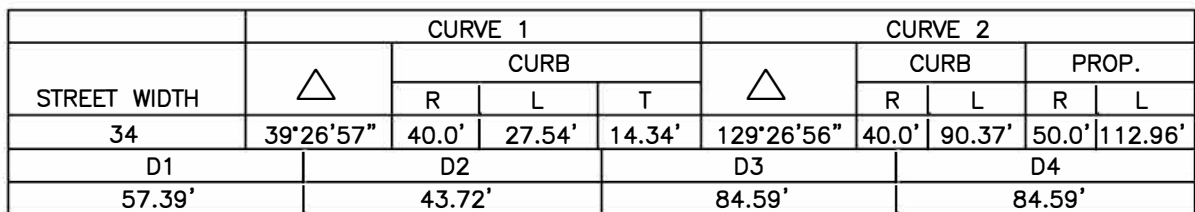
CURVE 1				CURVE 2			
△	CURB			△	CURB		PROP.
	R	L	T		R	L	R L
20°00'00"	60.0'	20.94'	10.58'	220°00'00"	40.0'	153.59'	50.0' 191.99'
STREET WIDTH		D1		D2		D3	
38'(MIN)		64.28'		49.61'		80.82'	

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

CUL-DE-SAC  
DETAIL A

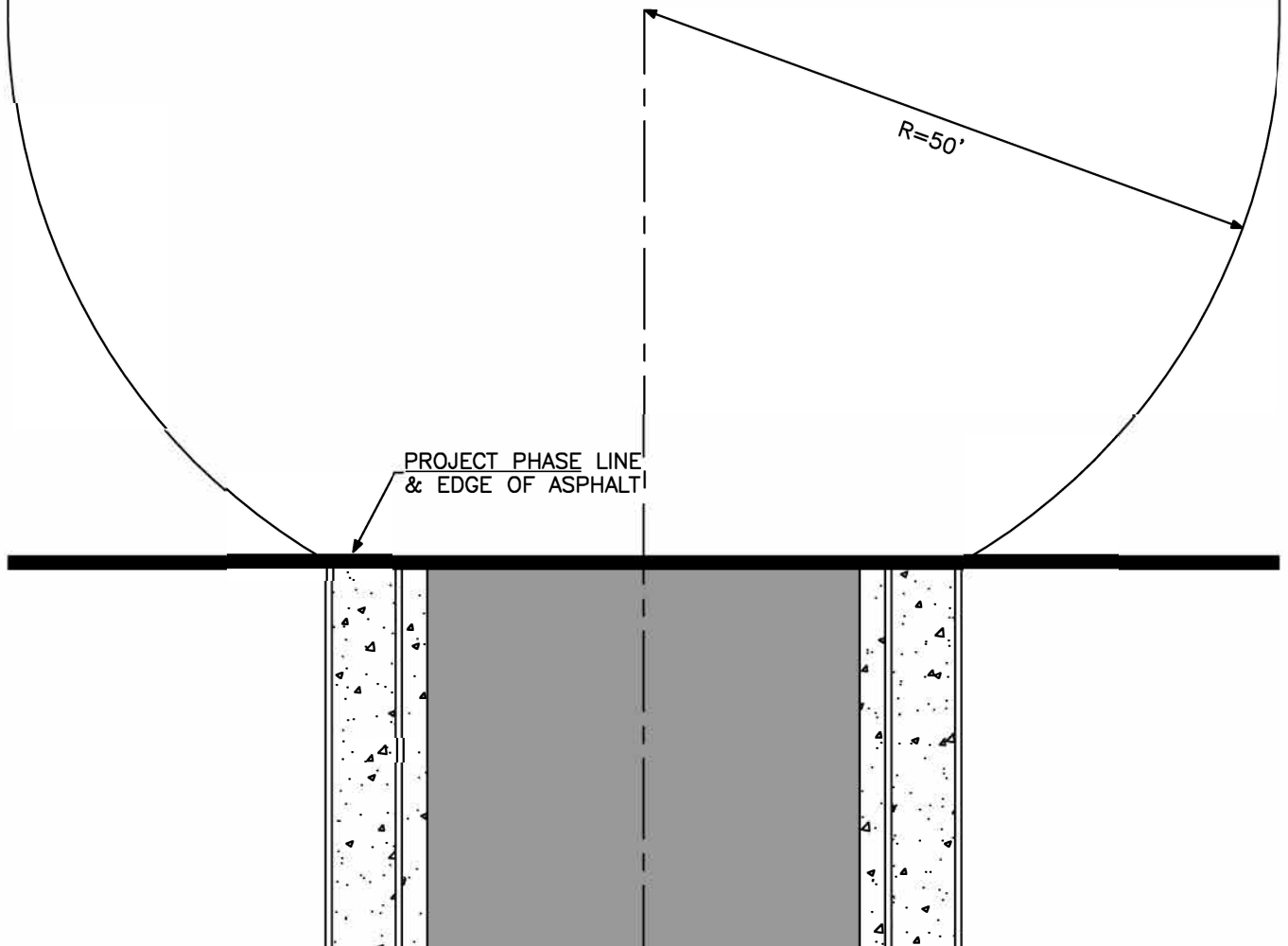
DATE: JUNE 2017

SHEET 6-03 OF 24 \_



SHEET 6-04 OF 24 -

- \* TEMPORARY CUL-DE-SAC SHALL BE CONSTRUCTED USING A MINIMUM OF 6" CLASS 6 ABC COMPACTED TO 95% STANDARD PROCTOR DENSITY
- \* TEMPORARY CUL-DE-SAC SHALL BE MAINTAINED BY RESPONSIBLE PARTY
- \* CUL-DE-SAC SHALL BE CONSTRUCTED WITH POSITIVE DRAINAGE NO PONDING OF STORMWATER PERMITTED
- \* UTILITIES WITHIN THE ROADWAY SHALL BE EXTENDED INTO CUL-DE-SAC



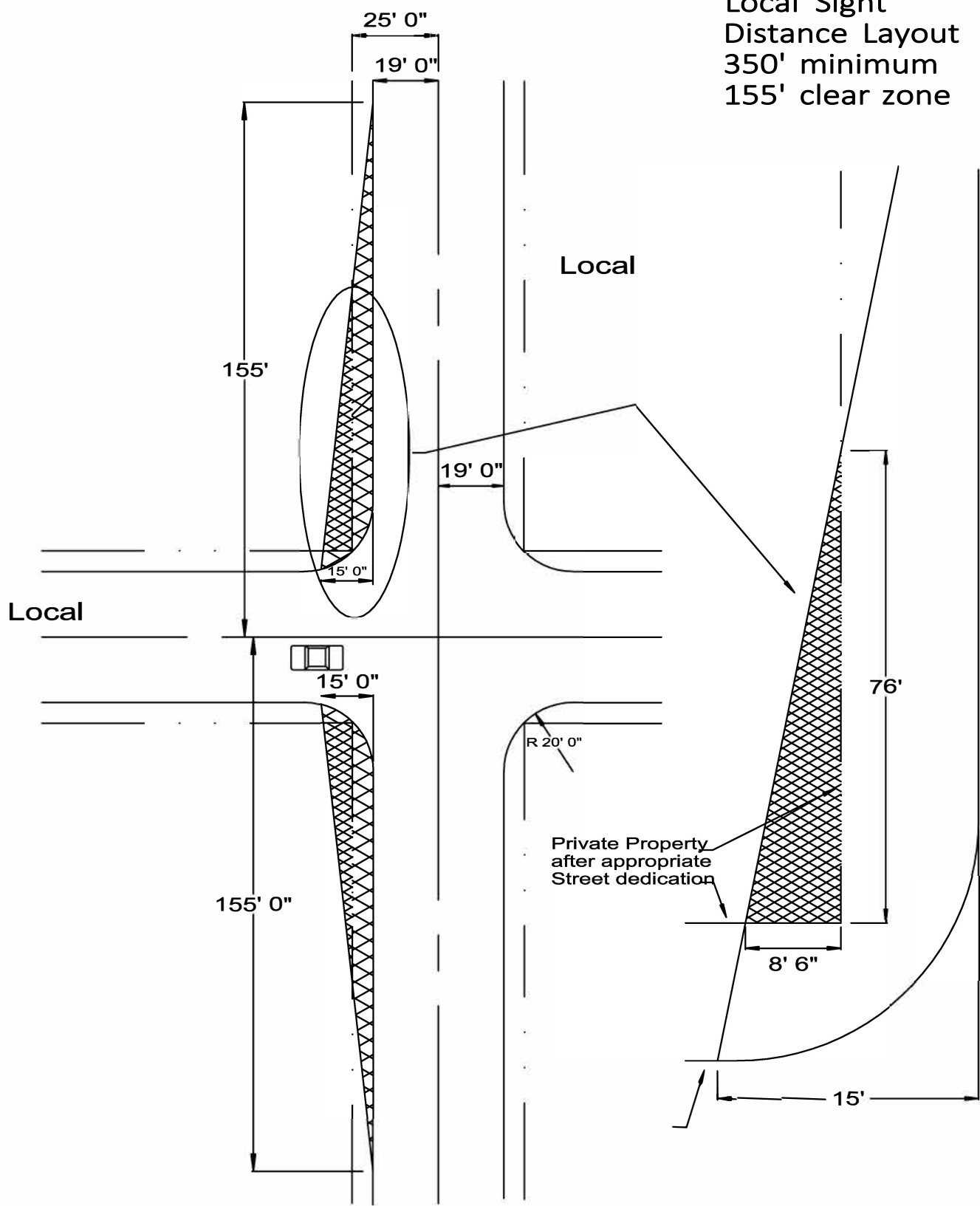
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

