

TOWN OF CASTLE ROCK

Landscape and Irrigation Performance Standards

AND CRITERIA MANUAL

_____, 2018



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Section 1: General Provisions

These standards, criteria, and regulations, together with all future amendments, shall be known as the Town of Castle Rock Landscape and Irrigation Performance Standards and Criteria (hereafter called the “Criteria”.) All landscape and irrigation design, installation, and maintenance performed as a requirement of the Town of Castle Rock Development Procedures Manual, the Building and Construction Code, and any other code, policy or criteria adopted by the Town of Castle Rock, shall comply with these Criteria.

All new or qualifying renovated landscaping within the Town limits, including remodels requiring an irrigation, building, or plumbing permit which increase irrigation demands or change water quality control, shall comply with these Criteria. It is the purpose and intent of these Criteria to establish landscape performance standards and criteria that will reflect Town identity and the desire of the community, as expressed through the Town’s Vision Plan, and that will:

Promote water conservation

- Demonstrate and recognize the need to invest future water and other resources as efficiently as possible
- Assist in reducing the overall per capita use of water within the Town
- Reduce peak summer water usage
- Reduce or eliminate outdoor water waste
- Assist with water budget rate structure compliance
- Promote the conservation of water supplies through the use of landscape design and materials that can have a beneficial effect upon water conservation

Encourage appropriate use of materials

- Promote the values and benefits of “natural and indigenous” landscapes for new landscape projects within the Town of Castle Rock
- Provide for the protection of and implementation of native vegetation
- Promote the conservation of energy resources through the use of landscape design and material that can have a beneficial effect upon energy conservation

Increase public safety

- Increase street safety by reducing or eliminating the potential of water and ice on all paved surfaces resulting from irrigation-related water waste
- Reduce damage to publicly owned streets caused by water waste
- Increase awareness of defensible space for fire mitigation

Facilitate successful projects

- Establish a procedure for designing, installing, and maintaining water efficient landscapes in new projects
- Establish a regulatory framework for the administration of landscape and irrigation design, plan review, installation, inspection and maintenance.

Section 1: General Provisions

1.1 GOVERNING REGULATIONS

Unless the Town expressly approves a specific variance or deviation, these Criteria and all secondary codes shall govern in all cases where plans or approvals are required.

The Town of Castle Rock / Castle Rock Water makes every attempt to provide a thorough and accurate plan review and landscape/irrigation inspection. In the event an item or items are missed, that does not release the applicant or permit holder from meeting all requirements as identified in the Landscape and Irrigation Performance Standards and Criteria Manual, the Water Use Management Plan, or Municipal Code.

1.2 JURISDICTION

These Criteria shall apply to all public, institutional and private lands located within or served by the Town of Castle Rock, including:

- New development or construction
- Currently approved development plans that are changed by amendments subsequent to the effective date of this document
- Any change of land use and conversion of land, whether residential or non-residential, public or private
- When conditions exist for joint or multiple land uses concurrent on a single site or development property, landscaping that is most consistent with the primary, prescriptive land use shall apply
- Projects which impact 25 percent or greater of landscaped area associated with a single water service connection (one tap)
- Projects which impact 10,000 square feet or greater of landscaped area associated with one or more service connections (taps)
- Irrigation maintenance through the course of routine maintenance, all replacement irrigation equipment shall meet criteria

These Criteria shall govern over privately enforced guidelines or requirements related to landscaping and irrigation (i.e. homeowner association design guidelines, regulations and requirements, etc.)

1.3 PURPOSE

Presented in these Criteria are the policies, procedures, performance standards, and minimum criteria for the design, installation, and maintenance of landscaping and irrigation within the Town. These Criteria provide comprehensive water-efficient design, installation, and maintenance standards for landscaping within the Town in a manner that balances quality of life and social awareness with the overall responsibilities of the Town as the water provider.

All landscaping and irrigation submitted for acceptance under the provisions of these Criteria shall include appropriate landscape and irrigation planning, analysis, and design. Such planning, analysis, and design shall conform with or exceed these Criteria.

1.4 AMENDMENT

The performance standards and criteria may be amended as new technology or other industry related best management practices are developed, or if experience gained in the use and application

Section 1: General Provisions

1.4 AMENDMENT, continued

of these Criteria indicates a need for revision. Minor revisions will require the approval of the Director of Castle Rock Water.

All major revisions will require Town Council adoption, by Resolution following a Public Hearing thereon. The Director of Castle Rock Water, or designee thereof, shall monitor the performance and effectiveness of these criteria and will recommend amendments and revisions as necessary.

1.5 ENFORCEMENT RESPONSIBILITY

The Town shall review all landscape, irrigation, and maintenance reports, plans, analysis, design, and installations for compliance with these Criteria. The Criteria are enforced by the Town or authorized representative.

1.6 REVIEW AND APPROVAL

The Town shall review all submittals for general compliance with these Criteria. An acceptance by the Town **does not** relieve the owner, designer, installer, or maintenance contractor from the responsibility of ensuring the design, plans, specifications, construction, maintenance, and record drawings are in compliance with these Criteria as stated in the owner and professional consultant certifications.

1.7 INTERPRETATION

The following shall govern the interpretation and application for the provisions of the Criteria:

- A. These provisions shall be regarded as the minimum requirements and standards for design, installation and maintenance of landscape and irrigation.
- B. Whenever a provision of these criteria and any other provision of the Town of Castle Rock Municipal Code or any provision in any law, ordinance, resolution, rule or regulation of any kind, contains any requirements covering any of the same subject matter, the requirements that are more restrictive or impose higher standards shall govern. In the event that there is a discrepancy in the interpretation of these Criteria, the Director of Castle Rock Water, or designee thereof, shall make the final determination of the intent of these Criteria.
- C. These Criteria shall not abrogate or annul any binding agreements, issued permits, or accepted landscape and irrigation construction plans, either recorded or accepted by the Town, prior to the effective date of these Criteria.

1.8 RELATIONSHIP TO OTHER STANDARDS

If the State, Federal government, or other applicable regulatory agency imposes stricter criteria, standards, or requirements than those contained herein, such provisions shall apply, and shall be subsequently incorporated into the Town's requirements after due process and public hearing(s) to modify the Town's regulations and these Criteria.

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1.9 DEVIATION AND VARIANCE

Refer to the Town Development Procedures Manual for information regarding deviations and variances to the Criteria.

1.10 SUPPLEMENTAL INFORMATION TO THESE STANDARDS

Supplemental information, forms, checklists, notes, etc., listed below, are available on the Town of Castle Rock website (CRgov.com) and shall be referenced or submitted in accordance with the requirements set forth in these Criteria. Please contact the Director of Castle Rock Water, or designee thereof, with any questions regarding the downloading of these files. It is the responsibility of the applicant and designer, installer, or maintenance contractor to obtain the latest version of any submitted document, as the Town will periodically update these items.

1. Contact List
2. Town of Castle Rock Approved Plant List
3. Sample Plans
4. Overlay Districts
5. Checklists and Forms
6. Signature Block
7. Variance Request Form
8. Drawing Submittal Requirements
9. Electronic Data Submittal Layer Requirements
10. General Construction Drawing Cover Sheets Notes
11. Standard Construction Notes
12. Standard Details
13. Record Drawing Checklists
14. Irrigated Public Area Water Conservation Worksheet (CLWUR)
15. Temporary Irrigation Criteria

1.11 VIOLATIONS AND PENALTIES

Refer to the Town Municipal Code for information regarding violations and penalties.

1.12 ACRONYMS

As used in the Town's Landscape and Irrigation Performance Standards and Criteria, the following acronyms shall apply:

ASLA	American Society of Landscape Architects
BMP	Best Management Practice
CD, CDs	Construction Drawing(s)
CO	Certificate of Occupancy
DESC	Drainage, Erosion, and Sedimentation Control
ET	Evapotranspiration
FPS	Feet per Second, referencing velocity
GESC	Grading, Erosion, and Sedimentation Control
GPM	Gallons per Minute
IA	Irrigation Association
K	Potassium

Section 1: General Provisions

1.12 ACRONYMS, continued

LWUR	Landscape Water Use Rating
N	Nitrogen
P	Phosphorus
PD	Planned Development
PDP	Planned Development Plan
PRV	Pressure Regulating Valve
ROW	Right-of-way
PSI	Pounds per Square Inch
RP, RPA	Reduced Pressure Principle Assembly
SDI	Subsurface Drip Irrigation
SDP	Site Development Plan
SDT	Sight Distance Triangle
TCO	Temporary Certificate of Occupancy
TCR, ToCR	Town of Castle Rock

1.13 DEFINITIONS OF TERMS

ACTIVE PARK: A public common area park with an active/programmable sports field.

ADMINISTRATIVE VARIANCE: A variance from technical criteria, see the Development Procedures Manual.

ALTERNATIVE TURF: Grasses cultivated in very close proximity, to form a living surface at the ground plane, generally intended to be mowed regularly, forming a dense growth of leaf blades and roots, including grasses other than bluegrass or bluegrass blends. These may include fescue hybrids, blue grama, and buffalo grasses propagated as turf.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS: A national membership organization formed to advance the professional practice of landscape architecture.

ANNUAL: A type of plant material, typically flowers, that require replanting each season.

APARTMENT BUILDING: A building containing two or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a residence by a family or individual.

APPLICANT: The individual or organization applying for zoning or permitting action.

APPLICATION RATE: The amount and frequency water is applied to landscaping by the irrigation system, usually measured in inches per hour.

ARTIFICIAL TURF: A non-living material typically used in lieu of a living turf/lawn. The appearance mimics a green, living turf during the growing season.

AS-BUILT DRAWINGS: The approved Town of Castle Rock stamped landscape and irrigation construction plans updated with any changes or deviations. Final disposition, location, with dimensions of the installed landscape and irrigation equipment shall be shown as as-built drawing.

BACKFLOW PREVENTION ASSEMBLY: A mechanical device installed at the beginning of the irrigation system to prevent a reverse water flow and contamination of the potable water supply.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

Reduced pressure principle assemblies and pressure vacuum breakers are the most common types used in the irrigation industry.

BACHELOR or higher degree refers to a four-year degree or master or doctorate degree from an accredited college or university.

BERM: An earthen mound intended for visual interest or screening of undesirable views. A berm is effective in buffering between differing land uses and reducing noise. The maximum slope of berms shall not exceed 4:1 (25 percent).

BLUEGRASS: Any grass of the genus *Poa*, having dense tufts of bluish-green blades and creeping rhizomes. Examples include, but are not limited to: Kentucky bluegrass, *Poa pratensis* and *Canada bluegrass*, *Poa compressa*.

CALIPER: The measurement in diameter of a tree trunk measured six-inches above the ground for trees up to four-inch size and twelve-inches above the ground for larger sizes.

CENTRAL IRRIGATION CONTROL SYSTEM: A computer system that enables programming, monitoring, and operation of irrigation systems from a central location. Central control systems are designed to allow a user to control a single site or a set of sites from a single computer.

CERTIFIED IRRIGATION CONTRACTOR: A person who has successfully completed formal training, certification, licensing, or other similar qualifications for irrigation installation and/or maintenance by the Irrigation Association.

CERTIFIED IRRIGATION AUDITOR: A person who has successfully completed formal training, certification, licensing, or other similar qualifications by the Irrigation Association to perform irrigation audits.

CERTIFIED IRRIGATION DESIGNER: A person who has successfully completed formal training, certification, licensing, or other similar qualifications by the Irrigation Association.

CHECK VALVE: A device that prevents a reverse water flow in pipes and sprinkler heads, commonly used in sprinkler heads or emitter systems to prevent low head drainage.

COMPOSITE LANDSCAPE WATER USE RATING (CLWUR): The area of weighted average of the landscape water use ratings for all landscape zones within a project or the Town as a whole. It is defined as the sum of the products of the landscape water use rating and the irrigated area (in square feet) for each landscape zone divided by the total area of all zones. The composite landscape water use rating is expressed by the following formula:

$$\text{Formula CLWUR} = \sum_{k=1}^N \text{LWUR}_k * \text{IA}_k / \text{TA}$$

Where CLWUR = Composite landscape water use rating

LWUR_k = Landscape water use rating for each landscape zone

IA_k = Irrigated area (in square feet) for each landscape zone

TA = Total area (in square feet) for all landscape zones included in the composite

The composite landscape water use rating is computed for a project using all landscape zones

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

shown on the landscape design and management plan. The composite rating for the Town is computed using all zones for all irrigated public areas in the Town. Non-irrigated native seed areas are not included in CLWUR calculations. See the Town website at CRgov.com for the CLWUR chart for the Town of Castle Rock.

COLORADOSCAPE: A natural landscape which uses low to very low water (less than 10-inches of water, plant material which blends in with the native Castle Rock landscapes. Plant material must be maintained in its natural, native form, utilizing a combination of hardscape and landscape materials which provide a variety of colors, textures, sizes, shapes and seasonal interest.

COMMON AREA: Land area within a development intended for joint, Private, or public ownership and use. These areas are often maintained by a homeowners association, business association, or in some instances, the Town. Pocket parks, passive parks, active parks, and right-of-ways are considered a common area for the purposes of these standards and criteria.

COMPOST: A mixture of decayed plants and other organic matter used to improve soil structure and provide nutrients. Acceptable compost shall be aged a minimum of one year.

COMPOST CLASS I: Fully composted, stabilized and mature product that is generally made from non-manure feed stocks; will germinate and sustain plants without much risk due to over-application or poor incorporation. Please see chart on next page for technical criteria.

COMPOST, CLASS II: Fully composted, stabilized and mature product that is generally made from manure-based feed stocks (dairy, poultry, equestrian, etc.); proper application quantity and incorporation is important to plant germination and sustainability; normally has increased level of nutrients and can be used to supplement fertilizer needs. Please see chart for technical criteria.
Technical Criteria Chart Source: Denver Water.

TABLE 1-1 COMPOST CRITERIA

	CLASS I	CLASS II
Minimum Stability Indicator	Stable - Very Stable	Stable
pH	6.0 - 8.0	6.0 - 8.2
Ag Index (Nutrients/Na+Cl)	Must report	Must report
Soluble Salts	Maximum 5 mmhos/cm	Maximum 10 mmhos/cm
Carbon / Nitrogen Ratio	< 12	< 18
Ammonia-N / Nitrate-N	< 4	< 6
Bulk Density (lbs/CY)	Must report	Must report
Primary, Secondary, Trace Elements	Must report	Must report
Organic Matter; Moisture Content (% / CY)	Must report	Must report

<http://www.denverwater.org/Conservation/SoilAmendmentProgram/CompostClassifications/>

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

CONDOMINIUM BUILDING: A building containing two or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a residence by a family or individual, with individually owned dwelling units and jointly owned and shared areas and facilities.

CONIFEROUS: A tree or shrub that bears cones and evergreen leaves.

CONTROL VALVE: Valves that turn on and off water to the individual zones of sprinklers or drip emitters.

CONTROLLER: An electric timing device that operates each zone of an irrigation system for a predetermined time and frequency.

COVERAGE: The extent of area where water is applied by sprinkler heads. This is used in the context of proper head spacing.

CROP COEFFICIENT: The water requirement for a plant material which may be calculated by multiplying the evapotranspiration of reference crop (in reference to these Criteria - bluegrass) (ET_o) with the crop coefficient (K_c) of a particular crop. The crop coefficient takes into account the changes in crop growth and ground cover over time.

CROSS CONNECTION: Any point in a water distribution system where chemical, biological, or radiological contaminants may come into contact with potable water. During a backflow event, these contaminants can be drawn or pushed back into the potable water system. A backflow prevention device installed at every point of cross connection prevents contaminated water from entering the potable water distribution system.

CU-Structural Soil™ (U.S. Patent # 5,849,069) is a two-part system comprised of a rigid stone “lattice” to meet engineering requirements for a load-bearing soil, and a quantity of soil, to meet tree requirements for root growth. The lattice of load-bearing stones provides stability as well as interconnected voids for root penetration, air and water movement

CYCLE: An interval of time during which an irrigation system is operated for one sequence of a regularly recurring succession of watering events.

DECIDUOUS: A plant with foliage that is shed annually.

DECIDUOUS TREE: A tree with foliage that is shed annually.

DEVELOPED AREAS: Any area on which a site improvement or change is made including buildings, landscaping, parking, streets and/or utilities.

DEVELOPER: Person, persons, or business that is responsible for the development of land, buildings and/or related improvements – often for the purpose of sale to a subsequent owner. The developer may be the property owner.

DOUBLE ROW OF PARKING: Two rows of parking adjacent to each other, generally not separated by a drive aisle or landscaping.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

DOWNTOWN STREETSCAPE : a Combination of window boxes, planters, trees, shrubs, perennials, and groundcovers, as appropriate to enhance building entries and buffer street.

DRAIN VALVE: A valve used to drain an irrigation system for repairs or freeze protection.

DRAINAGE, EROSION AND SEDIMENTATION CONTROL (DESC): The Town's regulations that describe the permitting program that has been adopted to promote environmentally sound construction practices in Town. These practices protect the Town's watersheds from pollution associated with single-family residential construction only. The goal of the program is to implement effective erosion and sediment control best management practices as a standard for single-family residential land disturbance activities to minimize increases in erosion and sedimentation over predevelopment conditions.

DRIP EMITTER: A small irrigation device that emits a dribble of water at very low pressure with flows measuring in gallons per hour.

DRIP LINE: A vertical line extended downward from the tips of the outermost branches of a tree or shrub to the ground.

DROUGHT: Periods of a year or more with below average precipitation. Can also refer to seasons such as winter, spring, summer or fall, with below average precipitation.

DROUGHT AVOIDANCE: A plant's ability to endure drought and not show signs of being stressed.

DROUGHT RESISTANT: A plant's ability to endure drought being unstressed and maintaining normal appearance and health, similar to drought avoidance.

DROUGHT TOLERANT: A plant's ability to withstand drought without dying.

DRYLAND SEED MIXTURE: A native seed mixture that does not require ongoing supplemental irrigation, but may benefit from temporary irrigation for establishment.

DUPLEX: A structure containing two dwelling units attached horizontally in a linear arrangement, and having a totally exposed front and rear wall to be used for access, light, and ventilation.

DWELLING, MULTI-FAMILY: A building, or portion thereof, designed for or occupied by three or more families living independently of each other, which may include apartments, condominiums, or townhomes.

DWELLING, SINGLE-FAMILY: A detached structure designed exclusively for occupancy by one family.

DWELLING, TWO-FAMILY: A detached building designed exclusively for occupancy by two families living independently of each other.

DYNAMIC PRESSURE: The pressure at any point in the irrigation system when the system is functioning. Measured with flow in the line.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

EASEMENT: The right of the Town to use lands owned by other parties for the purposes of maintenance, access, drainage, or other use, as specified in an agreement between parties.

ESTABLISHMENT PERIOD: The period of time required for a plant to seed, germinate and establish a healthy root system which promotes long-term health and growth.

ESTABLISHMENT IRRIGATION: Supplemental irrigation required during the establishment period.

EVAPORATION: The change by which water is converted from a liquid state into and carried off in vapor into the atmosphere.

EVAPOTRANSPIRATION (ET): A measure of water depletion from the soil due to evaporation from the soil surface and transpiration through plant foliage.

EVERGREEN: A plant with foliage that persists and remains green year-round.

EVERGREEN TREES: Trees that do not lose their leaves or needles at the end of their growing season. The leaves or needles stay the same color throughout the year.

FABRIC: A porous commercially available geotextile fabric installed underneath mulch that is manufactured specifically to reduce the growth of weeds within bed areas.

