

TOWN OF CASTLE ROCK

Landscape and Irrigation Criteria Manual

Date, 2022



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- Matt Benak, PE, Water Resources Manager
- Brad Boland, AICP, Planner II
- Tina Close, PE, Plan Review Supervisor
- Tim Friday, PE, Assistant Director of Castle Rock Water
- Linda Gould, Water Efficiency Specialist
- Pam Hall, Planner I
- Ian Hamilton, Parks/Open Space Supervisor
- Julie Kirkpatrick, PLA, ASLA, Plan Review Project Coordinator
- Mark Marlowe, PE, Director of Castle Rock Water
- Rick Schultz, Water Efficiency Supervisor
- Ruth Stadler, Water Conservation Plan Reviewer
- Sandy Vossler, Senior Planner
- Stacey Weaks, Norris Design



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Section 1: General Provisions

These performance standards, criteria, and regulations, together with all future amendments, shall be known as the Town of Castle Rock Landscape and Irrigation Criteria Manual (hereafter called "Criteria"). All landscape and irrigation design, installation, and maintenance performed as a requirement of Castle Rock Municipal Code, Town of Castle Rock Development Procedures Manual, Building and Construction Code, and any other regulation, 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 change irrigation demands or water quality control, shall comply with these Criteria. It is the purpose and intent of these Criteria to establish landscape and irrigation performance standards and criteria that will reflect Town identity and the desire of the community, as expressed through the Town's Vision and Comprehensive Master 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's service area
- 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 and irrigation 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's service area
- 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 irrigation-related 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

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Section 1: General Provisions

1.1 GOVERNING REGULATIONS

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

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

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1.2 JURISDICTION

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

1. New development or construction
2. Currently approved development plans which are changed by amendments subsequent to the effective date of this document
3. Any change of land use and conversion of land, whether residential or non-residential, public or private
4. 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
5. Projects which impact twenty-five (25) percent or greater of landscaped area associated with a single water service connection (one tap)
6. Projects which impact ten-thousand (10,000) square feet or greater of landscaped area associated with one or more service connection (one or more taps)
7. Irrigation maintenance: Through the course of routine maintenance, all replacement irrigation equipment shall meet current Criteria

These Criteria shall govern over privately enforced guidelines or requirements related to landscaping and irrigation (i.e. business association, metropolitan district, 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's service area. These Criteria provide comprehensive water efficient design, installation, and maintenance standards for landscaping and irrigation within the Town's service area 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 plans submitted for approval under the provisions of these Criteria shall include appropriate landscape and irrigation planning, analysis, and design. All landscaping and

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~~irrigation plans shall meet or exceed these Criteria,~~

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1.4 AMENDMENT

These Criteria may be amended as new technology or other industry related standards or best management practices are developed, or if experience gained in the use and application of these Criteria indicates a need for revision. Minor revisions will require the approval of the Director of Castle Rock Water.

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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 approval 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.

1.7 INTERPRETATION

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

1. These provisions shall be regarded as the minimum Criteria for design, installation, and maintenance of landscape and irrigation.
2. 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.
3. These Criteria shall not abrogate or annul any binding agreements, issued permits, or approved landscape and irrigation construction plans, either recorded or approved by the Town, prior to the effective date of these Criteria.

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1.8 RELATIONSHIP TO OTHER CRITERIA

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

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modify the Town's regulations and these Criteria.

1.9 VARIANCE AND DEVIATION

Refer to the Town Development Procedures Manual for information regarding deviations and technical criteria variances [and deviations](#) to these Criteria.

1.10 SUPPLEMENTAL INFORMATION TO THESE CRITERIA

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. 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 owner / 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. Checklists and Forms
2. Composite Landscape Water Use Rating Chart (CLWUR)
3. [Drawing Submittal Requirements](#)
4. Electronic Data Submittal Layer Requirements
5. General Construction Drawing Cover Sheet Notes
6. Overlay Districts (Municipal Code Chapter 17)
7. Record Drawing Checklists
8. [Registered Landscape Professional list](#)
9. Signature Block
10. Site Development Plan General Notes
11. Standard Construction Notes
12. Standard Details
13. Technical Criteria Variance Request Form
14. Temporary Irrigation Criteria
15. [Town of Castle Rock Approved Plant List](#)
16. [Water Use Management Plan](#)

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1.11 VIOLATIONS AND PENALTIES

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

1.12 ACRONYMS

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

BMP, BMPs Best Management Practice(s)

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CD, CDs	Construction Document(s)
CLWUR	Composite Landscape Water Use Rating
CO	Certificate of Occupancy
ET	Evapotranspiration
FPS	Feet per Second, referencing velocity
GPM	Gallons per Minute
IA	Irrigation Association
K	Potassium
LWUR	Landscape Water Use Rating
N	Nitrogen
P	Phosphorus
PD	Planned Development
PDP	Planned Development Plan
PLA	Professional Landscape Architect
PRV	Pressure Regulating Valve
PSI	Pounds per Square Inch
QWEL	Qualified Water Efficient Landscaper
RLP	Registered Landscape Professional
ROW	Right-of-way
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
TESC	Temporary Erosion and Sediment Control
WEP	Water Efficiency Plan

1.13 DEFINITIONS OF TERMS

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

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.

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

APPLICANT: The individual or organization applying for land use 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 [electronically](#) with any changes or deviations. Final disposition, location, with dimensions of the installed landscape and irrigation equipment shall be shown on as-built drawing [and submitted at project completion](#).

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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.

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 (twenty-five (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 (6) inches above the ground.

Deleted: for trees up to four (4) inch size and twelve (12) inches above the ground for larger sizes.

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

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.

COLORADOSCAPE: A natural landscape which uses low to very low water (less than ten (10) inches of water per year) plant material which blends in with the native Castle Rock landscapes. Plant material must be maintained in its natural 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, including pocket parks, passive parks, and active parks. These areas are often maintained by a homeowner's association, business association, or in some instances, the Town. Pocket parks, passive use areas, and active parks are considered a common area for the purposes of these standards and Criteria.

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:

$$\text{Formula } CLWUR = \sum_{k=1}^N$$

$$LWUR_k * IA_k / TA$$

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 shown on the landscape design and management plan. The composite rating is computed using all zones for all irrigated public areas within the Town's service area. 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 Municipal Code 13.20.030.

COMPOST: Fully finished, stabilized, and mature product, derived from organic materials such as

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leaves, grass clippings, wood chips, and other yard wastes. Finished compost is dark and crumbly, does not resemble the original contents, and has an earthy smell. Acceptable compost will not contain any human or animal waste.

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

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

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

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

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): 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 or 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 organization 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.

DOWNTOWN STREETSCAPE: A Combination of window boxes, planters, trees, shrubs, perennials, annuals, 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.

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

DRIPLINE: An imaginary vertical line extending downward from the tips of the outermost branches of a tree or shrub to the ground.

DROUGHT: Periods or seasons with below average precipitation.

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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.

DWELLING: Any building or portion thereof which provides complete independent living facilities for a family or individual, including permanent provisions for living, sleeping, eating, cooking, and sanitation, but not including hotels, motels, tourist courts, clubs, hospitals, or similar uses.

DWELLING, MULTI-FAMILY: A building, or portion thereof, designed for occupancy by three or more families living independently of each other.

APARTMENT: A building containing three or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a dwelling by a family or individual with shared areas and facilities.

CONDOMINIUM: A building containing three or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a dwelling by a family or individual with shared areas and facilities. Each dwelling is individually owned and shared areas and facilities are commonly owned.

TOWNHOME: A building containing three or more dwellings, which is part of a structure in which each dwelling has a private entrance and each dwelling is attached horizontally, in a linear arrangement, and having a totally exposed front and rear wall to be used for access, light and ventilation.

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

DUPLEX: A building containing two dwellings attached by a wall or floor.

PAIRED HOME: A building containing two dwellings attached by a wall.

SINGLE-FAMILY ATTACHED: A building containing two dwellings attached by a wall.

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

SINGLE-FAMILY DETACHED: A building containing one dwelling unit.

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

ENTRY STREET: A main access to a subdivision.

ESTABLISHMENT IRRIGATION: Supplemental irrigation required during the establishment period.

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.

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EVAPORATION: The change by which water is converted from a liquid to a vapor.

EVAPOTRANSPIRATION (ET): A calculation of water loss 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: A tree with foliage that persists and remains green year-round.

FABRIC: A porous geotextile material installed underneath mulch that is manufactured specifically to reduce the growth of weeds within planting bed areas. Also known as weed barrier.

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

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

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. Now known as Site Development Plan (SDP).

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.

GOLF COURSE: The ground or course over which golf is played.

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

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

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

HARDSCAPE: Non-living site improvements at the ground plane 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.

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 fifteen (15) inches of supplemental irrigation

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during each growing season (May through September).