TEMPORARY CUL-DE-SAC  
DETAIL

DATE: JUNE 2017

SHEET 6-05 OF 24 \_

Local Sight  
Distance Layout  
350' minimum  
155' clear zone



TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

SIGHT DISTANCE  
DIAGRAM LOCAL STREET  
DETAIL

DATE: JUNE 2017

SHEET 6-06 OF 24

Collector Sight  
Distance Layout  
500' minimum 210'  
clear zone

Collector

210'

Collector

15'

210'

68'

Private Property  
after appropriate  
street dedication

5' 6"

Street Flowline

15'

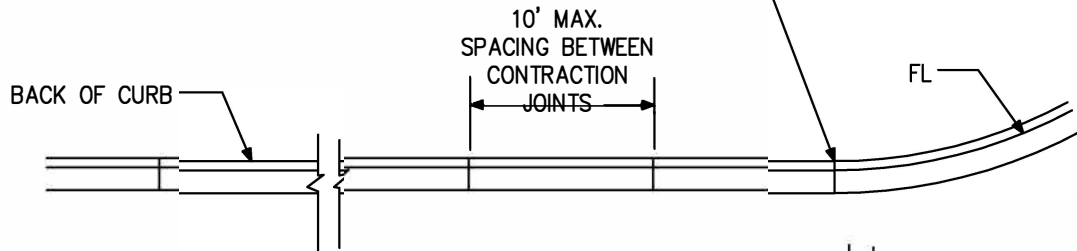
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

SIGHT DISTANCE DIAGRAM  
COLLECTOR STREET  
DETAIL

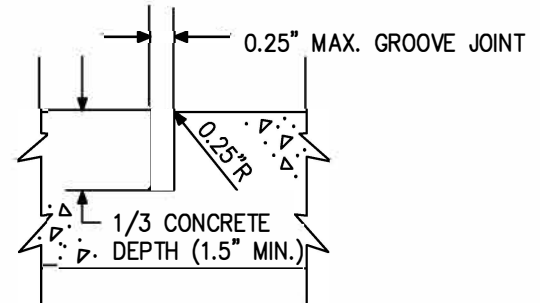
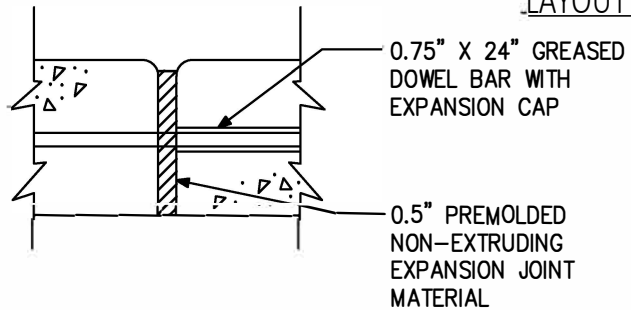
DATE: JUNE 2017

SHEET 6-07 OF 24

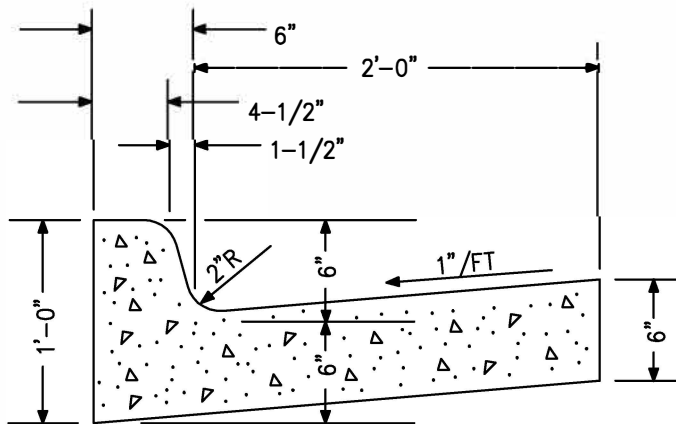
0.5" EXPANSION JOINT MATERIAL  
AT EACH END OF ALL CURB RETURNS  
AND AT 100 FEET MAX. SPACING



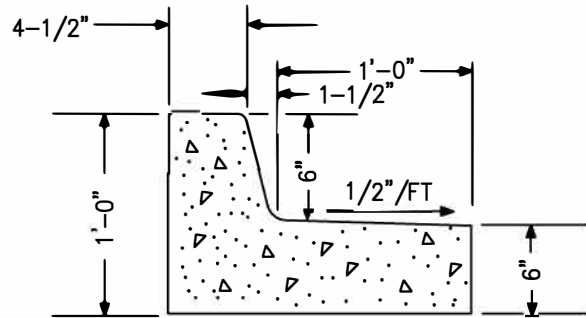
#### LAYOUT



#### EXPANSION JOINT



#### CONTRACTION JOINT



#### TYPE 2 CURB & GUTTER

#### TYPE 2 MEDIAN CURB & GUTTER

#### NOTES:

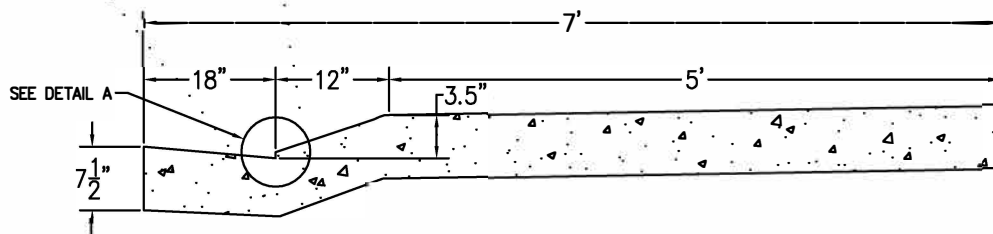
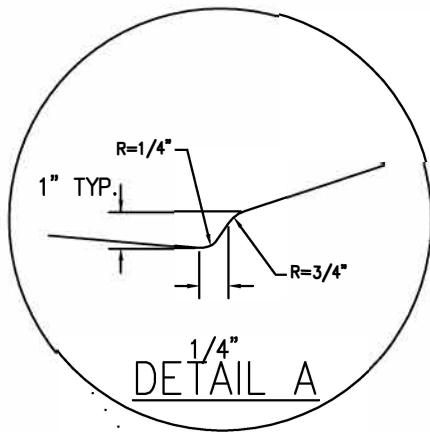
1. CONCRETE SHALL BE 6 SACK MINIMUM CLASS "B" 3000 LB. FIELD CURE/SQ. IN. AT 28 DAYS.
2. EXPANSION JOINT MATERIAL SHALL BE NON-EXTRUDING AND RESILIENT TYPE TO MEET AASHTO SPEC. M-213.
3. ANY OVER-EXCAVATION SHALL BE REPLACED WITH GRANULAR BACKFILL COMPACTED TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698.
4. TYPE 2 SPILL CURB MAY BE REQUIRED FOR SPECIAL CONDITIONS.
5. TYPE 2 CURB & GUTTER IS FOR USE IN LOCAL, COMMERCIAL, ARTERIALS, AND COLLECTOR STREETS.

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

#### TYPE 2 CURB & GUTTER DETAILS

DATE: JUNE 2017

SHEET 6-08 OF 24



### COMBINATION CURB, GUTTER, SIDEWALK

\*\*\*THE USE OF THE TYPE 1 COMBINATION CURB IS STRONGLY DISCOURAGED AND MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE CITY

#### NOTES:

1. CONCRETE SHALL BE 6 SACK MINIMUM CLASS "B" 3000 LB. FIELD CURE/SQ. IN. AT 28 DAYS.
2. EXPANSION JOINT MATERIAL SHALL BE NON-EXTRUDING AND RESILIENT TYPE TO MEET AASHTO SPEC. M-213.
3. ANY OVER-EXCAVATION SHALL BE REPLACED WITH GRANULAR BACKFILL COMPACTED TO 95% MAXIMUM DRY DENSITY AS DETERMINED BE ASTM D-698.
4. TYPE 1 COMBINATION CURB & GUTTER & SIDEWALK IS FOR USE AND NON-THRU TRAFFIC STREETS ONLY.