FIELD CHANGE ORDER: Paperwork and justification for a change to landscape and/or irrigation construction plans once a project is under construction.

FINAL PD SITE PLAN: Final Planned Development (PD) Site Plan and is the detailed development plan of a property which generally indicates the final planned use of the property, building and parking locations, building elevations, service connections, landscape and other site improvements.

FINAL GRADE: The finished ground surface or contour after construction, prepared for plants.

FLOW SENSOR: A device that measures the rate of water flow in an irrigation system quantified in gallons per minute (GPM).

GALLONS PER MINUTE (GPM): The flow rate of water, volume for a period of time.

GRADING, EROSION AND SEDIMENTATION CONTROL (GESC): The Town's regulations that describe the permitting program that has been adopted to promote environmentally sound construction practices in Town. These practices protect the Town's watersheds from construction-related pollution. The goal of the program is to implement effective erosion and sediment control best management practices as a standard for all land disturbance activities to minimize increases in erosion and sedimentation over predevelopment conditions.

GROUND COVER: Living plant material that grows low to the ground, usually under twelve-inches in height, often of a spreading nature.

GROSS (TOTAL) SITE AREA: The total square footage of the property associated with a development plan that includes landscape and/or irrigation installation and/or renovation.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

GROWING SEASON: The five month period of May through September.

HARDSCAPE: Non-living site improvements at the ground plan such as a building, pavement, walkways and parking areas – including those of crushed stone, patios, decks, mulch area (exclusive of mulch area in shrub and perennial beds), and other similar improvements as determined by the Town. Hardscape area does not include artificial turf unless as otherwise approved in this document.

HEAD: Pressure - one foot of head equals 0.433 psi.

HEAT ISLAND EFFECT: An “island” of higher temperatures caused by changing surfaces from permeable to impermeable as a result of development. See the United States Environmental Protection Agency website at www.epa.gov for more information.

HEIGHT for the purposes of these Criteria, is determined as typically measured by National Nursery Association Standards.

HIGH WATER USE: A plant material that requires over 15-inches of supplemental irrigation during each growing season (May – September).

HYDROZONE: Areas within the landscape area defined by similar water needs to sustain healthy plants. For the purposes of this document, hydrozones are broken into four (4) categories:

VERY LOW HYDROZONE (aka very low water use zone): Plant materials that require five-inches or less of supplemental water applied during the growing season. The plant materials within this zone are typically drought-tolerant natives. The very low water use zone is designated by the letter “V” and has a landscape water use (LWU) rating of zero (0) to one and one half (1.5).

LOW HYDROZONE (aka low water use zone or plant material): Plant materials that require over five-inches and up to or equal to ten - inches of supplemental water applied during the growing season. The low water use hydrozone shall be designated by the letter “L” and has a landscape water use (LWU) rating of greater than one and one half (1.5) and less than or equal to three (3.0.)

MODERATE HYDROZONE (aka moderate water use zone or plant material): Plant materials that require over ten (10) inches or up to or equal to fifteen-inches of supplemental water applied during the growing season. The plant materials within this zone are typically native hydrophilic or exotic species. The moderate water use zone is designated by the letter “M” and has a landscape water use (LWU) rating greater than three (3) and less than or equal to four and one half (4.5).

HIGH HYDROZONE (aka high water use zone or plant material): Plant material that require over 15-inches of supplemental water applied during the growing season. The plant materials within this zone are intended for high-pedestrian traffic areas such as sports fields or community gathering spaces. Plant materials using up to 19-inches may be used in qualifying passive common areas, with approval. There are limits to the amount of high water use plant materials that may be used on a single family residential property. The landscape water use (LWU) for high water use plant material is 4.5.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

INORGANIC MATTER: A non-naturally occurring and/or manufactured product such as perlite, used to enhance the soil texture and/or water holding capacity of soils.

INTERFACE LANDSCAPING: Landscaping between changing land uses, such as between residential and commercial, or residential and industrial. Such areas shall require increased landscaping to create buffers between uses.

IRRIGABLE AREA: The square footage of all permanently irrigated mature plant material per service connection. See **Appendix B** for examples of calculated irrigable areas. Irrigable areas do not include non-irrigated or temporarily irrigated native seed. Irrigable areas not to exceed 75 percent of total landscape area. Mulch beds will be calculated using the perimeter and then apply a density percentage.

IRRIGATED PUBLIC AREA: Land area that is not native or natural open space and in which healthy vegetative growth is maintained by the application of water through an irrigation system. Irrigated public areas shall include, but are not limited to, any and all irrigated areas associated with irrigated public lands and easements owned by the Town and/or any metropolitan district or homeowners association within the Town. Irrigated public areas include public street entrances, medians, parking lots and rights-of-way, public parks and recreation areas, and all areas whether owned, maintained, or irrigated at public expense by the Town, metropolitan district, or homeowners association.

IRRIGATION: An automatic, permanent, artificial watering system designed to transport and distribute water to landscape plants.

IRRIGATION ASSOCIATION: A non-profit North American organization formed to improve the products and practices used to manage water resources and to help shape the business environment of the irrigation industry.

IRRIGATION AUDIT: A procedure to collect and present information concerning the uniformity of application, precipitation rate, and general condition of an irrigation system and its components. This procedure according to the Irrigation Association that includes a visual site inspection of the installed irrigation system for performance according to design criteria.

IRRIGATION DESIGN: Creation of a drawing and associated information depicting irrigation system components and details.

IRRIGATION EFFICIENCY: A quantitative measurement of distribution uniformity as determined through an irrigation audit.

IRRIGATION PLAN: A plan drawn to scale that indicates the irrigation components and their specifications as related to a specific landscape plan. This is a two-dimensional plan drawn to scale that shows the layout of irrigation components, specifications, and hydrozones.

IRRIGATION SEASON: The period during which supplemental irrigation is used to maintain plant health, for purposes of these Criteria shall mean May through September.

INVASIVE PLANT: Plant that is non-native and able to establish on many sites, growing quickly, and spreading to the point of disruption of plant communities and/or ecosystems.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

LAND USE: The designation in these Criteria such as single-family, single-family attached, multi-family, non-residential, or other type of land use designation, as defined by the Town of Castle Rock in master planning and/or municipal code.

LANDSCAPE: Any combination of living plants, such as trees, shrubs, vines, groundcovers, flowers and/or grass, natural features such as land and water forms, rock, stone, bark chips or shavings, and structural features including but not limited to fountains, pools, outdoor art work, walls, fences or benches.

LANDSCAPE AREA: The area within a lot or property not comprised of hardscape, measured at the ground plane. Landscape area will not include bare dirt or weeds. Landscape area will consist of living groundcover, including turf or other groundcover, or shrub bed area which is permanently irrigated.

LANDSCAPE ARCHITECT: A professional who has successfully completed formal study in the field of landscape architecture culminating in degree and who is currently licensed in the State of Colorado.

LANDSCAPE BERM: See BERM.

LANDSCAPE BUFFER: A landscape area intended to physically and visually separate one land use from another.

LANDSCAPE DESIGNER: A professional who has successfully completed formal study or training in the field of landscape design, culminating in either certification, licensing, or degree.

LANDSCAPE GRADING PLAN: A plan drawn to scale that shows the designed landscape gradient and elevation using one-foot or two-foot contour lines with numeric notation of elevations.

LANDSCAPE IMPROVEMENTS: All elements typically used or present in the designed landscape such as, but not limited to, soil compost, rock, plant material, edging, weed fabric, mulch, and irrigation system.

LANDSCAPE ISLAND: A landscape area in a parking lot typically surrounded on four sides by parking spaces or drive isles.

LANDSCAPE PENINSULA: A landscape area in a parking lot typically surrounded on three sides by parking spaces or drive isles.

LANDSCAPE PLAN: A plan drawn to scale that shows the layout of all landscape components and their specifications for a development site.

LANDSCAPE PROFESSIONAL: A landscape or irrigation designer, installer, or maintenance contractor that possesses the qualifications associated with the specific discipline of landscape or irrigation design, installation, or maintenance of landscape and irrigation systems.

LANDSCAPE SETBACK: An area reserved for the primary use of landscaping measured by the horizontal distance between two points of reference. Oftentimes landscape setback area refers to a distance of landscape area located between the property line and a building or parking area or other

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

hardscape. Sidewalks located within a landscape setback area will necessitate a corresponding increase in the setback.

LANDSCAPE WATER USE RATING: A numeric rating assigned to a landscape zone that represents the irrigation water requirement. The LWU rating is computed by dividing the irrigation water requirement (in inches) for the zone by five (5.0) and is expressed by the following formula:

$$\text{Formula } LWUR = IWR/5.0$$

Where LWUR = Landscape water use rating
IWR = Irrigation water requirement

The four (4) defined landscape zone types have LWU ratings within the following ranges:

<u>Landscape Zone</u>	<u>LWU Rating Range</u>
Very low water use	0.0 to 1.5
Low water use	+1.5 to 3.0
Moderate water use	+3.0 to 4.5
High water use	+4.5

LARGE CANOPY DECIDUOUS TREE: A deciduous tree that has a mature height of greater than 30 feet and branches that start above six (6) feet at maturity.

LATERAL: Piping between the control valve and the sprinkler head.

LICENSED LANDSCAPE ARCHITECT: A person who is currently licensed by the State of Colorado of the United States to practice the profession of landscape architecture.

LOW HEAD DRAINAGE : A situation where water drains partially or completely out of the lateral line through the sprinkler head after each irrigation cycle is complete. This causes water waste, and check valves should be used in heads to mitigate this situation.

LOW WATER USE PLANT MATERIAL: Plants that require more than 5-inches and up to 10-inches of supplemental irrigation per season, May-September, to maintain optimum health and appearance.

MAINLINE: Piping upstream of the control valve in an irrigation system.

MAJOR MODIFICATION: Changes in live plant material coverage and/or square footages; and/or changes to irrigation tap sizes, drastic relocation of irrigation mainlines, changes in irrigation water application methods between overhead and sub-surface, and irrigation head types.

MAJOR REVISION: A revision to this code that involves policy changes, technical criteria changes, and/or major construction detail revisions.

MAINTENANCE: Any activity undertaken to prevent the deterioration, impairment, or need for repair of an area, structure, right-of-way, or land use, including but not limited to management, repair or replanting of plant materials, landscape materials, and/or irrigation system.

MASTER VALVE: The valve that turns on and off water for the entire irrigation system.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

MEDIAN: An area in a streetscape that separates lanes of traffic traveling in opposing directions. When landscape material is present the minimum width of the median shall be eight (8) feet, from back of curb to back of curb.

MINOR MODIFICATION: A change to this code that involve grammar, submittal requirement changes, clarifications and construction detail revisions for clarification, and/or minor modifications.

MOBILE HOME: A transportable structure suitable for year-round single-family occupancy and having water, electrical, and sewage connections similar to those of conventional single-family dwellings.

MODERATE WATER USE PLANT MATERIAL: A plant material that requires over 10-inches and less than 15-inches of supplemental irrigation per season, May-September, to maintain optimum health and appearance.

MONOCULTURE: Planting/growing of only one type of plant material.

MULCH: Non-living organic or inorganic material such as bark or rock material typically in a loose condition, used in the landscape industry to cover bare ground.

MULTI-FAMILY RESIDENTIAL: Multifamily residential (also known as multi-dwelling unit or MDU) is a classification of housing where multiple separate housing units for residential inhabitants are contained within one building or several buildings within one complex. A common form is an apartment building.

NATIVE AREA: An area of plant materials that are indigenous to Castle Rock. Such area may or may not include permanent irrigation, depending on the use.

NATIVE PLANT: A plant that is part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem.

NATIVE SEED: Seed of native grasses.

NATURALIZED AREA: An area with naturalized plants.

NATURALIZED PLANT: A non-native plant that does not need human help to reproduce and maintain itself over time in an area where it was not native.

NITROGEN (N): As used in the context of these Criteria, refers to this nutrient as used by plants as part of photosynthesis, promoting green plant growth.

NON-NATIVE PLANT: A plant that is introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found.

NON-RESIDENTIAL: Commercial or multifamily development.

NOXIOUS WEED: An alien plant or parts of an alien plant that have been designated by rule as being noxious or has been declared a noxious weed by a state, county, or local regulatory agency,

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

meeting one or more of the following criteria:

- Aggressively invades or is detrimental to economic crops or native plant communities;
- Is poisonous to livestock;
- Is a carrier of detrimental insects, diseases, or parasites;
- The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

NOZZLE: A short duct that is used to direct the flow of water from a sprinkler head.

OPERATING PRESSURE: The pressure at any point in the irrigation system when the system is functioning. Operating pressure is measured with flow in the line.

ORGANIC MATTER: Either Class I or Class II compost.

ORNAMENTAL TREE: A tree of smaller size than a large canopy shade (less than 30 feet in mature height), often providing variety and interest by flower display, attractive fruit or fall color. An example of ornamental trees are crabapples. Such trees are identified in the town of Castle Rock approved plant list.

PARKING LOT: The paved area used to accommodate vehicles associated with commercial and multi-family uses. The area of the parking lot used to calculate parking area landscape requirements excludes roadway, aisles leading to and from the parking lot, and landscape area abutting the parking lot. It is measured from back of curb to back of curb, and may include landscape islands between parking spaces or drive areas, and peninsulas (measured from ground plane back of abutting curb).

PARKING LOT ISLAND: A landscape area in a parking lot typically surrounded on four sides by parking spaces or drive isles.

PASSIVE RECREATION AREAS (common passive recreation areas): Areas used by multi-family complexes, or localized neighborhoods that are used for non-programmed athletic activities, picnic areas, playground equipment or other recreational/play areas. These areas shall meet minimum site requirements of no less than 3,000 square feet, accommodate no less than three large canopy shade trees and shall be safely accessible by users. The highest water use plant materials shall use no more than 19 inches of supplemental irrigation per season, May-September.

PENINSULA: A landscape area in a parking lot typically surrounded on three sides by parking spaces or drive isles. See Landscape Peninsula.

PERFORMANCE STANDARD: Outlines an expectation of results, through identification of a benchmark against which performance is measured.

PERENNIAL: A herbaceous plant that blooms and produces seed for each year, exceeding two years. A short-lived perennial lives for approximately 3-5 years. Long-lived perennials are likely to live much longer and can remain for over 20 years.

PERMITTEE: The party making application for permit.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

PLANT MATERIALS: Living plants such as trees, shrubs, groundcovers, and vines, and shall not include weeds or other undesirable plants as determined by the Town.

PLAZA: A public gathering space, place of respite, including landscaping.

PHOSPHORUS (P) : (Used in the context of these Criteria): A nutrient as used by plants as part of photosynthesis, nutrient transport, and energy transfer. Phosphorus assists with stable root system development, growth, and flowering.

PLANT HEIGHT (for the purposes of this document): Is determined as typically measured by the National Nursery Association Standards. See Town of Castle Rock plant list for plant heights.

POTABLE WATER: Water that has been treated and is suitable for drinking.

POTASSIUM (K) (as used in the context of these Criteria): A nutrient as used by plants to assist with water uptake and drought resistance, as well as to promote strong roots, stems, leaves, and fruits.

PRACTICAL TURF AREA (using high water use grasses): A landscape design concept that promotes turf only in areas that are functional, and not for aesthetic purposes only, and includes efficient management of supplemental irrigation required in those areas.

PRECIPITATION RATE: The quantity of water applied to the ground measured in inches per hour; also used in lieu of “application rate”.

PRESSURE (PSI): The force that moves water through a pipe or piping system and is measured in pounds per square inch (PSI) or feet of head. One foot of water depth equals 0.433 PSI, and one PSI equals 2.31 feet of head.

PRESSURE GAUGE: A device used for indicating water pressure.

PRESSURE REGULATING VALVE (PRV): A valve used to control pressure within a piping system.

PUBLIC IRRIGATION WATER ORDINANCE: Chapter 13.20 in the Municipal Code which references limitation on high water use plant materials by using a formula to calculate the CLWUR or Composite landscape water use rating for a landscape project.

RAIN SENSOR OR RAIN SHUTOFF DEVICE: A device connected to an irrigation controller that overrides scheduled irrigation when significant precipitation has been detected.

RECORD DRAWINGS: Town approved construction plan that depicts the final disposition, location, with dimensions of the installed landscape and irrigation equipment. Contractor shall keep record drawings current as project progresses.

REDEVELOPMENT: Any man-made change to improved or unimproved real estate including any material change in the use or appearance of any structure, physical improvement, grading, landscaping, or in the land itself.

REGISTERED PROFESSIONAL: Landscape and/or irrigation design, installation and maintenance professionals that hold a current registration issued by Castle Rock Water.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

RETROFIT: An umbrella term that refers to the modification of something for more efficiency. In the case of water conservation, retrofit refers to modifications to plumbing fixtures, landscaping and/or irrigation to increase water use efficiency.

RIGHT-OF-WAY: A public street, way, alley, sidewalk, easement, park, square, plaza, tract, and Town-owned lands, or any other public property owned and controlled by the Town, or dedicated to public use.

RISER: An upright piece of pipe used to support nozzles, heads, emitters, backflow preventers, and valves.

ROOT ZONE: The depth of the plant roots in the soil; the area in which plant roots grow.

ROUGH GRADE: The ground surface or contour that is not the final preparation for plants.

ROUND-A-BOUT: A circular junction in which road traffic must travel in one direction around a central island.

SCOPE OF WORK AREA: The gross site area of a parcel, and/or the property to which landscape improvements are being proposed. See definition of “gross site area”. If a project involved public or common area that is not referenced by a parcel or lot, scope of work areas may be referenced by the area served by a single dedicated irrigation service, or as identified by right-of-way, and/or public common areas.

SEMI-ARID CLIMATE: A climate characterized by 10 - 15 inches of annual precipitation; very dry with little rainfall and scrubby vegetation. Castle Rock is located in a semi-arid climate.

SETBACK: The required minimum horizontal distance between the location of structures or use's and the related front, side, or rear lot line measured perpendicular to such lot line.

SHADE TREE: Deciduous trees of large size, generally 30 feet or more in height when mature.

SHRUB: A self-supporting woody plant either evergreen or deciduous of low to medium height with multiple stems arising at or near the ground

SHUT OFF VALVE (isolation valve): A valve within an irrigation system that shuts off the entire system or isolates a portion of the system.

SIGHT DISTANCE TRIANGLE: The minimum visibility clearance provided at all access point locations, intersection of adjoining streets, and entrance drives. Landscape type, height, and opacity are limited in these areas.

SITE PLAN: A drawing depicting the final planned use of a property, building, parking locations, service and landscape irrigation, and other improvements.

SKETCH DRAWING (for the context of these Criteria): Demonstrates proposed property use and a preliminary landscape concept generally to scale, with directional arrow and general topography, showing general locations and mature sizes of plant materials (trees, shrubs, groundcovers) used in

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

the design, includes a list of species for each type of plant, from which final plant species will be selected. Also calls out type of irrigation for each area/and/or plant type or hydrozone.

SLOPE: The degree of change from the horizontal plane. Often slope is calculated as a ratio of “horizontal run” to “vertical rise”, or as a fraction (“rise” over “run”) in which run is the horizontal distance and rise is the vertical distance.

SMART IRRIGATION CONTROLLER: A controller that automatically adjusts the programmed run time or watering frequency based on changes in weather or soil moisture.

SOIL AMENDMENT: Organic and inorganic material added to the soil to improve texture, moisture holding capacity, nutrient capacity, water and air infiltration.

STREET: Any public or private road.