HYDROZONE: Landscape, containing vegetation requiring similar water needs and exposure. For the purposes of this document, hydrozones are broken into four (4) categories:

VERY LOW HYDROZONE: 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. This hydrozone 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: Plant materials that require over five-inches and up to or equal to ten (10) inches of supplemental water applied during the growing season. This 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: Plant materials that require over ten (10) inches or up to or equal to fifteen (15) inches of supplemental water applied during the growing season. The plant materials within this zone are typically native hydrophilic or exotic species. This hydrozone 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: Plant materials that require over fifteen (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 nineteen (19) inches may be used in qualifying passive use 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.

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, residential and industrial, or dissimilar residential properties. Such areas shall require increased landscaping to create buffers between uses.

IRRIGABLE AREA: All pervious surfaces within the lot.

IRRIGATED AREA: The actual area covered by plant material at mature size and permanently installed irrigation.

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 homeowner's association within the Town. Irrigated public areas include public street entrances, parking lots, 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 homeowner's association.

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

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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 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, growing quickly, and spreading to the point of disruption of plant communities and/or ecosystems.

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 ARCHITECT: A professional licensed to practice landscape architecture by the State of Colorado. Also referred to as a Professional Landscape Architect (PLA).

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 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 existing in the designed landscape such as, but not limited to, soil, compost, rock, plant material, edging, weed barrier, mulch, and irrigation system.

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LANDSCAPE ISLAND: Shall refer to a landscape area in a parking lot typically surrounded on four sides by parking spaces or drives.

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, parking area or other 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:

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

LAND USE: The designation in these Criteria such as single-family, two-family, 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.

LARGE CANOPY DECIDUOUS SHADE TREE: A deciduous tree that has a mature height equal to or greater than thirty, (30) feet and provides shade.

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

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 five-inches and up to ten (10) inches of supplemental irrigation per season, May through September, to maintain optimum health and appearance.

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

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

MAJOR MODIFICATION: Changes in live plant material coverage and/or square footage; and/or changes to irrigation service line 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 manual that involves policy changes, technical criteria variances, and / or major construction detail revisions.

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

MEDIAN: An area that separates lanes of traffic traveling in opposing directions.

MINOR REVISION: A change to this manual that involves 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 ten (10) inches and less than fifteen (15) inches of supplemental irrigation per season, May through September, to maintain optimum health and appearance.

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.

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.

NATIVE SOIL: Soil that is indigenous to Castle Rock that has developed over hundreds or thousands of years.

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-LIVING ORNAMENTAL: Area covered by rock mulch, which does not contain plant material.

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 development, such as a business, industrial, governmental, school.

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religious institution, or mixed uses (see **Section 7**). HOA or common areas are defined as non-residential for watering schedule purposes.

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, 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. Also known as dynamic pressure.

ORGANIC MATTER: Leaves, grass clippings, wood chips, and other yard wastes.

ORNAMENTAL TREE: A small canopy deciduous tree providing variety and interest by flower display, attractive fruit, or fall color.

PARK: An area of land offered for public use and rest and recreation.

PARKING LOT: The paved area used to accommodate vehicles associated with non-residential 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).

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PARKING LOT CORNER: A landscape area in a parking lot surrounded on two (2) sides by parking.

PARKING LOT ISLAND: A landscape area in a parking lot surrounded on four (4) sides by parking spaces or drive isles.

PARKING LOT PENINSULA: A landscape area typically surrounded on three (3) sides by parking spaces or drive isles.

PASSIVE PARK: A public common area park used for passive activities such as walking, hiking, biking, picnicking, and wildlife viewing.

PASSIVE RECREATION AREA: A common area 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.

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

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

PERMITTEE: The party making application for permit.

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.

PLANTING AREA: An area in which plants are to be installed, surrounded by mulch, and separated from other planting areas. Such areas may be irrigated on the same zone but are required to have individual operational indicators.

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.

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.

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.

QUALIFIED WATER EFFICIENT LANDSCAPER (QWEL): An individual who has successfully completed the Qualified Water Efficient Landscaper training and certification program. The QWEL program is a comprehensive in-depth training and certification program, emphasizing irrigation, landscape, water management and horticultural best management practices.

RAIN SENSOR OR RAIN SHUTOFF DEVICE: A device connected to an irrigation controller that interrupts scheduled irrigation when 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.

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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 LANDSCAPE COMPANY: Landscape and irrigation design, installation, or maintenance company, working on non-residential / commercial properties within the Town of Castle Rock service area. Company must register with Castle Rock Water, designate one or more Responsible Landscape Professional(s), and indicate current properties under their control.

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

RESPONSIBLE LANDSCAPE PROFESSIONAL (RLP): The person or persons designated by a landscape design, installation, or maintenance company to represent and ensure all activities comply with Town of Castle Rock regulations.

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, 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 ten (10) to fifteen (15) inches of annual precipitation; very dry with little rainfall and scrubby vegetation. Castle Rock is located in a semi-arid climate.

SERVICE LINE: A privately owned and maintained small diameter pipe used to connect from a water main through a small tap to a water meter at user's location. Also known as "tap".

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

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

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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. Also known as visibility distance triangle.

SITE DEVELOPMENT PLAN (SDP): The purpose and intent of the Site Development Plan is to depict the general layout of a residential subdivision or the site layout, site improvements and building configuration of a multi-family residential, commercial, industrial, or mixed-use development.

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 ("run" over "rise") in which run is the horizontal distance and rise is the vertical distance.

SMALL CANOPY DECIDUOUS TREE: A tree of smaller size that has a mature height of less than thirty (30) feet. Also known as "ornamental tree".

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 material added to the soil to improve texture, moisture holding capacity, nutrient capacity, water and air infiltration.

SPORTS FIELD: A field on which sports are played.

STREET: Any public or private road.

STREETSCAPE: Pedestrian and landscape improvements parallel to the roadway, which include at minimum the required width sidewalk, and the minimum required planting strip for trees, shrubs, and irrigation. The streetscape is typically located within the ROW but may be located on adjacent private property as appropriate.

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

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

TECHNICAL CRITERIA 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.

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC): The TESC Permit Program is mandated by legislation, including the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II Regulations, and the Colorado Water Quality Control Act. See Temporary Erosion and Sediment Control manual.

TEMPORARY IRRIGATION: A temporary watering system designed to transport and distribute water

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to landscape plants.

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, may also refer to imported soil material where native is substandard or non-existent, that is used for soil material in landscaped areas, not considered an organic component for soil amendment or soil preparation.

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

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.

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.

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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 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 5b (See **Section 4.6.7**).

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 (5) inches or less of supplemental water applied during the growing season, May through September.

Deleted: WATER EFFICIENCY 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.¶

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

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

Section 1: General Provisions

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

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

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 (5) 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.

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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, installation, and maintenance professionals. It outlines the responsibilities and compliance aspects of being a Registered Landscape Professional in the Town.

2.1 GENERAL REQUIREMENTS

State of Colorado Professional Landscape Architect license 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

A landscape company working on non-residential properties in Castle Rock is required to be registered through Castle Rock Water and designate one or more Responsible Landscape Professional(s) (RLP) who represent the company and is directly responsible to ensure compliance with all criteria set forth in the Water Use Management Plan and the Landscape and Irrigation Criteria Manual. The Responsible Landscape Professional must obtain, and keep current, a Qualified Water Efficient Landscaper (QWEL) certification and be registered through Castle Rock Water.

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A Registered Landscape Professional (RLP) designation applies to individuals, not companies or organizations. The registered individual (RLP) is responsible for all work conducted on a project under his/her supervision.

2.1.1 REGISTRATION REQUIRED

1. Registration of Landscape Professionals expedites plan review, permitting, inspection, and approval of qualifying landscapes. Landscape 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, installation, and maintenance.
2. All land uses, with the exception of installations done by individual residential homeowners (individual residential homeowners do not include developers/home builders), require a State Licensed or Town registered professional for landscape and irrigation design, installation, and maintenance of landscaping and irrigation systems.
3. Any landscape designer, irrigation designer, or installation contractor performing work or service in the design, construction, installation, maintenance, addition, alteration, repair, equipping, moving, removal, conversion, or demolition of any landscape or irrigation governed by these Criteria must possess a current Colorado Professional Landscape Architect license or be registered through Castle Rock Water. The type and size of landscape designs are governed by the State of Colorado.
4. Permits for construction will only be issued to registered professionals.
5. A current professional (Colorado State or Castle Rock Water) registration number and name shall be present on all applications, drawings, and permits.

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Section 2: Professional Registration

2.1.2 REGISTERED PROFESSIONAL CLASSIFICATIONS

Landscape Design Professional

In order to register as a Landscape Professional, an applicant must certify they meet the requirements for plan preparation by providing professional qualifications. Colorado State law governs the sizes and types of projects that unlicensed individuals can design independent of Town requirements. For those projects exempt from State licensure, applicants must successfully complete a Town registration workshop, and obtain the Qualified Water Efficient Landscaper (QWEL) certification.

