



ROADWAY DESIGN AND TECHNICAL CRITERIA

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ROADWAY DESIGN AND TECHNICAL CRITERIA

1-1 Purpose and Intent

The Town of Monument has adopted a Functional Street Classification Plan based on traffic volumes, land use and expected growth. This Functional Street Classification Plan designates streets as alley, local, hillside local, type I local, type II local, boulevard, lane, collector (major and minor), or arterial (major and minor). The following criteria apply to each classification. Standard roadway cross sections are presented in Appendix B, Details 1 to 11c.

A. Planning Principles for Local Circulation Systems.

The purpose of this section is to promote proper planning of traffic systems to help provide a safe and effective transportation network to meet existing and future demands within the Town. The goal of planning the transportation facilities is to create a network of roadways that connect, enhance circulation, and provide a balanced relationship between all roadways through coordination with developed land use plans (strategic and small area).

Basic considerations in the design of local circulation systems must recognize the following factors:

- Safety - for both vehicular and pedestrian traffic
- Efficiency of Service - for all users
- Livability - especially as affected by traffic elements in the circulation system
- Economy - of both construction and use of land

In addition, the Town encourages circulation systems that support and promote pedestrian and street life, and reserves the right to waive particular criteria if it serves to enhance downtown and pedestrian environments. Also, the Town will encourage multi-modal function for all street types (i.e. bus routes & bikes lanes).

1. Ensure Vehicular and Pedestrian Access.

The primary function of local streets is to serve abutting properties. Street widths, placement of sidewalks, pedestrian ramps, patterns of streets and number of intersections are related to safe and efficient access to abutting lands.

2. Control Access to Arterials.

Local circulation systems and land development patterns should not detract from the efficiency of peripheral arterial facilities. Ideally, land development should occur so that no local streets require direct access to arterial routes. The number of access points between the local circulation system and the arterial system should be minimized. Intersections along

arterial routes should be properly spaced for efficient signalization and traffic flow. The streets that do intersect the arterial system will tend to have high volumes since they are the only exit points.

3. Discourage Speeding.
Residential streets in traditional suburban residential communities should be designed to discourage fast movement (more than 25 mph), through the use of roundabouts and similar traffic control in the street system.
4. Minimize Pedestrian – Vehicular Conflicts.
Pedestrian travel from within the area to points outside should require a minimum number of street crossings. Sometimes this may be achieved through proper design of street patterns, land use arrangements and pedestrian routes. Typical methods include use of loop streets, special pedestrian routes or walkways and the proper placement of high pedestrian traffic generators. In general, while vehicular flow must be outward oriented to the peripheral arterials, pedestrian travel should be inward-oriented to avoid these heavier vehicular flows.
5. Appearance of Street Use.
Streets should also have an appearance commensurate with their function. They should be in keeping with the residential character, or in the case of downtown streets, in keeping with the character of downtown.
6. Relate Street to Topography.
Local streets will be more attractive and economical if they are constructed to closely adhere to topography. The important role that streets play in the overall storm drainage system can be enhanced by using the topography of the area.
7. Lay Out Streets to Achieve Optimum Subdivision of Land.
The arrangements of streets should permit economical and practical patterns, shapes and sizes of development parcels. Streets as a function of land use must not unduly hinder the development of land. Distances between streets, numbers of streets and related elements all have a bearing on efficient subdivision of an area. Access to adjoining properties should also be encouraged.
8. Priority Snow Routes.
The Town's Public Works Director will designate priority snow routes within the Town which will receive special consideration in relation to snow removal, parking restrictions, and emergency vehicle access during inclement weather. The Public Works Director may require the placement of signs along these routes. Refer to Monument Town Code Chapter 10 for additional requirements within the Town.

1-2 General

This section sets forth the minimum design, technical criteria and specifications to be used in the preparation of all roadway plans.

Within this Section on Roadway Design and Technical Criteria, references are made to "A Policy on Geometric Design of Highways and Streets – 2004" as published by the American Association of State Highway and Transportation Officials (AASHTO), commonly known as the "Green Book".

Additionally, standards and details as referenced by the "DCM" refer to "The City of Colorado Springs and El Paso County Drainage Criteria Manual". Several details and drainage concepts are referenced from this manual and are repeated in this text. Furthermore, the City of Colorado Springs roadway details have been used to supplement the appendices implementing an adaptation of those standards to the Town of Monument standard details.

A. Definitions.

"Alley" means a strip of land dedicated to public use, located at the side or rear of lots and providing a secondary means of vehicular access to the property.

"Average Daily Traffic (ADT)" means the total volume during a given time period (in whole days), greater than one day and less than one year, divided by the number of days in that time period.

"Block" means a parcel of land, intended to be used for urban purposes, which is entirely surrounded by public streets, highways, public walks, parks or green strips, rural or vacant land or drainage channels or a combination thereof.

"Town" means the incorporated Town of Monument.

"Cul-de-sac" means a street having only one end open to traffic and being terminated at the other end by a vehicular turnaround.

"DCM" means the El Paso County Drainage Criteria Manual.

"Design Limits" is the extent of a project which will be affected by construction activities.

"Design Speed" is a selected speed used to determine the various geometric design features of the roadway.

"Director" means the Director of Development Services for the Town.

"Driveway" means a private access way which is open to the general public, including but not limited to business invitees and patrons of the owner of such access way or such owner's tenant. Driveway does not include private access ways to be used for emergency access and maintenance purposes only, to which access by the general public is prohibited.

"Easement" is a right to use the land of another for a specific purpose.

"Entry Street" is the closest local street to an arterial.

"Floodplain" means that ground covered by water in the case of the flood of one hundred (100) year frequency as delineated by FEMA flood insurance maps.

"Improvements" means street grading, paving and curbing, fire hydrants, water mains, sanitary sewers, storm sewers and drains, pedestrian ways, crosswalks and such other construction as may be designated by the Board.

"Inter-District" means travel is through the Town only.

"Intra-District" means travel is through the Town and out.

"Major Arterial" means serving high-speed and high-volume traffic over long distances. Access is highly controlled with a limited number of full movement intersections and medians with infrequent openings, and no direct parcel access. Adjacent, existing and future, land uses shall be served by other network roadways, service roads, and inter-parcel connections.

"Minor Arterial" means serving high-speed and high-volume traffic over medium distances, or anticipated to serve this kind of traffic within a twenty-year period. Access is restricted through prescribed distances between intersections, use of medians, and no full movement parcel access. Minor arterial status is assigned to rural roadways where the probability of significant travel demand in the future is high.

"Minor Storm" or "Initial Storm" is the design storm for a five (5) year event. Refer to the El Paso County Drainage Criteria Manual and Section 5 of these standards.

"Major Storm" means a design storm for a hundred (100) year event. Refer to the El Paso County Drainage Criteria Manual and Section 5 of these standards.

"National Cooperative Soil Survey" means the soil survey conducted by the U.S. Department of Agriculture in cooperation with the State Agriculture Experiment Stations and other federal and state agencies.

"PCR" means point of curb return

"Posted Speed" is the maximum (or minimum) speed applicable to a section of roadway as established by law and shown on the speed limit sign.

"Right-of way" means all streets, roadways, sidewalks, alleys and all other areas reserved for present or future use by the public as a matter of right, for the purpose of vehicular or pedestrian travel.

"Snow Route" means all streets and highways designated as a "snow route" as designated by the Town. Refer to Monument Town Code Chapter 10 for additional requirements within the Town.

"Street" means a dedicated public right-of-way which provides vehicular and pedestrian access to adjacent properties. This definition includes the terms road, lane, place, avenue, drive and other similar designations.

Street, Arterial. "Arterial Street" is the major street in the hierarchy. It has a high ADT and limited access. An arterial provides connections with major state and interstate roadways and has a high potential for the location of

- significant community facilities as well as retail, commercial and industrial facilities. An arterial is intended to take people across town.
- Street, Boulevard. A "Boulevard Street" is designed to handle traffic volumes loading from and onto local, other collector and arterial roadways. It is intended for use in main access roadways in major subdivisions and regional attractions, and in limited downtown areas.
- Street, Collector. A "Collector Street" functions to conduct traffic between major arterial streets and/or activity centers. It is a principal traffic artery within residential areas and carries a relatively high volume of traffic. A collector has potential for sustaining minor retail or other commercial establishments along its route which will influence the traffic flow.
- Street, Lane. A "Lane Street" is designed to provide access to 1+ acre single-family residential properties.
- Street, Local. A "Local Street" functions to conduct traffic to and from dwelling units to other local or minor collector streets.
- Street, Nonresidential (Commercial) Collector. A "Commercial Collector" links local roadways and arterial roadways in locations characterized by nonresidential land uses or uncommitted future land uses. Urban nonresidential collectors are intended to accommodate multiple modes of transportation, high-volume turning movements or significant changes in roadway use over time. Urban nonresidential collectors are managed to maximize the safe operation of through-movements.
- Street, Residential Collector. A "Residential Collector" links local and arterial roadways in exclusively residential areas where build-out conditions for land development and roadway use can be reasonably forecasted. Residential major collectors are managed to maximize the safe operation of through-movements. No full movement parcel access is permitted where the local roadways can be expected to provide access. Where no local public or private roadways can provide access, partial turn movement access may be permitted.
- "Street Trees" means trees, shrubs, bushes, and all other woody vegetation on land lying between property lines on either side of all streets, avenues, or ways within the Town. Refer to Monument Town Code Chapter 17.52 for additional requirements within the Town.
- "Subdivision" means the division of a lot, tract or parcel of land into two or more lots, tracts, parcels, or other divisions of land.
- "Subdivision Improvements Agreement" means one or more security arrangements which may be accepted by the Town to secure the construction of such public improvements as required by the Town and includes collateral, such as, but not limited to, performance or property bonds, private or public escrow agreements, loan commitments, assignments of receivables, liens on property, deposit of certified funds, or other similar surety agreements.
- "Waiver" is a formal written statement of relinquishment from these standards provided under special conditions by the Town. To acquire a waiver, the developer/property owner must provide the Town with a letter of

explanation as to why the waiver is required with an explanation of specific circumstances that render the particular code provision ineffective. In addition, the letter of explanation shall also provide proof that the suggested alternative will maintain public safety and prove that the intent of the Town standard is being satisfied. Waivers are granted administratively.

B. Warranty periods.

The warranty period for streets, curbs, gutters, sidewalks, utilities, drainage and all other appurtenances, shall be two years from the date of initial acceptance. Public improvements will not be deemed to have been finally accepted until all necessary remedial work has been completed to the satisfaction of the Director of Development Services and no warranty period will expire until such final acceptance, notwithstanding the fact that such period would have otherwise expired by the passage of time.

1-3 **Roadway Design and Technical Criteria**

The following criteria are listed in tabular form on tables in Appendix A. Table 5.8 shows a summary of the minimum roadway construction requirements and other related information.

These principles are not intended as absolute criteria, since instances may appear where certain principles conflict. The principles should, therefore, be used as guides to proper systems layout. These criteria will be used for future roadway design and existing roadways will be exempt from the following criteria.

Roundabouts are an acceptable means of traffic control; refer to Appendix C Figures DT-26 and DT-27 for roundabout design and signage requirements. Street and stop signs shall be placed as needed to ensure adequate traffic control. Refer to Appendix C DT-34 for street signage requirements and DT-35 for stop sign requirements. In addition, refer to Appendix C Figure DT-40 for a general signal pole detail to be used in conjunction with local and state traffic signal pole requirements.

Commercial property access will be via private streets that shall meet public street standards.

A. Alleys.

1. Speed Limits.
Design - 15 mph
Posted - 10 mph

2. Continuity.
Continuity shall be determined by review.

3. Safety.
Alleys are to be designed for the safety of pedestrians and bicyclists, and the ease of access to adjacent parcels of land.

4. Traffic Control Characteristics.
Residential and Commercial:
 - (a) Alleys will intersect at perpendicular angles with streets.
 - (b) No parking shall be permitted.

