

SECTION 18-100 INTRODUCTION AND BACKGROUND

- A. The primary goal of any street or roadway system is to provide a safe, maintainable transport route for vehicles as well as pedestrians. The design elements placed within this system are just as important as the system itself. Streetscape improvements help to convey a certain image or identity for a particular area. These improvements can help unify an entire community and can help create an image for a neighborhood. Regardless of the intent streetscape improvements, there needs to be a basic framework established to ensure the proposed improvements are implemented successfully.
- B. The overall intent of the following criteria is to provide the PWD Engineering Division, prospective developers and development organizations with a basic framework for streetscape improvements within unincorporated Arapahoe County. This framework will assist the PWD Engineering Division with their review of submittal plans for roadway and landscape improvements by providing design criteria which will help determine if a proposal is acceptable or not. This criterion may also be provided to developers or development organizations which will enable them to determine if a proposal is acceptable.
- C. It should be noted that the enclosed Streetscape Criteria are intended as a guideline for streetscape improvements. It is virtually impossible to address all of the elements and site-specific conditions pertaining to the streetscape environment. The enclosed criteria and graphics address sight distances and sight triangles, landscape and irrigation design criteria, streetscape design criteria and recommended plant materials in a rather broad nature rather than specific standards. This allows for design flexibility and does not “lock” the County into “Only one way of doing something”. In many instances, design items are referenced as ‘being reviewed on a case by case basis’ because the issue of streetscape design is not a simple one. There is always a unique situation that is present with a design and the enclosed streetscape criterion is flexible enough to accommodate creative design solutions.

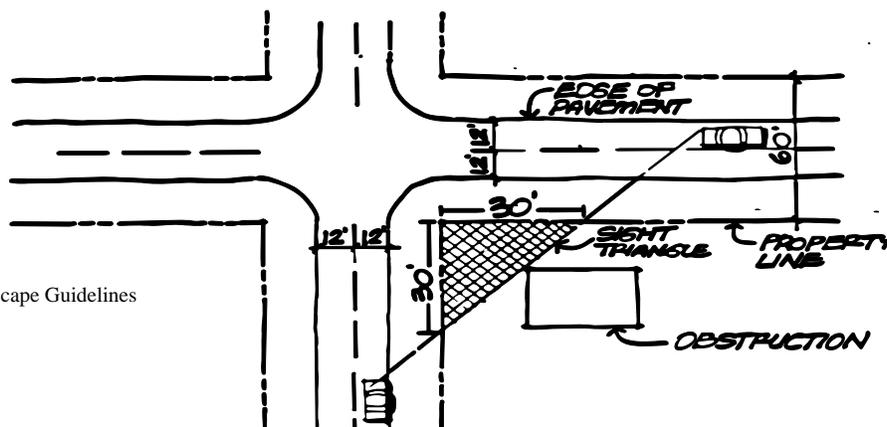
18-101 DESIGN CRITERIA

18-101.01 SIGHT LINES VS. SIGHT TRIANGLES

The sight distance (line of sight) should be unobstructed for a distance that will enable motorists approaching a road intersection to see each other in enough time to prevent a collision. The sight distance will be dependent on the type of traffic control present at the intersection, the width of the road, the design speed of approach and the type of vehicle approaching the intersection. Two factors that need to be addressed concerning sight distance are the *sight triangle* and the *sight line*.

18-101.02 SIGHT TRIANGLES

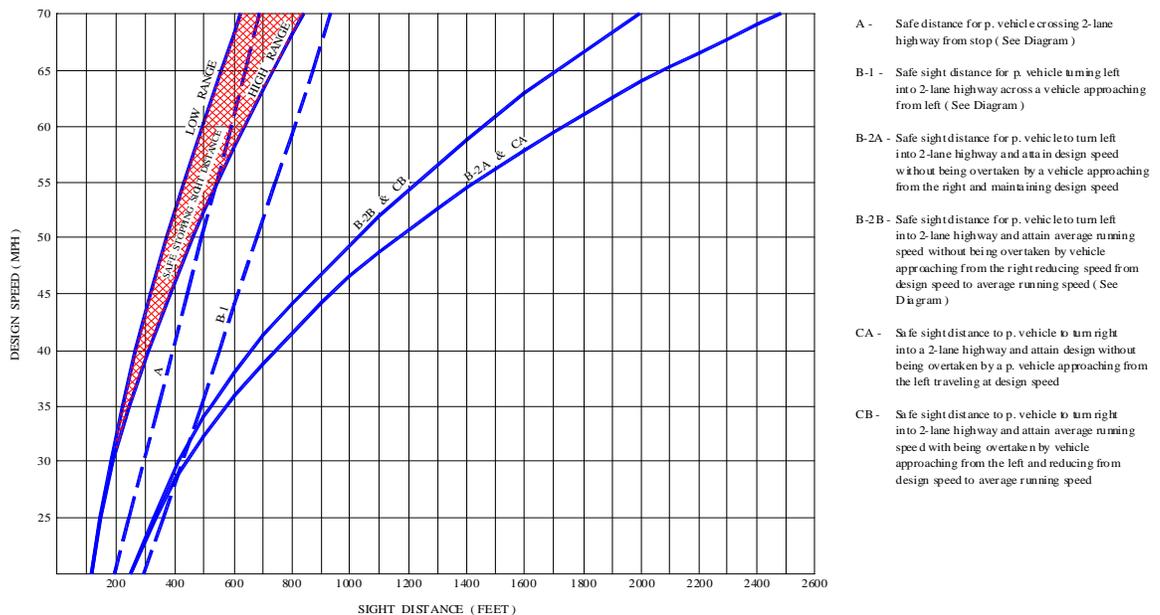
The Arapahoe County Zoning Regulations identify a *sight triangle* where “no wall, fence, sign, structures, or any plant growth having a height in excess of three feet (3') above the elevation of the lowest point on the crown of the adjacent roadway shall be maintained.” Therefore, the *sight triangle* is that area around an intersection where no obstructions above three feet (3') in height are permitted (Refer to Fig.1). The *sight triangle* is defined by measuring 30 feet, along the intersecting property lines. Site specific development plans may specify sight triangles having dimensions other than 30 feet. Refer to appropriate development plans to verify requirements at specific locations.