STREETSCAPE: Pedestrian and landscape improvements in the right-of-way, generally occurring between the curb and the ROW line. Streetscape generally includes sidewalks, street trees and street tree planting strips, medians, round-a-bouts, abutting area between back of sidewalk, and private lot, with all associated landscape and irrigation.

STREET TREE PLANTING STRIP: The area intended for planting to include street trees, between a detached sidewalk and street curb.

SUB-SURFACE DRIP IRRIGATION (SDI): Drip tubing with inline emitters, evenly spaced in a grid pattern, usually installed under turf or groundcover.

TEXAS HYBRID BLUEGRASS: A hybrid turf variety created by combining Kentucky bluegrass (*Poa pratensis* L.) and Texas bluegrass (*Poa arachnifera* Torr.). Such hybrids demonstrate lower water use requirements than Kentucky bluegrass (*Poa pratensis* L.), while being drought and heat tolerant.

TOPSOIL: Native soil, which is to be stockpiled during over lot work and returned to the sight, and may also refer to imported soil material where native is substandard or non-existent, and is used for soil material in landscaped areas, not considered organic component for soil amendment or soil preparation.

TOWN (in reference to these Criteria): The Town of Castle Rock.

TOWNHOME: An attached single-family dwelling unit with private entrance which is part of a structure whose dwelling units are attached horizontally in a linear arrangement, and having a totally exposed front and rear wall to be used for access, light and ventilation. Townhomes shall consist of at least three single-family attached dwellings.

TRACT: A parcel of land which is created for the purposes of common ownership and use by two (2) or more property owners; ownership and use by an association or government entity; or an impermanent status where property intended for further division can be platted and transferred, but where no building permits can be issued

TRANSPIRATION: The process of water moving through the leaf surface of a plant and vaporizing, and is utilized by the plant to cool its leaves.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

TREE: A woody plant with leaves or needles that grows to achieve height usually above the human form, often providing shade.

TURF: A grouping of grasses that grow in very close proximity to form a living surface at the ground plane, is regularly mowed forming a dense growth of leaf blades and roots. See Appendix C.

URBAN AREA: A focused development that has limited open space, primarily contains a variety of non-residential uses, but may also integrate residential uses, that combines the uses in a way which considers character, local identity, heritage, pedestrians, and traffic. Urban Areas include the Downtown Overlay District, the Wolfensberger North Zoning Overlay District, or other areas dense mixed use areas as determined by the Town.

USDA Hardiness Zone: A geographically defined area in which a specific category of plant life is capable of growing as defined by climatic conditions, including its ability to withstand the minimum temperatures of the zone. Castle Rock is a USDA Hardiness zone 4b.

VARIANCE: A design or portion of a design, for landscape and/or irrigation that is a diversion from criteria contained in these Criteria. The variance request shall meet the intent of the Criteria. A variance requires formal approval by the Director of Castle Rock Water and/or Director of Development Services.

VEGETATION: Plants in general, or the sum total of plant life in an area.

VELOCITY (for the purposes of these Criteria): The rate of water flow calculated in feet per second (FPS).

VERY LOW WATER USE PLANT MATERIAL: Plant materials that require five-inches or less of supplemental water applied during the growing season, May–September.

VISIBILITY DISTANCE TRIANGLE: See sight distance triangle.

WATER EFFICIENCY MASTER PLAN (WEP): A document which is part of the Development Agreement (DA) that has landscape and irrigation design requirements that exceed current Town of Castle Rock landscape and irrigation standards that use water more efficiently. The plan also outlines the homeowner education required for maintenance of the landscaping and irrigation systems.

WATER WASTE: The application of water to impervious surfaces, over irrigation resulting in runoff, and non-beneficial use of water.

WATERING RESTRICTIONS: Limitations on when irrigation may take place, and may include day and time.

WEED: Plant materials identified by local or county code, or state statute.

YARD OR YARD AREA: All portions of a lot not covered by building footprint. Yard area is typically broken down to front, rear, and side yard areas.

Section 1: General Provisions

1.13 DEFINITIONS OF TERMS, continued

ZONE (IRRIGATION): A group of heads connected to a control valve.

ZONE (LANDSCAPE OR PLANT HARDINESS): Zones that are broadly defined by the plant communities that occur at approximate elevations. Colorado State University defines five life zones. The United States Department of Agriculture references hardiness zones. Plants used in Castle Rock shall be consistent with the appropriate life or hardiness zone, and shall be on the Town's approved plant list.

Section 2: Professional Registration

2.0 INTRODUCTION

This Section describes the classifications, associated qualifications, and the Town's registration process for landscape and irrigation design professionals, as well as installation and maintenance professionals (Professionals). It outlines the responsibilities and compliance aspects of being a registered landscape Professional in the Town.

2.1 GENERAL REQUIREMENTS

State of Colorado licensing is required for landscape design (with the exception of single-family and multi-family up to four (4) units – not including common area).

Registration with the Town of Castle Rock, through Castle Rock Water, is required to conduct:

- Landscape design (unless licensed by the State of Colorado)
- Irrigation design
- Supervision of landscape or irrigation installation
- Supervision of landscape or irrigation maintenance of non-residential properties

Registration applies to individuals, not to companies or organizations. The registered individual is responsible for all work conducted on a project under his/her supervision.

2.1.1 REGISTRATION REQUIRED

- A. Registration of Professionals expedites plan review, permitting, inspection, and approval of qualifying landscapes. Professionals are required to have a working knowledge of current industry related best management practices and technologies. They are also required to have a working knowledge of these Criteria and other applicable codes and policies and be able to incorporate them into landscape and irrigation design, construction, and maintenance.
- B. All land uses, with the exception of installations done by private residential homeowners (private residential homeowners do not include developers/tract home, custom or semi-custom builders), require a State licensed or Town registered professional for landscape and irrigation design, installation, and maintenance of landscaping and irrigation systems.
- C. Any landscape designer, irrigation designer, or installation contractor performing work or service in the design, construction, installation, addition, alteration, repair, equipping, moving, removal, conversion, or demolition of any landscape or irrigation governed by these Criteria must possess a current Colorado license or be registered with the Town of Castle Rock.
- D. Plan approvals and permits for construction will only be issued to registered professionals.
- E. A current professional (Colorado State or Town of Castle Rock) registration number and name shall be present on all applications, drawings, and permits.

2.1.2 REGISTERED PROFESSIONAL CLASSIFICATIONS

The Town registers various types of Professionals. The holder of each Town registration shall be authorized to perform only the work for which they hold a current registration.

Landscape Design Professional

In order to register as a Landscape Design Professional, an applicant must certify they meet the requirements for plan preparation by providing professional qualifications. Colorado State law governs

Section 2: Professional Registration

2.1.2 REGISTERED PROFESSIONAL CLASSIFICATIONS, continued

the sizes and types of projects that unlicensed individuals can design independent of Town requirements. For those projects exempt from State licensure, a GreenCO Best Management Practice Certificate of Completion or an associates degree or greater in a related field as approved by Castle Rock Water is required before registration will be issued.

Irrigation Design Professional

To be eligible for registration as an Irrigation Design Professional, an applicant must certify they are qualified to prepare the type of plan(s) they submit by providing professional qualifications they possess.

- Irrigation Association Certified Irrigation Designer
- Licensed Landscape Architect with minimum five (5) years demonstrable irrigation design experience

Landscape/Irrigation Installation and Maintenance Professional

To be eligible for registration as a Landscape/Irrigation Installation and Maintenance Professional, an applicant must certify they are qualified to install landscape and irrigation, and maintain such, by providing professional qualifications that are possessed. These shall include, but are not limited to one of the following:

- Irrigation Association Certified Irrigation Contractor (CIC)
- Associated Landscape Contractors of Colorado (ALCC) Landscape Industry Certified Technician (LICT), formerly as Certified Landscape Technician (CLT)
- GreenCO Best Management Practice Certification of Completion
- Additional industry related certification or registration as approved by Castle Rock Water.

2.2 REGISTRATION

Prior to registration, Professionals must possess all applicable eligibility requirements for the specific classification of registered trade/category for which application is being made. See **Section 2.1.2** for types of classifications and associated eligibility.

2.2.1 APPLICATIONS

- A. Applications for registration as a Professional shall be on forms designated by Castle Rock Water. All information requested on the application shall be provided. Failure to provide required information may result in non-issuance or revocation of registration.
- B. Each application shall be accompanied by the registration fee relative to the type of registration being sought.
- C. The applicant will be notified of approval or denial of registration upon final review of attendance and applicable testing.
- D. It is the responsibility of the registered professional to inform Castle Rock Water promptly of any change in the registrant's contact information or State registration status.

Section 2: Professional Registration

2.2.2 REGISTRATION SEMINAR ATTENDANCE AND TESTING

Prior to issuance of registration, the applicant shall accomplish the following within the same year for which the registration shall be issued.

Seminar Attendance

The applicant shall attend a Professional Registration Seminar hosted by the Town of Castle Rock. This seminar outlines general rules and regulations associated with design, installation, and maintenance of landscape and irrigation in Castle Rock. Seminar curriculum may vary from year to year dependent on the status of the Criteria, State and Federal regulations, issues experienced in previous years, creation of new technologies, best management practice improvements, and other advances in industry related activities, and Town practices.

Testing

The applicant shall attain a passing score, seventy-five (75) percent or better on the registration test. This test shall discern general competency for appropriate regulations and industry knowledge.

Other testing

The applicant shall obtain other appropriate best management practice certification and or registrations as set forth by the Director of Castle Rock Water, or designee thereof, in order to ensure that registered Professionals are proficient in current technologies, methods, and industry standards.

2.2.3 EXPIRATION

All registrations in good standing shall be valid through April 30 of the following year.

In order to keep registration in good standing annually, qualifying Professionals shall comply with all requirements identified in these Criteria.

2.2.4 RENEWAL

A fee may be charged for registration renewal, and shall be set forth in the applicable fee schedule.

For Professionals in good standing, renewal may be issued upon receipt of acknowledgment of revisions to policies, criteria, or other applicable codes, in lieu of seminar attendance and testing.

Non-compliance with these Criteria may deem an applicant ineligible for renewal. In such cases, seminar attendance and testing will be required prior to registration renewal.

2.3 COMPLIANCE

The registrant is responsible for performing the activity authorized in a proficient manner consistent with industry standards, these Criteria, and related Town policies and codes. Failure to comply with this requirement shall be cause for the denial, suspension, revocation, or restriction of registration.

Section 2: Professional Registration

2.3.1 WORK WITHOUT CURRENT REGISTRATION

When design, installation, or maintenance work is commenced without first obtaining Town registration, or when the registration is expired, a special investigation may be conducted. An investigation fee equal to the amount the registration fee will be assessed.

Landscape or irrigation plans submitted by individuals without a current State of Colorado license or registration will not be accepted for review. Landscape or irrigation construction or maintenance performed by individuals without a current registration shall not be eligible for inspection or additional permit issuance.

2.3.2 DENIAL, SUSPENSION, REVOCATION OR RESTRICTION OF REGISTRATION

Authority

The Director of Castle Rock Water, or designee thereof, shall have the authority to deny, suspend, revoke, or place restrictions on a registration under any of the following circumstances:

1. False or misleading information was provided on the registration application or permit application.
2. Fails to provide reasonable information or documentation of knowledge and experience required by the registration classification applied for.
3. Provides false or misleading information on permit applications.
4. Fails to comply with any of these Criteria.
5. Knowingly allows the registrant's registration to be used by another person, firm, or corporation.
6. Commits any conduct constituting fraud in or connected with any activity relating to construction, which is governed by these Criteria or other Town policies, regulations and/or code.
7. Fails or refuses to correct or remove work, material, equipment, or appliances that are in violation of these Criteria.
8. Provides false or misleading permit fee charges to a customer or to the Town.

Procedure

When the Director of Castle Rock Water, or designee thereof, deems that such registration shall be denied, suspended, revoked or restricted, the procedures shall be as follows:

1. The applicant or registrant shall be notified in writing and by certified mail, at least seven (7) calendar days prior to the denial, suspension, revocation or restriction. Notice shall include the reason for the action and shall be delivered to the address of record.
2. The applicant or registrant may request a hearing. Such request shall be in writing and delivered to the Director of Castle Rock Water, or designee thereof, within fourteen (14) calendar days of the receipt of the notice.
3. Upon receipt of a valid request for hearing, the Director of Castle Rock Water shall set a time, date, and place of the hearing and so notify the applicant or registrant.
4. The applicant, registrant, and other interested parties may provide testimony at the scheduled hearing. The Director of Castle Rock Water, or designee thereof, shall provide the applicant or registrant with written findings and a ruling by certified mail, within fifteen (15) business days after the completion of the hearing.
5. The applicant or registrant may appeal the ruling to Planning Commission within fourteen (14) days of receipt of written findings. Any decision rendered by the Director of Castle Rock Water,

Section 2: Professional Registration

2.3.2 DENIAL, SUSPENSION, REVOCATION OR RESTRICTION OF REGISTRATION, continued

or designee thereof, shall take effect upon expiration of the fourteen (14) day appeal period, or upon a final determination by Planning Commission.

Emergency suspension

If the Director of Castle Rock Water, or designee thereof, finds an emergency cause exists for suspension or revocation of a registration, he may enter an order for immediate suspension of such registration, pending further investigation. The registrant, upon notice of such suspension, may request an immediate hearing before the Director of Castle Rock Water.

Period of suspension

The suspension of a registration shall be for the period stated in the suspension, but no longer than six (6) months.

Effect of revocation

If a registration is revoked, the applicant shall not be eligible to register with the Town for a period of six (6) months after the revocation or any final decision from an appeal thereof.

Provisions concerning work in progress

The suspension or revocation of a registration may include reasonable orders or conditions with which the Professional must comply in order to protect the work in progress as well as the intent of these Criteria.

Section 3: Landscape and Irrigation Submittal Requirements

3.0 INTRODUCTION

The requirements presented in this section shall be used to aid the applicant, designer, installer, and maintenance contractor in the analysis, design, installation, and maintenance for landscape and irrigation. The requirements presented herein are the minimum necessary for landscape and irrigation plan submittals, and should be considered in conjunction with the requirements set forth by the Town Development Services Department.

3.1 REVIEW PROCESS

3.1.1 PRE-APPLICATION CONSULTATION

A pre-application consultation with the Town Development Services Department is strongly encouraged for any type of development, redevelopment, or renovation. The purpose of this meeting is to discuss general information about the project, pertinent aspects of the Standards, the required scope, and any special procedures, analyses, and submittal requirements that may be applicable.

3.1.2 LANDSCAPE AND IRRIGATION SUBMITTAL REQUIREMENTS

A conceptual landscape plan shall be included with the Site Development Plan (SDP). Final Landscape and Irrigation plans shall be submitted with the Construction Drawing (CD) submittals. All plans shall include the designer's name, contact information, State license number, and Town registration number, where applicable.

SDP Landscape Plan

The landscape plan submitted with the SDP is conceptual and considered along with the overall development goals for the project. The purpose of the SDP landscape plan is to establish general locations and types of plant materials and hydrozones, set forth design parameters, and establish any special conditions that may exist within the proposed project. A complete irrigation plan is not required with this submittal. However, total square feet of landscape is required in order to assess irrigation tap requirements. The following site and use analysis should also be considered:

1. Site Analysis

Site analysis consists of inventory and analysis of all existing features that may influence landscape design. This includes direction of prevailing winds, exposures, topography (slopes and swales), drainage areas, existing features (utilities, trees, shrubs, walkways, and structures), and views. The site analysis must consider local zoning and codes related to utility easements, site distance requirements, and interface buffering.

2. Use Analysis

Use analysis consists of identifying the typical functions and activities that occur on the site and assists with landscape material selection and irrigation design. This includes the overall theme of the site and neighborhood, identifying future building projects, onsite traffic patterns, activity areas, service areas, and any other use that will affect the landscape design.

3. Required charts and forms for Site Development Plan Review

Section 3: Landscape and Irrigation Submittal Requirements

3.1.2 LANDSCAPE AND IRRIGATION SUBMITTAL REQUIREMENTS, continued

- a. Non-residential properties shall complete the Town of Castle Rock Commercial Site Inventory Form (available on CRgov.com).
- b. Multi-family residential projects shall complete the Multi-family Landscape Site Inventory form (available on CRgov.com).

CD Landscape and Irrigation Plans

Plans must be electronically reviewable and scaled appropriately. They should be printable at a 24" x 36" size with a scale of 1 inch = 20 feet and no greater than 1 inch = 40 feet.

1. Landscape Plan

Landscaping shall be designed as an important integral part of the overall site design. The landscaped area shall enhance the building design and public views, provide buffers and transitions between adjacent land uses, and provide screening.

- a. Design elements should include (as applicable):
 - Plant materials (trees, shrubs, living groundcovers, grasses, vines, annuals, and perennial flowers) - locate, identify, and draw at mature size
 - Structures (buildings, fences, retaining walls, gazebos/patios, surfaces-pavements, decks, sidewalks, parking structures, and other visual features) – locate and identify
 - Grading and contours
 - Minimum soil amendments as required by the Town
 - Special features
 - Mulch types (inorganic or organic) and depth in inches
- b. Include Town of Castle Rock standard landscape notes for construction documents and planting details. These are available on the Town website (CRgov.com).
- c. List quantities, types and sizes at planting of plant material to be used, including specific species in seed mixes. Plant materials shall be listed by both common and scientific name. Complete Town of Castle Rock Plant Schedule available on the Town's website (CRgov.com).
- d. Include summary table identifying square footage of each area by type of landscape cover (e.g., non-irrigated native, turf, groundcover, shrubs, trees, and mulches). Non-residential properties shall complete the Town of Castle Rock Commercial Landscape Site Inventory form and multi-family residential projects shall complete the multi-family Landscape Site Inventory form. Both forms can be found online at the Town's website (CRgov.com).
- e. Note planting details, including methods of soil preparation, soil and vegetation removal, and stockpiling and reuse.
- f. Locate and identify all significant areas of existing natural vegetation, specimen trees, wildlife habitat, and landscape features to be preserved and/or improved.

Section 3: Landscape and Irrigation Submittal Requirements

3.1.2 LANDSCAPE AND IRRIGATION SUBMITTAL REQUIREMENTS, continued

- g. Where a site abuts a natural amenity such as a floodplain, trail corridor, park, or other open space, the landscape plan shall complement the natural character and integrity of the amenity.
- h. Show and label all property lines and right-of-way areas.
- i. Show and label all existing and proposed easements and utility lines.
- j. Show site distance triangles - these areas must be kept free of visually obstructing landscape features (30 inches or taller) at mature size.

2. Irrigation Plan

- a. Plan elements shall include:

Irrigation diagram showing:

- Head layout
- Drip layout
- Hydrozones
- Scaled appropriately to match the landscape plan
- Irrigation legend
- Tap location and size
- Irrigation meter location and size
- Backflow location and size
- Existing and proposed utility easement location and information

- b. Include TCR standard construction document irrigation notes and details.

- c. Include TCR Hydraulic Worksheet.

- d. Include TCR Irrigation Chart.

3. Record Drawings

Landscape and irrigation improvements shall be approved by the Town. Drawings reflecting final installation of landscape and irrigation components shall be submitted in accordance with the Town's Regulations and "Drawing and Digital Submittal Requirements" prior to final approval. Such record drawings shall contain all required information as set forth in the latest version of the applicable checklist. The digital submittal should include the geospatial layer reflecting the irrigated area(s).

3.1.3 CHECKLISTS AND FORMS

Required checklists and forms are available on the Town of Castle Rock website (CRgov.com), and must be completed and submitted with each plan submittal. Appropriate notations shall be provided with the checklist to assist the reviewer in determining whether the submittal is complete. For example, if a specific item is not addressed or not applicable, an explanation needs to be provided.