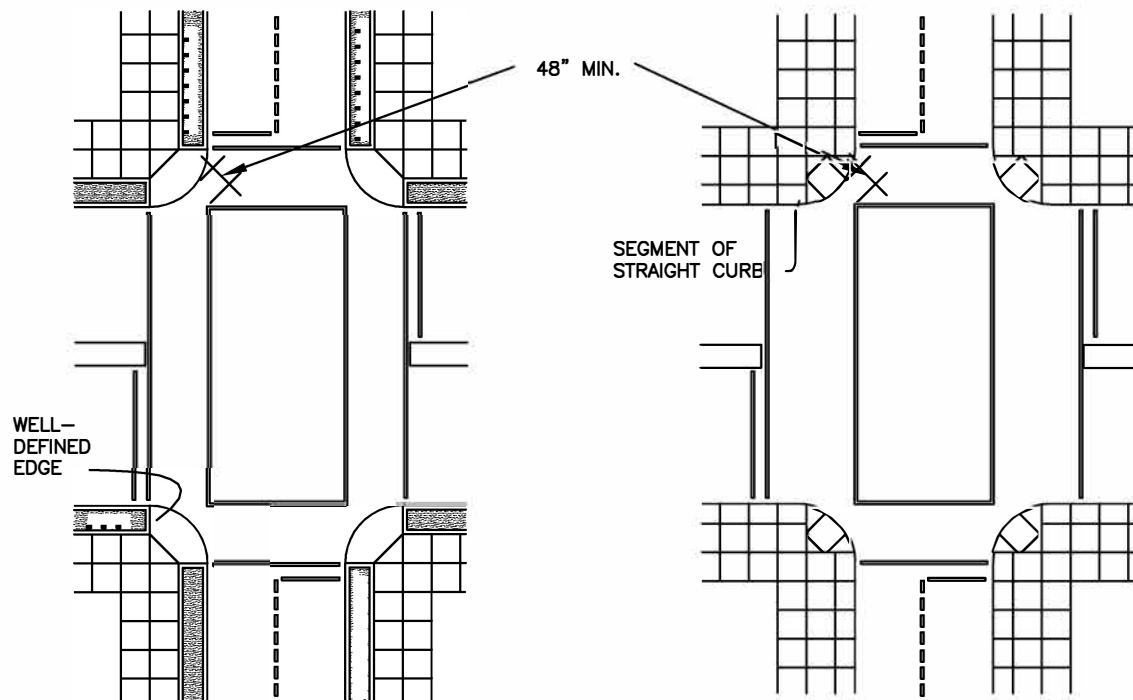
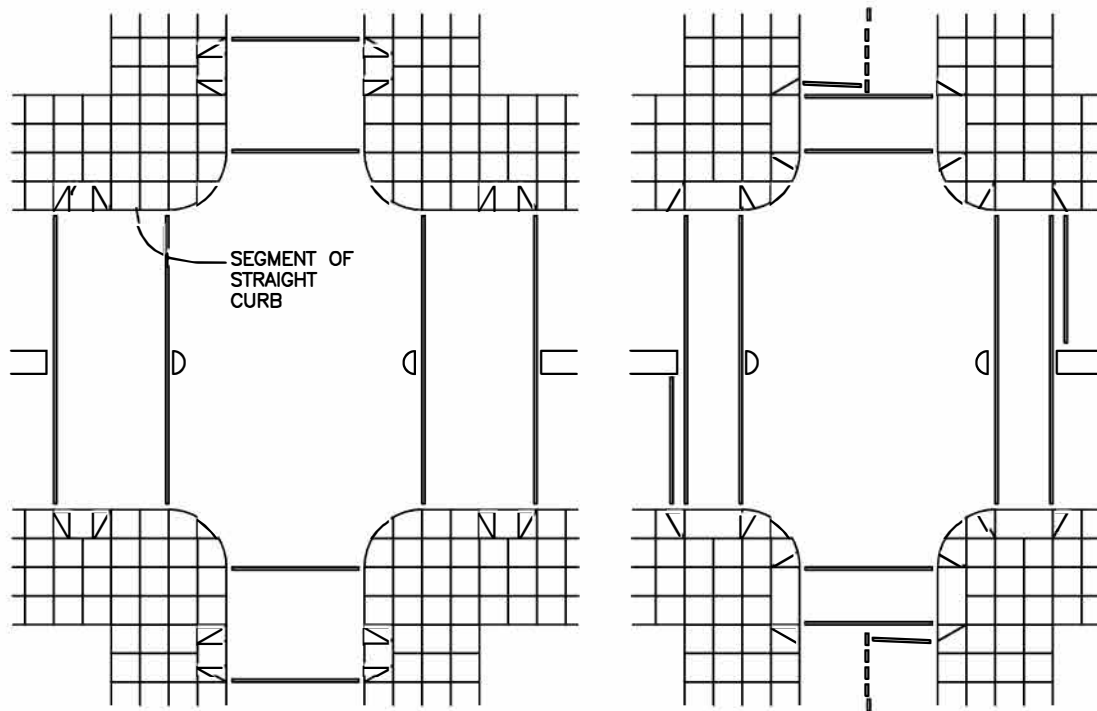
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

TYPE 1 COMBINATION CURB,  
GUTTER & SIDEWALK

DATE: JUNE 2017

SHEET 6-09 OF 24 \_





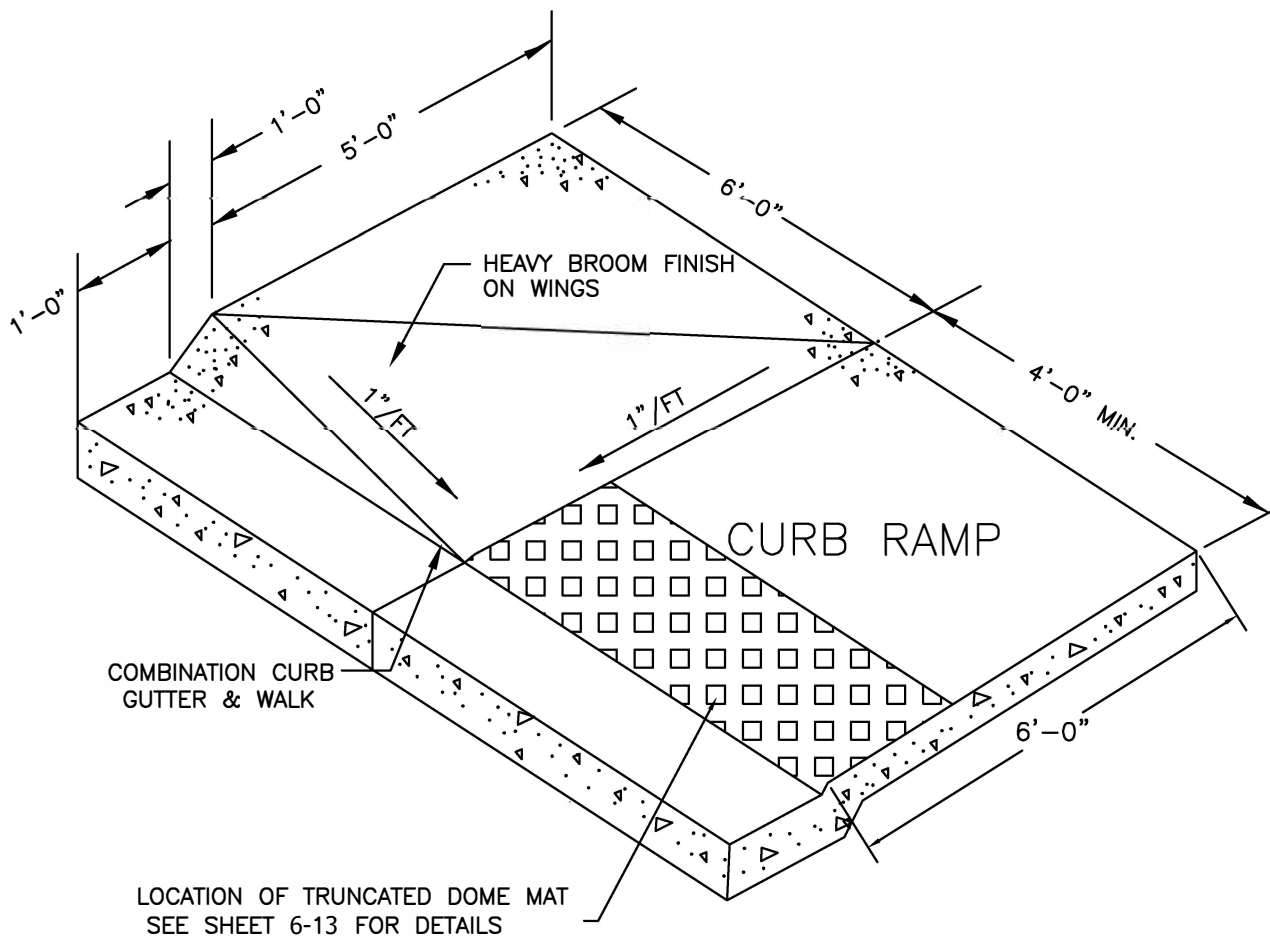
(SHOWN IN ORDER OF PREFERENCE FOR ACCESSIBILITY)

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

ADA HANDICAP RAMP  
LOCATIONS

DATE: JUNE 2017

SHEET 6-10 OF 24 \_



**NOTE:**

- \* COARSE BROOM FINISH ON RAMP.
- \* SPECIAL DESIGNS ARE REQUIRED WHEN GRADES ARE OVER 4% OR WHERE THE ANGLE OF THE INTERSECTION IS LESS THAN 78 DEGREES OR MORE THAN 105 DEGREES.
- \* MAINTAIN BACK OF WALK ELEVATION AT 2.0% ABOVE TOP OF CURB.
- \* SEE SHEET R15 FOR PREFERRED LOCATION OF RAMPS.
- \* A LANDING SHALL BE PROVIDED AT THE TOP OF THE RAMP IN ACCORDANCE WITH THE ADA REQUIREMENTS. SEE SHEET 6-12 IF A LANDING IS NOT FEASIBLE.

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

ADA HANDICAP RAMP  
DETAIL A

DATE: JUNE 2017

SHEET 6-11 OF 24 —

S = CURB TRANSITION SLOPE (12:1 MAX)

CURB FOR DRAINAGE  
CONTROL/LANDSCAPE  
BORDER

CONTROL  
JOINT (typ.)

CONTROL JOINT (typ.)

DEPRESS B.O.W. SO THAT SIDEWALK CROSS  
SLOPE DOES NOT EXCEED  $\frac{1}{4}$ "/FT MAX

FL TO T.O.C. = 6"

NORMAL B.O.W. GRADE/TOP OF CURB

TOP B.O.W.