5. Function.
Residential Alleys shall access to home and garage
Commercial Alleys shall access to back of businesses/deliveries.

Alleys can be used for utility placement, garage/recycling access and mail delivery.

6. Minimum Right-of-Way Width.
The minimum right-of-way shall be twenty (20) feet.

7. Number of Lanes.
 - (a) One-way will have: One (1) Lane at a minimum of Twelve (12) feet wide.
 - (b) Two-way will have: Two (2) Lanes at a minimum of Twenty (20) feet wide.

8. Access Conditions.
Provide access to abutting property at rear lot lines.

9. Planning Characteristics.
 - (a) Alleys shall be one or two ways and open at both ends.
 - (b) The One-Way Alley will consist of one (1) travel lane. The Two-Way Alley will consist of two (2) travel lanes.
 - (c) Alleys should not intersect with collector streets or arterial streets without the approval of the Town.

10. Type of Curb and Gutter.
There shall be no curbs within the Alley. A three (3) foot concrete pan (inverted) shall be placed in the center of the roadway.

11. Cul-de-sacs, Knuckles & Eyebrows.
Cul-de-sacs, knuckles, hammerheads and eyebrows will not be allowed.

12. Sidewalk Width.
No sidewalks shall be allowed.

13. Street Widths.
Paved Width requirements are as follows:
 - (a) A One-Way Alley shall be twelve (12) feet
 - (b) A Two-Lane Alley shall be twenty (20) feet.

Flow Line to Flow Line dimensions shall range from twelve (12) to twenty (20) feet.

See Appendix B - Detail 1 for cross-section.

14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.

15. Minimum Length of Vertical Curves.
See Appendix A – Figures A-1 and A-2.

16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 7% with allowance up to 8% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.

17. Curb Return Radii.
See Appendix A -Table 5-2.
A waiver may be obtained from the Town for good cause.

18. Sight Distance.
Refer to Tables 5.4 – 5.6
See Appendix C – Figure DT-25 for additional sight distance information.

19. Crown.
The Alley shall not have a crown. A three (3) foot concrete pan (inverted) shall be placed in the center of the roadway.

20. Super Elevation Curves.
Super elevation curves shall not be used.

B. Hillside Local.

1. Speed Limits.
Design - 25 mph
Posted - 20 mph
2. Continuity.
The maximum and minimum distances between intersections for residential and commercial are:

Maximum distance between intersections shall be 660'.
Minimum distance between intersections shall be 125'.
3. Safety.
Hillside Local streets shall be designed for the safety of pedestrians and bicyclists, as well as for ease of access to adjacent parcels of land.
4. Traffic Control Characteristics.
 - (a) On-Street parking is allowed on one side of the street. One side of the street to be posted for no parking by the developer.
 - (b) Intersections are at grade whenever possible.
5. Function.
Hillside Local streets are designed to provide direct access to abutting residential properties in hillside areas where extreme topographic conditions exist.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be fifty (50) feet.
7. Number of Lanes.
The Hillside Local road shall have two (2) travel lanes, each twelve (12) feet wide.
8. Access Conditions.
Intersections shall be designed at grade whenever possible. Direct access to abutting properties is by way of curb cuts or ramp type curbs.
9. Planning Characteristics.
When a standard width minor residential street is not practical due to the topographical conditions, a hillside street should be used on short streets only. The Hillside Local street shall not be longer than 500 feet in length, reaching from its intersection with a cross street to the end of the cul-de-sac. Hillside Local streets should be designed to work with and not against the existing topography.

10. Type of Curb and Gutter.
6" vertical and ramp type curb and gutters are permissible. Therefore, curb types 1 & 5 shall be used. See Figure DT-01 in Appendix C for detail.
11. Cul-de-sacs, Hammerheads, Knuckles & Eyebrows.
 - (a) Cul-de-sacs and Knuckles shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C - Figure DT-28). Refer to the latest edition of the International Fire Code for multiple-family units.
 - (b) Hammerheads shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C - Figure DT-31).
 - (c) Eyebrows shall all have a minimum flowline radius of fifty-five (55) feet. (See Appendix C – Figure DT-29).
12. Sidewalk Width.
Within the right-of-way, sidewalks shall be attached or detached, five (5) feet in width, and located on both sides of the street.
13. Street Widths.
 - (a) Paved Width shall be twenty-four (24) feet
 - (b) Flow Line to Flow Line shall measure twenty-eight (28) feet
 - (c) See Appendix B - Detail 2 for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 10% with allowance up to 12% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.

19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves shall not be used.

C. Local Type I (Residential).

1. Speed Limits.
Design - 25 mph
Posted - 20 mph
2. Continuity.
The maximum and minimum distances between intersections for Local Type I Residential are:

Maximum distance between intersections shall be 660'.
Minimum distance between intersections shall be 125'.
3. Safety.
Local Type I streets are to be designed for the safety of pedestrians and bicyclists, as well as to facilitate the ease of access to adjacent parcels of land.
4. Traffic Control Characteristics.
 - (a) Single-family: Two (2) off-street parking spaces are required per dwelling unit. On street parking shall be allowed on both sides of street.
 - (b) Multi-family: On-street parking is allowed on both sides of street.
5. Function.
Local Type I Residential streets provide direct access to adjacent property. Traffic carried by local streets should have an origin or a destination within the neighborhood. Utility line easements should be available.
6. Minimum Right-of-Way Width.
The minimum right-of-way width is fifty (50) feet.
7. Number of Lanes.
 - (a) For single family development, Local Type I streets shall have two (2) travel lanes, each fourteen (14) feet wide.
 - (b) For multi-family development, Local Type I streets shall have two (2) travel lanes, each fifteen (15) feet wide.
8. Access Conditions.
Intersections shall be designed at grade and direct access to abutting property is permitted.

9. Planning Characteristics.
Local Type I streets should be designed to discourage through traffic from moving through the neighborhood except in downtown areas. Local Type I streets should not intersect major collectors or arterial streets except when a waiver is allowed in downtown and commercial areas. See Section 1-7 for intersection spacing criteria.
10. Type of Curb and Gutter.
6" vertical and ramp type curb and gutter are permissible. Therefore, Curb Types 1 & 5 shall be used. See Figure DT-01 in Appendix C for detail.
11. Cul-de-Sacs, Knuckles & Eyebrows.
 - (a) Cul-de-sacs and Knuckles shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C – DT-28). Refer to the latest edition of the International Fire Code for multiple-family units.
 - (b) Hammerheads shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C – Figure DT-31).
 - (c) Eyebrows shall all have a minimum flowline radius of fifty-five (55) feet. (See Appendix A – Figure DT-29).
 - (d) ROW radius in cul-de-sac bubble, eyebrow, and knuckles shall be fifty-five (55) feet.
12. Sidewalk Width.
Sidewalk shall be five (5) feet in width, either attached or detached, within the right-of-way.
13. Street Widths.
 - (a) Single-family residential:
 - i. Paved Width shall be twenty-eight (28) feet.
 - ii. Flow Line to Flow Line shall measure thirty-two (32) feet.
 - iii. See Appendix B - Detail 3 for cross-section.
 - (b) Multi-family residential:
 - i. Paved Width shall be thirty (30) feet
 - ii. Flow Line to Flow Line shall measure thirty-four (34) feet
 - iii. See Appendix B - Detail 3 for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 8.0% with allowance up to 10% for short sections of street, not to exceed five

hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.

- (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
- (c) See Appendix A - Table 5.3 for permissible intersection grades.

17. Curb Return Radii.

See Appendix A - Table 5.2.

18. Sight Distance.

Refer to Appendix A - Tables 5.4 – 5.6.

See Appendix C – Figure DT-25 for additional sight distance information.

19. Crown.

The cross-slope shall be two percent (2%) to street crown.

20. Super Elevation Curves.

Super elevation curves shall not be used.

D. Local Type I (Commercial).

1. Speed Limits.

Design - 25 mph

Posted - 20 mph

2. Continuity.

The maximum and minimum distances between intersections for Local Type I Commercial roadways are:

Maximum distance between intersections shall be 660'.

Minimum distance between intersections shall be 125'.

3. Safety.

Local Type I Commercial streets shall be designed for the safety of pedestrians and bicyclists, as well as the ease of access to adjacent parcels of land.

4. Traffic Control Characteristics.

On-street parking is allowed on both sides of street in the downtown area.

5. Function.

Local Type I Commercial streets shall provide direct access to adjacent property. Traffic carried by local streets should have an origin or a destination within the commercial site. Utility line easements should be available.

6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be fifty (50) feet.
7. Number of Lanes.
Local Type I Commercial streets shall have two (2) travel lanes, each sixteen (16) feet wide.
8. Access Conditions.
Intersections shall be designed at grade as well as to allow direct access to abutting property.
9. Planning Characteristics.
Local streets should be designed to discourage through traffic from moving through the commercial site except in downtown areas. Local streets should not intersect major collectors or arterial streets except when a waiver is allowed in downtown and commercial areas. See Section 1-7 for intersection spacing criteria.
10. Type of Curb and Gutter.
6" vertical and ramp type curb and gutter is permissible. Therefore, Curb Types 1 & 5 are allowed. See Figure DT-01 in Appendix C for detail.
11. Cul-de-Sacs, Knuckles & Eyebrows.
Cul-de-sacs, knuckles, hammerheads and eyebrows will not be allowed.
12. Sidewalk Width.
Sidewalk shall be five (5) feet in width, either attached or detached within the right-of-way.
13. Street Widths.
 - (a) Paved Width shall be thirty (30) feet.
 - (b) Flow Line to Flow Line shall measure thirty-two (32) feet.
 - (c) See Appendix B - Detail 3a for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 8% with allowance up to 10% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.

(c) See Appendix A - Table 5.3 for permissible intersection grades.

17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix A - Figures DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves shall not be used.

E. Local Type II (Residential).

1. Speed Limit.
Design - 30 mph.
Posted - 25 mph
2. Continuity.
The maximum and minimum distances between intersections for residential and commercial are:

Maximum distance between intersections shall be 660'.
Minimum distance between intersections shall be 125'.
3. Safety.
Local Type II Residential streets shall be designed for the safety of pedestrians and bicyclists, as well as the ease of access to adjacent parcels of land.
4. Traffic Control Characteristics.
On-street parking is allowed on both sides of the street.
5. Function.
Local Type II Residential streets provide direct access to adjacent property. Traffic carried by local streets should have an origin or a destination within the neighborhood. Utility line easements should be available.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be fifty (50) feet.

7. Number of Lanes.
 - (a) For single family development, Local Type II streets shall have two (2) travel lanes, each fourteen (14) feet wide.
 - (b) For multi-family development, Local Type II streets shall have two (2) travel lanes, each fifteen (15) feet wide.
8. Access Conditions.

Intersections shall be at grade and permitting direct access to abutting property.
9. Planning Characteristics.

Local streets should be designed to discourage through traffic from moving through the neighborhood, except in downtown areas. Local streets should not intersect major collectors or arterial streets except when a waiver is allowed in downtown and commercial areas. See Section 1-7 for intersection spacing criteria.
10. Type of Curb and Gutter.

6" vertical and ramp type curb and gutter is permissible. Therefore, Curb Types 1 & 5 shall be used. See Figure DT-01 in Appendix C for detail.
11. Cul-de-Sacs, Knuckles & Eyebrows.
 - (a) Cul-de-sacs and Knuckles shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C – Figure DT-28). Refer to the latest edition of the International Fire Code for multiple-family units.
 - (b) Hammerheads shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C – Figure DT-31).
 - (c) Eyebrows shall all have a minimum flowline radius of fifty-five (55) feet. (See Appendix C – Figure DT-29).
 - (d) ROW radius in cul-de-sac bubble, eyebrow, and knuckles shall be fifty-five (55) feet.
12. Sidewalk Width.

Sidewalk shall be five (5) feet in width, either attached or detached within the right-of-way.
13. Street Widths.