Section 3: Landscape and Irrigation Submittal Requirements

3.1.4 SUBMITTAL ADEQUACY

Any submittal with incomplete or missing information may result in the plan being returned without review. The Town reserves the right to request additional information pertaining to specific landscape and irrigation plans beyond the general requirements in these Standards.

3.2 ACCEPTANCE

3.2.1 FINAL LANDSCAPE AND IRRIGATION PLAN REQUIRED FOR CONSTRUCTION

The final Landscape and Irrigation Plan shall be included in the CDs, and shall be approved by Castle Rock Water prior to the construction of any landscape and irrigation improvements.

3.2.2 ONE YEAR APPROVAL LIMITATION FOR FINAL LANDSCAPE AND IRRIGATION PLAN

The Final Landscape and Irrigation Plan shall be valid for one year from the date of Town approval of the final approved construction documents. If the improvements have not been constructed and accepted by the Town within one year, or extended in conformance with the Town requirements, the plan shall be deemed invalid and resubmittal required. In order to be re-approved, it must be demonstrated that the concepts, designs, analyses, and calculations presented in the plan are consistent with current Town's Standards.

Section 4: General Requirements

4.0 APPLICATION

This Section describes minimum necessary general performance standards and criteria for all land uses, including:

- Multi-family and single-family attached residential properties as outlined in **Section 5**
- Single and two-family residential properties as outlined in **Section 6**
- Commercial/business/industrial/urban/governmental/schools/mixed-use properties as outlined in **Section 7**
- Streetscape, right-of-ways (ROWs), tracts and easements, as outlined in **Section 8**
- Public areas as defined in **Section 9**

4.1 APPLICABLE LANDSCAPE AND IRRIGATION

- A. Area shall include front, back and side yard, gross site, parking lot, streetscape, and other common areas.
- B. Area shall include landscaping and irrigation for setbacks and utility easements.
- C. Unless otherwise required in these Criteria, homeowners are strongly encouraged to follow general performance standards and Criteria.
- D. Non-residential renovations shall adhere to performance standards and criteria called out in this code.

These Criteria shall apply when there is a renovation of any non-residential landscaped property in existence prior to the adoption of these Criteria. Projects which impact 25 percent or greater of landscaped area associated with a single water service connection (one tap); or projects which impact ten-thousand (10,000) square feet or greater of landscaped area associated with one or more water service connections (taps). The area that shall be considered toward development of the percentage of impacted area shall include:

- A. By lot – All landscape improvements on a single lot.
- B. By metered service – All landscape improvements irrigated by a single meter. The mainline or lateral line from a single irrigation meter shall not cross lot lines.
- C. By approved site plan - The percentage shall not be calculated on the entire approved site plan, unless the entire project is served by a single irrigation meter.

Town reserves the right to require renovations to meet current standards and criteria, regardless of size of impacted area should the area be significantly under standard, additional interface is required, or there is a change to existing final approved construction drawings or plans for the lot, project, or site plan.

Section 4: General Requirements

4.1 APPLICABLE LANDSCAPE AND IRRIGATION, continued

D. Not Applicable. This section shall not apply to:

1. Homeowner repair of an existing irrigation system.
2. Town registered installer or maintenance contractor repair of an existing irrigation system.
3. Renovation of existing irrigation systems that does not include addition of an irrigation zone.

Renovated areas that are less than 25 percent of the existing landscaped area. The existing landscaped area shall mean the landscaped area on a single lot, or serviced by a single irrigation meter. The existing landscaped area shall not mean the entire approved site plan area, unless the project is served by a single irrigation meter.

4.2 DESIGN REQUIREMENTS

This section identifies the minimum performance standards and criteria for landscape design, irrigation design and maintenance.

4.2.1 GENERAL PERFORMANCE STANDARDS

All landscape and irrigation design, installation and maintenance shall be evaluated against these performance standards as well as supporting criteria. Project approval is based on meeting the intent, performance thresholds, requirements, expectations, and level of quality defined within the performance standards, and the specific criteria.

Performance Standard #1: Efficient Water Use

1. Conserve water through application of water-wise, ColoradoScapes design principles, and current industry related best management practices.
2. Water allocation for irrigation shall be consistent with plant material requirements.
 - a. No individual plant may have water demand greater than 15-inches per growing season.
 - b. Water allocation for the irrigation of streetscapes is a maximum of 15-inches of irrigation per growing season for all landscaped areas.
 - c. Water allocation for the irrigation of parks, sports fields, and golf courses shall vary by use of the area. Active areas may be allocated up to 19-inches. Passive use areas may be allocated up to 19-inches, such allocations are by approval only. No individual plant may have a higher water demand than 15-inches, unless the area is subject to the additional water allocation in entrances (as identified in **Section 8**). Uses in this category shall be subject to the Composite Landscape Water Use Rating (CLWUR) analysis, and shall have a value for all irrigated public areas of no greater than two and a half (2.5). All allocations refer to inches of irrigation allocation per growing season. See Town Municipal Code Chapter 13.20 Irrigated Public Area Water Conservation for more information on CLWUR calculations.

Section 4: General Requirements

4.2.1 GENERAL PERFORMANCE STANDARDS, continued

- d. Schools may be allowed additional seasonal irrigation of up to 19-inches for approved passive common use areas that facilitate high public use. These areas shall meet specific criteria in order to qualify for this additional seasonal irrigation (See **Section 9**).
3. Allocated water shall be used as efficiently as possible. When an overhead irrigation system is provided system efficiency shall achieve a distribution uniformity of 75 percent or better. This level of efficiency shall be demonstrated through an independent audit performed after installation by a Certified Irrigation Auditor or as certified by the Irrigation Designer and accepted via the Town's Irrigation Design Affidavit.
4. The irrigation system shall be designed, installed, and maintained to eliminate run-off from landscaped areas and shall not damage street, sidewalk, or utility infrastructure.
5. Water waste is not allowed. Water shall not be applied to impervious surfaces.

Performance Standard #2: Environmental Sustainability

1. The project shall conserve water, and use the water that is applied efficiently.
2. The project shall seek to apply Low Impact Development (LID) stormwater mitigation techniques. Refer to the Town's Stormwater requirements.
3. The project shall alleviate the urban heat island effect by shading paved surfaces and rooftops where possible, as well as embrace and promote other techniques and technologies to achieve this goal as may be acceptable to the Town.

Performance Standard #3: Aesthetics and Quality of Life

1. The design, installation, and maintenance of the project shall enhance the visual aesthetics of the landscape.
2. The project shall provide for an enriched quality of life by promoting an enhanced level of design, installation, and maintenance that fits the unique natural character and beauty of the Town coupled with high quality land development.
3. The project shall preserve natural amenities and Castle Rock's environmental nature wherever possible, including views, nature, wildlife, habitat, flora, and fauna.
4. The project shall provide year round diversity of color and texture in plant material.

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA

A. General Landscape Design Criteria

Unless otherwise specified within a particular land use, the criteria within this section shall apply to all land uses.

Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, continued

Soil evaluation

Soil testing determines the condition of the soil related to texture, acidity, salts, and plant nutrient availability.

1. A soil analysis shall be conducted by a professional soil scientist at a certified soils laboratory.
2. Soil sample(s) shall be taken after over lot grading, if applicable, and prior to landscaping.
3. The soil sample must represent a uniform area. Differences in texture (sand, silt, clay), color, slope, degree of erosion, drainage, past management practices, types of plant materials designed for each area should be taken into account when collecting the sample. The soil scientist shall determine the sample sites, depth and frequency necessary to reflect a representative sample of the site and to coincide with the plant material intended for the area in the design. Recommended sampling frequency is no less than one sample per five-thousand (5,000) square feet. Any sampling less than this frequency shall be justified by the soil scientist.
4. The soil analysis shall determine the organic and inorganic composition of native/indigenous soil in landscaped areas, and shall include:
 - Soil texture
 - Total exchange capacity
 - Conductivity
 - Organic matter
 - Acidity
 - Content of nitrogen (NO₃), Phosphorus, Potassium, Zinc, Iron, Copper, Manganese and Lime

Stockpiling

Stripping and stockpiling of indigenous soil (topsoil) shall be required during construction (except as waived by Town staff). The replacement of this soil, plus additional soil amendments are critical to successful plant material establishment, ongoing health, and efficient use of water through the life of the project.

Soil amendment

1. The soil analysis shall include specific recommendations based on the soil test results for the type of plant material to be grown in each landscaped area. The type and volume of soil amendment shall be determined by the soil scientist and be consistent with the indigenous soil and the needs of the plant materials in each area of the landscape.
2. A minimum of four cubic yards of organic matter soil amendment per one-thousand square feet of landscaped area shall be required for turf grass, trees, shrubs, perennials, and annuals. See **Table 4-2** for soil volumes for trees. Soil amendments for native seed areas should be consistent with GESC detail #17.
3. Soil amendment organic matter shall consist of Class I or Class II compost.

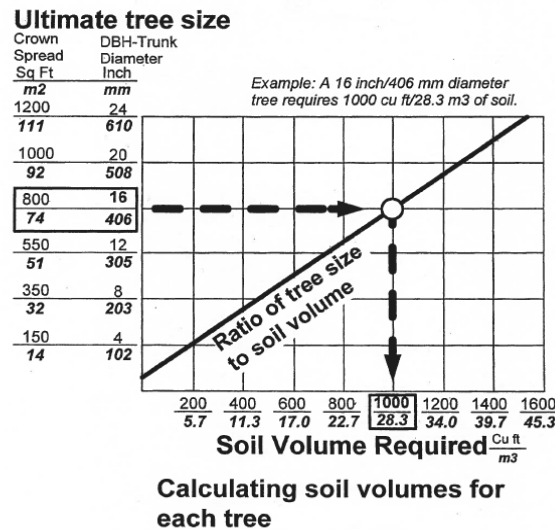
Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, continued

- Source water, such as non-potable water should be considered.

FIGURE 4-1

Tree Soil Volume



Soil Preparation

- Amendment shall be tilled to a minimum depth of six- inches.
- Site shall be graded to within two-tenths of a foot (2/10th).
- Slopes greater than 3:1 are not permitted.
- Site shall be free of rocks and debris over three-quarter inch (3/4-inch) diameter in size.
- Site shall be free of dirt clods over three-quarter inch (3/4-inch) diameter in size. Dry land seed areas may contain dirt clods up to two-inch diameter in size.

Soil Inspection

Soil inspections are required prior to installation of plant material, and shall include review of adherence to all criteria and performance standards. Written documentation reflecting approved volume and type of soil amendment is required upon inspection.

Structural Soil

CU-Structural Soil is required for all approved narrow tree planting strips less than eight (8) feet in width (measured back of curb to edge of walk), or otherwise approved narrow areas, as well as in tree grates. See standard Details for structural soil requirements. All applicable soil criteria and standards shall be noted on drawings.

Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, continued

SOIL CRITERIA

Soil analysis is required:

- Soil sample & analysis shall be performed by a certified professional soil scientist.
- Sample prior to disturbance.
- Number & location of samples shall be representative of the landscaped area. Soil scientist shall determine sampling frequency.
- Analysis shall determine organic and inorganic composition of native soil, including texture, total exchange capacity, conductivity, organic matter, acidity (pH), nitrogen (NO₃ content), phosphorus, potassium, zinc, iron, copper, manganese, & lime content.

Soil amendment shall:

- Be consistent with the needs of the designed plant materials.

Soil preparation shall include:

- Soil amendment defined through soil analysis and needs of plant materials.
- Depth of incorporation of amendment shall be no less than 6-inches.
- Site shall be graded to within two-tenths (2/10th) of a foot.
- Site shall be free of rock, debris, clods.

Drawings shall include:

- The soil analysis.
- The type and volume of amendment for each landscaped area.
- Soil and site preparation requirements.
- Notes of inspection requirements.

Inspection of soil is required:

- Written verification of approved soil amendment type and volume is required.
- Installation of amendment, soil preparation shall be inspected by the Town.

Plant Material Specifications and Planting Standards

1. Minimum plant material quality

- a. Plant materials shall be selected from the Town of Castle Rock approved plant list. Any plant materials that are not on the approved plant list shall require submission and approval of an administrative variance, consistent with Development Services procedures. Such variance request shall include verification of native or naturalized status water use in local climate, USDA hardiness zone and any other reference source. All plant materials shall be adapted to the local area.
- b. Plant materials shall meet or exceed the plant quality and species standards of the current American Standard for Nursery Stock and be consistent with the Colorado Nursery Act.
- c. Selected plant materials shall be nursery-grown in accordance with proper horticultural practice. Plants shall be healthy, well-branched vigorous stock with a growth habit normal to the species and variety, free of disease, insects, and injuries.
- d. Plant material that is banned for use by the Town of Castle Rock, Douglas County,

Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, continued

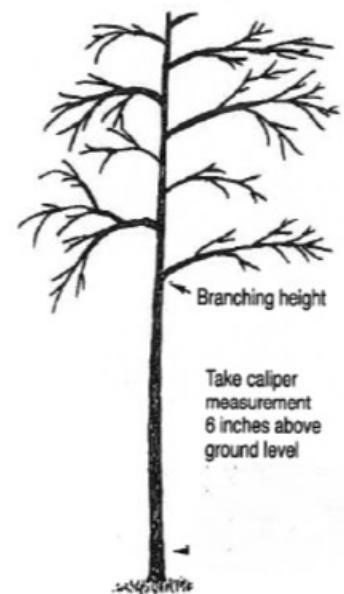
and/or the State of Colorado shall not be used. This applies to all builders, installers, owners, and individual homeowners. Please see the Colorado Department of Agriculture website (<https://www.colorado.gov/pacific/agconservation/noxiousweeds>) for a detailed list of restrictions.

2. Minimum plant material size - All plant material shall meet the following requirements:

NOTE: Sizing requirements for required single front yard tree shall be adhered to by all builder installations.

- a. Deciduous shade trees shall be a minimum of two-inch in caliper measured six-inches above the ground. Deciduous trees shall be three-inch caliper when in a grate.
- b. Ornamental and flowering trees shall be a minimum of one and one half-inch (1½") in caliper measured six-inches above the ground.
- c. Multi-trunk trees shall be three (3) or more canes with a minimum height of five-feet and a total caliper inches of the largest three (3) canes added together meet the standard caliper size for requirement for deciduous shade trees (between two (2) and two and one half (2½) inches).
- d. Evergreen trees shall be a minimum of six-feet tall, measured to the mid-point of the most recent year's growth.
- d. Shrubs shall be fully rooted and be a minimum of five (5) gallon container in size. See Town of Castle Rock Plant List for specific growth characteristics.
- f. Ornamental grasses may be used to meet the shrub requirement, however all will be required to meet the minimum size requirements for shrubs listed above.
- g. Perennials, ground covers, and vines shall be a minimum of one (1) gallon container in size. Such shall be spaced to provide 75 percent ground cover within three (3) growing seasons.
- h. Annuals shall be spaced to provide 75 percent ground cover. Size shall be appropriate to application, whether flats, four-inch pots or larger.
- i. Grass seed planting quality and quantity in irrigated areas shall be in compliance with nursery standards and shall provide a minimum ground cover of 80 percent within the first growing season. For non-irrigated native areas, see Grading, Erosion and Sediment Control Requirements.

FIGURE 4-2



Measuring deciduous tree caliper

3. Minimum planting standards

Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, continued

- a. Landscaping shall comply with the Town of Castle Rock planting details available on the Town of Castle Rock website (CRgov.com).
 - b. Plant materials shall be spaced appropriately to allow adequate room for root zone and vegetation at maturity.
 - c. Tree rings shall be provided for all trees within turf areas subject to mowing operations. Tree rings for evergreen trees shall extend to the dripline of the tree to avoid limbing up of evergreen trees.
 - c. Trees planted in areas less than eight (8) feet wide shall required CU-Structural Soil.
4. Minimum amount of plant materials - See specific land use sections.
- a. Diversity requirements for trees and shrubs are contained in Table 4-3.

TABLE 4-3

<u>Diversity Recommendations</u>	
Deciduous Tree or Shrub Plant Diversity Scale	
<u># of Plants</u>	<u>Maximum % of Single Species</u>
1-5	Can have 100% of one species
6-10	Maximum of 50% of any one species
11-15	Maximum of 33% of any one species
16-20+	Maximum of 25% of any one species
Evergreen Tree or Shrub Plant Diversity Scale	
<u># of Plants</u>	<u>Maximum % of Single Species</u>
1-2	Can have 100% of one species
3-6	Maximum of 50% of any one species
7-12	Maximum of 33% of any one species
13-40	Maximum of 20% of any one species
41+	Maximum of 10% of any one species

Non-Living General Landscape Design Criteria

- 1. Organic mulch
 - a. Shall be applied at (1) cubic yard per 80 square feet at a depth of four- inches, and as appropriate to each species.

Section 4: General Requirements

4.2.2 GENERAL LANDSCAPE DESIGN CRITERIA, *continued*

- b. Shall be applied to the soil surface, not against the plant stem or base of tree trunks, to minimize disease.
 - c. Organic mulch material includes bark and wood chips.
- 2. Inorganic mulch includes rock, gravel, or cobble.
 - a. Rock mulch shall have a minimum depth of two (2) inches.
 - b. Recycled rubber for landscape use is discouraged, however, may be considered for playground use.
- 3. Landscape fabric may be used underneath mulch to reduce weeds. Plastic is not allowed.
- 4. Artificial plant materials are permitted, materials such as artificial turf may be used in active sports fields. Homeowners Associations and other private restrictions may apply.
- 5. Edging shall be consistent with industry standards. Metal edging shall be rolled or capped to eliminate sharp edges.
- 6. Water features shall recycle water and be designed to reduce evaporation. Water features shall be on a separate tap from the domestic water service. Water demand for the feature shall be defined and included in tap sizing requirements. Wind shut off devices are required.

4.2.3 IRRIGATION DESIGN

This section identifies criteria for irrigation water service connections, irrigation control, irrigation methods, equipment, and system efficiency.

General Irrigation Design Criteria

Unless otherwise specified within a particular land use, the criteria within this section shall apply to all land uses, except single and two family residential.

- 1. Permanent irrigation systems are not required for landscaped areas, including pots and planters, under five hundred (500) square feet. These areas may be watered by bulk water service or from the building through a combined tap.
- 2. Permanent irrigation systems are required in landscaped areas greater than five hundred (500) square feet. These systems shall provide full coverage to all plant material located along property fronting public streets or adjacent to other developed lots.
 - a. Irrigated areas between five hundred (500) and two thousand five hundred (2,500) square feet may be served from the building through a combined tap.
 - b. Dual meter installations are required for irrigated areas between two thousand five hundred (2,500) and five thousand (5,000) square feet, not exceeding seven and one half (7.5) feet per second through the service connection, and a demand of less than ten (10) gallons per minute (gpm).

Section 4: General Requirements

4.2.3 IRRIGATION DESIGN, continued

- c. Irrigated areas greater than five thousand (5,000) square feet require a dedicated irrigation tap. This requirement does not apply to single family lots.
 - d. Irrigation shall be hydrozoned, grouping similar water demands by irrigation zone.
- 3. Irrigation is not allowed in areas less than four (4) feet in width unless approved in an urban area.
- 4. Only drip and subsurface irrigation systems will be allowed in areas less than ten (10) feet in width.
- 5. Turf grass and native areas may be irrigated with overhead irrigation (unless in medians or areas less than ten (10) feet in width).
- 6. Generally, trees, shrubs, perennials, and groundcovers shall be irrigated with drip irrigation. See Irrigation System Design for additional specific criteria. Native grass may be permanently irrigated on slopes equal to 3:1.
- 7. Native grass may be temporarily irrigated for establishment purposes. Please see the Town of Castle Rock Temporary Irrigation for non-irrigated native areas criteria available on the Town website. This criteria is required to be shown on the landscape or irrigation sheets submitted for construction document review.