T.O.C.

6' TRANSITION  
FROM T.O.C. TO  
RAMP OPENING  
1"/FT

5' OPENING

6' TRANSITION  
FROM T.O.C. TO  
RAMP OPENING  
1"/FT

SECTION A-A'  
RAMP PROFILE

2 #4 BARS

6" MIN

2' PAN

SECTION B-B'  
RAMP SECTION

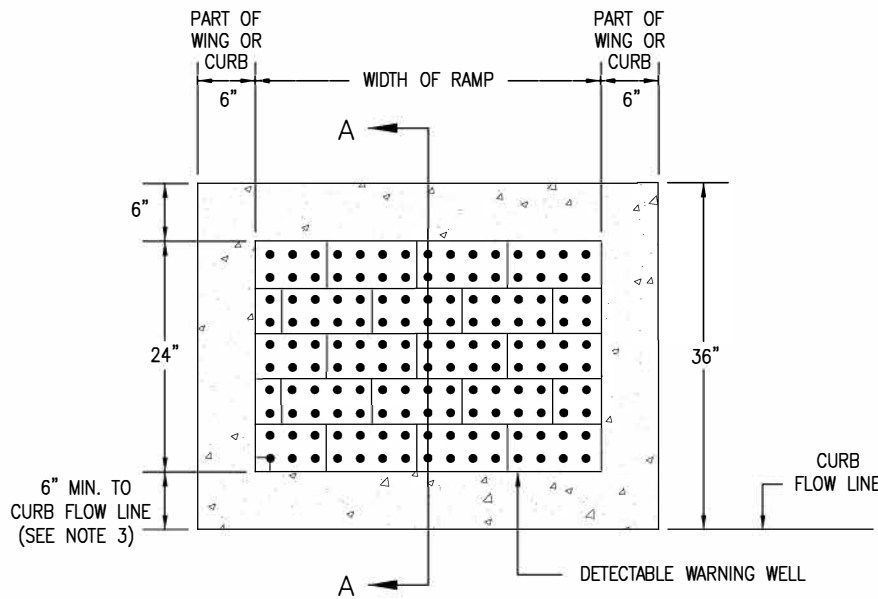
8" THICK CORNER RAMP  
6" THICK MID-BLOCK RAMP

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

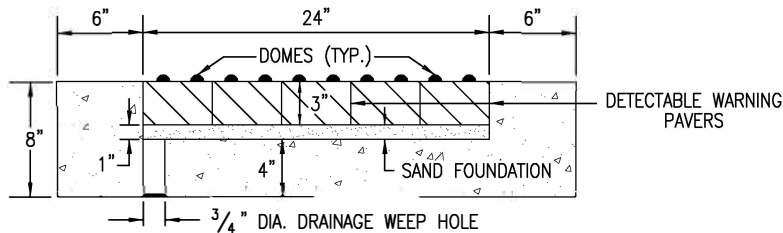
ALTERNATE ADA HANDICAP  
RAMP DETAIL

DATE: JUNE 2017

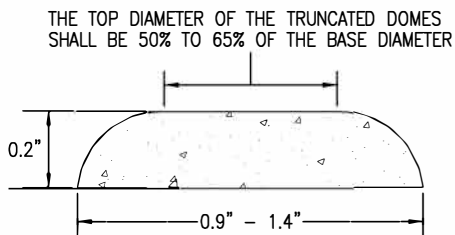
SHEET 6-12 OF 24



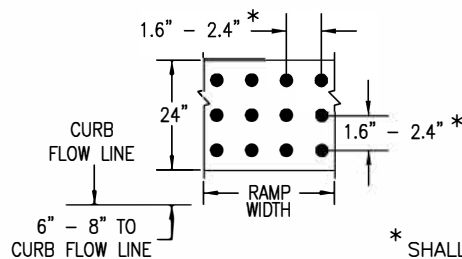
**PLAN VIEW OF  
DETECTABLE WARNING AND WELL**  
(PAVERS NOT DRAWN TO SCALE)



**SECTION A-A**



**ELEVATION VIEW**



**PLAN VIEW**

\* SHALL BE  
EQUAL IN  
BOTH DIRECTIONS.

**DOME AND DETECTABLE WARNING DETAILS**

## GENERAL NOTES

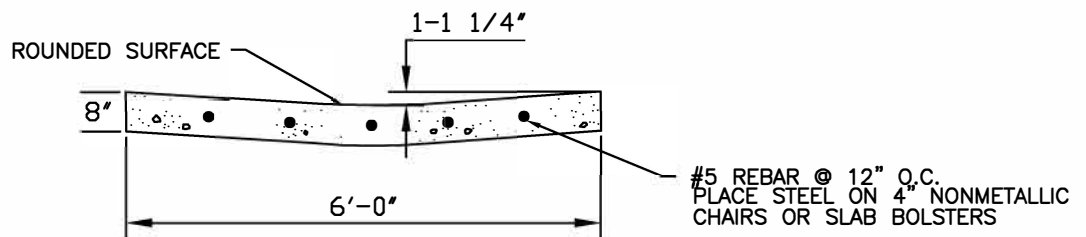
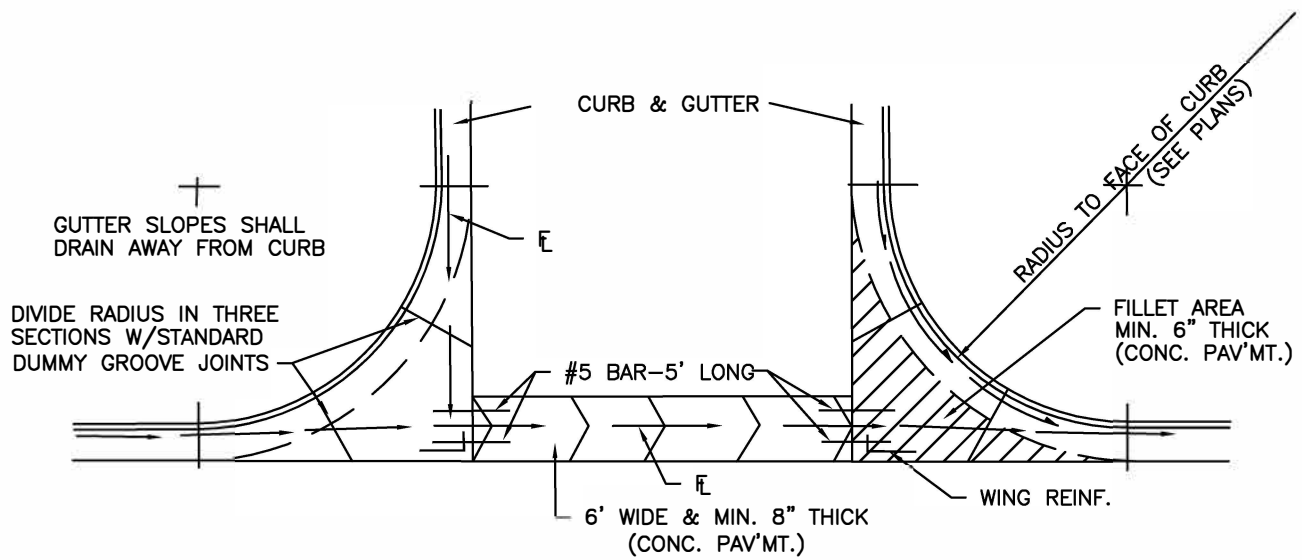
1. THE DETECTABLE WARNINGS SHALL BE INSTALLED AT SIDEWALK/STREET TRNASITIONS. ADA MATS SHALL BE CAST IRON 'WET-SET' TYPE MANUFACTURED BY JORDAN IRON WORKS OR OTHER APPROVED MANUFACTURER.
2. THE TOP OF THE DRAINAGE WEEP HOLE SHALL BE LOCATED AT THE LOWEST POINT OF THE DETECTABLE WARNING WELL.
3. ALL DETECTABLE WARNING AREAS SHALL START A MINIMUM OF 6 INCHES FROM THE FLOW LINE OF THE CURB AND NOT BE MORE THAN A MAXIMUM OF 8 INCHES FROM ANY POINT ON THE FLOW LINE OF THE CURB. ALL DETECTABLE WARNING AREAS SHALL BE 24 INCHES IN LENGTH AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.
4. THE DETECTABLE WARNING AREA SHALL BE INCLUDED IN THE COST OF THE CONCRETE CURB RAMP.
5. RAMP SLOPES SHALL NOT BE STEEPER THAN 12:1. THE DETECTABLE WARNING AND WELL AREA SLOPES SHALL NOT BE STEEPER THAN 20:1.