Single-family & multiple-family residential requirements are:

 - (a) Paved width shall be thirty (30) feet for Multiple-Family.
 - (b) Paved width shall be twenty-eight (28) feet for Single-Family.
 - (c) Flowline to Flowline shall measure thirty-four (34) feet.
 - (d) See Appendix B - Detail 4 for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).

See Appendix - Table 5.1.

15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 8% with allowance up to 10% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves shall not be used.

F. Local Type II (Commercial).

1. Speed Limit.
Design - 30 mph.
Posted - 25 mph
2. Continuity.
The maximum and minimum distances between intersections for commercial are:

Maximum distance between intersections shall be 660'.
Minimum distance between intersections shall be 125'.
3. Safety.
Local Type II Commercial streets shall be designed for the safety of pedestrians and bicyclists, as well as the ease of access to adjacent parcels of land.
4. Traffic Control Characteristics.
On-street parking is allowed on both sides of the street.

5. Function.
Local Type II Commercial streets provide direct access to adjacent property. Traffic carried by local streets should have an origin or a destination within the commercial area. Utility line easements should be available.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be fifty (50) feet.
7. Number of Lanes.
Local Type II Commercial streets shall have two (2) travel lanes, each fifteen (15) feet wide.
8. Access Conditions.
Intersections shall be at grade with direct access to abutting property permitted.
9. Planning Characteristics.
Local streets should be designed to discourage through traffic from moving through the commercial area, except in downtown areas. Local streets should not intersect major collectors or arterial streets except when a waiver is allowed in downtown and commercial areas. See Section 1-7 for intersection spacing criteria.
10. Type of Curb and Gutter.
6" vertical and ramp type curb and gutters are permissible. Therefore, Curb Types 1 & 5 are allowed. See Figure DT-01 in Appendix C for detail.
11. Cul-de-Sacs, Knuckles & Eyebrows.
Cul-de-sacs, Knuckles, Hammerheads and Eyebrows will not be allowed.
12. Sidewalk Width.
Sidewalk shall be five (5) feet in width, either attached or detached within the right-of-way.
13. Street Widths.
 - (a) Paved width shall be thirty (30) feet.
 - (b) Flowline to Flowline shall measure thirty-four (34) feet.
 - (c) See Appendix B - Detail 4a for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix - Table 5.1.
15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.

16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 8% with allowance up to 10% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100) from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.

See Appendix A - Table 5.2.
18. Sight Distance.

Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
19. Crown.

The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.

Super elevation curves shall not be used.

G. Lane

1. Speed Limit.

Design - 35 mph.
Posted - 30 mph
2. Continuity.

The maximum and minimum distances between intersections for residential and commercial are:

Maximum distance between intersections shall be 2,640'.
Minimum distance between intersections shall be 500'.
3. Safety.

Lanes shall be designed for the safety of pedestrians and bicyclists, as well as the ease of access to adjacent parcels of land.
4. Traffic Control Characteristics.

On-street parking is prohibited.
5. Function.

Lanes shall be designed to provide access to 1+ acre single-family residential properties.

6. Minimum Right-of-Way Width.
The minimum right-of-way shall be fifty (50) feet.
7. Number of Lanes.
Lanes shall have two (2) travel lanes, each twelve feet wide.
8. Access Conditions.
Intersections shall be at grade with direct access to abutting property permitted.

Intersections along residential streets shall be designed to minimize the number of access points.
9. Planning Characteristics.
Lanes shall be designed to provide access to 1+ acre single-family residential properties. See Section 1-7 for intersection spacing criteria.
10. Type of Curb and Gutter.
6" vertical or ramp type curb and gutters are allowed. Therefore, Curb Types 1 & 5 are permissible. See Figure DT-01 in Appendix C for detail.
11. Cul-de-Sacs, Knuckles & Eyebrows.
 - (a) Cul-de-sacs shall all have a minimum flowline radius of forty-five (45) feet. (See Appendix C – Figure DT-28). Refer to the latest edition of the International Fire Code for multiple-family units.
 - (b) Hammerheads, knuckles, and eyebrows are not permitted.
 - (c) ROW radius in cul-de-sac shall be fifty-five (55) feet.
12. Sidewalk Width.
Sidewalks shall be five (5) feet in width, detached only, and will be required on a case-by-case basis.
13. Street Widths.
 - (a) Paved Width shall be twenty-four (24) feet.
 - (b) Flow Line to Flow Line shall measure twenty-four (24) feet.
 - (c) See Appendix B - Detail 5 for cross-section.
14. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
15. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 8% with allowance up to 10% for short sections of street, not to exceed five

hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.

- (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
- (c) See Appendix A - Table 5.3 for permissible intersection grades.

17. Curb Return Radii.

See Appendix A - Table 5.2.

18. Sight Distance.

Refer to Appendix A - Tables 5.4 – 5.6.

See Appendix C – Figure DT-25 for additional sight distance information.

19. Crown.

The cross-slope shall be two percent (2%) to street crown.

20. Super Elevation Curves.

Super elevation curves are allowed as approved by Town.

H. Boulevard.

1. Posted Speed Limit.

Design - 40 mph

Posted - 30 mph

2. Continuity.

Maximum distance between intersections shall be 2,640'.

Minimum distance between intersections shall be 500'.

3. Safety.

Boulevards shall be designed to handle traffic volumes loading from and onto local, collector, and arterial roadways. Bicycle lanes are required to separate non-motorized from motorized vehicles.

4. Traffic Control Characteristics.

On-street parking may be allowed on both sides of the street on 2-lane roads. Parking shall meet ADA requirements. On-street parking is prohibited on 4-lane roads. Traffic control can be provided by stop signs, or a traffic signal if warranted by high traffic volume.

5. Function.

Boulevard streets collect and distribute traffic between arterial and local streets and serve as main connectors within communities, linking one neighborhood with another. Traffic carried by collector streets should have an origin or a destination within the community unless located in the downtown area. Utility line easements should be available.

Boulevards are to be considered in the downtown area as a means of providing access as a collector road, but with the added benefit of a wide right-of-way; containing hardscape and landscape improvements that enhance the visual appearance of the roadway corridor.

6. Minimum Right-of-Way Width.
The minimum right-of way is ninety (90) feet.
7. Number of Lanes.
Boulevards shall have two (2) or four (4) travel lanes, each twelve (12) feet wide.

Five (5) foot wide bicycle lanes are required on each curb side.
8. Access Conditions.
Intersections shall be at-grade.
9. Planning Characteristics.
Boulevards should provide access to local streets for traffic within the neighborhood. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.
10. Type of Curb and Gutter.
6" vertical or ramp curb and gutters are allowed. Therefore, Curb Types 1 & 5 are permitted. See Figure DT-01 in Appendix C for detail.
11. Sidewalk Width.
Sidewalk shall be five (5) feet in width, either attached or detached within the right-of-way per approval from the Town.
12. Street Widths.
 - (a) 2 Lane Boulevard requirements:
 - i. Paved width shall be 53' & 53'-8".
 - ii. Flowline to flowline shall measure twenty (20) feet.
 - iii. See Appendix B - Detail 6 for cross-section.
 - (b) 4 Lane Boulevard requirements:
 - i. Paved width shall be 77' & 77'-8"
 - ii. Flow line to flow line shall measure thirty-two (32) feet.
 - iii. See Appendix B - Detail 7 for cross-section.
13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.

14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be 775 feet, unless a waiver is granted.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 6.0% with allowance up to 8% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C - Figure DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

I. Minor Collector (Residential).

1. Speed Limit.
Design - 40 mph
Posted - 30 mph
2. Continuity.
Maximum distance between intersections shall be 1,320'.
Minimum distance between intersections shall be 200'.
3. Safety.
Minor Residential Collectors shall be designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.

4. Traffic Control Characteristics.
Regulation of traffic shall be accomplished through the use of stop signs. Traffic signals normally used only at intersections with major collectors and arterial streets. Parking is prohibited.
5. Function.
Minor Residential Collector streets collect and distribute traffic between arterial and local streets and serve as main connectors within communities, linking one neighborhood with another. Traffic carried by collector streets should have an origin or a destination within the community. Utility line easements should be available.
6. Minimum Right-of-Way Width.
The minimum right-of-way shall be sixty (60) feet.
7. Number of Lanes.
Minor Residential Collector streets shall have two (2) travel lanes, each twelve (12) feet wide.

Additional lanes might be required at intersections if left or right turn lanes are needed.

Five (5) foot wide bicycle lanes are required on each curb side.
8. Access Conditions.
Intersections shall be at grade with no direct access to abutting property allowed unless no other access is reasonably available. Multi-family developments will not be allowed direct access. Single family residential homes may be allowed to have direct access.
9. Planning Characteristics.
Collector streets should have continuity throughout a neighborhood but need not extend beyond the neighborhood. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.
10. Type of Curb and Gutter.
6" vertical Type 1 curb and gutter is permitted. See Figure DT-01 in Appendix C for detail.
11. Sidewalk Width.
Only 5' wide detached sidewalks are allowed.
12. Street Widths.
 - (a) Paved Width shall be thirty-four (34) feet.
 - (b) Flow line to flow line shall measure thirty-eight (38) feet.
 - (c) Additional lanes may be required at intersections.

- (d) See Appendix B - Detail 8 for cross-section.
- 13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
- 14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
- 15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be 100 feet, unless a waiver is granted.
- 16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 6% with allowance up to 10% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
- 17. Curb Return Radii.
See Appendix A - Table 5.2.
- 18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C, Figure DT-25 for additional sight distance information.
- 19. Crown.
The cross-slope shall be two percent (2%) to street crown.
- 20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

J. Minor Collector (Commercial).

- 1. Speed Limit.
Design - 40 mph
Posted - 30 mph
- 2. Continuity.
Maximum distance between intersections shall be 1,320'.

Minimum distance between intersections shall be 200'.
- 3. Safety.
Minor Commercial Collectors shall be designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.

4. Traffic Control Characteristics.
Regulation of traffic shall be accomplished through the use of stop signs. Traffic signals normally used only at intersections with major collectors and arterial streets. Parking is prohibited.
5. Function.
Minor Collector streets collect and distribute traffic between arterial and local streets and serve as main connectors within communities, linking one commercial site with another. Traffic carried by collector streets should have an origin or a destination within the community. Utility line easements should be available.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be sixty (60) feet.
7. Number of Lanes.
Minor Commercial Collectors shall have two (2) travel lanes, each twelve (12) feet wide

Additional lanes might be required at intersection if left or right turn lanes are needed.

Five (5) foot wide bicycle lanes are required on each curb side.
8. Access Conditions.
Intersections shall be at grade. Direct access to abutting property is not permitted unless no other access is reasonably available.
9. Planning Characteristics.
Collector streets should have continuity throughout a neighborhood but need not extend beyond the commercial area. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.
10. Type of Curb and Gutter.
6" vertical Type 1 curb and gutter is permitted. See Figure DT-01 in Appendix C for detail.
11. Sidewalk Width.
Only 5' wide detached sidewalks shall be permitted.
12. Street Widths.
 - (a) Paved Width shall be thirty-four (34) feet.

- (b) Flow line to flow line shall measure thirty-eight (38) feet.
 - (c) Additional lanes may be required at intersections.
 - (d) See Appendix B - Detail 8 for cross-section.
13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
 14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
 15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be 100 feet, unless a waiver is granted.
 16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 6% with allowance up to 10% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
 17. Curb Return Radii.
See Appendix A - Table 5.2.
 19. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
 20. Crown.
The cross-slope shall be two percent (2%) to street crown.
 21. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

K. Major Collector (Residential).

1. Speed Limit.
Design - 40 mph
Posted - 35 mph
2. Continuity.
Maximum distance between intersections shall be 1,320'.

Minimum distance between intersections shall be 400'.