Irrigation Design, Landscape and Irrigation Installation, and Maintenance Professionals

To be eligible to perform irrigation design, landscape and irrigation installation, or maintenance, an applicant must certify they are qualified to prepare the type of plans they submit by completing the following requirements:

1. Attendance at a registration workshop; and
2. Passing score (seventy-five (75) percent or better) on a test formatted to identify level of knowledge of the Water Use Management Plan and Town of Castle Rock Landscape and Irrigation Criteria Manual.
3. All Town of Castle Rock updates and revisions will be emailed to currently Registered Landscape Professionals and must be acknowledged and accepted.
4. Successful completion of the Qualified Water Efficient Landscaper (QWEL) training and certification program.
5. QWEL certification must remain current and in good standing.

2.2 EXPIRATION

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

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

2.2.1 RENEWAL

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

For Registered Landscape 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 a Registered Landscape Professional ineligible for renewal. In such cases, seminar attendance and testing will be required prior to registration renewal.

2.3 COMPLIANCE

The Registered Landscape Professional 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.

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Section 2: Professional Registration

2.3.1 WORK WITHOUT CURRENT REGISTRATION

When design, installation, or maintenance work is commenced without first obtaining a Landscape Professionals registration through Castle Rock Water, or when the registration is expired, a special investigation may be conducted. An investigation fee equal to the amount of the registration fee may be assessed.

Landscape or irrigation plans submitted by individuals without a current Colorado Professional Landscape Architect license or Landscape Professionals registration through Castle Rock Water 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

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

1. False or misleading information was provided on the registration 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 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. The Responsible Landscape Professional and the Registered Landscape Professional will be notified of any instance of non-compliance and given the opportunity to correct all inconsistencies.
8. Non-residential areas shall complete necessary repairs within twenty-four (24) hours of notification or at a minimum before the system is used again.
9. Failure to correct inconsistencies, or more than one notice of non-compliance, will result in suspension of the Landscape Professionals Registration.
10. Providing false or misleading permit fee charges to a customer or to the Town.

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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, 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 appeal the suspension or revocation. Such request shall be in writing and delivered to the Director of Castle Rock Water, or designee thereof, within ten (10) calendar days of the receipt of the notice. The appeal letter shall include a thorough explanation of why the Registered Landscape Professional believes it was issued in error. Any appeal received after this time will not be considered.
3. The Director of Castle Rock Water, or designee thereof, shall provide the applicant or registrant with written findings and a ruling within fifteen (15) business days after review of the appeal.

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Section 2: Professional Registration

- Any decision rendered by the Director of Castle Rock Water, or designee thereof, shall take effect upon expiration of the ten (10) day appeal period.

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/she may enter an order for immediate suspension of such registration, pending further investigation.

Period of suspension

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.

Effect of revocation

Registration reinstatement can be accomplished by successfully completing the landscape professionals test and paying the associated registration fee.

Provisions concerning work in progress

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

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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 of 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's Development Services Department.

3.1 REVIEW PROCESS

3.1.1 PRE-APPLICATION MEETING

A pre-application meeting with the Town's Development Services Department is required 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 Criteria, the required scope, and any special procedures, analyses, and submittal requirements that may be applicable.

3.1.2 LANDSCAPE AND IRRIGATION SUBMITTAL REQUIREMENTS

Landscaping shall be designed as an important part of the overall site design. Landscaped area shall enhance the building design and public views, provide buffers and transitions between adjacent land uses, and provide screening. A general landscape plan shall be included with the Site Development Plan (SDP) submittal and a more detailed landscape and irrigation plan shall be submitted with the Construction Document (CD) submittal. All plans shall include the designer's name, contact information, State license number, and Landscape Professionals registration number, where applicable. Plans must be scaled, electronically reviewable, and printable at a twenty-four (24) inch x thirty-six (36) inch size with a scale of one (1) inch = twenty (20) feet and no greater than one (1) inch = forty (40) feet.

All forms, checklists, and plant list can be found online at the Town's website (CRgov.com/landscapeforms),

3.1.2.1 SITE DEVELOPMENT PLAN (SDP)

1. Landscape plan. A general landscape plan is to be provided with the SDP submittal and is considered along with the overall development goals for the project, sets forth design parameters, and recognizes special conditions that may exist within the proposed project. The general landscape plan shall establish tree and shrub quantities, tree and shrub locations, tree and shrub types, and hydrozones. The following site and use analysis should be considered:

- a. 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. Hatch keys, north arrow, and scale are required.

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Section 3: Landscape and Irrigation Submittal Requirements

b. 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. Interface landscaping, when necessary, shall be shown on the SDP.

2. Irrigation Plan. A complete irrigation plan is not required with the SDP submittal. A complete irrigation design is necessary in order to determine water service connection and meter size.

3. Required forms, charts, and notes to be included on the general landscape plan:

a. Landscape Site Inventory form

- i. Non-residential shall complete and include the Commercial Landscape Site Inventory Form.
- ii. Multi-family residential shall complete the Multi-family Landscape Site Inventory form.

b. Streetscape landscape chart

c. Tract landscape chart

d. Composite Landscape Water Use Rating (CLWUR) chart

e. Town of Castle Rock standard landscape notes for site development plans

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3.1.2.2 CONSTRUCTION DOCUMENTS (CD)

1. Landscape Plan. A detailed landscape plan is to be provided with the CD submittal. The detailed landscape plan shall conform to the tree and shrub quantities, tree and shrub locations, and hydrozones established in the landscape plan in the approved SDP. The landscape plan will also include tree and shrub species as well as other plant species and landscape material.

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a. Design elements shall include (as applicable):

- i. Plant materials (trees, shrubs, living groundcovers, grasses, vines, annuals, and perennial flowers) - locate, identify, and draw at mature size
- ii. Structures (buildings, fences, retaining walls, gazebos/patios, pavements, decks, sidewalks, parking structures, and other visual features) – locate and identify
- iii. Grading and contours (all slopes equal to 3:1 are to be called out on landscape sheets. Slopes greater than 3:1 are not permitted)
- iv. Minimum soil amendments as required by the Town
- v. Special features
- vi. Mulch types (inorganic or organic) and depth in inches

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Section 3: Landscape and Irrigation Submittal Requirements

- b. Include Town of Castle Rock standard landscape notes for construction documents and planting details.
 - c. Within the plant schedule, list quantities, types, and sizes at planting of plant material to be used, including specific species in seed mixes. Plant material shall be listed by both common and scientific name. Complete Town of Castle Rock Plant Schedule. Plants are to be called out by legend abbreviation and quantities in parenthesis on the landscape plan.
 - 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.
 - e. Town of Castle Rock planting details are required and can be found online at the Town's website (CRgov.com/1711/Landscape-Forms), 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. See CD checklist for additional requirements.
 - 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. Wet utilities such as water, sanitary sewer, and stormwater lines shall be labeled. Wet utility or drainage easements shall be called out with dimensions.
 - j. Show sight distance triangles - these areas must be kept free of visually obstructing landscape features (thirty (30) inches or taller) at mature size. All plant material within sight distance triangles shall be labeled with common and scientific name and mature height as shown on the Town of Castle Rock plant list.
 - k. Label all existing plant material to be removed or to remain then delineate on Construction Documents.
2. Irrigation Plan to include:
- a. Plan elements
 - Irrigation diagram showing:
 - i. Head layout
 - ii. Drip layout
 - iii. Hydrozones

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Section 3: Landscape and Irrigation Submittal Requirements

- iv. Scaled appropriately to match the landscape plan
 - v. Irrigation legend
 - vi. Service line location and size
 - vii. Irrigation meter location and size
 - viii. Backflow location and size
 - ix. Existing and proposed utility easement location and information
- b. TCR standard construction document irrigation notes and details.
 - c. TCR Hydraulic Worksheet.
 - d. 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 shall 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 included 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 must be provided.

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 Criteria.

3.2 APPROVAL

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 Criteria.

Section 4: General Requirements

4.0 INTRODUCTION

This Section describes minimum necessary general performance standards and Criteria of landscape and irrigation for all land uses. State licensed and Town Registered Landscape Professionals, homebuilders, and homeowners shall use this information for design, construction, installation, and maintenance of all land uses. All forms, checklists, and plant list can be found online at the Town's website (CRgov.com),

4.1 APPLICATION

This Section applies to all properties within the Town's service area.

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4.1.1 APPLICABLE USES

1. Multi-family properties as outlined in **Section 5**
2. Single-family and two-family residential properties as outlined in **Section 6**
3. Non-residential properties / business / industrial / governmental / schools / religious institutions / mixed-use properties as outlined in **Section 7**
4. Urban Areas as outlined in **Section 8**
5. Streetscape, rights-of-way, and tracts along rights-of-way, as outlined in **Section 9**
6. Parks, Sports Fields, and Golf Courses as outlined in **Section 10**

4.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Gross site area
2. Front, back, and side yard, including setbacks and utility easements.
3. Parking lot
4. Common areas
5. Streetscape

These Criteria shall apply when there is a renovation of any non-residential landscaped property in existence prior to the adoption of these Criteria.