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

## DETECTABLE WARNING DETAIL FOR HANDICAP RAMP

DATE: JUNE 2017

SHEET 6-13 OF 24



TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

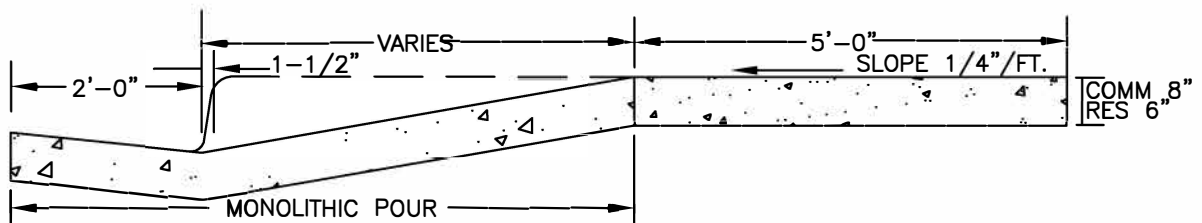
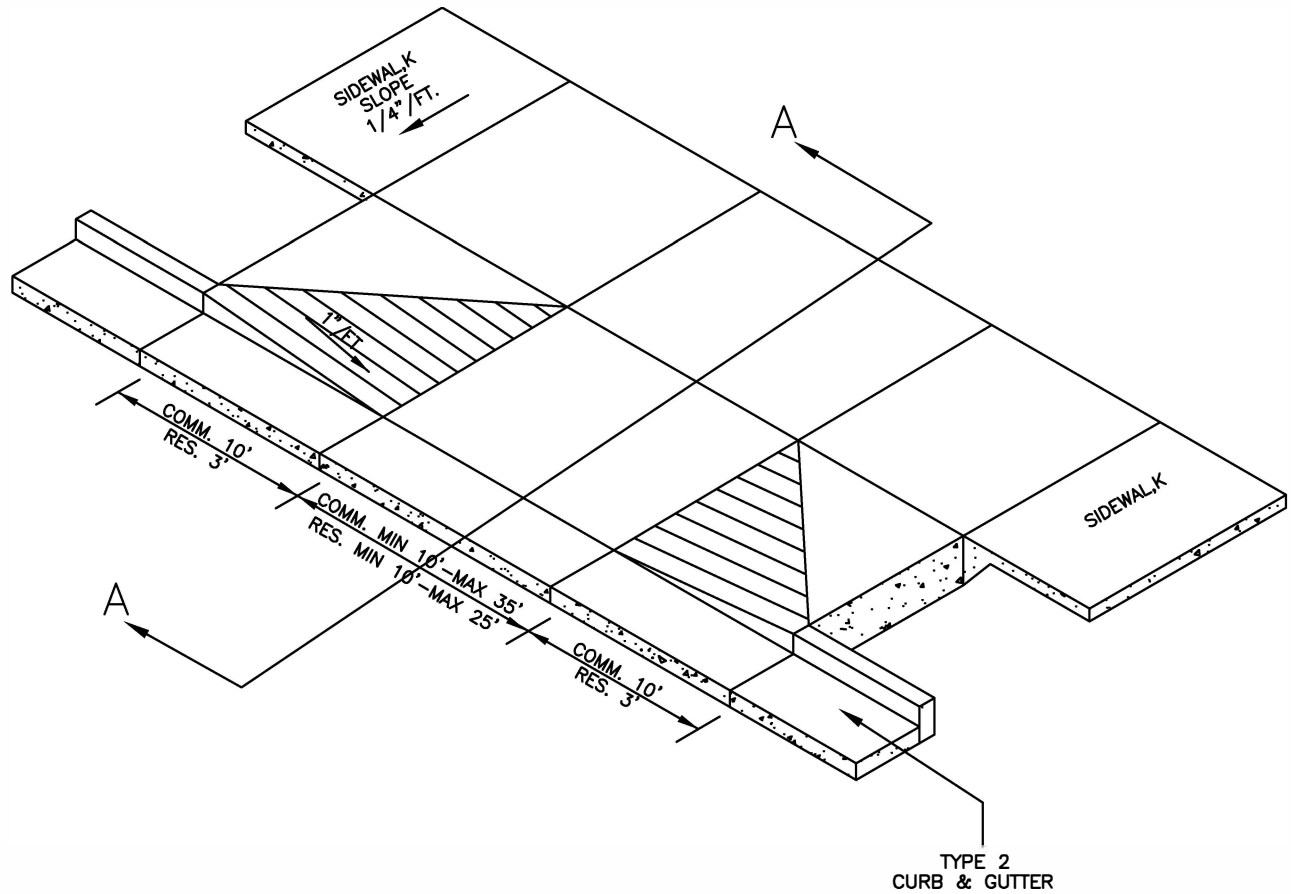
## CROSS PAN AND FILLET DETAIL

DATE: JUNE 2017

SHEET 6-14 OF 24 -

NOTE:

CONTRACTION JOINTS ARE REQUIRED AT EACH SIDE OF WARPED SECTION AND EVERY 10' (MAX) ALONG THE DRIVEWAY. EXPANSION JOINTS ARE REQUIRED ON EACH SIDE WHERE THE DEPTH OF CONCRETE CHANGES



SECTION A-A

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

RAMP DETAIL FOR  
VERTICAL CURB &  
DETACHED WALK

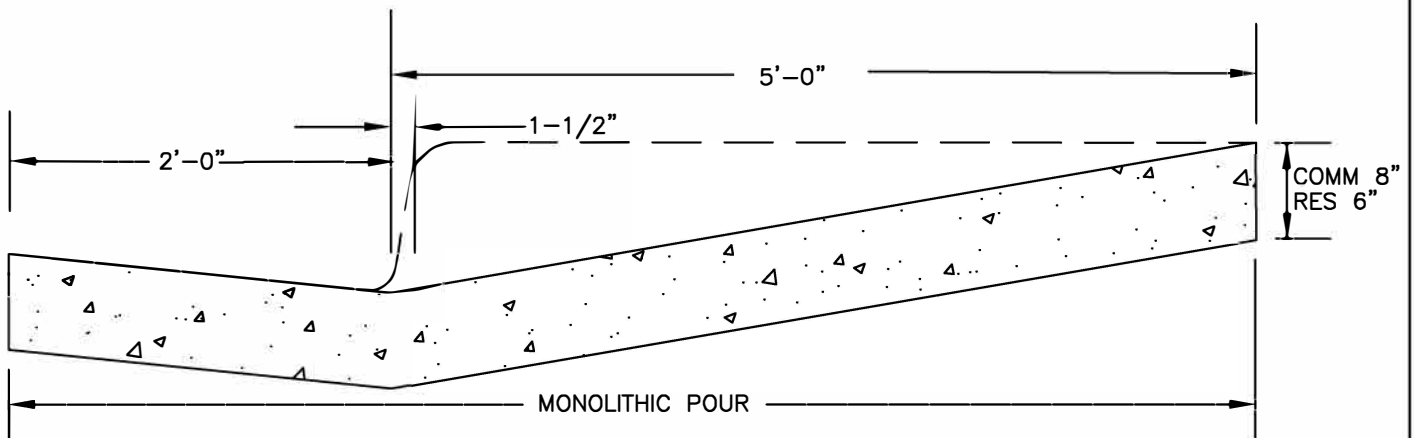
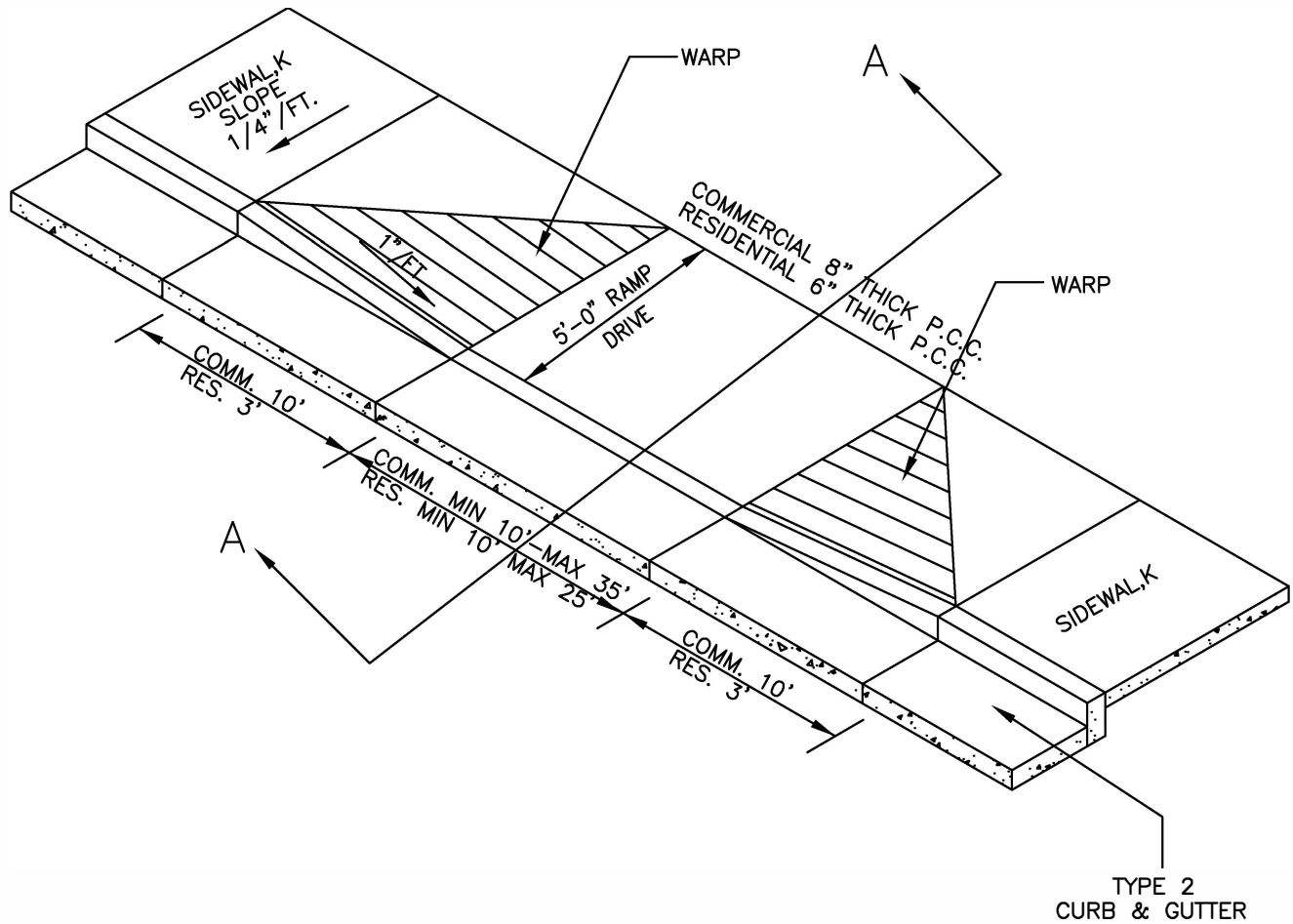
DATE: JUNE 2017