Water Service Connection

Water service connections for irrigated areas greater than five thousand (5,000) square feet shall be completed consistent with all Town regulations.

- 1. Irrigation shall be served from a dedicated irrigation service connection to the Town's water distribution system, separate from the domestic water service.
- 2. All irrigation water shall be metered and have appropriate backflow prevention as identified by Town regulations. Backflow must be installed no further than five feet from the irrigation meter.
- 3. The irrigation water service connection shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Town's Water Use Management requirements.
- 4. Maximum velocity shall not exceed seven and one half (7.5) feet per second through the service connection.
- 5. Mainline pressure
 - a. System design shall consider minimum and maximum allowable mainline pressures as provided by the Town.
 - b. Minimum pressure provided shall be forty-three (43) psi, maximum pressure shall be one hundred and twenty five (125) psi.

Section 4: General Requirements

4.2.3 IRRIGATION DESIGN, continued

- c. Site water pressure shall be identified by Castle Rock Water prior to irrigation system design and shall be noted on irrigation plans. Actual on-site pressure may vary based on water system demand at the time of the pressure test, subsequent development placing additional demand on the water system, etc.
6. Irrigation service connections (taps) shall not interconnect downstream of the meter. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
7. The irrigation service line shall be the same size as the tap from the Town water main to ten (10) pipe diameters downstream of the meter.

Irrigation System Control

1. Smart Irrigation Controllers (as defined by the Irrigation Association) are required and shall be installed according to manufacturer recommendations. They shall apply the appropriate amount of water to maintain healthy growing conditions.
2. Due to common power outages, battery back-up or non-volatile memory is required on all controllers.
3. Central Control Systems are recommended for larger irrigated areas, 10,000 square feet or larger.

Irrigation System Design

1. Resilient wedge shut off valve with drain, or stop and waste, is required downstream of the meter.
2. All irrigation systems shall be contained by the appropriate backflow prevention assembly. Reduced pressure principle assemblies are the minimum irrigation backflow prevention assembly for this land use. See the Town's Cross-Connection Control requirements in Town code and associated policy manual(s). A passing backflow prevention test is required for issuance of certificate of occupancy.
3. Master valves are required.
4. Flow sensors are required.
5. Rain sensors are required.
6. Overhead irrigation.
 - a. Overhead irrigation is not allowed in areas less than ten (10) feet in width/length.
 - b. Temporary overhead irrigation is allowed on slopes not to exceed 3:1. Refer to Temporary Non-Irrigated Native Criteria in **Appendix B**.
 - c. There shall be no overhead irrigation in medians, peninsulas, islands or roundabouts, whether these are located in streets, entrances, or parking areas.

Section 4: General Requirements

4.2.3 IRRIGATION DESIGN, continued

- d. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Minimum pop-up height of six (6) inches is required for turf areas. Minimum pop up height of twelve (12) inches is required for native, wildflower, or perennial areas.
- e. Pop-up spray heads shall be equipped with internal check valves, internal pressure regulation (Pressure regulation must be consistent with manufacturer's recommendations for the selected nozzle.), and matched precipitation rate spray or rotary nozzles. Variable arc nozzles are not allowed.
- f. Rotors shall be equipped with internal check valves and pressure regulation.

7. Drip irrigation

- a. Drip irrigation is required in areas greater than four (4) feet, and less than ten (10) feet (unless approved).
 - b. Drip irrigation shall be point source drip or sub-surface drip irrigation for all trees, shrubs, perennial, and annual beds.
 - c. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
8. Bubblers may be substituted for drip emitters where necessary to provide adequate supplemental irrigation to plant materials in certain locations (i.e., trees in native grass areas).
9. Irrigation charts and hydraulic worksheets are required for irrigation plan submittal on construction documents. See the Town of Castle Rock website (CRgov.com/landscapeforms) for forms.

Irrigation System Installation

Installation of irrigation system shall be consistent with approved plans, and meet Town performance standards and criteria prior to issuance of certificate of occupancy or other Town approval. Release of bonding or surety (if applicable) shall be withheld until approval is given.

- 1. Irrigation system installation shall be consistent with approved system design.
- 2. Irrigation system efficiency
 - a. The irrigation system shall consist of high efficiency nozzles, with an application rate not to exceed one and one quarter (1.25) inches/hour or less.
 - b. When nozzles are installed on spray head bodies (either fixed spray nozzles or rotary nozzles), the spray head body must be equipped with internal pressure regulation consistent with the manufacturer's recommended design pressure. The irrigation system design and installation must include a minimum of head to head spacing as observed at final inspection.

Section 4: General Requirements

4.2.3 IRRIGATION DESIGN, continued

- c. The irrigation system shall achieve a 75 percent distribution uniformity efficiency rating as demonstrated through an independent audit performed after installation by a Certified Irrigation Auditor, or as certified by the Irrigation Designer and accepted via the Town's Irrigation Design Affidavit.
- d. The irrigation audit shall result in a representative sample of the irrigation zones, and at a minimum shall include evaluation of a random sampling of no less than 25 percent of overhead irrigation zones, to include a minimum of two (2) spray zones and two (2) rotor zones. At the discretion of Castle Rock Water, the minimum number of zones may be increased depending on the size and complexity of the irrigation system.
- e. The Town reserves the right to conduct follow up audits as deemed necessary at the expense of the customer.

3. Backflow prevention testing

A passing backflow prevention assembly test is required prior to issuance of a certificate of occupancy. This shall include a mechanical test of the assembly, validation of protection for the degree of hazard present, and proper installation according to manufacturer's recommendations and Town of Castle Rock requirements.

Irrigation system operation

All irrigation shall occur according to the specifications of the Town's Water Use Management program, including hours, days, and application rates. Irrigation systems shall be operated and maintained in a manner that meets efficient irrigation performance standards. Temporary establishment and permanent irrigation methods, as well as timing and application rates, shall be included on irrigation plans.

- 1. Establishment Irrigation – To be defined for each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, flowers, ground covers, etc.)
 - a. Identify temporary, establishment irrigation method.
 - b. Identify duration of establishment period.
 - c. Identify application rates, monthly, and annual water demand totals for establishment period.
- 2. Permanent irrigation – To be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, flowers, ground covers, etc.).
 - a. Dedicated water service connections have designated watering days determined by address.
 - b. Permissible hours of irrigation for this land use will be consistent with those dictated for large irrigated areas.

Section 4: General Requirements

4.2.3 IRRIGATION DESIGN, continued

- c. Seasonal application rates shall be consistent with plant water requirements identified in the Town of Castle Rock Plant List available on the Town website (CRgov.com).
- d. As identified by Castle Rock Water, annual seasonal irrigation schedules may be required on an ongoing basis. These schedules will be submitted in accordance with the Town's Water Use Management program. Those properties that have not submitted the required information will be considered out of compliance and will be subject to enforcement action.

4.2.4 WATER EFFICIENCY PLAN

A Water Efficiency Plan (WEP) is a document which is part of the Development Agreement (DA). This document is a component of the codes, covenants and restrictions of the development.

- A. Developments with an approved Water Efficiency Plan (WEP) shall have landscape and irrigation designs that exceed current Town of Castle Rock landscape and irrigation standards.
- B. Landscape section of Water Efficiency Plans should contain:
 - a. Model landscape plans for single family homes.
 - b. Landscape typical for streetscapes.
 - c. Plantings along the public streets, common areas and open space frontages visible to the public must be limited to native species originally found in the existing landscape, and, to a lesser degree, non-native plants specifically approved in the Town of Castle Rock Plant species list and designated approved for Water Efficiency Plans.
 - c. Landscape typical for development entries.
 - d. Landscape typical for both public and private parks.
 - e. Landscape typical for open space.
- C. Irrigation section of Water Efficiency Plans should contain:
 - a. Irrigation plans which match landscape plans in a-e above.
 - b. Each tap and irrigation meter should have its own Hydraulic Worksheet.
 - c. Each irrigation tap should have its own Irrigation Chart.
- D. All landscape and irrigation plans as part of a Water Efficiency Plan must be approved by Castle Rock Water, Conservation Plan Review.

Section 4: General Requirements

4.3 MAINTENANCE

General

1. All landscape improvements, indigenous plant materials, and irrigation system components shall meet performance standards and supporting criteria. Violation of these standards or criteria shall be considered a Code violation.
2. Maintenance requirements shall be noted on landscape and irrigation plans.
3. Regular maintenance shall be consistent with the needs of the plant material and may include pruning, mowing, fertilization, and weeding.

Irrigation

1. Regular maintenance of the irrigation system includes backflow prevention assembly testing, leak repair, damaged part replacement, head adjustment, filter & strainer cleaning/replacement, and application rate adjustment.
2. A completed, passing backflow prevention assembly test consistent with the parameters outlined in the Town's cross-connection control standards is required within ten (10) days of irrigation system start-up each season. Proper assembly operation shall also be verified through a passing backflow prevention assembly test when the assembly is taken out of service for maintenance or repair.

Maintenance of turf and woody plants, and fertilization

1. Turf
 - a. Turf shall be maintained in a manner consistent with its growth characteristics and intended use. It shall optimize sustainability through maintenance practices that encourage root development and overall plant health.
 - b. Preferred mowing height is three and one-half inches (3 - 1/2), in order to promote root growth and reduce water requirements.
 - c. Adjust mowing frequency throughout the growing season to remove between one quarter (1/4) and one third (1/3) of the grass height per mowing, improving turf condition and reducing mowing equipment emissions.
 - d. Maintain mowing equipment by sharpening mower blades, or checking reel-type mowers for proper blade to bed knife adjustment.
 - e. Thatch build-up shall be addressed for plant health purposes and to reduce run-off.
 - f. Spring and fall aeration is recommended.

Section 4: General Requirements

4.3 MAINTENANCE, continued

2. Woody plant material - The mature size of woody plant material shall be considered during the design process so that pruning should only be necessary due to damage or health conditions, and to encourage a natural growth habit for hedges and topiaries.
 - a. Pruning practices consistent with type of tree or shrub. It is recommended to not remove more than 1/3 of the branch growth.
 - b. Eliminate dead and diseased plant material. If this causes significant disfigurement, replacement is necessary.
 - c. Encourage naturalistic habit and reduce crowding, while controlling scale related to landscape and size relative to safety parameters (site distances, etc.).
3. Fertilization
 - a. Fertilizer composition is consistent with soil test recommendations, amended soil condition and plant material requirements.
 - b. Fertilizer is applied on an as-needed basis, and excess application is avoided. Low phosphorus fertilizers are recommended.
 - c. The fertilization program shall be submitted with the maintenance program with construction document landscape plans.

Weed, pest and disease control

Shall be consistent with the approved maintenance plan for the property, and shall be in compliance with all Town, County and State regulations.

1. All landscape areas shall be installed and maintained free of invasive species and noxious weeds.
2. Pest and disease control measures shall be taken when needed.

Dead plant materials

Shall be removed and replaced with healthy planting materials of comparable size and species that meet the original intent of the approved landscape design within forty-five (45) days or sooner in the event of a contagious disease or invasive insect species. If seasonal conditions prohibit removal and replacement, property owner may request deferral of installation.

Such request shall be in written form with estimated date of installation, and must be approved by the Town.

Nonliving landscape materials such as rock, stone, bark chips and shavings which no longer cover the area in which they were originally installed shall be regularly replenished to maintain the full coverage to a minimum depth of two (2) inches for rock mulches, four (4) inches for wood mulch.

Section 5: Multi-Family and Single-Family Attached Residential

5.0 INTRODUCTION

This Section describes minimum necessary performance standards and criteria for multi-family and single-family attached residential land uses. Unless specifically called out in this section, the general performance standards and criteria in **Section 4** shall apply.

5.1 APPLICATION

5.1.1 APPLICABLE DWELLINGS

This Section applies to multi-family and single-family attached residential properties (including dwellings, parking, and common areas) within the Town limits, or served by Castle Rock Water, and includes the following:

- Apartment complexes
- Attached single-family residences with more than two (2) units per structure
- Town homes and condominiums
- Mobile home dwelling complexes or parks

This includes the types of residential properties found in the following zoning areas: R-3 Multi-family Residence District and MH Mobile Home District.

5.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

A. Area shall include front, back, and side yard, parking, and common areas.

B. Area shall include landscaping and irrigation for all utility easements and facilities.

Streetscapes, rights-of-way (ROWs), and easements included with the project shall adhere to standards and criteria in **Section 8**.

5.2 DESIGN REQUIREMENTS

This section identifies the minimum performance standards and criteria for landscape design, irrigation design, and maintenance for this land use.

5.2.1 LANDSCAPE DESIGN CRITERIA

Site Requirements

1. Gross Site Requirements - A minimum of 20 percent of the gross site area shall receive landscape improvements. Gross site area shall exclude the right-of-way (ROW.) ROW landscaping is required for adjacent streets, but is not included in the required calculation for the site. See **Section 8** for associated ROW and streetscape requirements. Gross site area may include the area required for parking lot landscaping improvements. The area required for parking lot landscaping improvements must be provided independent of other required improvements.
2. A minimum of two (2) trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area are required. Please see chart on next page.

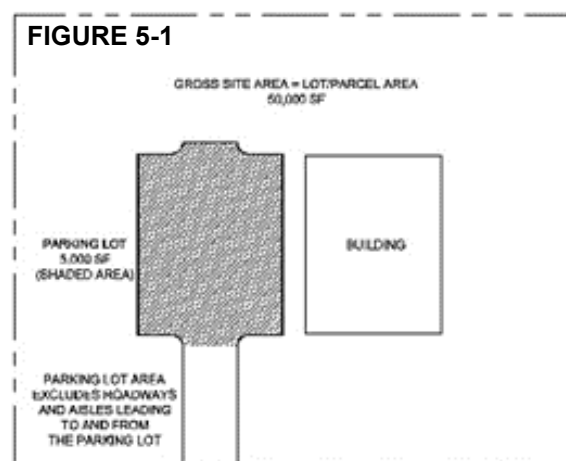
Section 5: Multi-Family and Single-Family Attached Residential

5.2.1 LANDSCAPE DESIGN CRITERIA, continued

3. Tree requirements cannot be exchanged for other types of plant material. Fifty percent of the tree requirement must include large canopy trees.

Parking Lot Requirements

1. The measured parking lot area includes the paved area and curbs. Measured parking lot area excludes roadways and aisles leading to and from the parking lot. Areas that meet the measured parking lot area calculation include landscaped parking lot medians and islands internal to the parking lot (not including curb). Measured parking lot area shall not be comprised of right-of-way or detention areas.
2. A minimum of ten percent of the parking lot area shall be landscaped. (This requirement is included in and counts towards the landscape requirements for the gross site).
 - a. Regardless of parking lot percentage, minimum planting requirements are two (2) large canopy trees and four (4) shrubs for each 1,000 square feet of landscaped area. One (1) additional large canopy tree may be substituted in lieu of each four (4) shrubs. Please see chart below.
 - b. The parking lot area landscape plan shall include large canopy trees to reduce urban heat island effect. It is recommended that the landscape plan include a selection of large canopy trees that result in shade covering at least 50 percent of the parking lot area at seven (7) years growth.
 - c. Interior parking lot area landscaping (islands, medians, and peninsulas).



Calculation area example

TABLE 5-2 Required trees/shrubs

AREA	TOTAL AREA IN Square Feet (sf)	REQUIRED LANDSCAPE AREA	REQUIRED TREES *	PROPOSED TREES	REQUIRED SHRUBS **	PROPOSED SHRUBS
Gross Site	50,000 sf	20% = 10,000 sf	$(10,000 \text{ sf} / 1,000 \text{ sf}) \times 2 = 20$	20	$(10,000 \text{ sf} / 1,000 \text{ sf}) \times 4 = 40$	40
Parking	5,000 sf	10% = 500 sf	$(500 \text{ sf} / 1,000) \times 2 = 1$	1	$(500 \text{ sf} / 1,000 \text{ sf}) \times 4 = 2$	2

Required trees/shrubs calculation example

* Required Trees = 2 trees per 1,000 sf of landscaped area

** Required Shrubs = 4 shrubs per 1,000 sf of landscaped area

Section 5: Multi-Family and Single-Family Attached Residential

5.2.1 LANDSCAPE DESIGN CRITERIA, continued

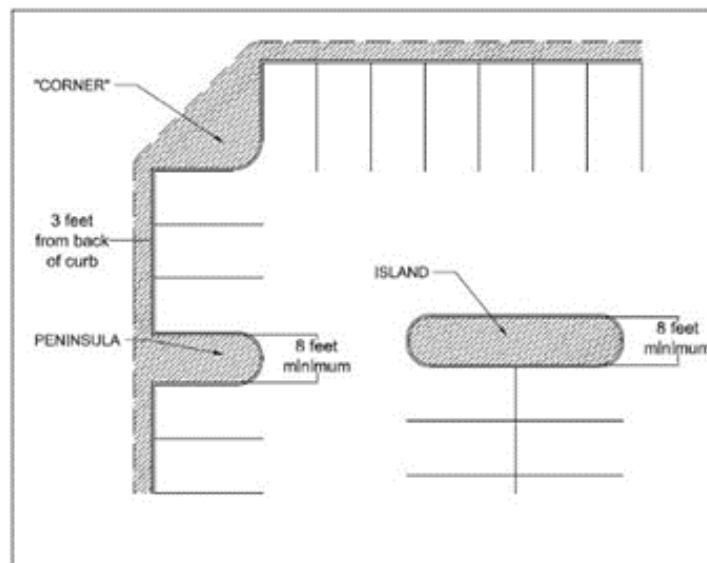
- Islands are entirely encompassed within the parking area, which is usually paved. Islands shall be a minimum of eight (8) feet in width. Width does not include the curb.
 - Parking areas containing more than 40 spaces shall provide interior landscape islands and medians.
 - When parking islands or medians are required (as in the bullet above), there shall be no more than 15 adjacent parking stalls between landscaped islands.
 - Each landscaped island or median shall provide shade through a minimum of one (1) large canopy shade tree. Two (2) large canopy shade trees are recommended.
 - Tree requirements cannot be exchanged for other types of plant material. Small canopy trees cannot be exchanged for required large canopy trees.
 - Peninsulas may only be considered part of the parking lot area landscaping when three (3) sides of the peninsula are within the parking lot area. Only the portion of the peninsula within the parking lot area shall count toward the required parking lot area landscaping.
 - Landscaped “corners” may also be considered part of the parking lot area landscaping. To be considered as part of the calculation, the landscaped corners must be surrounded on 2 sides by parking. The corners are calculated creating a triangle using the two (2) sides adjacent to the parking lot spaces or drive aisle and making the third triangle leg by connecting the curb corners. Please see graphic on next page.
 - A three (3) foot planting area, measured from the back of curb of the parking lot, may also be considered part of the parking lot landscaping area. Please see graphic on next page.
 - No obstruction, living or otherwise, greater than thirty (30) inches in height above the flow line shall be placed in the visibility triangle/sight triangle areas adjacent to parking space access aisles.
 - Plant materials located within snow storage areas shall be chosen for tolerance to snow storage.
3. Common Passive Recreation Areas - Multi-family land uses may have nearby, localized park or recreation areas for their residents. Such areas may be used for non-programmed athletic activities, and may include picnic areas, small pavilions, benches, playgrounds, recreation, or play areas. These areas shall be designed to support such activities, including layout and pedestrian access.
- a. Passive recreation areas shall meet the minimum site requirement of no less than three thousand (3,000) square feet. The square footage configuration shall be such to support non-programmed athletic activities, such as volleyball, softball, or other recreational activities.
 - b. Plant materials used in passive recreation areas shall be consistent with the level of use by the residents.
 - c. Water requirements for turf used for passive recreational activity surfaces shall not exceed nineteen inches of irrigation per growing season. Other plant material water demands shall not exceed fifteen inches of irrigation per growing season.