(Figure 1)

18-101.03 SIGHT LINES

A. Further, the PWD Engineering Services Division requires that adequate visibility is maintained to safely allow vehicles to cross a street, turn left or right onto it, or turn left from it. To do this, it is necessary to draw *sight lines*. These lines originate at the location of the driver’s eyes for the specific movement. This *sight line* extends along the roadway in question a distance that depends upon conditions which are defined by Figure IX-27 of Geometric Design of Highways and Streets by AASHTO (Refer to Fig. 2, below).



(Figure 2)

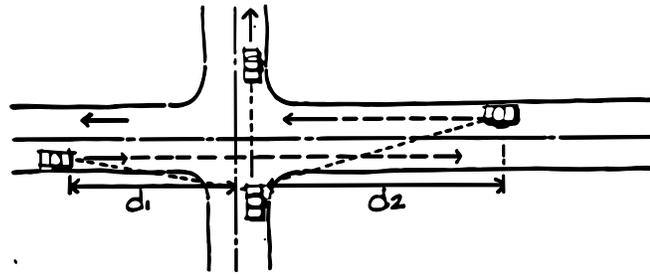
- B. In no instance will any obstruction be permitted in front of the minimum *sight line*, defined as the high range of stopping sight distance. Thus, no trees, shrubs, planters, berms, etc. over 36” in height above gutter flowline will be allowed (Refer to Fig.3). The driver’s eye location for sidestreet vehicles is 15 feet behind the curb line extended (desirable), with 10 feet being the absolute minimum.
- C. Between the minimum *sight line* distance and the maximum requirement noted in Figure 2, obstructions may be permitted but they must be “transparent” in nature. Landscape massings shall be designed to promote at least 50% visibility through the mass and spaced far enough apart to maintain an acceptable view of traffic. In no instance shall a blind spot be created that would completely screen a vehicle for more than one half second. The length of this “allowable” blind spot can be calculated using roadway speed and a vehicle length of 20 feet.

Chapter 18: Streetscape Guidelines

- D. Opaque tree/shrub masses will be permitted in areas where no intersections exist, and where no conflicts occur within the *sight triangle* or *sight line* areas as outlined above.
- E. Arapahoe County will require that all Landscape Plans submitted shall show the *sight lines*, *sight triangles* and the design speed on the plan at each intersection pertinent to the proposed project site.

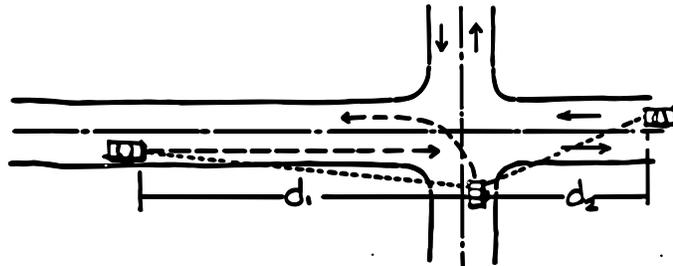
18-101.04 LANDSCAPE CRITERIA

- A. Landscape elements placed adjacent to existing and proposed roadways (in the right-of-way) shall be designed to minimize conflicts between vehicular and pedestrian traffic while providing an aesthetic landscape environment that is relatively easy to maintain. A following section will address trees and shrubs and their proposed placement in Arapahoe County rights-of-way.
- B. Trees in the environment are an important design element. They provide oxygen, shade and reduce pollution, they also screen views and create a separation between vehicular and pedestrian environments. Their placement therefore is important.
- C. As a general guideline, the following setbacks for trees should be applied when placing trees adjacent to roadways and walks.
- D. Large Deciduous Trees: 4' minimum, however, 6' is preferred for the setback from edge of pavements, back of curbs and edges of sidewalks.
- E. Small Deciduous/Ornamental Trees: 2' minimum, however, 4' is preferred for the setback from edge of pavements, back of curbs and edges of sidewalks.
- F. These are general guidelines and may be altered in a particular design. These will be reviewed on a case by case basis by Arapahoe County.
- G. Deciduous tree canopies should not conflict with the safe movement of pedestrians and vehicles. When locating deciduous trees, their canopies should be maintained to ensure a minimum of 6' of clearance on the pedestrian side and a minimum of 11'-6" on the vehicular side (See Suggested Plant Material List) (Refer to Figure 4). Because small deciduous trees and ornamental canopies often cannot meet these criteria, their use and placement must be carefully considered.
- H. Evergreen trees, when incorporated into a landscape design, should not be planted along the immediate west and south edges of roadways. Evergreen trees promote shading of roadways in the winter months and permit ice build-up during freeze-thaw cycles.
- I. Evergreen and deciduous shrubs shall be placed to minimize conflicts with visibility, while also maintaining sight distances/triangles. Generally speaking, shrubs should be placed at least 18" away from the face of curb or edges of pavement in sight line/sight triangle areas. Large shrubs placed adjacent to roadways and outside the sight line/triangle areas should be kept at least 4' away from back of curb or edge of pavement. As stated previously, all shrubs placed within sight triangles and sight line areas shall be kept below 36" in height from the existing roadway flowline or 30" from the top of existing curb.