SHEET-6-15 OF 24-



NOTE:

CONTRACTION JOINTS ARE REQUIRED AT EACH SIDE OF WARPED SECTION AND EVERY 10' (MAX) ALONG THE DRIVEWAY. EXPANSION JOINTS ARE REQUIRED ON EACH SIDE WHERE THE DEPTH OF CONCRETE CHANGES



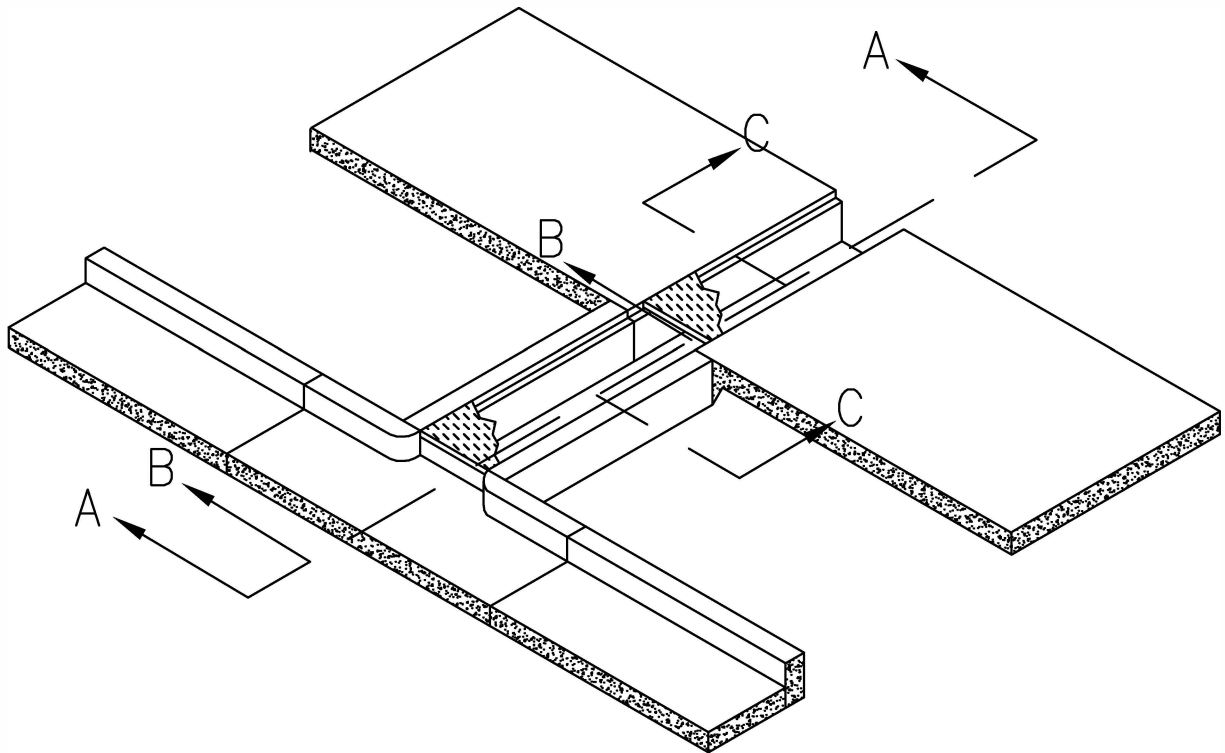
SECTION A-A

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

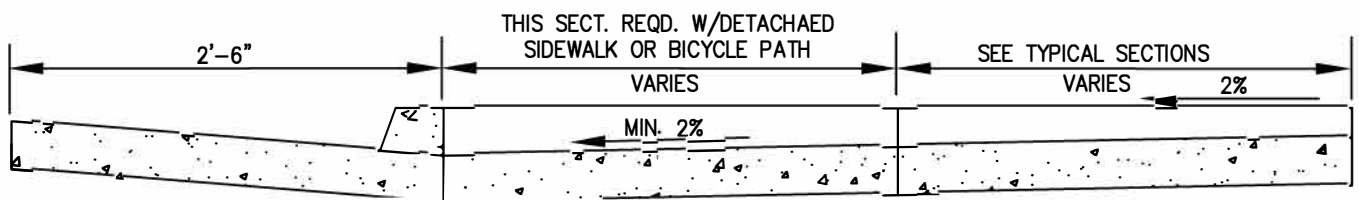
RAMP DETAIL FOR  
VERTICAL CURB ATTACHED WALK

DATE: JUNE 2009

SHEET 6-16 OF 24



CHASE DRAIN



SECTION A-A

NOTE:  
FOR SECTIONS B-B AND C-C AND DETAILS SEE SHEET 6-18.

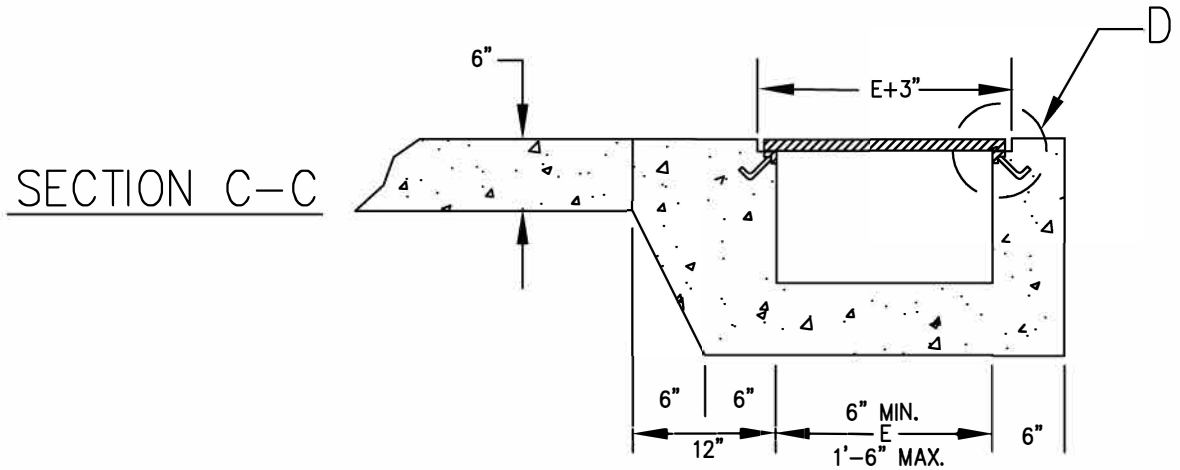
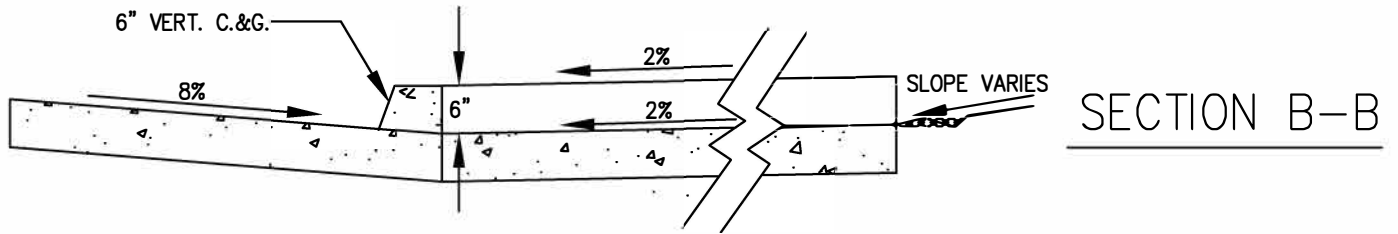
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