Section 5: Multi-Family and Single-Family Attached Residential

5.2.1 LANDSCAPE DESIGN CRITERIA, continued

- d. The area shall accommodate the use of overhead irrigation (no areas less than ten (10) feet in width).
- e. The area shall accommodate a minimum of three (3) large canopy trees.
- f. The following uses do not qualify as passive recreation areas: streetscapes, islands, or medians, buffers, building setbacks, parking areas, or other areas not intended or designed for recreational use.

FIGURE 5-2



Shaded areas may be counted towards parking lot landscape requirement

- g. Recreation areas referred to in this section are maintained by the multi-family complex or organization and are not owned, operated, or maintained by the Town of Castle Rock.

COMMON PASSIVE RECREATION AREAS IN MULTI-FAMILY LAND USE AREAS Reviewed on a case-by-case basis

1. Minimum size shall support non-programmed sports activities.
2. Recreational areas may receive up to 19 inches of irrigation per growing season.
3. Area shall accommodate overhead irrigation.
4. Area shall accommodate no less than three (3) large canopy trees.
5. Areas shall be designed for residential use. Areas such as islands, medians, setbacks, buffers, between buildings, and parking **DO NOT QUALIFY**.

Section 6: Single-Family and Two-Family Residential

6.0 INTRODUCTION

This Section describes minimum necessary standards and criteria for single and two-family residential property land uses. State licensed and Town registered landscape professionals, homebuilders, and homeowners shall use this information for design, construction, installation, and maintenance of such properties. Unless specifically called out in this section, the general performance standards and criteria in **Section 4** shall apply.

6.1 APPLICATION

6.1.1 APPLICABLE DWELLINGS

A. This Section applies to residential properties within the Town limits, or served by Castle Rock Water, and includes the following:

- Developer/Builder Single-family dwellings, detached
- Developer/Builder Two-family dwellings

This includes the types of residential properties found in the following zoning areas: R-1 Single-Family Residential, Detached and R-2 Single-Family and Duplex Residential Districts or as similarly zoned by a Planned Development. (See Town of Castle Rock Municipal Code Title 17 for zoning information).

B. Applicable dwellings are new homes constructed by a developer, residential home builder, organization, custom homebuilder, or semi-custom homebuilder.

C. This section provides performance standards, criteria, and recommendations for existing dwellings owned by individual homeowners.

6.1.2 APPLICABLE LANDSCAPING AND IRRIGATION

A. Area shall include front, back, and side yard where landscape or irrigation are provided in new home construction as identified in **6.1.1.B**.

B. Area shall include landscaping and irrigation for setbacks and utility easements where provided in new home construction as identified in **6.1.1.B**.

6.2 DESIGN REQUIREMENTS

This section identifies the minimum performance standards and criteria for landscape design, irrigation design, and maintenance for this land use.

6.2.1 LANDSCAPE DESIGN CRITERIA

General Landscape Design Criteria

The criteria within this section shall apply to all designs and installations completed by developers,

Section 6: Single-Family and Two-Family Residential

6.2.1 LANDSCAPE DESIGN CRITERIA

homebuilders, and homeowners.

A. Site Requirements

1. Trees - A minimum of one (1) large canopy shade tree shall be provided in the front yard set-back. Tree requirements cannot be exchanged for other types of plant material. Small canopy trees cannot be exchanged for required large canopy trees.
2. Four shrubs are required for each large canopy tree.
3. Diversity requirements for trees and shrubs are contained in **Section 4**, and are applicable to installation of tract home landscaping.
4. Irrigated Turf Areas – Kentucky bluegrass and turf varieties that use more than 19-inches are not allowed. Moderate and low water use turf and turf alternatives are required.

TABLE 6-1 5. Turf shall be limited as outlined in the following table:

Lot Size	Percentage of Turf	Example
7,000 sq. ft. or less	30%	7,000 sq. ft. x .30=2,100 sq. ft.
7,001 - 17,000 sq. ft.	20%	17,000 x .20 = 3,400 sq. ft.
Over 17,000 sq. ft.	20%; not to exceed 5,000 sq. ft.	

6. Areas devoted to the cultivation of native or naturalized grasses shall be exempt from square footage limitations. Large lots are encouraged to use irrigated native grass to reduce inorganic mulches (e.g. crushed granite, cobble)
 - a. Landscaping or landscape materials shall be no more than 30-inches above the flow line when located in a sight distance triangle.

6.2.2 IRRIGATION DESIGN

This Section identifies performance standards and criteria for residential irrigation systems including control, methods, equipment, and systems efficiency.

A. General Irrigation Design Criteria

Unless otherwise specified within a particular land use, the criteria within this section shall apply to design and installations by developers, home builders and homeowners.

1. Landscaped areas shall have a permanent water efficient irrigation system providing full coverage to all plant materials. Unless otherwise approved, this irrigation shall be an automatic irrigation system.

Section 6: Single-Family and Two-Family Residential

6.2.2 IRRIGATION DESIGN, continued

2. The water service connection that provides water for irrigation shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Town's Water Use Management Plan.
 3. All water used for irrigation shall be metered and have appropriate backflow prevention as identified by Town regulations. Cross-connection control requirements shall be adhered to by all installations within this category, including homeowner installations.
 4. Maximum velocity should be determined by American Water Works Association standards, Town water criteria, Town adopted plumbing code, and meter manufacturer operating standards. Flow rates should average no more than five (5) feet per second and shall not exceed seven and one half (7½) feet per second for intermittent flow.
 5. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
 6. Irrigation shall be hydrozoned, grouping similar water demands by irrigation zone.
 7. Irrigation methods:
 - a. Irrigation is not allowed in areas less than four (4) feet in width, unless approved in an Urban Area.
 - b. Only drip or sub-surface irrigation systems will be allowed in areas less than ten (10) feet in width.
- B. Irrigation System Control
1. Smart Irrigation controllers, capable of interval watering, are required. This requirement shall be adhered to by all installations within this category, including homeowner installations.
 2. Due to common power outages, back-up or non-volatile memory is required on all controllers. This requirement shall be adhered to by all installations within this category, including homeowner installations.
 3. Upon installation the landscape/irrigation installer should program the controller to meet Water Use Management Plan requirements.
 4. Irrigation exemptions for establishment of plant material may be granted. Should the installer set the controller in accordance with an irrigation exemption for plant material establishment, the installer shall return to re-program the controller upon expiration of exemption, or instruct the homeowner to do so.
 5. The builder or landscaper should assist in educating the customer about watering restrictions in Castle Rock. The homeowner shall be responsible for compliance with water restriction regulations.

Section 6: Single-Family and Two-Family Residential

6.2.2 IRRIGATION DESIGN, continued

C. Irrigation System Design

1. Resilient wedge shut off valve with drain, or stop and waste, is required to isolate the irrigation system from the domestic plumbing system.
2. All irrigation systems shall be contained by the appropriate backflow prevention assembly. Most homes will require reduced pressure principle assemblies. See the Town's Cross-Connection Control requirements in the Town Municipal Code Chapter 13.06. A passing backflow prevention test is required prior to issuance of certificate of occupancy.
3. Master valves and flow sensors are recommended.
4. Rain sensors are required.
5. Overhead irrigation.
 - a. Overhead irrigation is not allowed in areas less than ten (10) feet in width/length.
 - b. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Minimum pop-up height of six-inches or higher is required for plant materials unless the plant material is natively maintained native grass or wildflowers, where a minimum pop-up height of twelve-inches is required.
 - c. Pop-up spray heads shall be equipped with internal check valves, internal pressure regulation and matched precipitation rate spray or rotary nozzle. Pressure regulation must be consistent with manufacturer's recommendations for the selected nozzle
 - d. Rotors shall be equipped with internal check valves and pressure regulation.
6. Drip irrigation
 - a. Drip irrigation shall be point source drip or sub-surface drip irrigation for all trees, shrubs, perennial, and annual beds.
 - b. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
 - c. Sub-surface drip irrigation may be used for turf or grass areas.
7. Bubblers may be substituted for drip emitters where necessary to provide adequate irrigation to plant material in certain locations (i.e. trees in native grass areas).
8. Irrigation charts and hydraulic worksheets may be required for plan submittal.

D. Irrigation system installation

Irrigation system shall meet Town performance standards and criteria prior to issuance of certificate of occupancy or other Town approval. Release of bonding or surety shall be withheld until approval is given.

Section 6: Single-Family and Two-Family Residential

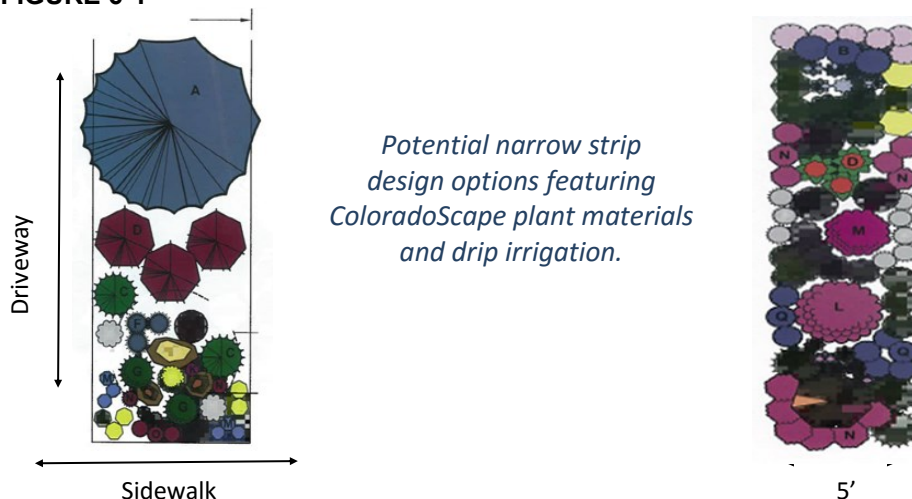
6.2.2 IRRIGATION DESIGN, continued

1. Irrigation system installation shall be consistent with approved system design.
2. Homeowner installations are not subject to efficiency testing requirements as outlined in **Section 4**.
3. A passing backflow prevention assembly test is required prior to issuance of a certificate of occupancy or other Town approval. The results shall include a mechanical test of the assembly, validation of protection for the degree of hazard present, and proper installation according to manufacturer's recommendations and Town of Castle Rock requirements. Homeowner installations shall adhere to Cross Connection Control requirements.

E. Irrigation system operation

All irrigation shall occur according to the specifications of the Town's Water Use Management program including hours, days, and application rates. Irrigation systems shall be operated and maintained in a manner that meets efficient irrigation performance standards. Temporary establishment, and permanent irrigation methods, timing, and application rates shall be included on irrigation plans.

FIGURE 6-1



1. Establishment Irrigation is to be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, flowers, ground covers, etc.).
 - a. Identify temporary, establishment irrigation method.
 - b. Identify duration of establishment period.
 - c. Identify application rates, monthly and annual water demand totals for establishment period.
2. Permanent irrigation is to be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, flowers, ground covers, etc.).

Section 6: Single-Family and Two-Family Residential

6.2.2 IRRIGATION DESIGN, continued

- a. Watering days and times to be outlined in the Town of Castle Rock Water Use Management Plan.
- b. Seasonal application rates shall be consistent with the Plant List located on the Town's website (CRconserve.com).

Section 7: Non- Residential Properties

7.0 INTRODUCTION

This section describes minimum necessary standards and criteria for non-residential properties such as retail, office, commercial, industrial, and religious institutions. Unless specifically called out in this section, the general performance standards and criteria in **Section 4** shall apply.

7.1 APPLICATION

7.1.1 APPLICABLE USES

This section applies to non-residential properties and districts (including site and parking areas) within the Town limits, and/or served by Castle Rock Water, and includes the following:

- B Business/commercial districts
- Overlay districts
- I-1 Light industrial districts
- I-2 General industrial districts
- Urban dAreas as determined by the Town
- Governmental facilities
- Non-residential or mixed use PD Planned Development zoning districts
- Schools
- Mixed use containing one or more of the above uses
- Religious institutions

7.1.2 APPLICABLE LANDSCAPING AND IRRIGATION

A. Area shall include site and parking common areas.

B. Area shall include landscaping and irrigation for all facilities and easements.

C. Other

- Streetscapes included with the project shall adhere to the performance standards and criteria in **Section 8**.
- Dependent on design, schools with passive use areas and/or active sports fields may require adherence to the performance standards and criteria in **Section 9**.

7.2 DESIGN REQUIREMENTS

This section identifies the minimum performance standards and criteria for landscape design, irrigation design, and maintenance for non-residential properties.

7.2.1 LANDSCAPE DESIGN CRITERIA

These criteria shall apply to all land uses within this section. Urban and vertical uses with approved overlay district criteria shall adhere to all standards and criteria herein, unless called out in approved overlay district criteria.

Section 7: Non- Residential Properties

7.2.1 LANDSCAPE DESIGN CRITERIA, continued

A. Site requirements

1. A minimum of ten percent of the gross site area shall receive landscape improvements. Gross site area does not include adjacent right-of-way (ROW). Plantings in adjacent right-of-way must follow the standards in **Section 8** and those plantings do not count toward required on site landscaping. Gross site area may include the area required for parking lot landscape improvements.
2. A minimum of two (2) large trees and four (4) shrubs for each 1,000 square feet of required landscaped area shall be provided. See example in **Table 7-1**.
3. Tree requirements cannot be exchanged for other types of plant material. Fifty (50) percent of the tree requirement must include large canopy trees.
4. One (1) additional tree may be substituted in lieu of each four (4) required shrubs. Shrubs shall not be substituted for trees.

B. Parking lot requirements

1. The measured parking lot area includes the paved area and curbs. Measured parking lot area excludes roadways and aisles leading to and from the parking lot to a public or private street. Areas available to meet the measured parking lot area calculation include landscaped parking lot medians and islands internal to the parking lot (not including curb). Measured parking lot area shall not be comprised of right-of-way or detention areas.
2. A minimum of ten percent of the parking lot area shall be landscaped. (This requirement is included within and counts toward the landscape requirements for the gross site).
3. Regardless of parking lot percentage, minimum planting requirements are two (2) large canopy trees and four (4) shrubs for each 1,000 square feet of landscaped area. One (1) additional large canopy tree may be substituted in lieu of each four (4) shrubs required. See chart in **Table 7-1**.

Table 7-1

AREA	TOTAL AREA IN SQUARE FEET (sf)	REQUIRED AREA (10%)	REQUIRED TREES *	PROPOSED TREES	REQUIRED SHRUBS **	PROPOSED SHRUBS
Gross Site	50,000 sf	5,000 sf	$(5,000 \text{ sf} / 1,000 \text{ sf}) \times 2 = 10$	10	$(5,000 \text{ sf} / 1,000 \text{ sf}) \times 4 = 20$	20
Parking	5,000 sf	500 sf	$(500 \text{ sf} / 1,000) \times 2 = 1$	1	$(500 \text{ sf} / 1,000 \text{ sf}) \times 4 = 2$	2

Required trees/shrubs calculation example

* Required Trees = 2 trees per 1,000 sf of required area

** Required Shrubs = 4 shrubs per 1,000 sf of required area

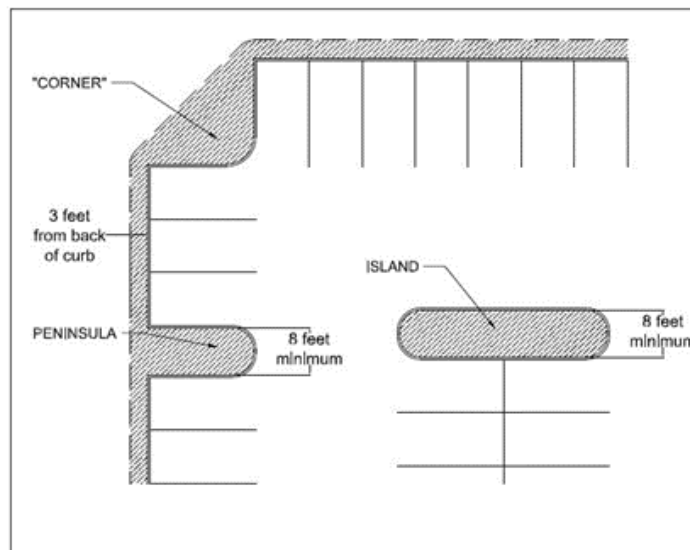
4. The parking lot area landscape plan shall include large canopy trees to reduce urban heat island effect. It is recommended that the landscape plan include a selection of large canopy trees.
5. Interior parking lot area landscaping (islands, medians and peninsulas).

Section 7: Non- Residential Properties

7.2.1 LANDSCAPE DESIGN CRITERIA, continued

- a. Islands are entirely encompassed within the parking area, which is usually paved. Islands shall be a minimum of eight (8) feet in width. Width does not include curb.
- b. Peninsulas may only be considered part of the parking lot area landscaping when the three (3) sides of the peninsula are within the parking lot area. Only the portion of the peninsula within the parking lot area shall count toward the required parking lot area.
- c. Landscaped “corners” may also be considered part of the parking lot area landscaping. To be considered as part of the calculation, the landscaped corners must be surrounded on two sides by parking. The corners are calculated creating a triangle using the two sides adjacent to the parking lot spaces or drive aisle and making the third triangle leg by connecting the curb corners. Please see graphic below.
- d. Parking lots containing more than 40 spaces shall provide interior landscape islands and medians.
 - When parking islands or medians are required, there shall be no more than 15 adjacent parking stalls between landscape islands.
 - Each landscape island/median shall provide shade through a minimum of one (1) large canopy shade tree (two (2) are recommended).
 - Tree requirements cannot be exchanged for other types of plant material. Small canopy trees cannot be exchanged for required large canopy trees.
 - No obstructions, living or otherwise, greater than thirty inches in height shall be placed in the visibility triangle areas adjacent to parking space access aisles.
 - Plant materials located within snow storage areas shall be chosen for tolerance to snow storage.

FIGURE 7-1



Shaded areas may be counted towards parking lot landscape requirement

Section 7: Non- Residential Properties

7.2.1 LANDSCAPE DESIGN CRITERIA, continued

C. Urban Area Landscape Areas

An Urban Area is a focused development that has limited open space, primarily contains a mix of non-residential uses, but may integrate residential uses, that combines the uses in a way which considers character, local identity, heritage, pedestrians and traffic. Urban Areas include the Downtown Overlay district, the Wolfensberger North Zoning Overlay district, or other dense mixed use areas as determined by the Town.

This sub-section calls out additional performance standards and criteria for site and streetscape landscaping for Urban Areas. For general non-residential site performance standard and criteria see **Section 7**. For general streetscape and right-o-way performance standard and criteria see **Section 8**. See Municipal Code for plant materials and quantity requirements.

The intent of this section is to facilitate creation of an aesthetically pleasing and functional urban environment. Development shall protect and enhance historical character.