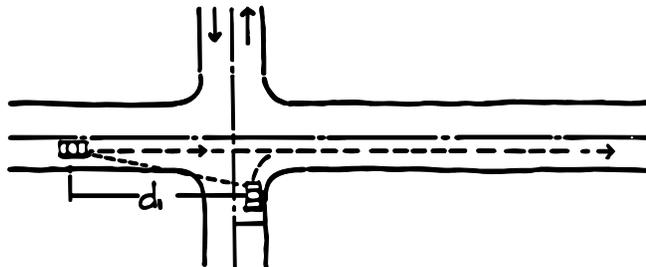


STOPPED VEHICLE CROSSING A MAJOR HIGHWAY

(Figure 3)

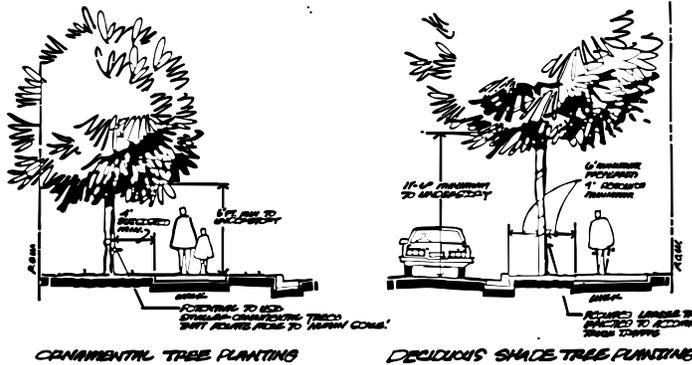


STOPPED VEHICLE TURNING LEFT ONTO TWO LANE MAJOR HIGHWAY



STOPPED VEHICLE TURNING RIGHT ONTO TWO LANE MAJOR HIGHWAY OR RIGHT TURN ON A RED SIGNAL

$d =$ SIGHT DISTANCE



(Figure 4)

Chapter 18: Streetscape Guidelines

- J. As a general guideline for new roadways placed within a designated right-of-way, it is suggested that the proposed roadway be offset towards one side of the right-of-way to accommodate landscape plantings on the opposite side. This may be accomplished by deleting a parking lane in select areas or by moving the actual roadway to one side of the right-of-way centerline to promote landscaping on the opposite side. It is preferable that plantings be placed on north and east sides of the roadway to minimize shading. This will be reviewed in a case by case situation and must be approved by Arapahoe County prior to proceeding with the proposed construction documentation.
- K. The above referenced landscape criteria are suggested for Arapahoe County Rights-of-Way only. Landscape criteria governed by other jurisdictions (i.e. CDOT, municipalities, etc.) will be governed by that agency.
- L. Note: For all proposed landscape improvements and related appurtenances placed within Arapahoe County Rights-of-Way, the applicant needs to contact the Arapahoe County Attorney's Office to develop a Maintenance Agreement with the County. Arapahoe County will not be responsible for maintaining landscape improvements and related appurtenances placed within the Arapahoe County Rights-of -Way.

18-101.05 IRRIGATION CRITERIA

- A. All proposed irrigation systems that are placed within the Arapahoe County rights-of-way shall have a manual gate valve installed within the right-of-way that controls the entire irrigation system. Irrigation controllers and backflow preventors shall be installed in a relatively non-visible area while also allowing for maintenance access. Landscape plantings are also encouraged to help screen views of these items when possible. Irrigation moisture sensors are also recommended in landscape areas adjacent to roadways. Sensors tend to decrease the overall demand for water and eliminate excessive amounts of water on roadway surfaces.
- B. Irrigated medians as well as roadway edges should be designed to minimize conflicts with both vehicular and pedestrian traffic. When irrigated turf is proposed immediately adjacent to a roadway, it is preferred that 'pop-up' style irrigation heads be placed immediately along the back of the curb/road section. 'Rotor' type irrigation heads, if used, should be placed a minimum of 8' from the edge of the curb road section. The intent is to eliminate or minimize irrigation water from entering pedestrian/vehicular travel lanes. These conflicts may also be further minimized through the use of low trajectory spray heads and drip emitter systems.
- C. All Landscape Plan submittals shall be accompanied with a Schematic Irrigation Plan that outlines:
 - 1. The proposed lap/backflow preventor and irrigation controller location;
 - 2. The location of the manual gate valve that will control the entire irrigation system
 - 3. The anticipated type of irrigation proposed for each area (turf, shrub beds, etc.)
 - 4. The recommended setback distance of all proposed irrigation heads from back or curb or edge of pavement
 - 5. All proposed sleeve locations
 - 6. All Irrigation Plans submitted will be reviewed by Arapahoe County on a case-by-case basis.