STANDARD SIDEWALK CHASE  
DETAIL

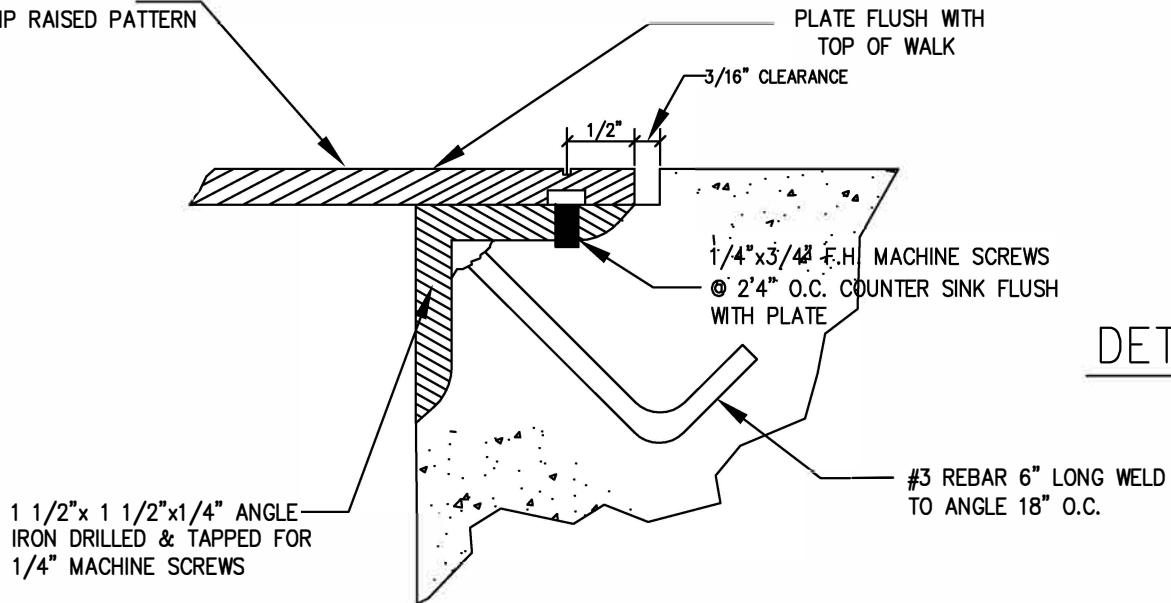
DATE: JUNE 2017

SHEET 6-17 QF 24 \_ \_

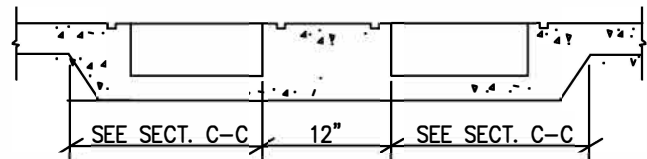




1/4" STEEL PLATE  
NON SLIP RAISED PATTERN



MULTIPLE CHASE



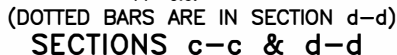
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

CHASE DRAIN  
DETAILS

DATE: JUNE 2009

SHEET 6-18 OF 24





NOTE: MANHOLE RING & COVER, STATION POINT  
AND OUTFLOW PIPE SHALL BE LOCATED  
AT THE SAME END OF THE INLET.

SHEET 6-20 OF 24

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

MARK	DIA (in)	O.C. SPACING (in)	TYPE	ALL INLETS		INLETS, H ≤ 5'				INLETS, H > 5'			
				L = 5'		10'		15'		10'		15'	
				NO. REQ'D.	LENGTH (ft-in)	NO. REQ'D.	LENGTH (ft-in)	NO. REQ'D.	LENGTH (ft-in)	NO. REQ'D.	LENGTH (ft-in)	NO. REQ'D.	LENGTH (ft-in)
401	11"	11"	II	15	*	21	*	26	*	11	*	11	*
402	11"	11"	II	7	*	13	*	18	*	7	*	7	*
403	9"	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"
405	6"	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	6"	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	1 1/2"	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"
408	12"	12"	II	3	6'-0"	3	11'-0"	3	16'-0"	3	11'-0"	3	16'-0"
409	8"	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410	11"	11"	VI							3	*	3	*
411	11"	11"	II							3	5'-2"	3	10'-2"
412	11"	11"	II							3	2'-9"	3	2'-9"
413	9"	9"	II							7	10'-10"	7	15'-10"
501	5 1/2"	5 1/2"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502	5/8"	5 1/2"	III							11	11'-5"	17	11'-5"
503	5 1/2"	5 1/2"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504	5 1/2"	5 1/2"	IX									5	8'-4"
601	3/4"	2 1/2"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
Ø8[8.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"
▼				2 BARS 1 ROD		4 BARS 3 RODS		8 BARS 5 RODS		4 BARS 3 RODS		8 BARS 5 RODS	

\* VARIABLE, REFER TO TABLE TWO.

Ø INCLUDE 18" NO. 4 BARS (SEE CHANNEL LAYOUT DETAIL).

▼ SEE CURB FACE ASSEMBLY ON SHEET 2 AND CHANNEL LAYOUT DETAILS ON SHEET 4.

REGULAR  
INLETS

DROP BOX  
INLETS

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"

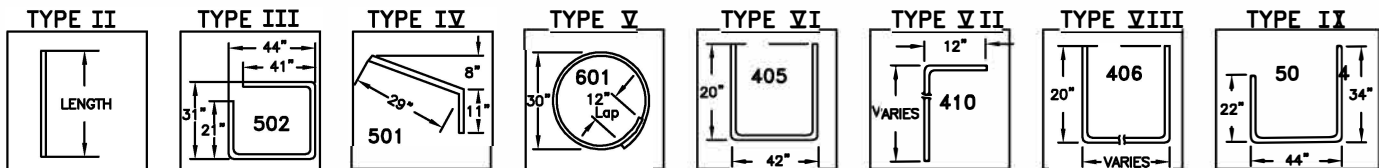
"H" (ft-in)	LENGTH (ft-in)			NO. REQ'D. REGULAR		NO. REQ'D. DROP BOX		L = 5'		L = 10'		L = 15'	
	401	402	410	403	407	403	407	CONC. CU.YD.	STEEL LBS.	CONC. CU.YD.	STEEL LBS.	CONC. CU.YD.	STEEL LBS.
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

NOTE: FOR L= 5',  
L= 10' AND L= 15'

REGULAR INLETS:  
TOTAL QUANTITIES NEEDED  
ARE OUTSIDE OF THE  
HEAVY BLACK LINE.

DROP BOX INLETS:  
TOTAL QUANTITIES NEEDED  
ARE INSIDE OF THE  
HEAVY BLACK LINE.

STEEL WEIGHTS DO NOT  
INCLUDE STRUCTURAL  
STEEL.



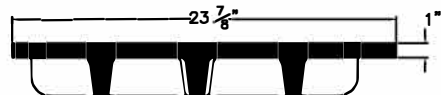
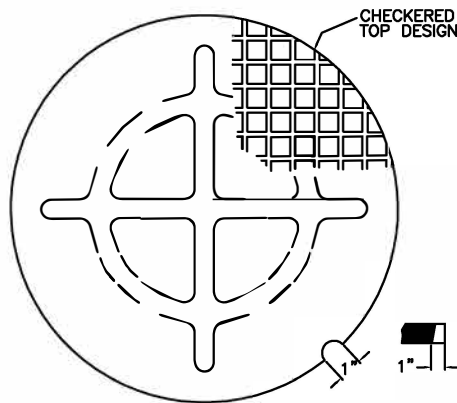
BAR BENDING DIAGRAMS ~ (Dimensions are Out-to-Out of bar)

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

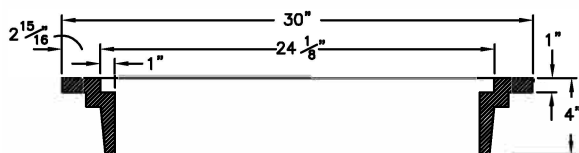
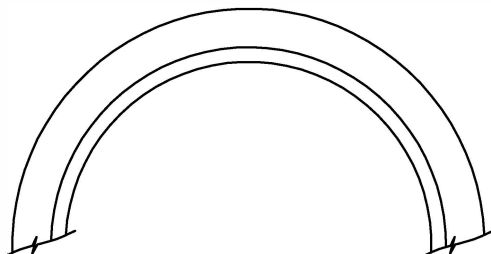
TYPE R STORM INLET  
SHEET 3 OF 4

DATE: JUNE 2017

SHEET\_6-21 OF 24

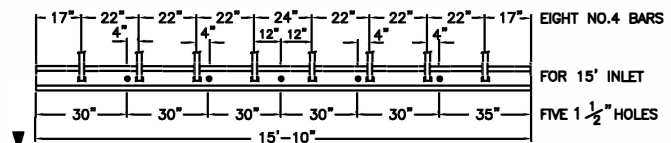
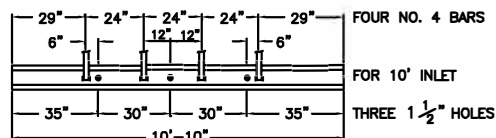
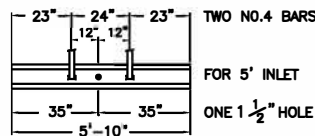


TYPICAL MANHOLE COVER

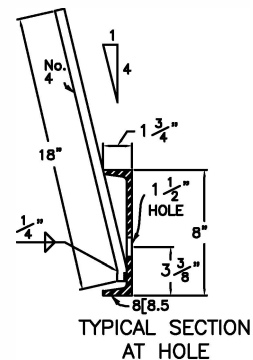


TYPICAL MANHOLE RING

WEIGHTS: COVER = 125 LBS.  
RING = 135 LBS.  
TOTAL = 260 LBS.