3. Safety.
Major Residential Collectors shall be designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.
4. Traffic Control Characteristics.
 - (a) Regulation of traffic accomplished through the use of traffic signs, striping and signals.
 - (b) On-street parking is prohibited.
 - (c) Traffic signals will normally be located only at intersections with streets of equal or higher classification.
5. Function.
Major collector streets permit relatively unimpeded traffic movement and are intended for use on those routes where two (2) or four (4) moving lanes are required but where a larger classified street is not warranted.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be ninety (90) feet.
7. Number of Lanes.
Two Lane Major Residential Collector:
 - (a) Major Residential Collector streets shall have two (2) travel lanes and one (1) center turn lane, each twelve (12) feet wide.
 - (b) Additional laneage may be required at intersections.
 - (c) Five (5) foot wide bicycle lanes are required on each curb side.
 - (d) See Appendix B – Detail 9 for cross-section.
Four Lane Major Residential Collector:
 - (a) Major Residential Collector streets shall have four (4) travel lanes and one (1) center turn lane, each twelve (12) feet wide.
 - (b) Additional laneage may be required at intersections.
 - (c) Five (5) foot wide bicycle lanes are required on each curb side.
 - (d) See Appendix B – Detail 9a for cross-section.
8. Access Conditions.
 - (a) Access from streets of equal or lower classification will be permitted, but in all cases will be controlled by traffic control devices.
 - (b) Intersections at grade with no direct access to abutting property.
9. Planning Characteristics.
 - (a) Major collector streets should be employed where conditions warrant.
 - (b) Landscaping elements are encouraged (trees, hardscape, open space, etc.). – refer to Town of Monument Code Section 17.52.

- (c) Intersections with other collector and arterial streets should be at least 1,320 feet apart. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.
10. Type of Curb and Gutter.
6" vertical Type 1 curb and gutter is permitted. See Figure DT-01 in Appendix C for detail.
 11. Sidewalk Width.
Only 5' wide detached sidewalks are allowed.
 12. Street Widths.
Major Residential Collector Street with two (2) travel lanes:
 - (a) Paved width shall be forty-six (46) feet.
 - (b) Flow line to flow line shall measure fifty (50) feet.
 - (c) Include additional width as required for turn lanes.
 - (d) See Appendix B - Detail 9 for cross-section.
Major Residential Collector Street with four (4) travel lanes:
 - (a) Paved width shall be seventy (70) feet.
 - (b) Flow line to flow line shall measure seventy-four (74) feet.
 - (c) Include additional widths as required for turn lanes.
 - (d) See Appendix B - Detail 9a for cross-section.
 13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
 14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
 15. Minimum Length of Tangents Between All Curves.
The minimum length of tangents shall be one hundred (100) feet. No waivers will be permitted.
 16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 4% with allowance up to 6% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
 17. Curb Return Radii.
See Appendix A - Table 5.2.

18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

L. Major Collector (Commercial).

1. Speed Limit.
Design - 40 mph
Posted - 35 mph
2. Continuity.
Maximum distance between intersections shall be 1,320'.
Minimum distance between intersections shall be 400'.
3. Safety.
Major Commercial Collector streets shall be designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.
4. Traffic Control Characteristics.
 - (a) Regulation of traffic shall be accomplished through the use of traffic signs, striping and signals.
 - (b) On-street parking is prohibited.
 - (c) Traffic signals will normally be located only at intersections with streets of equal or higher classification.
5. Function.
Major collector streets permit relatively unimpeded traffic movement and are intended for use on those routes where two (2) or four (4) moving lanes are required but where a larger classified street is not warranted.
6. Minimum Right-of-Way Width.
The minimum right-of-way width shall be ninety (90) feet.
7. Number of Lanes.
Major Commercial Collector Street with two (2) travel lanes:
 - (a) Major Commercial Collector streets shall have two (2) travel lanes and one (1) center turn lane, each twelve (12) feet wide.
 - (b) Additional laneage may be required at intersections.
 - (c) Five (5) foot wide bicycle lanes are required on each curb side.

- (d) See Appendix B – Detail 9 for cross-section.

Major Commercial Collector Street with four (4) travel lanes:

- (a) Major Commercial Collector Streets shall have four (4) travel lanes and one (1) center turn lane, each twelve (12) feet wide.
- (b) Additional laneage may be required at intersections.
- (c) Five (5) foot wide bicycle lanes are required on each curb side.
- (d) See Appendix B – Detail 9a for cross-section.

8. Access Conditions.

- (a) Access from streets of equal or lower classification will be permitted, but in all cases will be controlled by traffic control devices.
- (b) Intersections at grade with no direct access to abutting property permitted unless no other access is reasonably available.

9. Planning Characteristics.

- (a) Major collector streets should be employed where conditions warrant.
- (b) Intersections with other collector and arterial streets should be at least 1,320 feet apart. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.

10. Type of Curb and Gutter.

6" vertical Type 1 curb and gutter is permitted. See Figure DT-01 in Appendix C for detail.

11. Sidewalk Width.

Only 5' wide detached sidewalks are allowed.

12. Street Widths.

Two (2) travel lanes:

- (a) Paved width shall be forty-six (46) feet.
- (b) Flow line to flow line shall measure fifty (50) feet.
- (c) Install additional width as required for turn lanes.
- (d) See Appendix B - Detail 9 for cross-section.

Four (4) travel lanes:

- (a) Paved width shall be seventy (70) feet.
- (b) Flow line to flow line shall measure (74) feet.
- (c) Install additional width as required for turn lanes.
- (d) See Appendix B - Detail 9a for cross-section.

13. Minimum Radius of Curvature on Centerline (Horizontal).

See Appendix A - Table 5.1.

14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be one hundred (100) feet. No waivers will be permitted.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 4% with allowance up to 6% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

M. Minor Arterial.

1. Speed Limit.
Design - 50 mph
Posted - 40 mph
2. Continuity.
Maximum distance between intersections shall be 2,640'.
Minimum distance between intersections for a “T” intersection shall be 400'.
Minimum distance between intersections for a “4-Way” intersection shall be 2,640'.
3. Safety.
Minor Arterial streets shall be designed to handle traffic volumes loading from and onto collectors, and other arterial roadways.

4. Traffic Control Characteristics.
 - (a) Regulation of traffic shall be accomplished through the use of traffic signs, signal control devices, and channelization.
 - (b) On-street parking is prohibited.
 - (c) Traffic signals normally used only at intersections with major collectors and arterial streets.
 - (d) Medians are required and may, at the discretion of the Town, be raised and/or landscaped. Medians may be painted only in certain circumstances, such as when raised medians are designed for future turn lanes.

5. Function.

Arterial streets permit rapid and relatively unimpeded traffic movement and carry high volumes of traffic while connecting major land use elements as well as communities with one another. The secondary function is to serve abutting property.

6. Minimum Right-of-Way Width.

The minimum right-of-way width shall be one hundred-twenty (120) feet.

Additional ROW may be required based on future transit needs as identified by the Town.

7. Number of Lanes.

Minor Arterial roads shall have four (4) travel lanes, each twelve (12) feet wide.

Additional twelve (12) foot wide center turn lanes and/or eleven (11) foot wide acceleration/deceleration lanes may be required.

Five (5) foot wide bicycle lanes are required on each curb side.

8. Access Conditions.
 - (a) Intersections will be at grade.
 - (b) Access from streets of equal or lower classification will be permitted, but in all cases will be controlled preferably by signalization. Stop sign control may be permitted on a case by case basis.
 - (c) Direct access to abutting property is not permitted.
 - (d) Intersections with other collector and arterial streets should be at least 2,640' apart. See Section 1-7 for intersection spacing criteria.

9. Planning Characteristics.

Minor Arterials should be spaced from 2,640 feet to 5,280 feet apart and should be, where possible, continuous. The spacing of arterial streets will

depend on current and future land uses, densities and traffic volumes. Arterials should not bisect neighborhoods, but should act as boundaries between neighborhood areas. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.

10. Type of Curb and Gutter.
6" vertical Type 1 curb and gutter is permissible. See Figure DT-01 in Appendix C for detail.
11. Sidewalk Width.
Only 5' wide detached sidewalks are allowed.
12. Street Widths.
 - (a) Paved width shall be a minimum of seventy-four (74) feet and a maximum of one hundred-two (102) feet.
 - (b) Flow line to flow line shall measure between thirty-three (33) feet and forty-four (44) feet.
 - (c) See Appendix B - Details 10, 10a, 10b, and 10c for cross-sections.
13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.
14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be one hundred (100) feet.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 4% with allowance up to 6% for short sections of street, not to exceed five hundred (500) feet without a waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A – Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.

19. Crown.
The cross-slope shall be two percent (2%) to street crown.

20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

N. Major Arterial.

1. Speed Limit.
Design - 50 mph
Posted - 45 mph

2. Continuity.
Maximum distance between intersections shall be 2,640'.
Minimum distance between intersections for a "T" intersection shall be 400'.
Minimum distance between intersections for a "4-Way" intersection shall be 2,640'.

3. Safety.
Major Arterial roadways shall be designed to handle traffic volumes loading from and onto collectors, and other arterial roadways.

4. Traffic Control Characteristics.
(a) Regulation of traffic shall be accomplished through the use of traffic signs, signal control devices, and channelization.
(b) On-street parking is prohibited.
(c) Traffic signals normally used only at intersections with major collectors and arterial streets.
(d) All streets shall have a median.
(e) Medians are required and may, at the discretion of the Town, be raised and/or landscaped. Medians may be painted only in certain circumstances, such as when raised medians are designed for future turn lanes.

5. Function.
Arterial streets permit rapid and relatively unimpeded traffic movement and carry high volumes of traffic while connecting major land use elements as well as communities with one another. The secondary function is to serve abutting property.

6. Minimum Right-of-Way Width.
The minimum right-of-way shall be one hundred forty (140) feet. Additional ROW may be required based on future transit needs as identified by the Town.

7. Number of Lanes.
Major Arterial roads shall have four (4) or six (6) travel lanes, each twelve (12) feet wide.

Additional twelve (12) foot wide center turn lanes and/or eleven (11) foot wide acceleration/deceleration lanes may be required.
8. Access Conditions.
 - (a) Limited access, refer to CDOT Access Codes. See State of Colorado website¹.
 - (b) Intersections and curb cuts shall be limited as approved by the Town. Access to abutting property is not permitted unless no other access is reasonably available. Intersections shall be at grade. Access from streets of equal or lower classification will be permitted but in all cases will be controlled by stop signs or traffic control devices.
 - (c) Median cuts will not normally be permitted except at major or significant street intersections or major entrances to commercial development.
9. Planning Characteristics.
Major Arterials should be spaced from 2,640 –feet to 5,280 feet apart and should be, where possible, continuous. The spacing of arterial streets will depend on current and future land uses, densities and traffic volumes. Arterials should not bisect neighborhoods, but should act as boundaries between neighborhood areas. See Section 1-7 for intersection spacing criteria and Section 1-11 for median design.
10. Type of Curb and Gutter.
6" vertical curb and gutter is permissible. Therefore, Curb Types 1, 3 & 4 are allowed. See Figure DT-01 in Appendix C for detail.
11. Sidewalk Width.
Only 5' detached walks shall be allowed on Major Arterial roadways.
12. Street Widths.
 - (a) Paved width shall be a minimum of eight-four (84) feet and a maximum of one hundred thirty-two (132) feet.
 - (b) Flow line to flow line shall measure between thirty-three (33) feet and fifty-seven (57) feet.
 - (c) See Appendix B - Details 11, 11a, 11b, and 11c for cross-sections.
13. Minimum Radius of Curvature on Centerline (Horizontal).
See Appendix A - Table 5.1.