1. Projects which impact twenty-five (25) percent or greater of landscaped area associated with a single water service connection (one tap)
2. Projects which impact ten thousand (10,000) square feet or greater of landscaped area associated with one or more water service connections (taps).

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Section 4: General Requirements

The area that shall be considered toward development of the percentage of impacted area shall include:

1. By lot – All landscape improvements on one (1) lot.
2. By metered service – All landscape improvements irrigated by a single meter.
3. 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 meet current Criteria, regardless of impacted area. Current Criteria must also be met where additional interface is required, or there is a change to existing final approved construction documents or plans for the lot, project, or site plan.

4.1.3 NOT APPLICABLE. This Section shall not apply to:

1. Homeowner repair of an existing irrigation system.
2. Renovation of existing irrigation systems that does not include addition of an irrigation zone.
3. Renovated areas less than twenty-five (25) percent of the existing landscaped area. Existing landscaped area shall mean the landscaped area on a single lot, or serviced by a single irrigation meter. Existing landscaped area shall not mean the entire approved site plan area, unless the project is served by a single irrigation meter.

4.2 GENERAL DESIGN REQUIREMENTS

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

4.3 GENERAL PERFORMANCE STANDARDS AND DESIGN CRITERIA

All landscape and irrigation design, installation, and maintenance shall be evaluated against these performance standards and 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.

4.3.1 PERFORMANCE STANDARD #1: Efficient Water Use

1. Conserve water through application of water-wise, ColoradoScape 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 fifteen (15) inches per growing season.

Section 4: General Requirements

- b. Water allocation for the irrigation of parks, sports fields, and golf courses shall vary by use of the area. Parks and passive recreation areas may be allocated up to nineteen (19) inches, such allocations are by approval only. No individual plant may have a higher water demand than fifteen (15) inches. 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 one 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.
 - c. Schools may be allowed additional seasonal irrigation of up to nineteen (19) inches for approved passive use common areas that facilitate high public use. These areas shall meet specific criteria in order to qualify for this additional seasonal irrigation (See **Section 10**).
3. Allocated water shall be used as efficiently as possible. When an overhead irrigation system is installed, system efficiency shall achieve a distribution uniformity of seventy-five (75) percent or greater. 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.

4.3.2 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 embracing and promoting other techniques and technologies to achieve this goal, as approved by the Town.

4.3.3 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 Castle Rock's natural resources, such as, but not limited to: views, nature, wildlife, habitat, flora, and fauna.

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- The project shall provide year round diversity of color and texture in plant material.

4.4 LANDSCAPE DESIGN

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

4.4.1 SOIL EVALUATION

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

- A soil analysis shall be conducted by a professional soil scientist at a certified soils laboratory.
- Soil sample(s) shall be taken after over-lot grading, if applicable, and prior to landscaping.
- The soil sample must represent a uniform area. Differences in texture (sand, silt, or clay), color, slope, degree of erosion, drainage, past management practices, types of plant material 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.
- 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, Phosphorus, Potassium, Zinc, Iron, Copper, Manganese, and Lime

4.4.2 STOCKPILING

When stripping of topsoil occurs, stockpiling 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.

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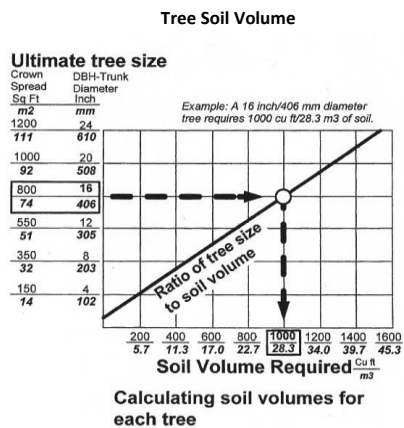
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Section 4: General Requirements

4.4.3 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 material in each area of the landscape.
2. A minimum of four cubic yards of organic matter soil amendment per one thousand (1,000) square feet of landscaped area shall be required for turf grass, trees, shrubs, perennials, and annuals. See **Table 4-1** for soil volumes for trees. Soil amendments for native seed areas must be consistent with TESC detail #17.
3. Soil amendment organic matter shall consist of compost, as defined in **Section 1**.
4. Source water, such as non-potable water should be considered.

TABLE 4-1



4.4.4 SOIL PREPARATION

1. Amendment shall be tilled to a minimum depth of six (6) inches.
2. Site shall be graded to within two-tenths (2/10th) of a foot.
3. Slopes greater than 3:1 are not permitted.
4. Site shall be free of rocks, dirt clods, and debris over three-quarter inch (3/4-inch) diameter in size.
5. Dry-land seed areas may contain dirt clods up to two (2) inch diameter in size.

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Section 4: General Requirements

4.4.5 STRUCTURAL SOIL

1. Cornell University (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), as well as in tree grates. Minimum tree planting area is six (6) feet in width. See standard Details for structural soil requirements.
2. All applicable soil Criteria and standards shall be noted on drawings.

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4.4.6 INSPECTIONS

1. Inspections are required prior to installation of plant material, and shall include review of adherence to all Criteria. Written documentation reflecting approved volume and type of soil amendment is required upon request. See CRgov.com/landscapeforms for current inspection requirements.
 - a. Residential inspections include, but are not limited to the following:
 - i. Compost and finish grade inspection, to include soil till depth
 - ii. WI-FI enabled smart controller
 - iii. Rain sensor
 - iv. No overhead irrigation in any area less than ten (10) feet
 - v. Curb stop box must be installed no more than one and one half (1 ½) inches above finish grade.
 - b. Non-residential inspections include, but are not limited to the following:
 - i. Pre-construction meeting
 - ii. Point of connection (IR-9 detail)
 - iii. Compost
 - iv. Finish grade inspection, to include soil till depth
 - v. No slopes greater than 3:1
 - vi. No overhead irrigation in any area less than ten (10) feet
 - vii. Sub-surface irrigation, as necessary
 - viii. Final landscape
 - ix. Final irrigation
2. All landscape and irrigation inspections are weather dependent. Due to the extreme variability and unpredictability in temperatures, precipitation, and reduced daylight hours inspections will not be performed between November 1st and March 1st.

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Section 4: General Requirements

- a. Certificate of Occupancy (CO) will not be issued until all inspections have been completed, punch list items have been addressed, final letter of acceptance has been issued, and irrigation permit has been closed.
- b. In order to receive the CO, prior to completion of all permit requirements, the applicant may post a surety.
 - i. Surety amount will be determined as a percentage of the owner's landscape and irrigation construction contract for items incomplete as determined by the approved plans unless a lower surety amount is outlined in the Subdivision Improvement Agreement (SIA) or Property Improvement Agreement (PIA).
 1. Bond: 100% of owner's landscape and irrigation construction contract
 2. Letter of credit: 75% of owner's landscape and irrigation construction contract
 3. Cash / Escrow: 65% of owner's landscape and irrigation construction contract

4.4.7 PLANT MATERIAL SPECIFICATIONS AND PLANTING STANDARDS

1. Minimum plant material quality
 - a. Plant material shall be selected from the Town of Castle Rock approved plant list. Any plant material not on the approved plant list must be submitted for review and approval. Submissions must be consistent with Development Services procedures and shall include water requirements and USDA hardiness zone information. Plant material shall be adaptable to the local environment and capable of naturalizing.
 - b. A minimum coverage of seventy-five (75) percent living plant material, at maturity, is required. No more than twenty-five (25) percent may be non-living material, to include organic mulch and rock. Plant material 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 material 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, 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.
 - e. Plants are to be hydrozoned with plants that have a similar water requirement. Plants of a very low hydrozone are not to be planted in a moderate to high hydrozone.

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

a. Large canopy deciduous shade trees shall be a minimum of two (2) inch in caliper, measured six (6) inches above the ground. Large canopy deciduous shade trees shall be three (3) inch caliper when in a grate, or planted in areas less than eight (8) feet in width.

b. Ornamental and flowering trees shall be a minimum of one and one half (1½) inch in caliper measured six (6) inches above the ground.

c. Evergreen trees shall be a minimum of six (6) feet tall, measured to the mid-point of the most recent year's growth.

d. Shrubs shall be fully rooted, a minimum of five (5) gallon container in size, and spaced to provide seventy-five (75) percent ground cover within five (5) growing seasons. See Town of Castle Rock Plant List for specific growth characteristics.

e. Ornamental grasses may be used to meet the shrub requirement; all plant material must meet the minimum size requirements for shrubs listed above.

f. Perennials, ground covers, and vines shall be a minimum of one (1) gallon container in size. Such shall be spaced to provide seventy-five (75) percent ground cover within three (3) growing seasons.

g. Annuals shall be sized shall be appropriate to application, whether flats, four (4) inch pots or larger and spaced to provide seventy-five (75) percent ground cover.

h. Grass seed planting quality and quantity in irrigated areas shall be in compliance with nursery standards and shall provide a minimum ground cover of eighty (80) percent within the first growing season. For non-irrigated native areas, see Temporary Erosion and Sediment Control Requirements.