1. Urban Area Landscape Performance Standards

- a. Landscaping shall create an aesthetically pleasing, pedestrian friendly, urban environment for people to walk and shop. Landscape plantings shall focus on building frontage and pedestrian corridors.
- b. Streets shall be lined with trees, focusing on large canopy trees.
- c. A tree canopy between on-street parking and store fronts creates a separation between cars and sidewalks and provides shade.
- d. Shrubs provide for screening.
- e. Perennials provide color and texture.
- f. Groundcovers provide for texture, depth and soil cooling.
- g. Adequate growing space and soil amendment support the establishment and mature growth of plant materials.

2. Urban Area Criteria

- a. For the Downtown Overlay District, see Municipal Code 17.46.70, Design Standards for Plant Materials and Quantity Requirements for minimum plant materials and quantity requirements.
- b. For the Wolfensberger North Zoning District, see Municipal Code 17.46.70, Design Standards for Plant Materials and Quantity Requirements for minimum plant materials and quantity requirements.

Section 7: Non- Residential Properties

7.2.1 LANDSCAPE DESIGN CRITERIA, continued

- c. For other Urban Areas, as determined by the Town, see **Section 7** for minimum tree and shrub requirements for the site, and **Section 8** for minimum tree and shrub requirements for the streetscape.
- d. Large canopy trees shall be space no more than 40 feet apart in the streetscape.
- e. The width of tree planting strips shall be no less six feet. However, trees in planting strips less than eight feet wide shall have CUTM Structural Soil.
- f. Plant material, other than trees, may be installed in areas less than four feet.
- g. Provide adequate plant material for 80 percent coverage within five years.
- h. Provide a mechanism for the specific needs for long-term maintenance of landscaping within the urban environment.
- i. Provide regularity of watering, especially in planting vault situations with CUTM Structural Soil as CUTM Structural Soil does not hold water as well as standard soil.

3. Urban Area Tree Grates

- a. Tree grates or similar planting sections are allowed in Urban Area streetscape only and shall accommodated mature tree canopy.
- b. Tree grates shall a minimum width of five feet.
- c. All trees in grates shall be a minimum of three-inch caliper measured in six-inches above the ground.
- d. Tree species is limited to trees identified in the approved plant list as appropriate for urban environments and narrow street tree planting strips.
- e. It is critical, especially in a planting vault situation with CUTM Structural Soil, that watering is done with regularity, as the CUTM Structural Soil does not hold water as well as standard soil.

D. Street trees

There shall be four (4) shrubs for every tree.

a. Summer flowering perennials and annuals

- One percent of the total landscaped area is required to be planted in a summer flowering xeric perennial or annual plant.
- Flowering plants should be planted in window boxes, clay pots, or raised beds.
- Containers shall be able to drain water and contain the necessary amount of soil to grow healthy plants, however should not create water waste.
- Flowers should face the street or sidewalk adjacent to the property or the business entrance.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.0 INTRODUCTION

This Section describes minimum necessary standards and criteria for streetscape, rights-of-way (ROW) and tract land uses. Unless specifically called out in this section, the general performance standards and criteria in **Section 4** shall apply.

8.1 APPLICATION

8.1.1 APPLICABLE USES

This Section applies to streetscapes, right-of-ways (ROW) and tracts within the Town limits and/or served by Castle Rock Water, and includes the following:

- A. Streets (local residential, local commercial, urban streets, arterials, collectors and entry streets, medians, mixed uses, industrial streets and round-a-bouts).
- B. Commonly owned tracts (that are not designated as Parks Open Space active or passive uses).
- C. Above area within overlay districts

8.1.2 APPLICABLE LANDSCAPING AND IRRIGATION

A. Streetscape shall include:

- 1. Street tree planting strips (ROW/area between back of street curb and detached sidewalk or edge of attached sidewalk and end of ROW).
- 2. ROW behind sidewalk abutting private property.
- 3. Medians.
- 4. Round-a-bouts.

B. Tracts and easements

8.2 DESIGN REQUIREMENTS

This section identifies the minimum performance standards and criteria for landscape design, irrigation design, and maintenance for this land use.

8.2.1 RESPONSIBLE PARTY

A. Local streets (non-residential and mixed use/residential)

For all new local streets (non-residential and industrial), the developer/Homeowner Association (HOA)/business association shall be responsible for designing, installing, and maintaining the ROW behind the curb. The individual property owner shall maintain this landscape and irrigation in compliance with the approved planning documents. Business associations may be formed with adjacent commercial property owners which will then complete the landscape maintenance.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.1 RESPONSIBLE PARTY, continued

B. Local streets (residential), arterials, collectors, neighborhood entrances, and medians

For all new local (residential), arterials, collectors, and neighborhood entrances, including medians within the Town of Castle Rock, the developer shall be responsible for design and construction of the streetscape within the applicable project. Landscape and irrigation system design, installation, and maintenance shall comply with the approved Construction Drawing (CD) plan, and standards and criteria contained herein. No single family residential property shall be responsible for irrigating and maintaining streetscapes and right-of-way. These areas require a mechanism for required common maintenance other than an individual homeowner.

C. This responsibility criteria applies to Site Development Plans with effective dates after March 6, 2018.

8.2.2 LANDSCAPE DESIGN CRITERIA

A. General Landscape Design Criteria

Unless otherwise specified within a particular land use, the criteria within this section shall apply to all land uses within this section. Urban and vertical uses with approved overlay district criteria shall adhere to all standards and criteria herein, unless called out in approved overlay district criteria.

1. Composite landscape water use rating

Streetscapes, ROW's, tracts, and easements are considered to be part of public areas and generally have landscaping that is sustained by supplemental irrigation. These areas are all owned, maintained, or irrigated by the Town, a metro district, or homeowner's association and often include public street entrances, medians, public parks and recreation areas, associated build ings, and parking lots. They are also owned, maintained, or irrigated at public expense by the Town, district, or homeowner's association. As such, these areas must meet the requirements of the composite landscape water use rating, as identified in **Section 4**.

2. Streetscapes and ROW

The standards and criteria within this subsection shall apply to all streetscape components, including street tree planting strips, ROW to private abutment areas, medians, entrances, round-a-bouts, and all applicable sight distance triangles.

a. Site Requirements

Performance Standards

- Plant material diversity is necessary to create visual appeal and limit disease and other environmental problems. (See **Section 4**, for diversity requirements for trees and shrubs.)
- A mix of evergreen and deciduous trees and shrubs is required for a seasonal appearance of greenery throughout the year.
- Plant material choices shall accommodate environmental conditions associated with streetscapes, including heat, salts, chemicals, pollution and snow storage.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued

- No individual plant material may have a water demand greater than 10-inches per growing season along streetscapes.
- Promote ColoradoScape design elements.

Criteria

- A minimum coverage of 75 percent live plant material (at maturity) is required and may include tree canopy, shrubs, ornamental grasses, ground covers (which may include turf that meet maximum water requirements in the appropriate widths). No more than 25 percent may be non-living materials, including organic mulch (with no plant materials) and rock.
- When designing and installing to the ColoradoScape standard streetscape, soil amendment shall be two cubic yards of organic material per 1,000 square feet rototilled to a minimum depth of six-inches.
- Traditional turfgrass not allowed . Must use native hydrozone 1 or 2 plant material.

b. Trees

Performance Standards

- Tree type and placement is intended to provide a tree canopy over street space as well as pedestrian space. Where detached sidewalks are present, this includes planting trees on both sides of the sidewalk.
- Unless otherwise approved for visual appeal, trees shall be regularly spaced to create a continuous street edge. Spacing may be adjusted slightly for driveways and street lights.
- Trees shall not interfere with safe view of oncoming traffic and pedestrians, and shall not interfere with visibility of traffic control devices and regulatory signs.
- A clear walking zone between trees and fences or buildings shall be created.
- Ornamental trees may be used only in median areas or traffic islands where lower branching habits will not interfere with pedestrians, vehicles, or driver visibility.
- Trees, including evergreens, shall not cause snow build-up or icing problems (i.e. north facing areas).
- Trees near walks shall be fruitless and thornless.
- A strip of trees shall be planted the full length of the public street.
- Trees are required in property setbacks in the event there is not sufficient planting space in the public right-of-way.
- Seventy five (75) percent of street trees should be large canopy.

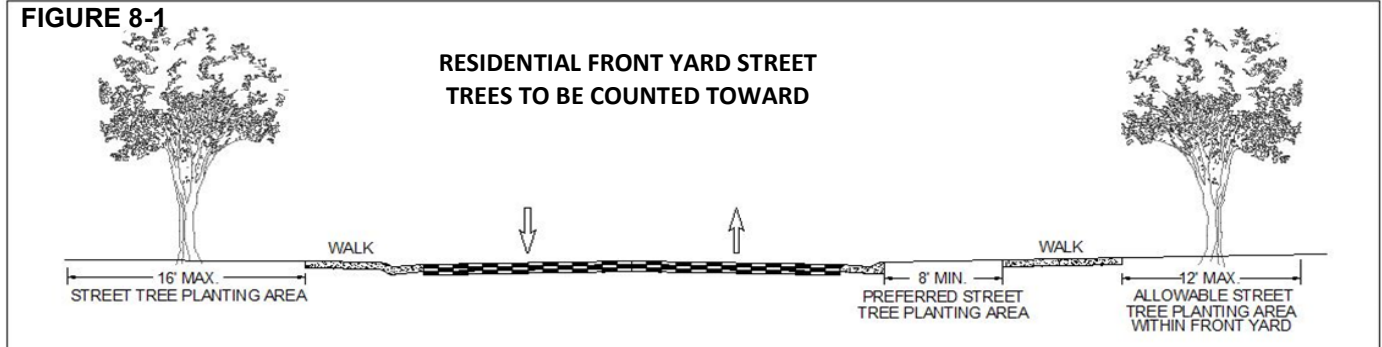
Criteria

- The amount of street trees required shall be based on a minimum of one large tree for every 40 linear feet. The trees do not need to be placed every 40 linear feet on center and may be grouped to achieve the desired design aesthetic. However, there shall not be a gap between trees greater than 120 feet.

Section 8: Streetscapes, Right-of-Ways and Tracts

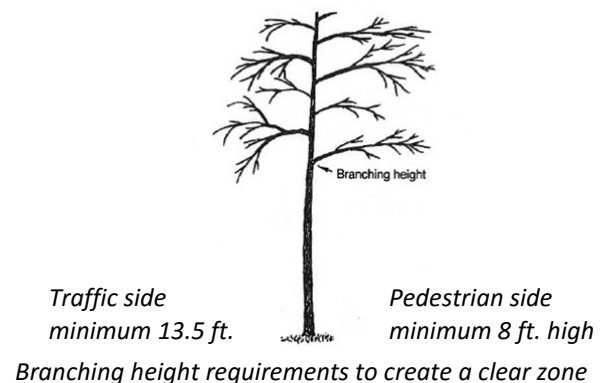
8.2.2 LANDSCAPE DESIGN CRITERIA, continued

FIGURE 8-1



- A tree planted within the front yard of a residential lot may be counted toward the required street trees as long as the tree is within 16 feet of the back of the curb, for a residential street with an attached sidewalk. For a residential street with a detached sidewalk, the tree must be within 12 feet from the back of the sidewalk to be counted as a street tree.
- Trees shall be located a minimum of 42-inches, or three and one half (3-1/2) feet, from the face of the curb, whenever possible.
- Trees shall not be planted closer than 30 feet from the curb face at intersections and street corners, and outside of the sight distance triangle.
- For non-residential areas, trees shall be a minimum distance of 20 feet from streetlights.
- A minimum walking zone of 10 feet shall be provided between trees, buildings and fences.
- The branching height of mature trees on the traffic side of the street shall be no less than thirteen and one half (13-1/2) feet above the street.
- The branching height of mature trees on the pedestrian side of the street shall be no less than eight (8) feet above the sidewalk.
- Evergreen trees shall be planted away from the street and sidewalk edge so that their shade does not promote ice and snow build up in winter months.
- Small canopy trees shall be spaced no more than 25 feet apart.
- Large canopy trees shall be planted in a landscape strip that is no less than eight (8) feet in width (not including curb and gutter).
- Small canopy trees shall be planted in a landscape strip that is no less than six (6) feet in width (not including curb and gutter).
- Large canopy trees shall not be planted in areas equal to or less than six (6) feet.

FIGURE 8-2



Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued

- Large canopy trees planted in areas between six (6) to eight (8) feet in width must be installed in structural soil.

3. 75 percent of street trees should be large canopy.

a. Shrubs

Criteria

- A minimum of four (4) shrubs per large canopy tree are required.

b. Groundcover

Performance Standards

- Ground cover (including turf type grass meeting water conservation requirements) shall create a consistent coverage of plant material.
- Ground cover design and plant materials shall consider level of foot traffic and shall not create a safety hazard for pedestrian ingress and egress.

Criteria

- No slopes greater than 3:1 are permitted.

c. Sight distance triangles (SDTs)

Performance Standards

- The design shall provide for safe ingress and egress from street to street, or from driveway to street.
- There shall be no visibility obstructions for motorists within the SDT.
- Minimum SDTs and corner triangle distances shall be maintained for safe view of traffic and pedestrians.

Criteria

- Length of SDTs is dependent on the street classification.
- Within the sight distance triangle, no visually obstructive landscaping features over thirty (30) inches high (above the top of the flow-line) are permitted.
- Trees shall not be planted closer than thirty (30) feet from the curb face at intersections and street corners within the SDT.
- Evergreen trees are not allowed in the sight triangle.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued

d. Street Tree Planting Strips

Performance Standards

- Street trees will be planted with adequate space and soil to provide for healthy mature spread.
- Trees may be grouped in areas where appropriate with design, as approved by the Town.
- Promote ColoradoScape design elements.

Criteria

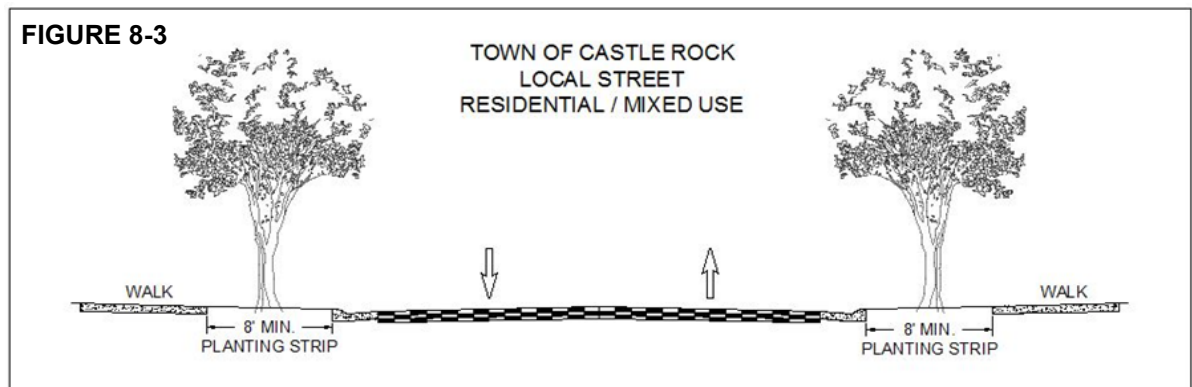
- Width (all widths are from back of curb to back of curb/sidewalk; curb is not included in measurement).
- The width of the street tree planting strip for local streets shall be a minimum of eight (8) feet.
- The width of the street tree planting strip for collector and arterial streets shall be a minimum of ten (10) feet, unless the area is an approved urban site.
- Areas along collector and arterial streets less than four feet in width shall contain no plant material and shall be hardscaped with material including, but not limited to, stamped concrete, unit pavers, grouted cobble, or flagstone. Plant material, other than trees, in urban areas may be installed in areas less than four feet', with plan approval only.
- Traditional turfgrass not allowed . Must use native hydrozone 1 or 2 plant material.

NOTE 1: For any of the aforementioned street tree planting strips approved for widths less than eight feet, structural soil is required. (See **Section 4.2.2.A.6**)

NOTE 2: For any of the aforementioned street tree planting strips less than ten feet in width, overhead irrigation is not allowed. (See **Section 4.2.3.A.5**)

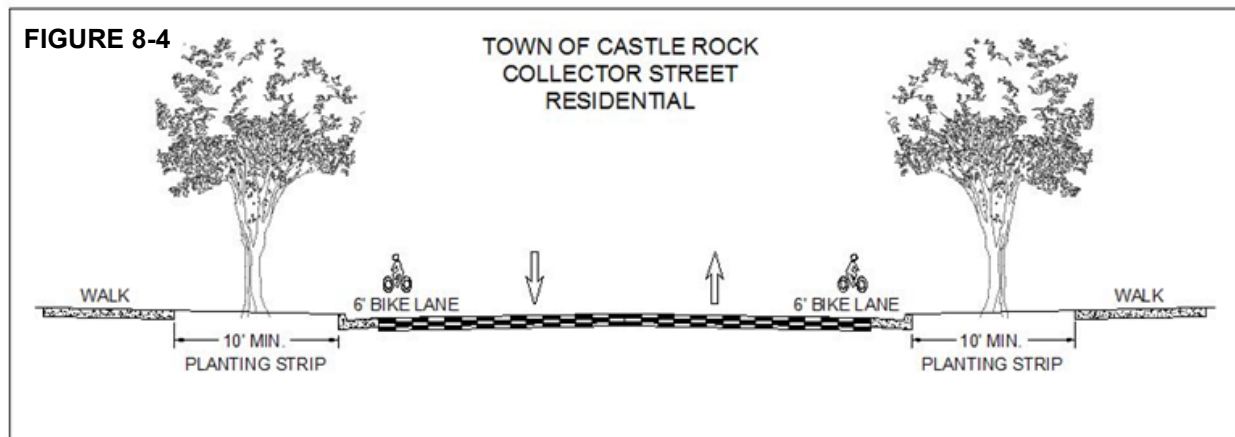
- No trees shall be placed in wet utility easements or within ten feet of water or wastewater infrastructure. Under most conditions, no trees shall be placed within ten feet of stormwater infrastructure.
- Tree requirements cannot be exchanged for other types of plant material.

FIGURE 8-3



Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued



e. ROW Abutting Private Property

Performance Standards

- Where this area is maintained directly by an individual homeowner (applicable single-family, or two-family attached home), in narrow setback situations, the Town may consider on a case-by-case basis to allow single family standards and criteria to apply to this area. This requires Town approval.
- Where this area is maintained by a homeowner's association, the standards and criteria called out in this section apply.
- Promote ColoradoScape design elements.

Criteria

- Attached sidewalk areas, where no street tree strip exists:
- Street tree planting strip criteria shall apply.
- Large canopy trees shall have a maximum distance from the back of the sidewalk of no more than 16 feet, unless otherwise approved. Trees shall be placed at intervals identified away from the sidewalk to avoid branching into sidewalk, and trees shall have a branching height of no less than eight feet.
- Traditional turfgrass not allowed . Must use native hydrozone 1 or 2 plant material.