¹ CDOT Access Code found on State of Colorado Website:
http://www.dot.state.co.us/AccessPermits/PDF/601_1_AccessCode_March2002_.pdf

14. Minimum Length of Vertical Curves.
See Appendix A – Figures A1 & A2.
15. Minimum Length of Tangents Between All Curves.
The minimum tangent length shall be one hundred (100) feet.
16. Street Grades.
 - (a) Minimum grade shall be 0.5%. Maximum grade shall be 4% with allowance up to 6% for short sections of street, not to exceed five hundred (500) feet without waiver from the Town. Designs at minimum grade will be reviewed on a case by case basis.
 - (b) Grades cannot exceed 4% for a distance of at least one hundred feet (100') from the beginning of the curb return.
 - (c) See Appendix A - Table 5.3 for permissible intersection grades.
17. Curb Return Radii.
See Appendix A - Table 5.2.
18. Sight Distance.
Refer to Appendix A - Tables 5.4 – 5.6.
See Appendix C – Figure DT-25 for additional sight distance information.
19. Crown.
The cross-slope shall be two percent (2%) to street crown.
20. Super Elevation Curves.
Super elevation curves are allowed as approved by Town.

1-4 Sidewalks, Curbs, Gutters, and Driveways

- A. Roadway Typical Sections.
Roadway typical sections shall be as specified by these Roadway Standards. They are summarized in Appendix B, Details 1 to 11c of these Standards.
- B. Sidewalks.
Sidewalks shall be constructed on both sides of all roadways unless specifically approved otherwise by the Town of Monument. All sidewalks shall be installed by the developer at the time of road and/or curb and gutter installation. Sidewalks may be installed in phases in residential neighborhoods, with phasing to be consistent with the construction of homes within a particular block or section. No utilities shall be placed under sidewalks. A drain pipe may be placed under the sidewalk in accordance with Detail DT-20 in Appendix C. Refer to Appendix C for sidewalk passing space requirements and sidewalk pedestrian clearance zone requirements as shown in Details DT-05 and DT-21 respectively.

- C. Handicap Ramps.
State law requires that handicap ramps be installed at all intersections and at mid-block locations specified by the Town for all new construction or reconstruction of curb and sidewalk. Handicap ramps shall be constructed in accordance with Details DT-06 through DT-16 in Appendix C. Handicap ramps may be shown at all curb returns or called out by a general note on the development plans, but must be shown (located) at all "T" intersections directly opposite either curb return.
- D. Curb Returns Radii.
See Appendix - Table 5.2 for curb return radii.
- E. Curb Cuts.
Curb cuts and driveways shall be constructed in accordance with Detail DT-22 in Appendix C.
- F. Mailboxes.
The local branch of the United States Postal Service has the final decision on size and location of mailboxes and mailbox groupings.
- G. Policy Regarding Damage.
Any damage to public infrastructure as a result of vegetation growing on an adjacent property is the responsibility of the adjacent property owner.
- H. Sidewalks and Gutters Clear.
It is unlawful for any person performing any excavation to place any dirt, debris, or other materials upon any sidewalk or in any gutters. Such work shall be performed so as to permit the free passage of water along the gutters.

1-5 Horizontal Alignment

- A. Horizontal Curves.
Minimum curve radii shall be as shown in Appendix A - Table 5.1.
- B. Curb Return Radii.
Minimum and maximum curb return radii shall be as shown in Appendix A - Table 5.2.
- C. Design Speed.
Horizontal alignment design speed shall be consistent with the requirement for vertical alignment design speed.

If no superelevation is required and a normal crown section exists, the horizontal curve data as shown in Appendix A - Table 5.1 shall be used.

D. Superelevation.

Superelevation may be required for curves on arterial roadways and selected collector roadways. Horizontal curve radii and superelevation shall be in accordance with the recommendations of the AASHTO "Green Book," (Horizontal Alignment). Superelevation shall not be used without prior approval by the Town.

Superelevation shall not be used on local or other roadway classifications with a design speed of less than 50 mph.

The following procedure is an outline for the correct application of superelevation on roadways:

1. Definitions Regarding Superelevation.

(a) Superelevation Runoff:

Superelevation runoff is that length of roadway needed to accomplish the change in cross slope from a section with the adverse crown removed (flat) to the fully superelevated section, or vice versa.

(b) Transition Points:

Beginning or ending of tangent runout, superelevation runoff or full superelevation.

(c) Tangent Runout:

The length of roadway needed to accomplish the change in cross slope from a normal (2.0%) crown section to a section with the adverse crown removed (flat), or vice versa.

2. Standards for Superelevation.

The CDOT "M" Standards on Superelevation give the required rate of superelevation for the various degrees of curvature.

The maximum superelevation rate is 0.04 feet per foot.

3. Urban Street Conditions.

Every effort should be made to maintain standard rates of superelevation. However, in urban areas, street intersections, established street grades, curbs, and drainage conditions may require a reduction in the rate of superelevation, or different rates for each half of the roadbed. In warping areas for drainage, adverse superelevations should be avoided.

E. Spiral Curves.

Spiral curves shall not be used.

- F. Cul-de-sacs.
Cul-de-sacs shall have a minimum flowline radius of forty-five (45) feet. Refer to the International Fire Code for multi-family units. See Appendix C - Detail DT-28 for cul-de-sac requirements.
- G. Sight Distances.
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. Alignment should provide for safe and continuous operation at a uniform design speed. Road layout shall bear a logical relationship to existing or platted roads in adjacent properties.
 2. Horizontal Alignment.
 - (a) Sight Distance. Horizontal alignment must provide at least the minimum stopping distance for the design speed at all points. This includes visibility at intersections as well as around curves and roadside encroachments.
 - (b) Stopping Sight Distance. The minimum stopping sight distance is the distance required by the driver of a vehicle traveling at the design speed to bring the vehicle to a stop after an object on the road becomes visible. Object height shall be 2' above road surface and viewer's height shall be considered to be 3.50 ft. above road surface. See Appendix A Tables 5.4 – 5.6 for stopping sight distance requirements.

Where an object off the pavement restricts sight distance, the minimum radius of curvature is determined by the stopping sight distance (see Appendix A – Tables 5.4 – 5.6). In no case shall the stopping sight distance be less than as specified in Appendix A - Table 5.4. A likely obstruction may be a bridge abutment or line of columns, wall, cut side slope, or a side or corner of a building. The sight distance design procedure shall assume a 6'-0" fence (as measured from actual finished grade) exists at all property lines except in the sight distance triangles required at all intersections. The horizontal sight restrictions may occur where there is a cut slope on the inside of the curve. For the 3.5-foot eye height and the 2-foot object height used for the stopping sight distance, a height of 2.75 feet may be used as the midpoint of the sight line where the cut slope usually obstructs sight. This assumes that there is little or no vertical curvature.

- (c) Passing Sight Distance. Passing sight distance is the minimum sight distance that must be available to enable the driver of one vehicle to pass another safely and comfortably without interfering with oncoming traffic traveling at the design speed. Two-lane roads should provide adequate passing zones. Required passing sight distance for given design speeds is given in Appendix A - Table 5.4.
- (d) Intersection and Driveway Sight Distance (Sight Triangle). There shall be an unobstructed sight distance along both approaches of both sides at an intersection within the right-of-way for distances sufficient to allow the operators of vehicles, approaching simultaneously, to see each other in time to prevent collisions at the intersection. The sight triangle relationship developed for use in the Town of Monument is based upon the dimensions shown in Appendix A – Table 5.4 and Figure DT-25.

Any object within the sight triangle which is more than thirty-six (36) inches above the flowline elevation of the adjacent street shall constitute a sight obstruction and shall be removed or lowered. Such objects include: buildings, cut slopes, hedges, trees, bushes, utility cabinets or tall crops. This design criteria also requires the elimination of parking (except on local streets) within the sight triangle and applies whether the intersecting roads are level or on grades. The sight distance shall be measured to the centerline of the closest through lane in both directions.

All sight distance triangles must be within the public right-of-way or a sight distance easement will be required (refer to Appendix A – Table 5.4 and Figure DT-25). A sight distance easement shall be required if the line of sight crosses onto private property. The sight distance easement or necessary right-of-way shall be dedicated to the Town to provide the required sight distance. Maintenance of a sight distance easement shall be the responsibility of the property owner or the homeowners' association unless otherwise approved by the Town. All sight distance triangles must be shown on the street plan/profile plans. In no case shall any permanent object encroach into the line-of-sight of any part of the sight distance triangle.

Where there is downtown redevelopment, the sight distances shall be reviewed and approved by Town staff on a case by case basis. However, every effort shall be made to meet the criteria in this section.

1-6 Vertical Alignment

A. Design Controls.

Design controls for vertical alignment are shown in Appendix A - Figures A-1 & A-2.

B. Permissible Roadway Grades.

See Appendix A - Table 5.3.

C. Sight Distances.

Both the horizontal and vertical sight distance should be checked to insure that the sight distance along the major highway is sufficient to allow a vehicle to cross or turn left, whichever is required.

- (a) By determining graphically the sight distances on the plans and recording them at frequent intervals, the designer can appraise the overall layout and affect a more balanced design by minor adjustments in the plan or profile. See Figure DT-25 for a typical sight distance record that would be shown on the final plans.

Because the view of the highway ahead may change rapidly in a short distance, it is desirable to measure and record sight distance for both directions of travel at each station. Both horizontal and vertical sight distances should be measured and the shorter lengths recorded. In the case of two-lane streets, passing sight distance in addition to stopping sight distance should be measured and recorded.

Once the horizontal and vertical alignments are tentatively established, the practical means of examining sight distances along the proposed street is by the method demonstrated in Figure DT-25.

- (b) Horizontal sight distance on the inside of a curve is limited by obstructions such as buildings, hedges, wooded areas, high ground, or other topographical features. These generally are plotted on the plans. The cut slope obstruction is shown on the worksheets by a line representing the proposed excavation slope at a point 2.0 ft. (average of 3.50 and 0.5 ft) above the road surface for stopping sight distance and at a point about 3.75 ft. above the road surface for passing sight distance. The stopping sight distance should be measured between points on the one traffic lane, and passing sight distance from the middle of one lane to the middle of the other lane as detailed in Figure DT-25 of Appendix C.
- (c) A simple sight distance record is shown in Appendix C - Figure DT-25. Sight distances in both directions are indicated by arrows and figures at each station on the plan and profile sheet of the proposed

roadway. To avoid the extra work of measuring unusually long sight distances that may occasionally be found, a selected maximum value may be recorded. In the example shown, all sight distances of more than 3,000 ft. are recorded as 3,000+, and where this occurs for several consecutive stations, the intermediate values are omitted. Sight distances less than 1,000 ft. may be scaled to the nearest 50 ft. and those greater than 1,000 ft. to the nearest 100 ft.

D. Permissible Intersection Grades (Public Rights of Way).

The maximum permissible grade at intersections will be as shown in Appendix A – Table 5.3. These grades are maximum instantaneous flowline grades for the stated distances (each side of the street) for the minor (intersecting) street.

All private commercial driveways with curb return radii shall follow the standard set forth for a local street. The length of the maximum grade for the commercial driveway shall begin at a minimum of 50 feet measured from the flowline where the driveway intersects the public roadway. The maximum grade for a residential drive is 10%. A waiver may be requested to increase the grade to 14%. The maximum grade for arterial intersections is 4%. A waiver may be requested to increase the grade.

E. 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 five tenths of a percent (0.005 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 (2.0) percent and for arterial roadways a maximum of one (1.0) percent for all other roadway classifications.

F. Cross Fall.

Except at intersections, or where superelevation is required, roadways shall be level from top of curb to top of curb (or flowline to flowline). The distance from intersections with which 'cross-fall' will be permitted shall be determined by criteria in Section 1-17.D, Cross-Slope.

G. Vertical Curves.

When the algebraic difference in grade is at or exceeds the maximum values, a vertical curve is to be used. Design criteria for vertical curves are found in Appendix A – Figures A-1 and A-2 of these Standards. 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 Section 1-6A of these Standards. All vertical curves shall be labeled, in the profile, with length of curve (L) and $K = (L/A)$ values, where “A” is defined as the algebraic difference in approaching slopes.

- H. Vertical Clearance.
A minimum vertical clearance of 13 feet 6 inches will be maintained at all times.