3. Minimum planting standards

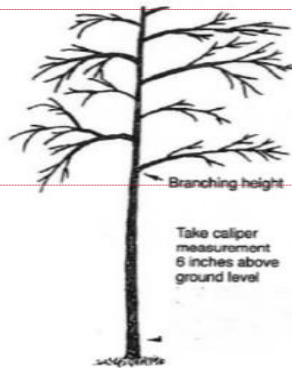
a. Landscaping shall comply with the Town of Castle Rock planting details.

b. Plant materials shall be spaced appropriately to allow adequate room for root zone and vegetation at maturity.

c. A minimum distance of ten (10) feet shall be provided between large canopy trees and buildings or trees and fences. Space provided must allow adequate room for mature tree.

d. Tree rings shall be provided for all trees within turf areas subject to mowing

FIGURE 4-2



Measuring deciduous tree caliper

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Section 4: General Requirements

operations. Tree rings for evergreen trees shall extend to the dripline of the tree to avoid limbing up of evergreen trees.

- e. Standard planting areas for large canopy deciduous shade trees shall be no less than eight (8) feet in width.
 - f. When an eight (8) foot width planting area is not possible, such as in urban areas or overlay districts, large canopy deciduous shade trees may be planted in areas less than eight (8) feet wide and shall require CU-Structural Soil™.
 - g. Small canopy trees shall be planted in a landscape strip no less than six (6) feet in width (not including curb and gutter).
4. Minimum amount of plant material.
- a. Tree requirements cannot be exchanged for other types of plant material. Fifty (50) percent of the gross site area tree requirement must include large canopy deciduous shade trees.
 - b. Diversity requirements for trees and shrubs are contained in **Table 4-3**.

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TABLE 4-3

Diversity Requirement

Deciduous Tree or Shrub Plant Diversity Scale

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

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4.4.8 NON-LIVING LANDSCAPE MATERIAL

1. Organic mulch, includes bark and wood chips
 - a. Shall be applied at one (1) cubic yard per eighty (80) square feet at a depth of four (4) inches, and as appropriate to each species.
 - b. Shall be applied to the soil surface, not against the plant stem or base of tree trunks, to minimize disease.
 - c. For all applications including residential and commercial, wood mulch is not allowed in drainage swales or areas of ponding water such as detention ponds. Rock mulch or other approved means of stabilization designed in accordance with the Storm Drainage Design and Technical Criteria Manual is required in areas of concentrated runoff.
2. Inorganic mulch includes rock, gravel, or cobble.

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- 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 material is permitted. Materials such as artificial turf may be used. Homeowners Associations and other private restrictions may apply.
 - a. ~~Artificial turf must be installed and maintained per manufacturers specifications.~~
5. Edging shall be consistent with industry standards. Metal edging shall be rolled or capped to eliminate sharp edges.
6. Water features shall recirculate water and be designed to reduce evaporation. Water features shall be on a separate service connection from the domestic water service. Water demand for the feature shall be defined and included in service connection sizing requirements. Wind shut off devices are required.

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4.5 IRRIGATION DESIGN

This Section identifies Criteria for irrigation service connections, control, methods, equipment, and system efficiency.

4.5.1 GENERAL DESIGN

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

1. Landscaped areas ~~five hundred (500) square feet or less~~, including pots and planters, ~~do not require permanent irrigation~~. These areas may be watered by bulk water service or from the building through a combined service line and must be well-maintained.
2. ~~Landscaped areas greater than five hundred (500) square feet require permanent irrigation systems~~.
 - a. Irrigated areas between five hundred (500) and five thousand (5,000) square feet shall be served from the building through a combined service line.
 - b. Irrigated areas greater than five thousand (5,000) square feet ~~shall~~ require a dedicated irrigation service line. This requirement does not apply to single family lots.
 - c. 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.~~
4. Only drip and subsurface irrigation systems are allowed in areas between four (4) feet

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and ten (10) feet in width.

5. Generally, trees, shrubs, perennials, and groundcover shall be irrigated with drip irrigation. See Irrigation System Design for additional specific criteria. Native grass may be permanently irrigated on slopes not to exceed 3:1 (Slopes steeper than 3:1 are not permitted).
6. Native grass may be temporarily irrigated for establishment purposes. See the Town of Castle Rock Temporary Irrigation for non-irrigated native areas criteria (Appendix A). This Criteria is required to be shown on the landscape or irrigation sheets submitted for construction document review.

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Irrigation is not allowed in areas less than four (4) feet in width, unless approved in an Urban Area. ¶

4.5.2 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 prevention assemblies must be installed no further than five (5) 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 Plan.
4. The mainline or lateral line from a single irrigation service connection shall not cross lot lines.
5. Maximum velocity shall not exceed seven and one half (7.5) feet per second through the service line and meter.
6. Mainline pressure
 - a. System design shall consider minimum and maximum allowable mainline pressure 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.
 - 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.
7. Irrigation service connections (taps) shall not interconnect downstream of the meter. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
8. The irrigation service line shall be the same size as the tap from the Town water main

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~~through the point of connection, as outlined in the IR-9 detail,~~

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4.5.3 IRRIGATION SYSTEM CONTROL

1. Smart irrigation controllers 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, ten thousand (10,000) square feet or larger.

4.5.4 IRRIGATION SYSTEM DESIGN

1. Resilient shut off valve with manual drain, or stop and waste valve, is required downstream of the meter.
2. All irrigation systems shall be contained by the appropriate backflow prevention assembly. 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 on non-residential service connections.
4. Flow sensors are required on non-residential service connections.
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 irrigation is allowed on slopes not to exceed 3:1. Refer to Temporary Irrigation Criteria in Appendix A.
 - c. There shall be no overhead irrigation in parking lot peninsulas, ~~islands~~ or entryways.
 - d. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Pop-up height of six (6) inches is required for turf areas. 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 spray nozzles are not allowed.
 - f. Rotors shall be equipped with internal check valves and pressure regulation.

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7. Drip irrigation

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- a. Drip irrigation is required in areas greater than four (4) feet, and less than ten (10) feet.
 - b. Drip irrigation shall be point-source drip or sub-surface drip irrigation for all trees, shrubs, perennials, and annual beds.
 - c. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
 - d. All (Residential and non-residential) point-source drip, sub-surface drip, dripper line, and bubblers must be installed with an operational indicator in each planting area and a flush valve, with operational indicator at every dead end.
 - e. All drip emitters shall be installed on stakes and placed above the mulch, around the perimeter of the plant.
8. Bubblers may be substituted for drip emitters where necessary to provide adequate supplemental irrigation to plant material in certain locations (i.e., trees in native grass areas).
9. There shall be no irrigation within street medians or round-a-bouts.
- a. All material proposed within street medians or round-a-bouts shall be designed to minimize dislodging and obstructing travel lanes, and be compatible with Town maintenance operations. Proposed material must be shown on plan submittals. Final selected material must be approved by the Town.
10. Irrigation charts and hydraulic worksheets are required for irrigation plan submittal on construction documents.

4.5.5 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 achieve a seventy-five (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.
 - b. 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 twenty-five (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

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number of zones may be increased depending on the size and complexity of the irrigation system.

- c. The Town reserves the right to conduct follow up audits as deemed necessary at the expense of the customer.
 - d. The irrigation system shall consist of high efficiency nozzles, with an application rate not to exceed one and one quarter (1.25) inches / hour.
 - e. 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.
 - f. The irrigation system design and installation must include head to head coverage, ~~without overspray onto impervious surfaces,~~ at final inspection.
3. Backflow prevention assembly testing
- a. 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.

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4.5.6 IRRIGATION SYSTEM OPERATION

All irrigation shall occur according to the specifications of the Town's Water Use Management Plan, 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, annuals, ground covers, etc.)
 - a. Identify temporary, establishment irrigation method.
 - b. 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, annuals, ground covers, etc.).
 - a. Dedicated water service connections have designated watering days determined by address or location.
 - b. Permissible hours of irrigation will be consistent with those outlined in the Water Use Management Plan.
 - c. Seasonal application rates shall be consistent with plant water requirements

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identified in the Town of Castle Rock Plant List.

4.6 WATER EFFICIENCY PLAN

A Water Efficiency Plan (WEP) is a component of the codes, covenants and restrictions of the development.