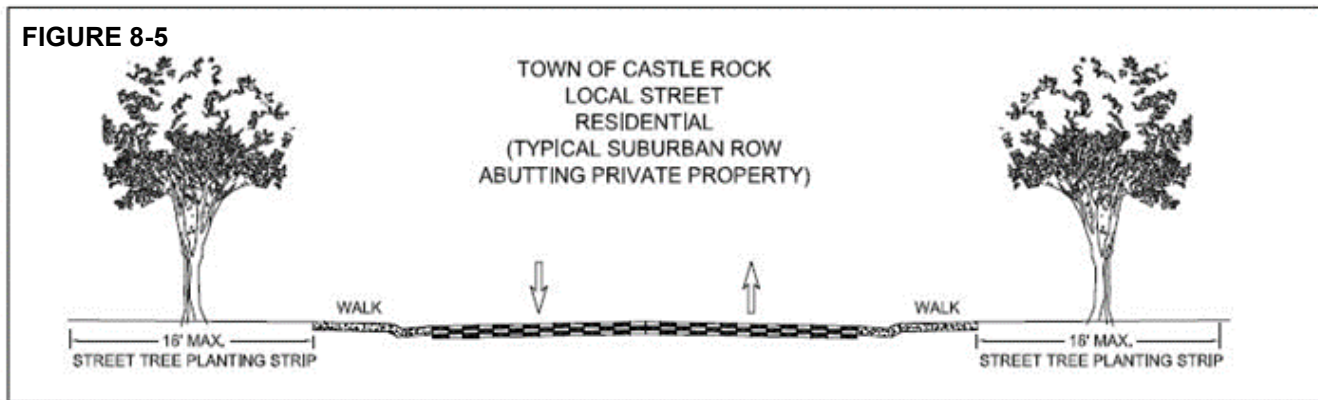
f. Medians – A median is the area between the lanes of opposing traffic.

Performance Standards

- Street trees will be planted with adequate space and soil to provide for healthy mature spread.
- Promote ColoradoScape design elements.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued



Criteria

- Median planting areas shall be no less than ten (10) feet in width for all public street classifications. Width measurement is from inside of the back of curb to inside of the back of curb, e.g. the curb is not included in the measurement.
- Median planting areas of no less than eight feet in width (from inside of the back of curb to inside of the back of curb) will be allowed on private property.
- Medians shall be large enough to accommodate two (2) large canopy trees and associated shrub materials. Trees shall be centered within the island to accommodate adequate root growth.
- The use of appropriate plant material shall be limited to median planting areas greater than ten feet. No overhead irrigation is allowed on medians.
- Medians shall be elevated as determined by Town of Castle Rock Design Criteria Manual.
- Traditional turfgrass not allowed . Must use native hydrozone 1 or 2 plant material.
-

g. Round-a-bouts

Performance Standards

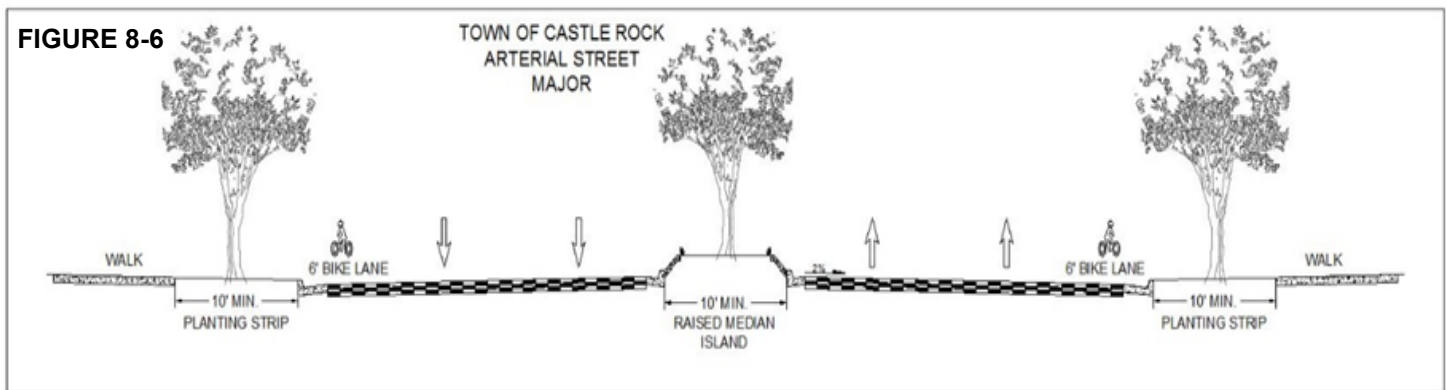
- Round-a-bouts that include planting areas shall have a minimum planting area diameter that promotes healthy plant growth.
- Design shall accommodate efficient irrigation and minimize run-off. No overhead irrigation is allowed on round-a-bouts.
- Design shall provide a safe view of traffic and pedestrians.
- Promote ColoradoScape design elements.

Criteria

- Shall have a pervious buffer surrounding the planting area of four (4) feet in width between the curb and edge of planting area.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued



- Traditional turfgrass not allowed . Must use native hydrozone 1 or 2 plant material.

h. Entrances

Performance Standards

- Entrances shall enhance neighborhood character. On a case-by-case basis, the Town *may* consider additional water allocation of up to twenty (20) inches for limited square footage in neighborhood entrances for irrigation of annuals only (This does not include turf). For approval, low and or very low water use plant material of equal square footage would be required within the entrance design, and be serviced by the same dedicated irrigation tap. Native or open space areas would not qualify for this exchange.

Criteria

- Shall be irrigated according to criteria identified in **Section 4.2.1**.
- Shall meet plant material number (tree/shrub) and coverage requirements (percent living coverage) as prescribed in site requirements for this section.
- Shall meet location, spacing, soil, and all other criteria as defined in this section.

i. Tree Grates (or similar planting sections)

Performance Standards

- Tree grates shall be allowed in Downtown and/or urban commercial areas only.
- Mature canopy shall be accommodated.
- Tree species is limited to trees identified in the approved plant list as appropriate for urban areas/narrow street sections.

Criteria

- Minimum tree grate width of five (5) feet.
- All trees in grates shall have CUTM Structural Soil.

Section 8: Streetscapes, Right-of-Ways and Tracts

8.2.2 LANDSCAPE DESIGN CRITERIA, continued

- Minimum tree size of three-inch caliper.

j. Urban Area Streetscapes—See **Section 7**

6. Utility Easements and Tracts

- Trees, large shrubs and permanent structures shall not interfere with access or integrity of water, wastewater, or stormwater infrastructure. Trees or other permanent structures are not permitted in easements or within ten (10) feet of water, wastewater or stormwater infrastructure.

B. Non-living landscape material standards

- Inorganic mulch includes rock, gravel, or cobble.
 - Size of cobble shall be limited where there is pedestrian ingress and egress .
 - Cobble may be required to be grouted as determined for safety.

8.2.3 MAINTENANCE

A. General

1. Maintenance Responsibilities

a. Local Streets — Residential

For all residential local streets, with an attached sidewalk, the adjacent homeowner shall be responsible for maintaining the ROW behind the curb. The homeowner shall maintain this area in compliance with the standards and criteria contained herein. No single family residential property shall be responsible for irrigating and maintaining streetscapes and right-of-way.

General landscape and irrigation maintenance in new residential areas with detached sidewalks shall be provided by homeowners association (HOA) or Metropolitan District.

b. Local Streets — Non-residential/mixed use and industrial

For all new commercial local and industrial streets, the adjacent property owner shall be responsible for maintaining the ROW behind the curb. Business associations may be formed with adjacent commercial property owners which will then complete the landscape maintenance. The property owner or business association shall maintain this area in compliance with the standards and criteria contained herein.

c. Arterials, Collectors, Entry Streets, and Medians

The homeowners association (HOA), Metropolitan District, or Town, as determined by the Town, may acquire the maintenance of the landscape and irrigation improvements for all arterials, collectors, entry streets, and medians within the Town of Castle Rock. Such maintenance shall be in compliance with the standards and criteria contained herein.

Appendix

Appendix A: Temporary Irrigation Criteria

Appendix B: Irrigable Area

Appendix C: Turf Grasses

TEMPORARY IRRIGATION CRITERIA

Criteria:

1. The native soil must be amended with 3 cubic yards (Class I or Class II compost) per 1,000 square feet.
1. This amendment must be incorporated via tractor ripping into the soil.
1. Drill seeding is required in all areas. Slopes steeper than 3:1 are not permitted.
1. Temporary irrigation systems and irrigation exemption will meet the following specifications:
 - The irrigation system must be above ground and removed at the end of the approved establishment period.
 - Sprinkler heads used for temporary irrigation must have an application rate not to exceed .75-inch/hour. Traditional spray heads/nozzles are not allowed.
 - The irrigation exemption shall not exceed 45 days.
 - Seed ticket(s) for areas temporarily irrigated are to be provided to the Town inspector.
 - Town of Castle Rock hydraulic worksheet (required on construction documents) will show both permanently and temporarily irrigated areas. These should be listed separately and not combined.
 - Tap sizing will be determined by the permanently irrigated plant material.
5. A waterproof sign measuring a minimum of two feet by two feet shall be visible from each adjacent road. The sign shall contain:
 - **TEMPORARY IRRIGATION**
 - Dates of the temporary irrigation
 - Contractor's contact information (See example on next page)

Appendix A

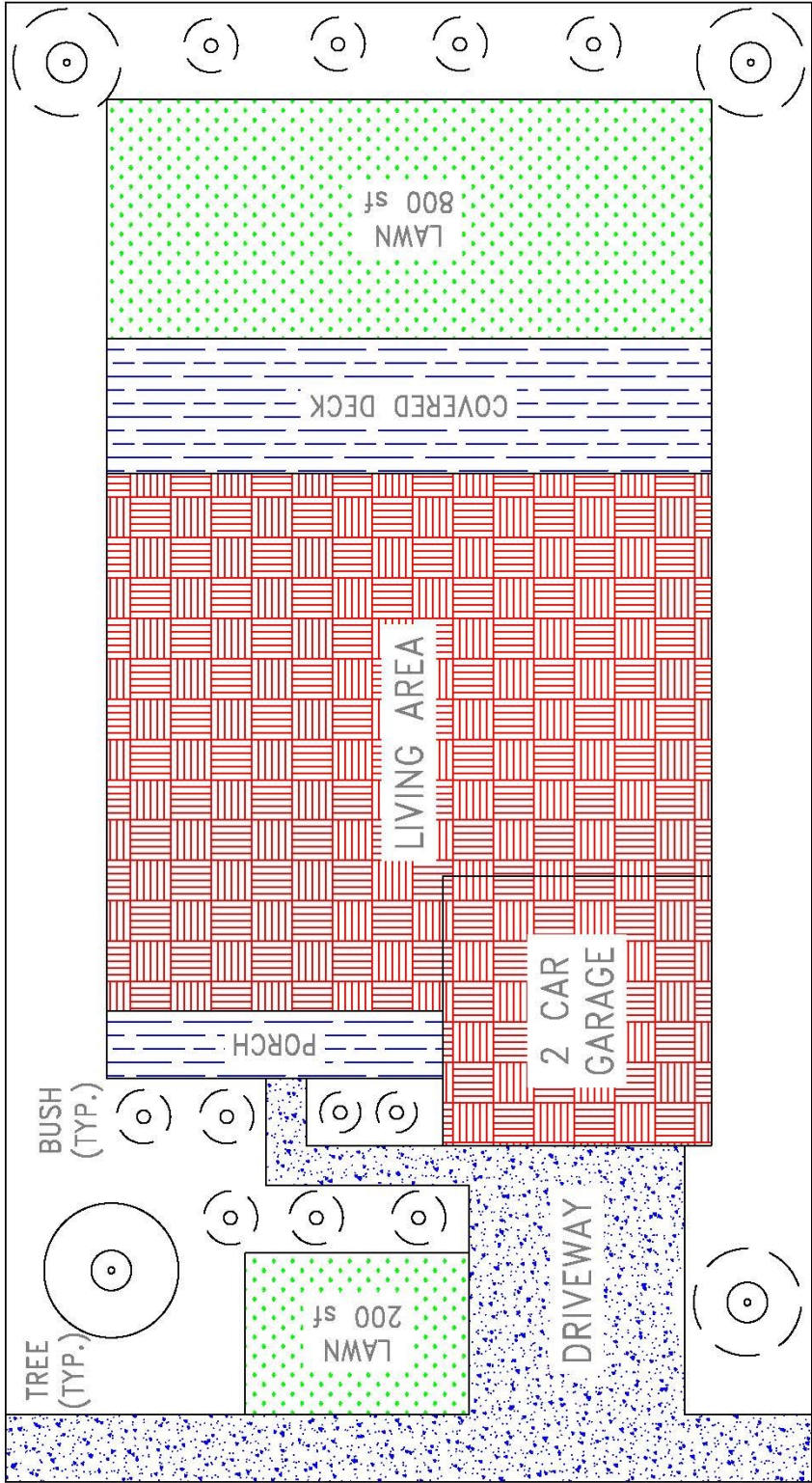
6. The contractor must contact Castle Rock Water, Stormwater hotline at 720-733-2235, a minimum of one week prior to the expiration of the temporary irrigation exemption to evaluate the level of establishment.
7. Upon expiration of the approved establishment period, all components of the temporary irrigation system must be removed. These include, but are not limited to, valves, valve boxes, lateral piping, heads, and staking.

TEMPORARY IRRIGATION

01/01/2018 - 02/01/2018

ABC BUILDER, 303-555-5555

Residential Example

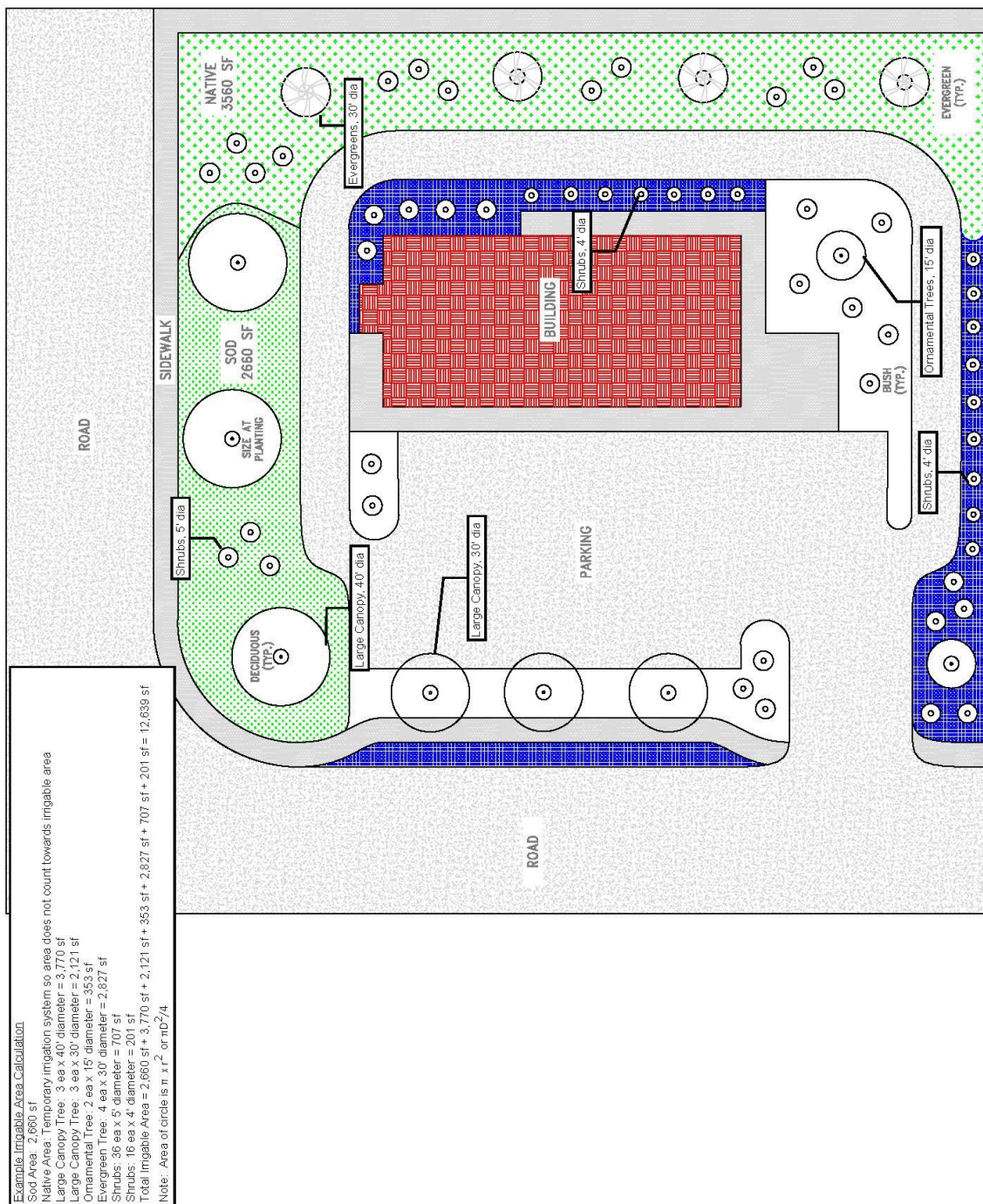


The purpose of this plan is to provide the user with an example of how to calculate the irrigable area of a lot. The dimensions of mature plant materials shall be used.

Example Irrigable Area Calculation
Lawn Area: 200 sf + 800 sf = 1,000 sf
Large Canopy Tree: 1 ea x 30' diameter = 707 sf
Small Canopy Tree: 3 ea x 15' diameter = 176 sf
Bushes: 11 ea x 3' diameter = 78 sf
Total Irrigable Area = 1,000 sf + 707 sf + 176 sf + 78 sf = 1,961 sf
Note: Area of circle is $\pi \times r^2$ or $\pi D^2 / 4$

Appendix B: Irrigable Area Calculation Example

Commercial Example



The purpose of this plan is to provide the user with an example of how to calculate the irrigable area of a lot. The dimensions of mature plant materials shall be used.

Turf Grass Varieties Recommended for Single Family Homes

Type	Available At
Texas Hybrid Bluegrass Blends	
Thermal Blue	Big Foot Turf Green Valley Turf
Thermal Blue Blaze	Wolf Creek Farms Horizon Turf Nursery
Bandera Hybrid Texas Bluegrass	Horizon Turf Nursery
BTF Texas	Bittersweet Turf Farms
HY-Performance Bluegrass	Graff's Turf Farm
Vortex	Korby Sod LLC
Seed Blends	
Reveille Turfgrass	Echters Garden Center
SPF30 Texas Hybrid Blend	Classic Turf
Drought Tolerant Blends	
Enviro turf	Turf Master
Turf Tall Fescue Blends	
RTF Water Saving	Green Valley Turf
Black Beauty	Korby Sod LLC Graffs Turf farm Echters Garden Center
GTF Fescue	Graffs Turf farm
TarHeel II Tall Fescue/Texas Hybrid Blend	Horizon Turf Nursery
Regiment Tall Fescue/Texas Hybrid Blend	Horizon Turf Nursery
Crew Cut II Fescue/Texas Hybrid Blend	Horizon Turf Nursery
Fescue Blends	
Natures Prairie	Turf Master Sod Farms
Canadian Blue Fescue	Turf Master Sod Farms
Warm Season Grasses	
Legacy Buffalo	Green Valley Turf
Colorado Buffalo Blend	Turf Master Sod Farms
Dog Tuff TM	Todd Valley Farms Paulino Gardens Gulley Green House Center Green House Browns Greenhouse

Turf Grass Varieties Recommended for Single Family Homes, cont.

Type	Available At
Seed Blends	
Buffalo Grass/Blue Grama	Echters Nursery and Garden Center
Blue Grama Grass	High Country Gardens
Buffalo Grass	Gurney's Seed and Nursery Co.
Perennial Rye Blend	Buffalo Brand Seed Company
Emerald III Blend	Buffalo Brand Seed Company
Low maintenance Mix	Buffalo Brand Seed Company
Low Grow Mix	Buffalo Brand Seed Company
Native turf mix	Buffalo Brand Seed Company
Artificial Turf	
Next 2 Natural Turf	Graffs Turf farm
Real Turf	Real Turf USA