1-7 Intersections

A. Design Criteria.

The following criteria shall apply at intersections:

1. Grade.
The grade of the "through" street shall take precedence at intersections. At intersections of roadways with the same classification, the more important roadway, as determined by the Town, shall have this precedence. The design should warp side streets to match through streets with as short a transition as possible.
2. PCR of the Curb Return.
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 normal pavement cross slope (2.0%).
3. Crown & Elevation.
Carrying the crown at a side street into the through street is permitted only when drainage considerations warrant such a design. Refer to Section 1-17D for street cross slope allowances.

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:

- (a) Permissible grade. See Appendix A - Table 5.3.
- (b) Vertical controls within the curb return itself. (See Section 1-6).

4. Dipping the Flowline.
Dipping the flowline to the extent that the lip of gutter is also dipped will not be permitted. Inlets shall be placed such that the flow line of the inlet and the flow lines of the gutter upstream and downstream shall be continuous and at the same grade.
5. Arterial-Arterial Intersections.
A more detailed review shall be performed for arterial-arterial intersections to maximize driveability. Few arterial intersections will have a uniform 2% cross slope, the majority of them having one or more sides warped. (See Section 1-7, B-4 of these Standards for rates of pavement warp allowed).

6. Intersection Angle.
Whenever possible, intersections shall be made at right angles or radial to a curve. No intersecting angle of less than eighty (80°) degrees will be allowed.
7. Curb Returns.
All curb returns must drain. No inlets are allowed within a curb return. Inlets can be placed at the PT or PC of a curb return.

B. Curb Return Profiles

Curb return profiles are required for radii equal to or greater than thirty (30) feet within the public right-of-way. A midpoint elevation along the arc length of the curb return shall be shown in plan view for radii equal to or greater than twenty-five (25) feet.

Curb return design shall be set in accordance with the following design procedure. General standards for flowline control and profiles within the curb returns shall be as follows:

1. Point of Tangency.
The point of tangency at each curb return shall be determined by the projected tangent grade beginning at the point of intersection (P.I.) of the flowlines.
2. Arc Length and External Distance.
The arc length and external distance of the curb return shall be computed and indicated on the drawing.
3. Flowline Grade.
Show the corresponding flowline (or top of curb) grade for each roadway beyond the P.C.R.
4. Flowline Slope.
Design the flowline of the curb return such that the maximum slope along the flowline does not exceed eight (8) percent. Grade breaks at the PCR's will not exceed two (2) percent for local and collector streets and one (1) percent for arterials. Minimum curb & gutter grade is 0.5%. No more than 1' vertical difference in elevation across the street at the PCR is allowed.
5. Scale.
Scale for the curb return profile shall be 1" = 20' horizontally and 1" = 4' vertically, unless otherwise approved by the Town.
6. Curb Return Radii.
Curb return radii, existing and proposed, shall be shown.

C. Connection with Existing Roadways.

1. Vertical Curve.

Connections with existing roadways shall be smooth transitions conforming to normal vertical curve criteria (See Section 1-6). If the algebraic difference in grade (A) between the existing and proposed grade exceeds the maximum allowed, a vertical curve is used to make this transition. The vertical curve shall be fully accomplished prior to the connection with the existing improvement and shall also comply with the grade requirements at intersection approaches.

2. Existing Grade.

Existing grade shall be shown for at least two-hundred (200) feet with field verified as-builts showing stations and elevations at twenty-five (25) foot intervals. In the case of connection with an existing intersection, these as-builts are to be shown within a two-hundred (200) foot radius of the intersection. This information will be included in the plan and profile that shows that proposed roadway.

Limits and characteristics of the existing improvement are the primary concern in the plan view. Such characteristics include horizontal alignment, off-site intersections, limits of the improvement, etc.

3. Approved Design for Existing Improvements.

Previously approved designs for the existing improvements are not an acceptable means of establishing existing grades; however, they are to be referenced on the construction plan where they occur.

4. As-Built Elevations.

The basis of the as-built elevations shall be the same as the design elevations (both flowlines or both tops of curb, etc.,) when possible.

1-8 Phased Design

The design grade and existing ground at that design grade, all of the 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 five hundred (500) feet or to its intersection with an arterial roadway. This limit shall be extended to one thousand (1,000) feet when arterial roadways are being designed.

If the off-site roadway adjacent to the proposed development is not fully improved, the developer 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 determine the length of 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

1-9 Acceleration/Deceleration Lanes

The design of the arterial street system depends upon the proper control of access to developments. The location and design of access points must minimize traffic hazards and interference with through traffic movements. Acceleration/Deceleration lanes shall be designed using CDOT Access Codes, refer to the State of Colorado website².

The need for acceleration or deceleration lanes shall be established by the (different) approved traffic impact study, which should follow the Town of Monument criteria. The approved traffic impact study will be completed for the final plat or final development plan.

1-10 Construction Traffic Control

A. Pedestrian Traffic.

1. General.

Every precaution shall be taken to ensure that construction work does not interfere with the movement of pedestrian traffic, which shall be maintained on the sidewalk at all times. Flagperson(s) shall be provided for guidance as necessary.

2. Sidewalk Interruption.

Where an excavation interrupts the continuity of the sidewalk, the contractor shall provide suitable bridge or deck facilities, to be supplemented by the use of such proper devices and measures as prescribed in the Manual on Uniform Traffic Control Devices, most recent edition, for the safe and uninterrupted movement of pedestrian traffic. The edges or ends of the pedestrian bridge or decking shall be beveled or chamfered to a thin edge to prevent tripping.

² CDOT Access Codes on the State of Colorado Website:
http://www.dot.state.co.us/AccessPermits/PDF/601_1_AccessCode_March2002_.pdf

3. Temporary Diversion Walkways.
Temporary diversion walkways shall be hard surfaced and electric lighting shall be provided and kept continuously illuminated during hours of darkness, when required by the Town.
4. Pedestrian Detours in Roadway.
Unless otherwise authorized by the Town, pedestrians shall not be channeled to walk on the traveled portion of a roadway.
5. Pedestrian Detours Across Street.
Under certain conditions, it may be necessary to divert pedestrians to the sidewalk on the opposite side of the street. Such crossings shall only be made at intersections or marked pedestrian crossovers.
6. Pedestrian Crossings.
Facilities satisfactory to the Town shall be provided for pedestrian crossings at corners, pedestrian crossovers and public transportation stops.

B. Vehicular Traffic.

1. Construction Work Zone Traffic.
Construction work zone traffic shall be controlled by signs, barricades, detours, etc., which are designed and installed in accordance with the Manual on Uniform Traffic Control Devices, most recent edition. A traffic control plan prepared by a certified traffic control supervisor shall be submitted and approved by the Town of Monument Director of Development Services or designee prior to start of any construction. A maintenance of traffic permit must also be acquired from the Town prior to construction.
2. Construction of New Facilities.
During construction of new facilities, traffic control should strive to keep the motorist from entering the facility. The primary means to accomplish this are by use of temporary barricades, located in advance of the point where new construction joins existing and by appropriate signing. New construction shall not be opened to traffic, and thus the construction traffic control removed, without the approval of the Town.
3. Construction Traffic Control Plan - General.
In general terms, a construction traffic control plan must be drawn on a map. For minor projects or local roadways, a neat sketch of the roadways and the proposed control devices will suffice. For major projects or major roadways, the traffic control plan should be superimposed on as-builts, construction plan drawings, or other detailed maps.

4. Construction Traffic Control Plan – Design.
The Manual on Uniform Traffic Control Devices (MUTCD) shall be the basis upon which the construction traffic control plan is designed, in concert with proper, prudent, and safe engineering practice. All necessary signing, striping, channelization devices, barricading, flagging, etc. shall be shown on the plan.

5. Barricades.
Whenever roadways terminate due to project phasing, subdivision boundaries, etc., barricades are required. Design and construction shall comply with the requirements of the MUTCD, most recent edition. Details shall be shown on the construction drawings and installation shall be provided by the developer.

Every person doing or causing to be done any of the work authorized by the Town shall keep the work barricaded at all times and, between the hours of sunset and sunrise, he or she shall keep the same property lighted as to warn all persons thereof.

6. Street Closures.
In concept, streets shall not be closed overnight and work shall not force road or lane closures before 8:30 a.m. or after 3:30 p.m. If exceptions to this are required, this shall be so noted on the construction traffic control plan and must be specifically approved by the Town.

7. Directional Access.
Directional access on roadways may be restricted (minimum travel lane width in construction area is 10 feet) but proper controls including flagging must be indicated. Removal of on-street parking should be considered and noted where applicable.

1-11 Median Islands

- A. Median islands shall be designed per the AASHTO "Green Book".
- B. No permanent structures (trees, poles, large rocks, etc.) shall be placed in any location that would obstruct sight distance. See Appendix C – Figure DT-25 for sight distance requirements.
- C. The nose of the median island shall not extend past the curb return at the intersection. The radius of the median island shall allow for adequate turning movements and shall not impede traffic in any way. An Auto-Turn report will need to be submitted to verify median placement.
- D. Landscaping on median islands shall have a mature height of twenty-four (24) inches or less above the traveled way within the intersection sight triangle to

facilitate adequate sight distance, and will preferably be dry land or native vegetation. If irrigation is planned for a median island, mitigation will be provided to protect the subgrade under the pavement from being saturated by using the median island as detailed in Appendix C, Drawings DT-41 and DT-42.

1-12 Street Lighting, Signage, Striping, and Signalization Criteria

A. General.

This section is intended to provide a set of guidelines that promotes a coordinated and visually attractive streetscape. All luminaries, signs, and traffic signals shall be designed and constructed to prevent deformation or failure as set forth in the latest edition of the AASHTO publication, “Standard Specifications for Structural Supports of Highway Signs, Luminaires and Traffic Signals.” If the AASHTO standards are in conflict with these Roadway Technical Standards, the more stringent shall apply. All existing and proposed street lighting, signing, and signalization shall be shown on a Street Lighting and Signing Plan for review and approval by the Town.

B. General Guidelines.

The street lighting standards as follows have been developed as a guideline for a functional and attractive street lighting system that is of a uniform design and construction, as well as provides for safe vehicular and pedestrian transportation.

1. Street lighting shall be installed in accordance with Mountain View Electric Association (MVEA) requirements, these guidelines, and Town Code Section 17.48.100 criteria, as applicable.
2. Street lighting shall be designed and installed so that adjacent properties are protected from excessive glare considered to be a public nuisance.
3. The installation of any lighting that conflicts with warning signals, emergency signals, or traffic signals is prohibited.
4. All street lighting within the Town limits shall be installed with underground electric service.
5. Developers are responsible for coordinating all aspects of design and installation for street lighting on the local streets within their projects with Mountain View Electric Association.
6. Street lights shall be located a minimum of four (4) feet behind face of curb unless otherwise approved by the Town.

C. Design Guidelines.

1. Average Maintained Horizontal Illumination Standards:
 - (a) Arterial streets (e.g. Jackson Creek Parkway), arterial/arterial intersections, and arterial/collector intersections should have an average of 1.2 foot candle with a minimum uniformity ratio of 4:1.
 - (b) Collector/collector and collector/local intersections should have an average of 0.6 foot candle with a minimum uniformity ratio of 6:1 unless Town code prohibits.
 - (c) Local/local intersections should have an average of 0.4 footcandle with a minimum uniformity ratio of 6:1.
2. All street lights shall be designed and constructed to prevent deformation or failure when subjected to 100 mph wind loads.
3. All arterial and collector street light poles shall be mounted on a concrete footing.
4. All street light luminaires shall be high pressure sodium (hps).
5. Arterial street lights shall:
 - (a) Have 150 watt lamps.
 - (b) Have octagonal tapered, precast, prestressed concrete poles as manufactured by Ameron International, Pole Products Division, or an equal approved by the Town. Luminaire mounting height shall be approximately 30 feet. The color and finish of the pole shall be Number 263 (a dark gray exposed aggregate) with a protective acrylic coating for graffiti resistance.
 - (c) Have 11-inch mast arms as manufactured by WideLite (a Genlyte Company), or an equal approved by the Town. The color shall be Textured Black. The color shall match the pole as close as possible.
 - (d) Have model EAL S(19")-150W-2H-120-S-TLR/PC-TBK luminaires as manufactured by WideLite, or an equal approved by the Town. The color shall be Textured Black.
 - (e) Have a maximum horizontal spacing of 150 feet.
6. Collector and Boulevard street lights shall:
 - (a) Have 150 watt lamps.
 - (b) Have octagonal tapered, precast, prestressed concrete poles as manufactured by Ameron International, Pole Products Division, or an equal approved by the Town, with a luminaire mounting height of approximately 25 feet. The color and finish of the pole shall be Number 263 (a dark gray exposed aggregate) with a protective acrylic coating for graffiti resistance. The color shall match the pole as close as possible.