CHANNEL LAYOUT DETAILS



## GENERAL NOTES

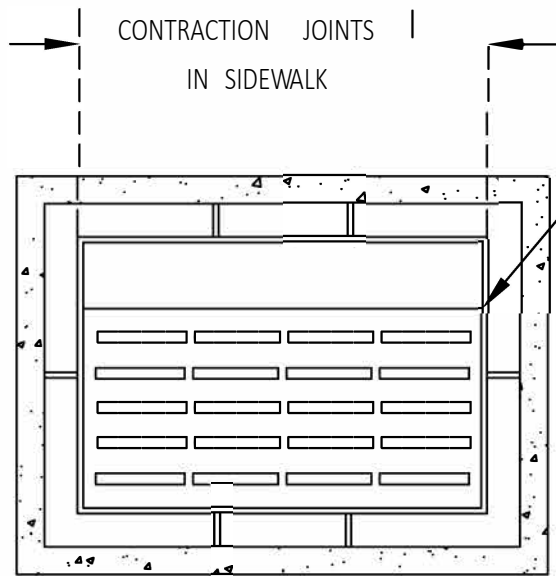
ALL CONCRETE SHALL BE CLASS A.  
CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8" THICK.  
INLET STEPS SHALL BE IN ACCORDANCE WITH AASHTO M 199.  
CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.  
EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4". CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.  
REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2" MINIMUM CLEARANCE.  
DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.  
MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON CONFORMING TO 5.45.02.  
SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.  
STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M111.

TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

TYPE R STORM INLET  
SHEET 4 OF 4

DATE: JUNE 2017

SHEET\_6-22 OE 24



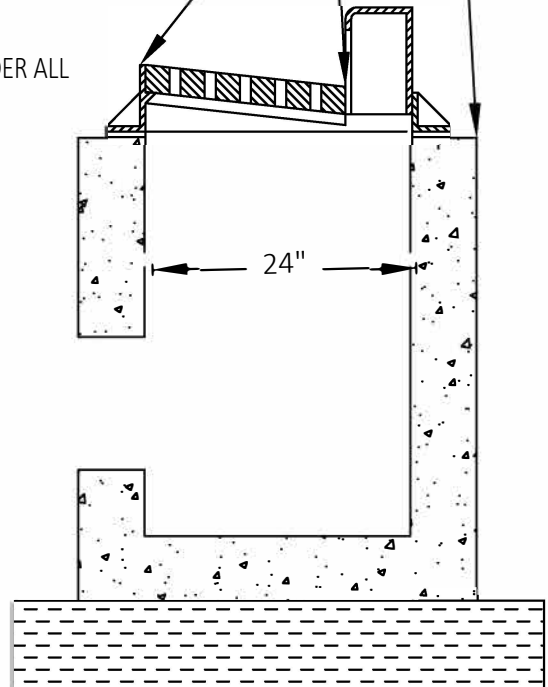
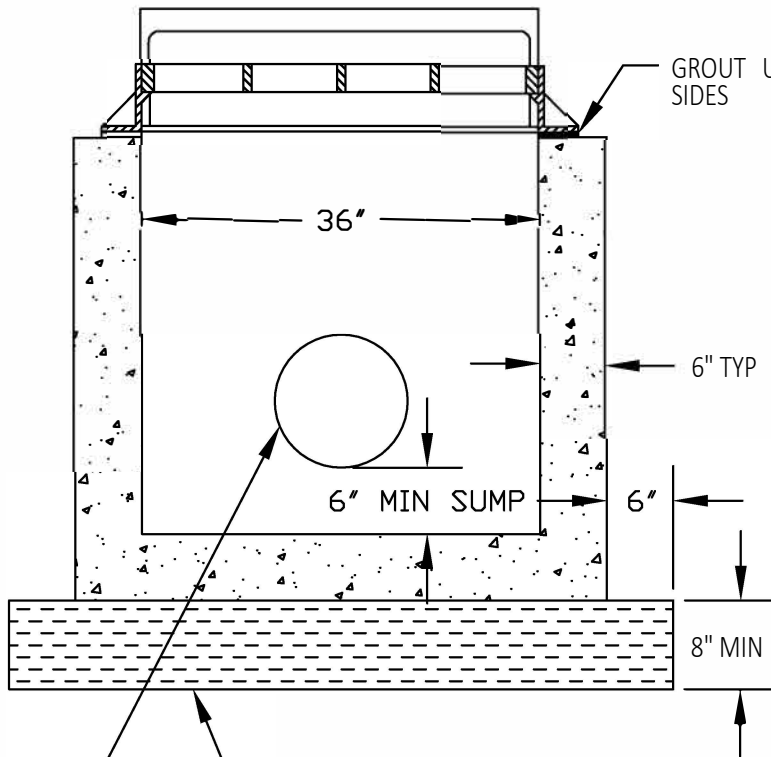
FRAME/GRATE/CURB HEAD ASSEMBLY TO CONFORM TO CDOT  
M-604-13 OR APPROVED EQUAL

PRECAST CONCRETE BOX.  
REINFORCE 'W'ALLS AND FLOOR  
'W' #4 REBAR  
@ 8" E.'W'

SET FRAME AND GRATE 1"  
TO 1.5" BELOW NORMAL GUTTER ELEV.  
TRANSITION CURB HEIGHT IN 3' EACH  
SIDE OF INLET

SET FRAME IN LINE AND  
FLUSH WITH EDGE OF  
GUTTER

GROUT UNDER ALL  
SIDES



COMPACTED STRUCTURAL BEDDING  
MATERIAL

CORED DR PRECAST HOLE

BOX MAY BE LENGTHENED ACCORDING TO MANUFACTURER SPECIFICATIONS TO ACCOMMODATE ADDITIONAL  
INLET GRATES IF ADDITIONAL CAPACITY IS REQUIRED

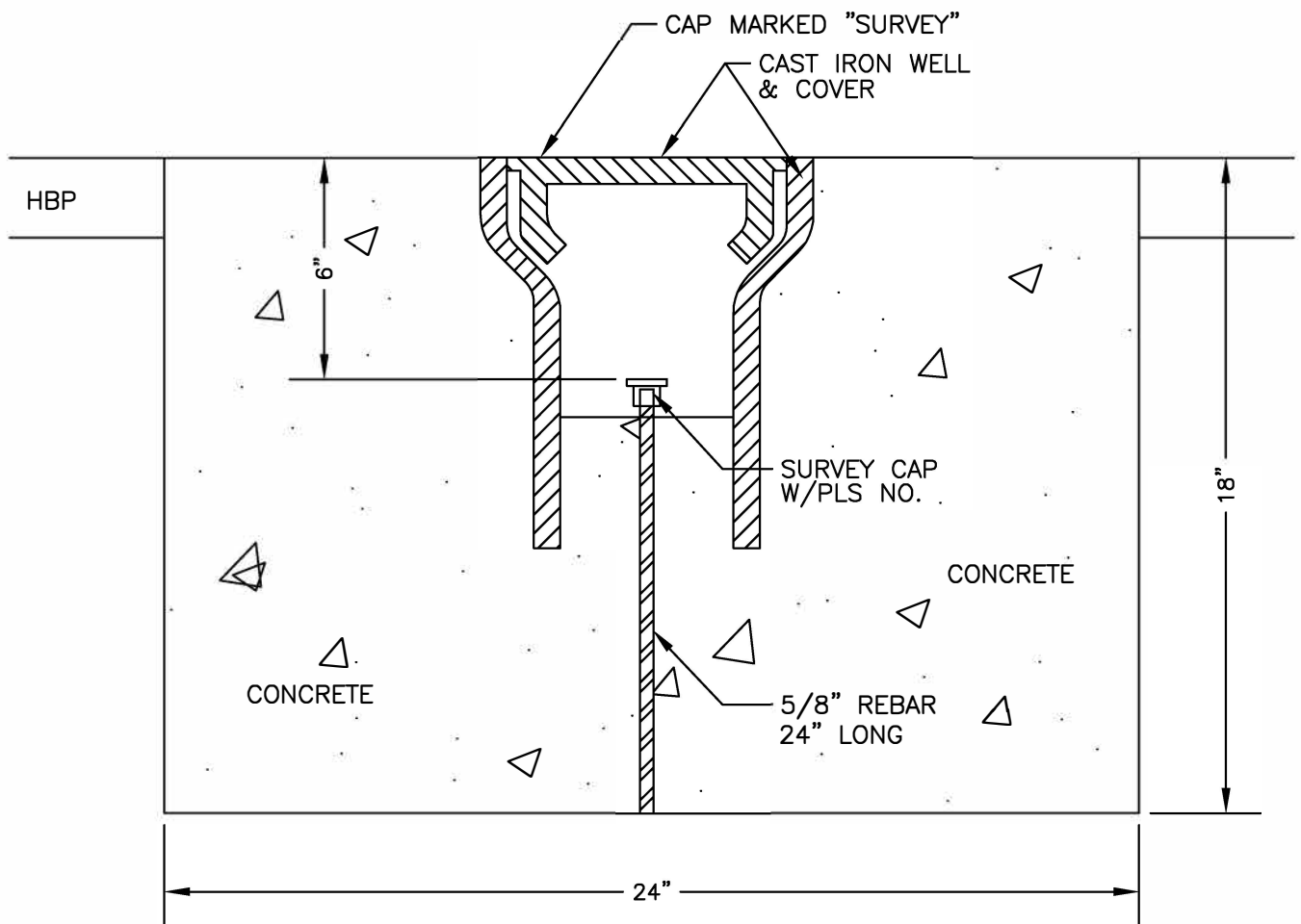
TOWN of GEORGETOWN  
404 Sixth Street  
Georgetown, CO 80444

TYPE 13/16 STORM INLET DETAIL

DATE: JUNE 2017

SHEET 6-23 OF 24





TOWN of GEORGETOWN  
 404 Sixth Street  
 Georgetown, CO 80444

STREET INTERSECTION  
 MONUMENT DETAIL

DATE: JUNE 2017

SHEET 6-24 OF 24