18-101.06 DRAINAGE CONCERNS

- A. At the present time, Arapahoe County does not have a standard drainage detail that will prevent lateral water movement into and under a proposed roadway section. There are many products and alternative solutions that address this issue, but none have been adopted as of this publication. The following section will briefly address what the County will require for future road construction submittals.

Chapter 18: Streetscape Guidelines

- B. In all areas that are proposed for irrigation immediately adjacent to a roadway section (i.e. landscape medians, streetscape plantings, etc.) there will be a requirement that a drainage barrier or drainage “system” be incorporated into the design that will prevent lateral water movement into or under the proposed roadway section. This “system” may range from an impermeable barrier that extends below the roadway section to a subsurface drainage system that intercepts this water and diverts it away from the roadway section. The impermeable barrier “system” shall be encouraged in more rural/non-urban areas whereas the subsurface drainage “system” shall be encouraged in areas that possess a storm sewer system or enough grade change that will allow for the discharge of this water away from the roadway section in question.
- C. Regardless of the proposed “system” that will be used to prevent this lateral movement of water under a roadway section, Arapahoe County will require that all proposed solutions be submitted to the County for review and comment. Each proposed solution will also be handled on a case-by-case basis.

18-102 STREETScape CRITERIA

It is the intent of the county to promote landscape elements within the streetscape environment. The Arapahoe County Infrastructure Design and Construction Standards, as amended, classifies each roadway. The following text will address each classification with its potential for landscape design improvements.

18-102.01 STREETScape GUIDELINES FOR ROADWAY SECTIONS

18-102.01.01 RURAL LOCAL ROAD

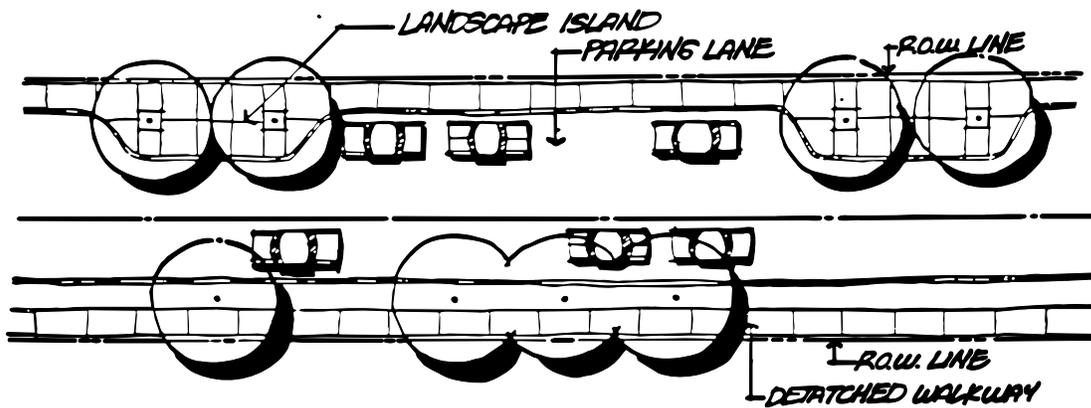
- A. Medians not permitted.
- B. Landscape improvements will be limited to the area between pavement edge and right-of-way Boundary.
- C. Potential for moving the roadway to one side of right-of-way to allow for landscape improvements on the opposite side (limited applications).

18-102.01.02 URBAN LOCAL ROAD

- A. Roadway may be offset to one side of right-of-way to allow for additional landscape/streetscape improvements.
- B. Parking lane may be eliminated on one side of roadway section in select areas to allow for landscape/streetscape improvements.
- C. Median is not permitted unless it is used as an entry feature and the right-of-way is wide enough to accommodate it.

18-102.01.03 60' MINOR COLLECTOR

- A. Parking pavement lane could be deleted in select areas to accommodate landscape/streetscape improvements. Detached walks are encouraged in this situation.
- B. “Parking islands” may be incorporated in parking pavement lane areas to break up the linearity of the street and provide an area for proposed landscape/streetscape improvements. See Figure 6, below.
- C. Landscape area may be incorporated between detached walk and curb.



(Figure 6)

- D. Roadway may be offset to one side of right-of-way to allow for additional landscape/streetscape improvements.
- E. Median is not permitted, unless it is used as an entry feature and the right-of-way is wide enough to accommodate a median.

18-102.01.04 80' MAJOR COLLECTOR

- A. Paved area may be narrowed to accommodate landscape/streetscape improvements in areas where a center turn lane is not required, provided that proper transitions are constructed.
- B. Medians will be permitted in areas where side street access is fairly limited and will be considered on a case by case situation. Intermittent use of medians will not be permitted.
- C. Raised planter medians are discouraged.
- D. Turf median solutions are possible but are discouraged. Turf medians will be reviewed on a case by case basis.
- E. Roadway may be offset to one side of right-of-way to allow for additional landscape/streetscape improvements.
- F. Landscape/streetscape improvements are suggested between the detached walk and curb line, detached walks are encouraged.