1. Developments with an approved Water Efficiency Plan (WEP) shall have landscape and irrigation designs exceeding current Town of Castle Rock landscape and irrigation standards.
2. Landscape Section of Water Efficiency Plans shall contain:
 - a. Model landscape plans for single-family homes.
 - b. Landscape typical for streetscapes.
 - c. Plantings along public streets, common areas, and open space frontages, visible to the public, must be limited to native species originally found in the existing landscape. Landscape may include non-native plants specifically approved in the Town of Castle Rock Plant list and designated approved for Water Efficiency Plans.
 - d. Landscape typical for development entries.
 - e. Landscape typical for both public and private parks.
 - f. Landscape typical for open space.
3. Irrigation Section of Water Efficiency Plans shall contain:
 - a. **Conceptual** irrigation plans, matching corresponding landscape plans in “a” through “f” above.
4. All landscape and irrigation plans, as part of a Water Efficiency Plan, must be approved by Castle Rock Water, Conservation Plan Review.

4.7 GENERAL MAINTENANCE

4.7.1 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.

4.7.2 LANDSCAPE

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Section 4: General Requirements

1. All landscape improvements, indigenous plant material, 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.

4.7.3 TURF, 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 (3-1/2) inches, 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.

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 one-third 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.

Section 4: General 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 construction document landscape plans.

4.7.4 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.

4.7.5 DEAD PLANT MATERIAL

Dead plant material shall be removed and replaced with healthy plant material of comparable size and species that meet the original intent of the approved landscape design within forty-five (45) days of Town being notified of a problem, 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.

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

Nonliving landscape material 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 mulch and four (4) inches for wood mulch.

Town is not responsible for plant damage due to insects, disease, winter injury, irrigation malfunctions, or other environmental factors.

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Section 5: Multi-Family Residential

5.0 INTRODUCTION

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

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5.1 APPLICATION

5.1.1 APPLICABLE DWELLINGS

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

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1. Apartment complexes
2. Townhomes and condominiums
3. Mobile home dwelling complexes or parks
4. Residential properties found in the R-3 Multi-Family Residence District or as similarly zoned by a Planned Development. See Town of Castle Rock Municipal Code Title 17 for zoning information.

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Deleted: following zoning districts:

5.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Gross site area
2. Front, back, and side yard, including setbacks and utility easements
3. Parking lot
4. Common area
5. Associated facilities

Deleted: Passive recreation areas

Streetscapes, rights-of-way (ROW), included with the project shall adhere to the performance standards and Criteria in **Section 9**.

5.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape design for this land use.

5.2.1 LANDSCAPE DESIGN

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Section 5: Multi-Family Residential

5.2.1.1 SITE REQUIREMENTS

1. Gross Site Requirements

A minimum of twenty (20) percent of the gross site area shall receive landscape improvements. Gross site area shall exclude the right-of-way. ROW landscaping is required for adjacent streets, but is not included in the required calculation for the site. See **Section 9** 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.

5.2.1.2 PARKING LOT REQUIREMENTS

1. Performance Standards

- a. Trees shall reduce urban heat-island effect.
- b. Trees shall not cause snow build-up or ice problems.
- c. Plant material shall accommodate environmental conditions associated with parking lots, including heat-island effect and snow storage.
- d. Trees shall not interfere with driver visibility of pedestrians or drive-aisle traffic.
- e. Design, plant materials, and hardscape material shall consider levels of foot traffic and shall not create pedestrian safety hazards.

2. Criteria

- a. A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included within and counts toward the minimum gross site area requirements).
- b. A minimum of two (2) large canopy deciduous shade trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See Table 5-1.

TABLE 5-1

Required trees/shrubs

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Section 5: Multi-Family Residential

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 = ~~one~~ (1) tree per one thousand (1,000) sf of landscaped area

** Required Shrubs = four (4) shrubs per one thousand (1,000) sf of landscaped area

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c. Parking lots containing more than forty (40) spaces shall provide parking lot islands and/or peninsulas. When required, there shall be no more than fifteen (15) adjacent parking stalls between parking lot islands and peninsulas.

i. A minimum of one (1) large canopy deciduous shade tree and four (4) shrubs shall be provided for each parking lot island and peninsula.

1. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each of the four (4) required shrubs.

2. Large canopy deciduous shade tree requirements cannot be exchanged for small canopy trees.

ii. A minimum width of eight (8) feet is required for parking lot islands and peninsulas.

3. Measuring the parking lot area and parking lot landscape area

a. The measured parking lot area includes the paved area and parking lot curb. It does not include right-of-way and aisles leading to and from the parking lot. See Figure 5-1

b. The measured parking lot landscaped area includes parking lot islands, peninsulas, and corners (not including curbs) and may include a three (3) foot wide landscaped area abutting the parking lot. It does not include right-of-way or detention areas.

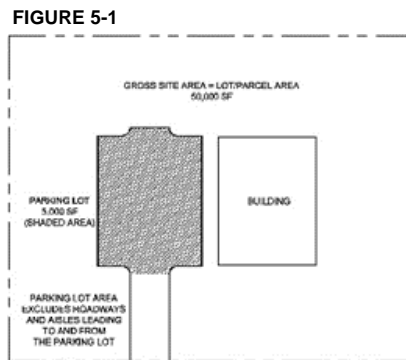
i. Islands may only be considered part of the parking lot landscaped area when surrounded on four (4) sides by parking spaces or drive aisles.

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Section 5: Multi-Family Residential

- ii. Peninsulas may only be considered part of the parking lot landscaped area when surrounded on three (3) sides by parking spaces or drive aisles.
- iii. Corners may only be considered part of the parking lot landscaped area when surrounded on two (2) sides by parking. Landscaped 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.
- iv. A three (3) foot wide landscaped area may only be considered when abutting the parking lot as measured from the back of the parking lot curb. See Figure 5-2



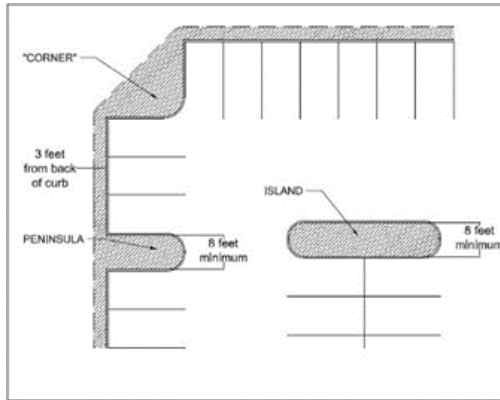
Calculation area example

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Section 5: Multi-Family Residential

FIGURE 5-2



Shaded areas may be counted towards parking lot landscape requirement

4. Other

- Evergreen trees shall not be located in parking lot islands, peninsulas or any area that would cause snow or ice buildup on the parking lot.
- Evergreen trees shall not be located in parking lot islands, peninsulas or any area that would block sight lines.
- Landscape plantings at mature size and landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles adjacent to parking space access aisles.
- Plant material located within snow storage areas shall be chosen for tolerance to snow storage.

5.2.1.3 PASSIVE RECREATION AREA

Passive Recreation Areas: Multi-family land uses may have Passive Recreation Areas, a type of Common Area, 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 intended activities of the area, including pedestrian access and layout. See Section 10.

Deleted: The measured parking lot area includes the paved area and curb. Measured area excludes roadways and aisles leading to and from the parking lot. Areas to be incorporated in the calculation include landscaped islands, peninsulas, and corners internal to the parking lot (not including curb). Measured parking lot area shall not be comprised of right-of-way or detention areas. See Figure 5-1.

A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included in and counts towards the landscape requirements for the gross site).

Minimum planting requirements are two (2) large canopy trees and four (4) shrubs for each one thousand (1,000) square feet of landscaped area. One (1) additional large canopy tree may be substituted in lieu of each four (4) shrubs. See Table 5-2.

The parking lot area landscape plan shall include large canopy deciduous shade trees to reduce urban heat island effect. The landscape plan shall include a selection of large canopy deciduous shade trees that result in shade covering at least fifty (50) percent of the parking lot area at seven (7) years growth.

Multi-family residential projects shall use the Town of Castle Rock Multi-family Landscape Site Inventory form for landscape submittal.

Interior parking lot area landscaping (islands and peninsulas).

Shall be a minimum of eight (8) feet in width. Width does not include the curb.

Parking areas containing more than forty (40) spaces shall provide interior landscape islands.

When parking islands or peninsulas are required, there shall be no more than fifteen (15) adjacent parking spaces between landscaped islands or peninsulas.

Each landscaped island or peninsula shall provide shade through a minimum of one (1) large canopy deciduous shade tree.

Tree requirements cannot be exchanged for

Deleted: access and layout of these areas shall be designed to support Passive Recreation Area activities, including pedestrian access.

Passive recreation areas shall be a minimum of 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.

The following uses do not qualify as passive recreation areas: streetscapes, islands, or medians, landscape buffers, setbacks, parking areas, or other areas not intended or designed for recreational use.

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Section 6: Single-Family and Two-Family Residential

6.0 INTRODUCTION

This Section describes minimum necessary performance standards and criteria for single and two-family residential land uses and recommendations for existing dwellings owned by individual homeowners. Unless specifically called out in this Section, the general performance standards and criteria in **Section 4** shall apply.