- (c) Have 11-inch mast arms as manufactured by WideLite (a Genlyte Company), or an equal approved by the Town. The color shall be Textured Black.
 - (d) Have model EAL S(19'')-150W-2H-120-S-TLR/PC-TBK luminaires as manufactured by WideLite, or an equal approved by the Town. The color shall be Textured Black.
 - (e) Have a maximum horizontal spacing of 400 feet, to be located alternately on opposite sides of the street when practical.
7. All street lights on local streets and lanes will be installed and warranted by the developer/builder. The Town will provide the maintenance after the warranty period is over. The developer/builder's responsibility is to install street lights that:
- (a) Have 70 watt lamps.
 - (b) Have octagonal tapered, precast, pre-stressed concrete poles as manufactured by Ameron International, Pole Products Division, or an equal approved by the Town, with a luminaire mounting height of approximately 14 feet. The color and finish shall be Number 263 (a dark gray exposed aggregate) with a protective acrylic coating for graffiti resistance.
 - (c) Have model V1503-A-B3-N-D-70S-TLR/PC-120V luminaires as manufactured by Hadco, or an equal approved by the Town and referred to Mountain View Electric Association for installation. The color shall be black.
 - (d) Have one street light per intersection, and a maximum horizontal spacing of 400 feet, to be located alternately on opposite sides of the street when practical.
 - (e) Street lights in the downtown area shall be Mountain View Electric Association Colonial/Coach Style with fiberglass pole. The color shall be black.
8. Downtown pedestrian level street lights shall:
- (a) Have luminaires mounted on the post using hardware provided by manufacturer. Luminaires shall be Hadco Hagerstown (T03) with a round fitter with scalloped petals, a tall roof, "B" finial, black finish, type III cut-off, twist-lock photo control, medium socket, 70 W HPS, and 120V. A complete grounding system shall be provided for the entire lighting installation. Grounding shall consist of ground cables, conduits, ground rods, wire or strap and ground fittings, as required. Ordering Guide: (T03 B C B B 2 A 3 R D 70S E)
 - (b) Have all installations be in accordance with these specifications, the National Electrical Code, or the National Electrical Safety Code, and shall meet the requirements of the local utility company and conform to Subsection 107.01. Contractor shall furnish and install all

incidentals necessary to provide a complete working unit or system as called for on the plans.

- (c) Have concrete foundation pads that are cast in place, with highway pole foundation pad to be installed as per CDOT M&S Standard Plan No. M-613-1. Pedestrian ornamental pole foundation pad to be installed as per detailed on plans.
- (d) Have as a pedestrian ornamental light standard a Hadco P1100 Series (P1150) with cast aluminum housing and a 12'-6" mounting height. The shaft shall be tapered from 4" to 3" with a wall thickness of 0.125 aluminum. Tenory top shall be 3" outside diameter. Finish shall be black polyurethane enamel in accordance with ASTM B-117-64 and ANSI/ASTM G53-77 specifications. Ordering Guide: (P1150 126A)
- (e) Have poles set plumb on the foundation pad by means of non-corrosive metal shims and the mounting grouted with a non-shrinkable grout. Any defects or scratches to light standard finishes shall be painted to match Black finish.
- (f) Have posts anchored as per manufacturer's specifications, using specified anchor bolts and bolt circle. An access door shall be provided in the base for securing anchor bolts and wiring access. A grounding screw shall be provided inside the base opposite the door for easy access.

9. The positioning of street lights at intersecting streets shall be as follows:

- (a) Arterial/arterial Minimum of 4 lights, one at each corner. Luminaires shall be mounted on the traffic signal poles where possible. Additional lights may be mounted on poles located at the ends of the arterial median.
- (b) Arterial/collector Minimum of 4 lights, two on a single pole, at each end of the arterial medians or one on each corner. If the intersection is signalized and lights are located at the corners, lights shall be mounted on the traffic signal poles.
- (c) Arterial/boulevard 2 lights, one each on opposite corners.
- (d) Collector/collector 2 lights, one each on opposite corners.
- (e) Boulevard/collector 2 lights, one each on opposite corners.
- (f) Boulevard/boulevard 2 lights, one each on opposite corners.
- (g) Collector/local 1 light, on one corner.
- (h) Collector/lane 2 lights, one each on opposite corners.
- (i) Lane/local 2 lights, one each on opposite corners.
- (j) Local/local 1 light, on one corner.

10. On arterial streets with a median (e.g. Jackson Creek Parkway) street light poles shall be located in the center of the median. On collector and

boulevard streets they shall be located a minimum of 24 inches from face of curb. On local streets and lanes light poles shall be 24 inches from face of curb on streets with a detached walk, or 12 inches behind back of walk on streets with attached walks (combination gutter, curb and walk). All poles shall be located within street rights-of-way.

11. All underground electric lines shall be buried a minimum of 36 to 42 inches below finish grade. Lines placed under paved roadways and sidewalks shall be placed in a UL listed Schedule 40 PVC, or better, pipe sleeve to provide protection and facilitate maintenance. Top of sleeving under roadways shall be located at a minimum depth of 36 inches below finish grade.
12. All street light poles and luminaires are to be installed according to manufacturer's specifications and construction details.

D. Street Signing.

These standards have been developed to furnish guidelines for an effective, easy to read, street signing system. The system shall also complement the lighting and signalization elements of the streetscape through the use of similar colors for posts and poles. The street signing system shall be of a uniform design and construction. All sign panels shall not deform under 100 mph wind loading. There are two street signing categories: traffic control and street name.

E. Design Guidelines for Traffic Control Signs.

1. Traffic control signs include standard regulatory, warning, school, and guide signs.
2. Shapes, sizes, and colors shall be as specified in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).
3. All signs shall be single sheet aluminum, 1/8-inch minimum thickness, with a reflective surface as specified for Typical Class I Ground Sign Installations in the Colorado Department of Transportation's M & S Standards and Standard Specifications for Road and Bridge Construction.
4. All signposts shall be preservative treated timber posts. Timber signposts shall be of the grade and species specified in Section 614 of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction. The posts shall be stained a dark gray (Federal Standard Color 36081) to match the color of the street light poles.
5. Posts for 36-inch and 30-inch stop signs shall be a nominal 6-inch by 6-inch timber. All other traffic control signposts shall be a nominal 4-inch by 4-inch. Stop signs may be bracketed to street light poles, if poles are properly located for stop sign placement.
6. All regulatory signs shall be located a minimum of two (2) feet behind the curb or a minimum of four feet from edge of pavement (if no curb).

7. All regulatory signs shall be erected with a minimum seven (7) foot clearance between the bottom of the sign and finish grade and a minimum five (5) foot clearance between the bottom of the sign and the top of the adjacent curb.

F. Design Guidelines for Street Name Signs.

There are two categories of street name signs - Lighted and Standard. Lighted street name signs are to be located only at signalized intersections including arterial/arterial intersections (e.g. Baptist Road/Jackson Creek Parkway) and arterial/collector (e.g. Baptist Road/Leather Chaps Drive); standard street name signs are to be used for all other street intersections.

1. Lighted Street Name Signs.

- (a) Lighted street name signs shall be used wherever there are signalized intersections. The lighted street name signs shall be mounted on the signal mast arms, on a signal, on a pole, or hung from a span wire.
- (b) Lighted street name signs shall be internally illuminated signs as manufactured by Nu Art Lighting and Manufacturing Company of North Salt Lake City, Utah, or an equal approved by the Town.
- (c) Sign panels shall be white translucent, high impact resistant, glass fiber reinforced acrylated resin, with silk-screened interstate green background. Panel shall be laminated with clear tedlar film to protect from scratches and filter out ultraviolet radiation.
- (d) Signs shall be able to be mounted with traffic signals from span wire cable (temporary) or a mast arm. They shall be designed and constructed to prevent deformation or failure when subjected to 90 mph wind loading.
- (e) Street names shall be in upper case helvetica letters.
- (f) Signs shall be legible to the average eye from a distance of 500 feet, while traveling at 45 mph.
- (g) Signs shall be approximately 21 inches high, in lengths of 2, 4, 6, 8, or 10 feet.
- (h) Overhead signs shall provide a minimum seventeen (17) foot clearance above the pavement surface.
- (i) Lighted street signs shall be installed according to manufacturer's specifications and construction details.

2. Standard Street Name Signs.

- (a) All street name signposts shall be preservative treated nominal 6-inch by 6-inch timber posts. Timber signposts shall be of the grade and species specified in Section 614 of the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction. The posts shall be stained a dark gray (Federal Standard Color 36081) to match the color of the street light poles.

- (b) Street name signs may be bracketed to street light poles, if poles are properly located for street name signs.
- (c) The mounting height shall be a minimum of seven feet six inches (7'6") from finish grade to the bottom edge of the sign as shown below.
- (d) Signposts shall be direct buried (embedded).
- (e) Each individual standard street name sign for collector/collector, collector/local, and local/local intersections shall be single sheet aluminum, 1/8 inch minimum thickness, with a reflective surface as specified for Typical Class I Ground Sign Installations in the Colorado Department of Transportation's M & S Standards and Standard Specifications for Road and Bridge Construction.
- (f) Street name signs shall be 9 inches high (length will vary depending on the number of letters), blue background with a 1/8-inch white reflective border, and white reflective 4-inch helvetica letters.
- (g) Street names shall be all upper case letters.
- (h) Signs shall be mounted on the post as shown on the detail below.
- (i) Sign faces shall have a 1 1/4-inch wide by 1/4-inch thick steel angle brace attached to the post and sign bottom, painted to match the white border.
- (j) When signs for two intersecting streets are placed on one post, place bottom sign at 90 degrees to the top sign.
- (k) All hardware shall be compatible with the sign material and shall not cause any discoloration due to weather.
- (l) Street name signs shall be a minimum of four (4) feet behind the curb or edge of paving and located as indicated on the following details unless otherwise approved by the Town.

G. Pavement Markings.

All pavement markings shall conform to the standards set forth in the latest edition of the MUTCD, published by the U.S. Department of Transportation, Federal Highway Administration. Pavement paint shall conform to the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction. Pedestrian crosswalks shall be striped. See Appendix C-Figure DT-33 for crosswalk requirements.

H. Street Traffic Signals.

These standards have been developed to furnish guidelines for a functional, safe, signalization system that complements the lighting and signage elements of the streetscape though the use of similar colors and materials. All street signals shall be designed and constructed to prevent deformation or failure when subjected to 100 mph wind loads.

1. Design Guidelines for Street Signalization.
 - (a) All electric supply lines shall be buried. Lines located under paved roadways and sidewalks shall be placed in a UL listed Schedule 40 PVC or better pipe sleeve to provide protection and facilitate maintenance.
 - (b) All signal poles shall be mounted on a concrete footing to be approved by the Town and match the color of the street light poles.
 - (c) All poles shall be octagonal tapered as manufactured by Ameron International, or as approved by the Town, with a signal mounting height of 18 feet.
 - (d) All signals shall be permanently mounted on a mast arm. Mast arm material and color shall match the mast arms of the arterial and collector streetlights.
 - (e) Signals may temporarily be mounted on span wire (messenger cable). If mounted on span wire, a tether cable shall be used. See Appendix C - Figure DT-40 for traffic signal detail.
 - (f) Span wire (messenger cable) used to temporarily hang the signals shall be minimum 3/8 inch diameter rated at 11,500 pounds in accordance with ASTM A 475.
 - (g) All lenses shall be 12 inches in diameter.
 - (h) Traffic signal lamps shall conform to Colorado Department of Transportation Standard Specifications for Road and Bridge Construction and the latest issue of Technical Report No. 6, prepared by the Institute of Traffic Engineers.
 - (i) Traffic signals shall be installed according to engineer's plans, manufacturer's specifications and details. See Detail 40 in Appendix C for traffic signal detail.