18-102.01.05 100' MINOR ARTERIAL

- A. Paved area may be narrowed to accommodate landscape/streetscape improvements in areas where a center turn lane is not required, provided that proper transitions are constructed.
- B. Medians will be permitted in areas where side street access is fairly limited and will be considered on a case by case situation. Intermittent use of medians will not be permitted.
- C. Landscape/streetscape improvements are strongly recommended between the detached walk and curb to help reduce the scale of the street (i.e. street trees).
- D. Turf median solutions are possible but are discouraged. Turf medians will be reviewed on a case by case basis.
- E. Roadway may be offset to one side of the right-of-way to allow for additional landscape/streetscape improvements.

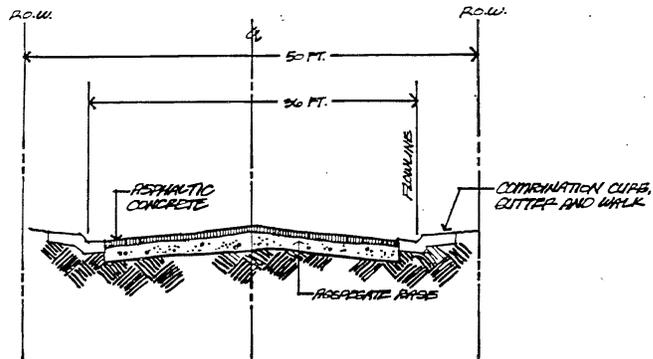
18-102.01.06 120' (4 LANE) AND 140' (6 LANE) MAJOR ARTERIALS

- A. Standard section calls for a raised median up to 26' in width.
- B. Turf medians are permitted in median sections greater than 12'.

Chapter 18: Streetscape Guidelines

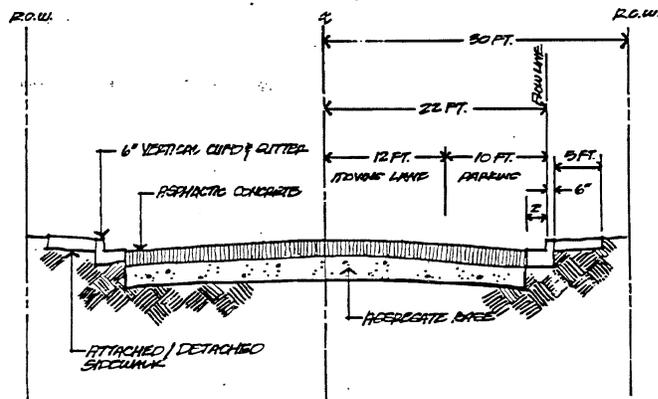
- C. When double left turn lanes are provided, landscape treatments will not be permitted on the adjacent raised median.
- D. Landscape masses can be larger than previous median typicals and plant diversity should be minimized because of faster design speeds.
- E. Landscape/streetscape improvements are strongly recommended between the detached walk and curb to help reduce the scale of the street (i.e. street trees).

(Figure 7)



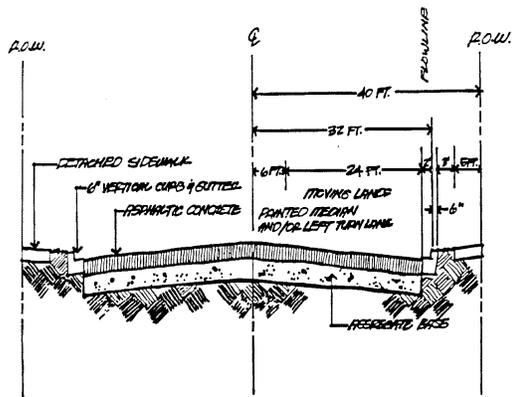
Urban Local Road

(Figure 8)