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6.1 APPLICATION

6.1.1 APPLICABLE DWELLINGS

Applicable dwellings are new homes constructed by a developer, residential homebuilder, organization, custom homebuilder, semi-custom homebuilder, and homeowners.

This Section applies to single-family and two-family residential properties within the Town limits, or served by Castle Rock Water, and includes the following:

1. Single-family dwelling, ~~detached,~~
2. Single-family dwelling, ~~attached,~~
3. Paired home
4. This includes the types of residential properties found in the R-1 and R-2 Single-family Residence District or as similarly zoned by a Planned Development. (See Town of Castle Rock Municipal Code Title 17 for zoning information).

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Deleted: following zoning districts:

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6.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Front, back, and side yards where landscape or irrigation are provided in new home construction, renovation, or maintenance.
2. All setbacks and utility easements where provided in new home construction, renovation, or maintenance.

6.2 DESIGN REQUIREMENTS

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

Landscaping or landscape materials shall be no more than thirty (30) inches above the flow line when located in a sight distance triangle.

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Front, back, and side yard landscape and irrigation must be designed and installed through the homebuilder as part of the construction process. All landscape and irrigation installation must be completed by a Registered Landscape Professional.

6.2.1 LANDSCAPE DESIGN

1. Site Requirements
 - a. Trees

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Section 6: Single-Family and Two-Family Residential

i. All pervious areas equal to or greater than four hundred (400) square feet shall have a minimum of one (1) large canopy deciduous shade tree provided in the setback. All pervious areas less than four hundred (400) square feet shall have a minimum of one (1) small canopy deciduous shade tree. Tree requirements cannot be exchanged for other types of plant material. Small canopy trees cannot be exchanged for required large canopy deciduous shade trees. NOTE: Sizing requirements for single-family residential front yard tree shall be adhered to by all builder installations.

b. Front yard

i. No turf allowed in front yards. Front yard landscape shall utilize a ColoradoScape design. Minimum 75% plant coverage at maturity (3 years).

c. Traditional front yard:

- i. Less than 400 square feet: A minimum of four (4) shrubs and sixteen (16) perennials are required.
- ii. 400 square feet or more: A minimum of nine (9) shrubs and twenty-four (24) perennials are required.

d. Corner lot:

- i. Less than 400 square feet: A minimum of five (5) shrubs and fifteen (15) perennials are required.
- ii. 400 square feet or more: A minimum of ten (10) shrubs and thirty (30) perennials are required.

e. Alley loaded:

- i. Less than 400 square feet: A minimum of four (4) shrubs and Sixteen (16) perennials are required.
- ii. 400 square feet or more: A minimum of nine (9) shrubs and twenty-four (24) perennials are required.
- iii. Diversity requirements for trees and shrubs are contained in **Section 4**, and are applicable to installation of tract home landscaping.

f. Back yard:

- i. Turf (live or artificial): 500 Square feet maximum
 - 1. A minimum of one (1) tree.
 - 2. A minimum of ten (10) shrubs.
 - 3. A minimum of four (4) ornamental grasses or perennials.
- ii. Reduced Turf (live or artificial): Two hundred and fifty square feet maximum.

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Shrubs - A minimum of four (4) shrubs are required for each large canopy deciduous shade tree.¶

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Section 6: Single-Family and Two-Family Residential

1. A minimum of one (1) tree.
2. A minimum of fourteen (14) shrubs.
3. A minimum of eight (8) ornamental grasses or perennials.
- iii. ColoradoScape: No turf
 1. A minimum of one (1) tree.
 2. A minimum of fourteen (14) shrubs.
 3. A minimum of sixteen (16) ornamental grasses or perennials.
4. Irrigated Turf Areas are only allowed in back yards and cannot exceed 500 square feet. Approved moderate and low water use turf or alternative turf are required. 100% Kentucky Bluegrass, and turf varieties that use more than nineteen (19) inches of water per growing season are not allowed.

TABLE 6-1 Diversity Requirement

Deciduous and Evergreen Tree or Shrub Plant Diversity Scale

# of Plants	Maximum % of Single Species
1-3	Can have 100% of one species
4-7	Maximum of 50% of any one species
8-12	Maximum of 33% of any one species
12+	Maximum of 25% of any one species

Areas devoted to the cultivation of native or naturalized grasses shall be exempt from square footage limitations. These areas can be temporarily irrigated for establishment only. Establishment period not to exceed one full growing season.

6.2.2 IRRIGATION DESIGN

This Section identifies performance standards and Criteria for single-family and two-family residential irrigation systems including control, methods, equipment, and system efficiency.

1. General Design

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.

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

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Section 6: Single-Family and Two-Family Residential

- b. 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.
 - c. 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.
 - d. 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.
 - e. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
 - f. Irrigation shall be hydrozoned, grouping similar water demands and exposure by irrigation zone.
 - g. Irrigation methods:
 - i. Only drip or sub-surface irrigation systems will be allowed in areas less than ten (10) feet in width.
 - ii. Irrigation is not allowed in areas less than four (4) feet in width.
2. Irrigation System Control
- a. WI-FI enabled smart irrigation controllers, capable of interval watering, are required. This requirement shall be adhered to by all installations within this category, including homeowner installations.
 - b. Due to common power outages, battery 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.
 - c. Upon installation the landscape / irrigation installer shall program the controller to meet Water Use Management Plan requirements.
 - d. 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.
 - e. 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.
3. Irrigation System Design

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Section 6: Single-Family and Two-Family Residential

- a. Resilient shut off valve with manual drain, or stop and waste, is required to isolate the irrigation system from the domestic plumbing system.
- b. All irrigation systems shall be contained by the appropriate backflow prevention assembly. See the Town's Cross-Connection Control requirements in the Town Municipal Code Chapter 13.06.
- c. Backflow prevention assemblies shall not exceed sixty (60) inches above the ground.
- d. A Pressure Vacuum Breaker (PVB) shall be installed a minimum of twelve (12) inches higher than the highest possible outlet.
- e. Master valves are required.
- f. Rain sensors are required.
- g. Flow sensors are recommended.
- h. Overhead irrigation.
 - i. Overhead irrigation is not allowed in areas less than ten (10) feet.
 - ii. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Minimum pop-up height of six (6) inches or higher is required for plant material unless the plant material is natively maintained native grass or wildflowers, where a minimum pop-up height of twelve (12) inches is required.
 - iii. Pop-up spray heads shall be equipped with internal check valves, internal pressure regulation and matched precipitation rate spray or rotary nozzles. Pressure regulation must be consistent with manufacturer's recommendations for the selected nozzle.
 - iv. Rotors shall be equipped with internal check valves and pressure regulation.
- i. Drip irrigation
 - i. Drip irrigation shall be point source drip or sub-surface drip irrigation for all trees, shrubs, perennial, and annual beds.
 - ii. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
 - iii. Sub-surface drip irrigation may be used for turf or grass areas, and is required in areas less than ten (10) feet in width.
 - iv. All point-source drip, sub-surface drip, dripper line, and bubblers must be installed with an operational indicator in each planting area and a flush valve, with operational indicator at every dead end.
- j. 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).

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Section 6: Single-Family and Two-Family Residential

k. Irrigation charts and hydraulic worksheets may be required for plan submittal.

4. Irrigation system installation

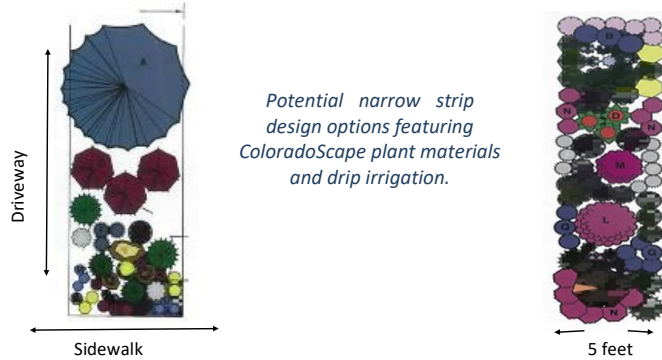
Irrigation system shall meet Town performance standards and Criteria prior to issuance of certificate of occupancy or other Town approval. Release of bonding or surety shall be withheld until approval is given.

- a. Irrigation system installation shall be consistent with approved system design.
- b. 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.

5. Irrigation system operation

All irrigation shall occur according to the specifications of the Town's Water Use Management Plan 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



- a. Temporary irrigation (establishment) is defined for each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.).
 - i. Identify temporary establishment irrigation method.
 - ii. Duration of establishment period to be determined by the temporary irrigation criteria.

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Section 6: Single-Family and Two-Family Residential

- iii. Identify application rates, monthly and annual water demand totals for establishment period.
- b. Permanent irrigation is to be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.).
 - i. Watering days and times to be outlined in the Town of Castle Rock Water Use Management Plan.
 - ii. Seasonal application rates shall be consistent with the Town of Castle Rock Plant List.