1-13 Basic Principles for Curb Openings and Driveways

- A. Certain control values for curb openings and driveways require minimum dimensions in some instances and maximum values for other dimensions. The design of curb openings and driveways within the range of these dimensions will provide for good service on the part of the motorist using the driveway while at the same time minimizing interference to the traffic using the street. By controlling the location and width of openings or driveways along the street, it will be possible to avoid or eliminate long open stretches where motorists can indiscriminately drive onto the street. The widths of openings established in these Design Standards are based on studies which indicate that the various width openings will accommodate vehicles of maximum size authorized on Town streets and highways. In case of conflict between requirements in the various sections of this chapter, the more restrictive condition will normally apply.

The opening or driveway width should be adequate to properly handle the anticipated traffic volume and character of traffic, as well as being within the

limits specified for the type of property development. The controls established for curb openings and driveways shall apply to existing streets as well as new streets that may be developed in the future. Details for driveway standards with attached and detached sidewalks are shown in Appendix C – Detail DT-03 and DT-04.

- C. To the greatest extent possible all openings for driveways shall be located at the point of optimum sight distance along the street. For openings and driveways to commercial establishments and service stations there shall be sufficient space reasonably cleared of any obstructions such that drivers entering the property will have sufficient sight distance to enable them to make proper and safe movements. The profile of a driveway approach and the grading of the adjacent area shall be such that when a vehicle is located on the driveway outside the traveled portion of the street the driver can see a sufficient distance in both directions so as to enable him to enter the street without creating a hazardous traffic situation. The driveway profile grade within public R.O.W. shall not exceed two (2%) percent for collector and arterial streets and four (4%) percent for local streets.
- D. Any adjustments which must be made to utility poles, street light standards, fire hydrants, catch basins or intakes, traffic signs and signals, or other public improvements or installations which are necessary as the result of the curb openings or driveways shall be accomplished without any cost to the Town. Also, any curb opening or driveway which has been abandoned shall be restored by the property owner except where such abandonment has been made at the request of, or for the convenience of, the Town.
- E. Driveway approaches, whereby the driveway is to serve as an entrance only or as an exit only, shall be appropriately signed by, and at the expense of, the property owner. The property owner will be required to provide some means of ensuring that the motorists will use the driveway either as an entrance only or an exit only, but not both. All common areas and parking lot access drives shall have a maximum grade of 4%.
- F. Paving.
All access ways between a public street and off-street parking spaces or areas, and all off-street parking spaces, driveways and aisles shall be surfaced with asphalt or concrete.
- G. Corner Clearance
It is important to locate driveways away from major intersections. This constraint is as much for the ability to enter and leave the property as for the benefit of intersection safety and operations. Exiting a driveway during peak-hour conditions at traffic signals is difficult where the queue of standing or slow-moving vehicles never allows a sufficient gap for entry from the driveway. Corner clearances are measured from the curb line.

H. Sight Distance

Sight distance for curb openings to private property shall consist of a sight triangle conforming to the requirements of Section 1-5.G.2 of these standards. This does not apply to driveways in single-family residential projects using mountable curb, gutter, and sidewalks.

1-14 Standard Construction Specifications

Standard construction specifications for roadways, grading and drainage construction within the Town shall be the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction," latest edition.

A. Detailed Construction Specifications.

The Detailed Specifications for a specific project within the Town shall consist of the applicable sections and subsections numbered Section 200 through Section 700 of the above-referenced "Standard Construction Specifications", Triview Metropolitan District Design Criteria and Construction Specifications Manual Standard Details and/or the DCM, whichever is more stringent.

Special project provisions pertaining to a specific project take precedence over Specifications or Plans, and supplement or amend the referenced "Standard Specifications for Road and Bridge Construction" latest edition, by the Colorado Department of Transportation, which is to be used to control construction of the project.

References to "Division" or "DOT" in the Standard Specifications shall be considered to mean the Town of Monument.

B. Standard Construction Details

It is the intent of the Town to use applicable details from the CDOT Division of Highways M&S Standards, latest edition. Drainage-related appurtenances shall be constructed per the Triview Metropolitan District Design Criteria and Construction Specifications Manual Standard Details and/or the DCM, whichever is more stringent. Applicable details shall be as noted on the plans for a specific project.

C. Specific Details

- a. Disturbance to existing trees shall be restricted and considered by the Town on a case-by-case basis. In the event that the tree shall be protected, refer to Appendix C, Detail DT-18 for tree root protection. If tree root cutting is required, refer to Detail DT-19 in Appendix C.

- b. Concrete expansion joints and concrete paving requirements and details shall be in accordance with Appendix C, details DT-23 and DT-24.
- c. In the event that pavement shall be replaced, refer to detail DT-43 in Appendix C for requirements.
- d. For general utility requirements, including water, sanitary sewer and storm sewer facilities, refer to Appendix C, details DT-36 through DT-39 for standards and requirements. Any utilities placed in public right-of-way shall adhere to these Standards.

1-15 Work Within Public Right-of-Way

The El Paso County Department of Transportation ECM (Engineering Criteria Manual) dated 1/9/2006, Chapter 4: Utilities and Other Right-of-Way Uses has been adopted by the Town of Monument for work to be accomplished within the public right-of-way. This regulation should be referred to for the specific requirements for cutting and repairing Town streets and for pertinent information about backfilling trenches.

No person shall make any excavation or fill in any public street or alley, gravel or paved, without first obtaining a permit for the work from the Town.

Permits for work in rights-of-way within the Town boundaries must be obtained from the Town of Monument Development Services Department. Permit applications may be obtained at Town Hall. Any access, driveway, or curb-cut which is constructed within public right-of-way without an access permit issued by the Town shall be subject to “STOP Work” order and shall be removed immediately. Failure to remove the unpermitted access may result in the removal of said access by the Town (the cost for removal shall be charged to the property owner from which the access originates). Failure to obey the “Stop Work” order may result in the prosecution of the violators.

For work within the Town boundaries, a bond or letter of credit with automatic renewal for one hundred and twenty-five percent (125%) of the contracted cost of construction within the right-of-way is required to be submitted, along with a copy of the contract for construction. If this information is not available, an engineer’s estimated cost of construction may be substituted. A copy of the contractor’s certificate of insurance must be submitted or be on file with the Town prior to issuance of a permit for work within the right-of-way. The policy must have minimum limits of \$1,000,000 combined single limit coverage for bodily injury and property damage liability and shall name the Town of Monument as an additional insured party. In addition, the contractor shall hold the Town harmless from any claims resulting from, or relating to, the work.

Warranties for complete work within Town right-of-way shall be pursuant to the El Paso County Department of Transportation (ECM) Chapter 5, Section 5.3.15- Construction Surety, Warranties, and Acceptance of Public Improvements.

Any street that has been paved or overlain within the previous three years cannot be cut, except for emergency repairs, without the written approval of the Town. If such written approval is obtained, special backfill requirements shall be per the Standard Roadway Detail DT-17, as shown in Appendix C, or as may otherwise be required.

Compaction tests shall be performed on all trench backfill in accordance with Triview Metropolitan District Standards and Specifications - see Water and Wastewater Excavation and Trenching (Sections 7.3 and 8.6, respectively). Additional tests may be required at the discretion of the Town.

Existing pavement and base course thickness shall be matched with permanent paving and base repairs as a minimum. Any special design must be approved by the Town. Temporary patching with a minimum of 2 inches of bituminous hot or cold mix may be installed subject to the approval of the Town, and must be maintained in a safe, drivable condition by the contractor until weather permits permanent pavement construction.

In the case of a failure of an excavation repair, the contractor shall have two hours after notification to begin emergency repairs or barricading. If the contractor fails to comply, the Town may perform the work and will bill the contractor for the cost thereof, along with any additional charges per Chapter 5 of the El Paso County Engineering Criteria Manual (ECM) adopted on 1/9/2006.

The costs associated will be billed to the applicant and must be paid within 30 days from the date of billing. Each applicant shall be responsible for the cost of repairing any facilities in the right-of-way which it or its facilities damage.

If the defective work is not corrected by the permit holder, and the Town does the work and sends a bill to the permit holder, who fails to pay for such work, the Town may exercise its rights under the defect warranty. The following are exempt from having to file a defect warranty: special districts, utilities governed by the State Public Utilities Commission, and municipalities.

1-16 Roadway Drainage

A. General.

As specified in Section 4 of the Triview Metropolitan District Standards for Storm Drainage and Erosion Control, minor and major storm drainage systems must be designed in accordance with the City of Colorado Springs/El Paso County Drainage Criteria Manual (DCM), latest edition. Because safe and efficient conveyance of traffic is the primary function of roadways, the storm

drainage function of the roadway (such as allowable gutter capacity and street overtopping) will be designed to the limits set forth herein. In the case of a conflict caused by requirements of the City of Colorado Springs/El Paso County Drainage Criteria Manual, the more stringent criteria shall apply.

B. Crosspans.

Crosspans are not permitted across major collector roadways or arterial roadways. Crosspans are recommended at cross streets unless there is reason to believe that the intersection will eventually be signalized. Crosspans located anywhere other than street intersections or at entry streets will require the granting of a waiver. See Appendix C - Detail DT-02 for crossspan requirements.

The use of any crossspan on roadways where the vertical grade exceeds four and one-half percent (4.5%) at the crossspan will be considered only after all other alternatives have been determined to be impractical.

C. Storm Sewer Inlets.

Inlets shall be located to intercept the curb flow at the point curb flow capacity is exceeded by the storm runoff. Inlets shall also be installed to intercept cross pavement flows at points of transition in superelevation. Inlets are not allowed in the curb return except with Town approval. Inlets will be located at or behind the tangent points of the curb returns. Minimum inlet length for type R inlets shall be 5 feet.

D. Cross Slope.

Except at intersections, or where superelevation is required, roadways shall have a two percent (2%) crown from the high point of the road cross-section to each flowline. Top of curb elevations on both sides of the street shall be identical.

1. Parabolic or Curved Crowns.

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.

2. Cross Slope.

The rate of change in pavement cross slope, when warping side streets at intersections, shall not exceed one (1) percent every twenty-five (25) feet horizontally on a local roadway, one (1) percent every forty (40) feet horizontally on a collector roadway, or one (1) percent every sixty (60) feet horizontally on an arterial roadway.

E. 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. Refer to the Monument Municipal Code, Sections 8.30 and 16.40, for additional requirements.

F. Sidewalk Chases.

Storm water from concentrated points of discharge shall not be allowed to flow over sidewalks, but shall drain to the roadway by use of chase sections. Sidewalk chase sections shall not be located within a curb cut or driveway. Hydraulic design shall be in accordance with the DCM, Section III Design Methods, Chapter 6 – Design Criteria and Chapter 7 – Street Drainage & Storm Water Inlets.

G. Storm Water Conveyance in Streets.

The design criteria for stormwater conveyance in public streets are based on a reasonable frequency of traffic and pedestrian interference. The engineer/designer should recognize that the primary purpose of streets is for traffic, and therefore the use of streets for storm runoff must be restricted.

See Appendix D, Table 1 for the allowable capacity for storm runoff in the streets.

The Town allows the use of roads and streets for drainage. In all cases the flow encroachment shall not extend past the street right-of-way.

H. Culvert Design Criteria.

See Appendix A-Table 5.7 for the maximum headwater depth to structure depth ratios. Culverts shall be designed to carry the 100-year flood with no road overtopping