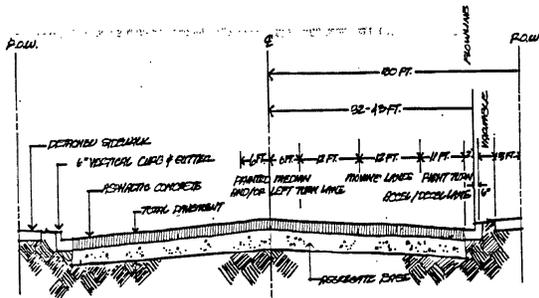


60' Minor Collector

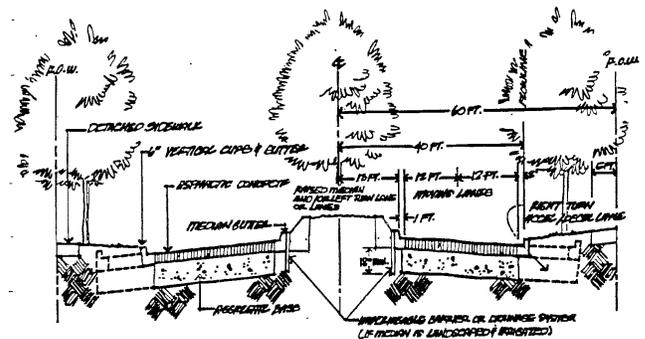
Chapter 18: Streetscape Guidelines



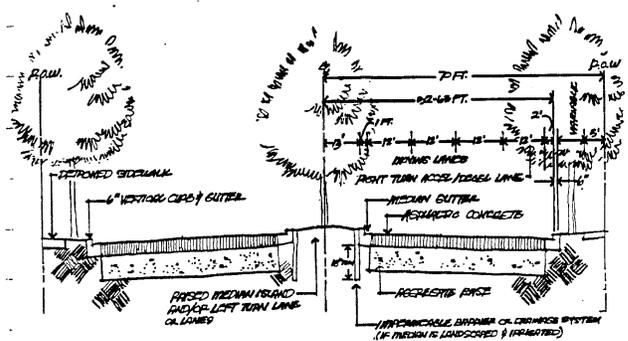
80' Major Collector



100' Minor Arterial



120' (4 lane) Major Arterials



140' (6 lane) Major Arterials

18-102.02 PAVED MEDIANS

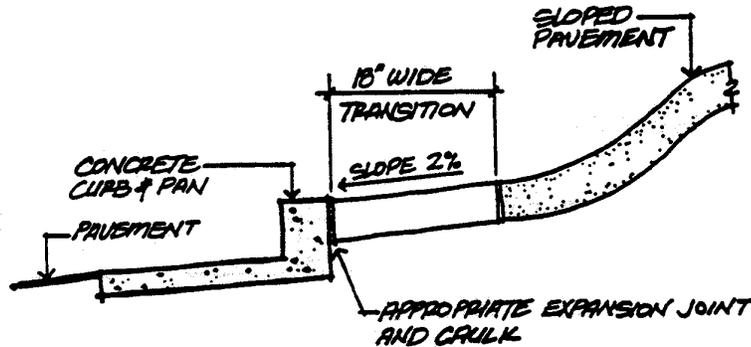
- A. Paved medians should be designed to incorporate a common element throughout
- B. The entire design (i.e. materials, color, texture, etc.). Medians should be designed to be relatively easy to maintain while also adding an aesthetic appeal to the street environment. Positive drainage should be maintained at all times. Appropriate expansion joint material and caulk should also be installed between median pavement and back of curb. Below are suggested paved median design guidelines.

18-102.02.01 PAVED SMALL MEDIAN (6' OR LESS IN WIDTH)

- A. Medians should be crowned at a minimum of 2" per foot.
- B. Textured paving materials that trap dirt and debris should be used in limited areas.
- C. Accepted materials for small median treatments:
 - 1. Broom finished concrete (colored preferred),
 - 2. Stamped/ textured concrete
 - 3. Exposed aggregate concrete
 - 4. Interlocking pavers
 - 5. Mortared brick
 - 6. Grouted cobble
- D. Asphaltic pavements will not be accepted for small paved medians.

18-102.02.02 PAVED LARGE MEDIANS (GREATER THEN 6' IN WIDTH)

- A. Medians shall be crowned at a minimum of 1" per foot.
- B. An 18" wide "grade transition strip" is required from back of curb face to the beginning of crowned pavement. Slope of "transition strip" will be a minimum of 2% towards the street flowline. See Figure 13.



(Figure 13)

- C. Paved medians shall be designed so that no visible vertex exists. Median crowns should be smooth. Tangents and abrupt grade breaks should be avoided.
- D. Large expanses of paved medians should be avoided.
- E. Acceptable materials for large medians treatments:
 - 1. Broom finished concrete (color preferred)
 - 2. Stamped concrete (color preferred)
 - 3. Interlocking pavers
 - 4. Mortared brick
 - 5. Exposed aggregate concrete
 - 6. Grouted cobble

Chapter 18: Streetscape Guidelines

- F. Asphaltic pavements will not be accepted for large paved medians.

18-102.03 NON-PAVED MEDIANS

The addition of medians to the streetscape environment is an important design element. Medians tend to reduce the overall scale of a roadway and make it possible to add landscape elements in the center of the right-of-way. This section pertains to landscape medians as well as raised planter medians. Medians of this nature tend to be more maintenance intensive and require design solutions that address this issue.

18-102.03.01 LANDSCAPE MEDIANS: (4' OR LESS IN WIDTH)

Landscape improvements are discouraged and will be reviewed on a case by case basis.

18-102.03.02 LANDSCAPE MEDIANS: (GREATER THAN 4' IN WIDTH)

- A. Landscape improvements are encouraged.
- B. Medians shall not exceed 4:1 slopes.
- C. Ensure plant materials do not encroach into vehicular or pedestrian circulation areas.
- D. Provide drainage barrier/drainage system to prevent lateral water movement into the roadway section.
- E. Turf medians are discouraged for median widths less than 12' in width. Proposals for turfed medians under 12' in width will be reviewed on a case by case basis.
- F. Irrigation systems should be designed to prevent overspray into vehicular travel lanes.
- G. Deciduous trees will be allowed in raised medians within sight line and sight triangle areas, however, there must be no obstruction from 36" above roadway flowline to 7'-6" above roadway flowline. A 4'-6" clear zone is required in sight line and sight triangle areas.

18-102.03.03 PLANT MATERIALS

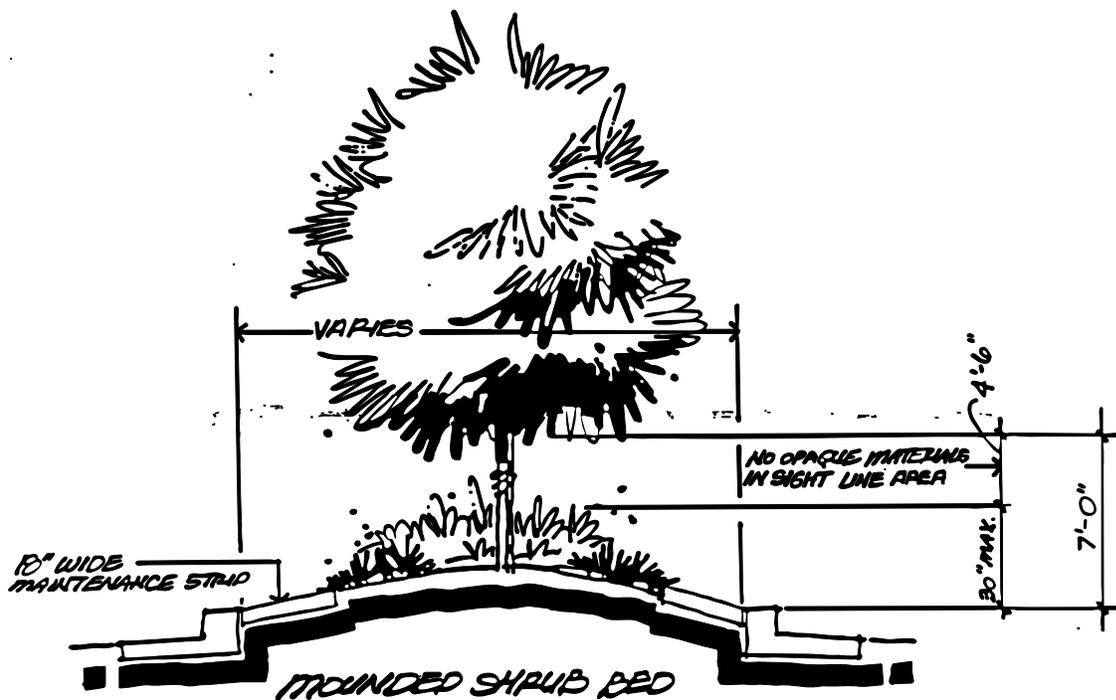
- A. All plant materials shall be placed to ensure that no conflict occurs with traffic flow (at time of planting and in the future). See Landscape Criteria.
- B. As a general rule, plant materials, particularly shrubs, should be kept away from the median edge to ensure that an 18" clear zone exists. Plant materials selected should be placed to ensure that no encroachment occurs into traffic flow areas. These 18" clear zones need to be either paved or mulched with appropriate mulch.
- C. Irrigation should be designed to avoid overspray into traffic lanes. All irrigated areas adjacent to roadways should incorporate a drainage barrier/drainage "system" to prevent lateral water movement under the roadway section.
- D. All plant materials placed in medians shall not obstruct design sight lines or sight triangles. (See Chapter 12).
- E. Opaque plant masses will be permitted outside design sight lines and sight triangles but will be reviewed on an individual case basis.
- F. Recommended plant setbacks shall be maintained and all local landscape codes shall be adhered to.
- G. Landscape medians shall not exceed 4:1 slopes and landscape crowns shall be wide enough to ensure no "vertex" exists.
- H. Landscape medians shall also incorporate a general diversity of plant massings and turf areas to promote visual interest.

18-102.03.04 RAISED MEDIANS/PLANTER BOXES

- A. All landscape material in raised medians shall not exceed 36" in height from adjacent flowline in design sight lines and sight triangle areas. Sloped pavement/planter walls

Chapter 18: Streetscape Guidelines

- with slopes greater than 2:1 shall have an 18" paved "transition zone" from curb face to bottom of pavement/wall.
- B. Transitions for raised medians from left turn lanes to raised median planters shall be smooth and continuous. Abrupt changes from a flat median section to a raised median section should be avoided.
 - C. Accepted raised medians/planter treatments:
 1. Cast in place concrete, broom finish (color preferred), or pre-cast construction
 2. Exposed aggregate concrete
 3. Stamped concrete (color preferred)
 4. Interlocking pavers
 5. Mortared Brick
 6. Grouted cobble
 - D. As with landscape medians, all proposed irrigated raised medians shall be designed to minimize conflicts with vehicular and pedestrian circulation areas. Irrigated raised medians/planters should also incorporate a drainage barrier/drainage "system" that will prevent lateral water movement under roadway sections.
 - E. Deciduous trees will be allowed in raised medians within sight line however there must be no obstruction from 36" above roadway flowline to 7'-6" above roadway flowline. A 4'-6" clear zone is required in sight line areas.



(Figure 14)

18-103 RECOMMENDED PLANT MATERIALS LIST

- A. Plant materials and their use within the streetscape environment serve both functional and aesthetic requirements. Plants provide shade, reduce glare, serve as windbreaks and help to reduce and direct noise. Plant Material also satisfies the aesthetic needs with colors, textures and scents. It is for these reasons that their selection and placement are extremely important.

Chapter 18: Streetscape Guidelines

- B. The below referenced list of plant materials and mulches is not to be considered all-inclusive. The spectrum of plant materials that may be used in the urban environment is vast. The plants and mulches referenced here were selected because of their viability and practicality in the Colorado environment. Most of the plant materials selected are drought tolerant (xeriscape plants denoted with an asterisk*).

18-103.01 LARGE DECIDUOUS TREES

Greenspire Linden	Marshall Seedless Ash	Northern Red Oak	Western Catalpa*
Redmond Linden	Green Ash*	Schwedler Maple	Thornless Honeylocust*
Autumn Purple Ash	Summit Ash*	Red Sunset Maple	Golden Rain Tree*
Rosehill Ash*	English Oak*	Norway Maple	

18-103.02 EVERGREEN TREES

Austrian Pine*	Western Juniper*
Ponderosa Pine*	Bristlecone Pine*
Colorado Blue Spruce	Pinyon Pine*

18-103.03 SMALL DECIDUOUS TREES

Littleleaf Linden	Crabapple spp.*
Newport Plum*	Golden Rain Tree*
Thornless Hawthorn	Bradford Pear

18-103.04 DECIDUOUS SHRUBS

Japanese Barberry*	Alpine Currant*	Redtwig Dogwood*	Crimson Pygmy Barberry*
Fremont Barberry*	Yellowtwig Dogwood	Staghorn Sumac*	Cranberry Cotoneaster*
Cistena Plum	Firethorn	Smooth Sumac*	Littleleaf Mockorange*
Coralberry*	Snowmound Spirea	Yucca*	Mountain Mahogany*

18-103.05 EVERGREEN SHRUBS

Blue Rug Juniper*	Buffalo Juniper*
Arcadia Juniper	Calgary Carpet Juniper*
Blue Chip	Juniper Tammy Juniper
Mugho Pine	Wilton Carpet Juniper

18-103.06 PERENNIALS/GROUNDCOVER/ORNAMENTAL GRASSES

Daylily spp*	Snow in Summer*	Virginia Creeper	Miscanthus Grass*
Dianthus spp*	Wild Strawberry*	Aster spp.*	Oriental Poppy*
Iris spp*	Dwarf Yarrow*	Campanula spp.*	Creeping Phlox*
Mahonia Repens*	Salvia spp*	Correopsis spp.*	Himalayan Border Jewel*
Periwinkle	Common Yarrow*	Pampas Grass*	Buttercup*
Sedums*	Kinninnick*		

18-103.07 TURF GRASSES

Perennial Rye Grass spp.*	Smooth Brome*
Wheatgrass spp.*	Fescue spp.*
Buffalo Grass*	Blue Grama Grass*
Kentucky Bluegrass	Tall Fescue*

18-103.08 ACCEPTED MULCHES FOR SHRUB BEDS

Red Cedar (3/4" to 3")

Chapter 18: Streetscape Guidelines

Pine Bark (3/4" to 3")
Fibre Mulch (registered trademark)
Pole Peelings (2"+)
Aspen Mulch (3/4"+)

18-103.09 DISCOURAGED MULCHES FOR SHRUB BEDS

River rock	Crushed Gravel
Loose Cobbles	Lava Rock
Wood Shavings	Ground Shavings

18-103.10 MAINTENANCE REGIME

18-103.10.01 ANTICIPATED HOURS OF LABOR

- The following is provided as a general guideline for anticipated labor-hour tasks to maintain the below referenced items. The maintenance tasks are based on maintaining one (1) acre of median/streetscape area.

NON-TURF MEDIANS

<u>Activity</u>	<u>Performance Standard</u>	<u>Anticipated Hours Per Acre Per Year</u>
1.Litter Pick Up	Weekly trash removal	23
2.Irrigation Maintenance	Valve repair, mainline repair as necessary	40
3.Irrigation System	Freeze damage protection Winterization and Spring Start Up and spring activation	9
4.Plant Maintenance	Yearly tree pruning	6
5.Shrub Bed Weeding	Hand removal of weeds 3 times per growing season	24
6.Pest Control	Yearly control of tree pests	4
7.Concrete Cleaning	Concrete cleaned twice yearly	12
8.Support Activity	Equipment maintenance, supervision, travel and transportation (1/2 aver.)	39
	TOTAL HOURS	157

Chapter 18: Streetscape Guidelines

<u>SODDED MEDIAN</u>		
<u>Activity</u>	<u>Performance Standard</u>	<u>Anticipate Hours Per Acre Per Year</u>
1.Litter Pickup	Weekly trash removal	23
2.Irrigation Maintenance	Head adjustment, valve repair, mainline repair as necessary	80
3.Irrigation System	Freeze damage protection and spring activation	9
4.Plant Material	Trees pruned once a year	6
5.Shrub Bed Weeding	Hand removal of weeds 3 times per growing season	12
6.Turf Grass Weeding	Three times per growing season chemical weeding	14
7.Pest Control	Yearly control of tree pests	4
8.Mowing	Grass mowed weekly	80
9.Turf Trimming & Edging	Curb, sidewalks and shrub beds edged weekly	21
10.Turf Fertilization	Grass fertilized once a year	8
11.Concrete Cleaning	Concrete cleaned twice per year	12
12.Support Activity	Equipment maintenance, supervision, travel and transport	77
TOTAL HOURS		346

18-104 BIBLIOGRAPHY

- A. Infrastructure Design and Construction Standards, as amended
- B. Arapahoe County, Colorado
- C. Burke and Associates, Inc.
- D. Infrastructure Design Manual, March 1984
- E. Colorado Division of Highways
- F. Colorado Standard Plans, as amended
- G. Division of Highway M&S Standards
- H. Standard Specifications for Road and Bridge Construction (1986)
- I. State Department of Highway
- J. Division of Highways - State of Colorado