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Section 7: Non-Residential Properties

7.0 INTRODUCTION

This Section describes minimum necessary standards and criteria for non-residential properties such as business / commercial development, such as a business, industrial, governmental, school, religious institution, or mixed uses. 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 zoning districts within the Town limits, and / or served by Castle Rock Water, such as, but not limited to the following:

1. Business/commercial district uses
2. Industrial
3. Governmental
4. Schools
5. Religious institutions
6. Mixed use containing one or more of the above uses
7. This includes the types of Non-residential properties found in the following zoning districts: B Business Commercial District, I-1 Light Industrial District, I-2 General Industrial District, similarly zoned by a Planned Development or an Overlay District. (See Town of Castle Rock Municipal Code Title 17 for zoning information).

7.1.2 APPLICABLE LANDSCAPE

1. Gross site area
2. Areas, including setbacks and utility easements
3. Parking lot
4. Common areas.

Streetscapes included with the project shall adhere to the performance standards and criteria in **Section 9**.

Dependent on design, schools with passive parks or passive recreation areas and / or active sports fields, may require adherence to the performance standards and criteria in **Section 10**.

7.2 DESIGN REQUIREMENTS

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Section 7: Non-Residential Properties

7.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the performance standards and Criteria shall apply to all non-residential land uses within this Section.

7.2.1.1 SITE REQUIREMENTS

1. Performance Standards

- a. Plant material diversity creates visual appeal and limits disease and other environmental problems.
- b. Plant material diversity creates a seasonal appearance of greenery throughout the year.

2. Criteria

- a. A minimum of ten (10) percent of the gross site area shall receive landscape improvements.
 - i. Gross site area does not include adjacent streetscapes or rights-of-way. Plantings in these areas must follow the standards in **Section 9**.
 - ii. Plantings in adjacent streetscapes, rights-of-way, or tracts along rights-of-way do not count toward the site requirements herein.
 - iii. Landscaping in the parking lot may be counted toward the minimum gross site area requirement.
- b. A minimum of two (2) trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See example in **Table 7-1**.
 - i. Fifty (50) percent of the tree requirement must include large canopy deciduous shade trees.
 - ii. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each four (4) required shrubs.
 - iii. Tree requirements cannot be exchanged for other types of plant material.

c. Plant material requiring more than ten (10) inches of water is not allowed.

i. Native grasses can be temporarily irrigated for establishment.

ii. Permanently installed overhead irrigation is not allowed.

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7.2.1.2 PARKING LOT REQUIREMENTS

1. Performance Standards

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Section 7: Non-Residential Properties

- a. Trees shall reduce urban heat-island effect.
- b. Trees shall not cause snow build-up or ice problems.
- c. Plant material shall accommodate environmental conditions associated with parking lots, including heat-island effect and snow storage.
- d. Trees shall not interfere with driver visibility of pedestrians or drive-aisle traffic.
- e. Design, plant materials, and hardscape material shall consider levels of foot traffic and shall not create pedestrian safety hazards.

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2. Criteria

- a. A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included within and counts toward the minimum gross site area requirements).
- b. A minimum of two (2) large canopy deciduous shade trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See Table 7-1.

Table 7-1 Required trees/shrubs

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

- c. Parking lots containing more than forty (40) spaces shall provide parking lot islands and/or peninsulas. When required, there shall be no more than fifteen (15) adjacent parking stalls between parking lot islands and peninsulas.
 - i. A minimum of one (1) large canopy deciduous shade tree and four (4) shrubs shall be provided for each parking lot island and peninsula.
 1. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each of the four (4) required shrubs.
 2. Large canopy deciduous shade tree requirements cannot be exchanged for small canopy trees.
 - ii. A minimum width of eight (8) feet is required for parking lot islands and peninsulas.

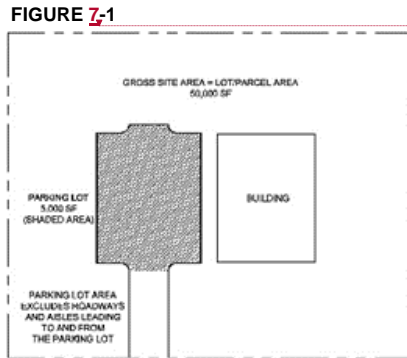
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Section 7: Non-Residential Properties

3. Measuring the parking lot area and parking lot landscape area

- a. The measured parking lot area includes the paved area and parking lot curb. It does not include right-of-way and aisles leading to and from the parking lot. See Figure 7-1



- b. The measured parking lot landscape area includes parking lot islands, peninsulas, and corners (not including curbs) and may include a three (3) foot wide landscaped area abutting the parking lot. It does not include right-of-way or detention areas.
- Islands may only be considered part of the parking lot landscaped area when surrounded on four (4) sides by parking spaces or drive aisles.
 - Peninsulas may only be considered part of the parking lot landscaped area when surrounded on three (3) sides by parking spaces or drive aisles.
 - Corners may only be considered part of the parking lot landscaped area when surrounded on two (2) sides by parking. Landscaped 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.
 - A three (3) foot wide landscaped area may only be considered when abutting the parking lot as measured from the back of the parking lot curb. See Figure 7-2.

c. Other

- Evergreen trees shall not be located in parking lot islands, peninsulas, or any area that would cause snow or ice buildup on the parking lot.
- Evergreen trees shall not be located in parking lot islands, peninsulas, or any area that would block sight lines.
- Landscape plantings at mature size and landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles adjacent to parking space access aisles.

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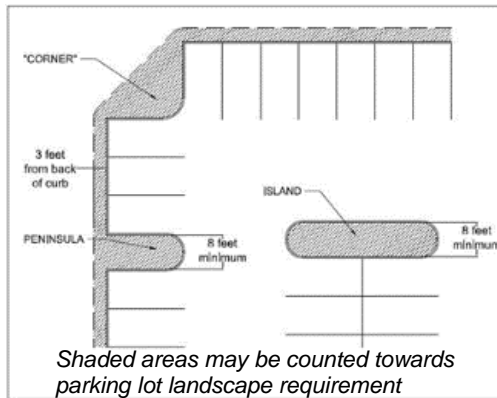
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Section 7: Non-Residential Properties

- iv. Plant material located within snow storage areas shall be chosen for tolerance to snow storage.
- v. The parking lot area landscape plan shall include large canopy deciduous shade trees to reduce urban heat island effect.
- vi. Water features are not allowed.

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FIGURE 7-2



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Section 8: Urban Areas

8.0 INTRODUCTION

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 Section describes minimum necessary performance standards and Criteria for site and streetscape landscaping for Urban area uses not specifically addressed within the Castle Rock Municipal Code. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4**, **Section 5**, **Section 7**, and **Section 9** shall apply.

8.1 APPLICATION

8.1.1 APPLICABLE USES

This Section applies to Urban Areas as determined by the Town, or served by Castle Rock Water. Urban and vertical uses with approved Overlay District Criteria shall adhere to all standards and Criteria herein unless otherwise called out in approved Overlay District Criteria. Refer to Municipal Code for specific Overlay District requirements.

8.2 DESIGN REQUIREMENTS

8.2.1 LANDSCAPE DESIGN

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

1. Performance Standards

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

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Section 8: Urban Areas

2. Criteria

a. Minimum Planting Requirements

- i. For minimum plant material and quantity requirements for the Downtown Overlay District, see Municipal Code 17.46.
- ii. For minimum plant material and quantity requirements for the Wolfensberger North Zoning District, see Municipal Code 17.42.
- iii. For other Urban Areas, as determined by the Town, see **Section 7** for minimum tree and shrub requirements for the site, and **Section 9** for minimum tree and shrub requirements for the streetscape.

b. Trees

- i. Large canopy deciduous shade trees shall be spaced no more than forty (40) feet apart in the streetscape.
- ii. Tree planting strips less than eight (8) feet wide shall have CU™ Structural Soil.
- iii. Minimum tree planting width is six (6) feet.

c. Street Trees

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

d. Tree Grates

- i. Tree grates or similar planting sections are allowed in Urban Area streetscapes only and shall accommodate mature tree canopy.
- ii. Tree grates shall be a minimum of six (6) feet by six (6) feet.
- iii. All trees in grates shall be a minimum of three (3) inch caliper, measured six (6) inches above the ground.
- iv. Tree species is limited to trees identified in the approved Town of Castle Rock plant list (hydrozone 1 or 2), as appropriate for urban environments and narrow street tree planting strips.

e. Overlay District potted plant requirement:

- i. One percent of the total landscaped area is required to be planted in a summer flowering xeric perennial or annual plant.
- ii. Flowering plants should be planted in window boxes, clay pots, or raised beds.

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<#>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.¶

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Section 8: Urban Areas

iii. Containers shall be able to drain water and contain the necessary amount of soil to grow healthy plants, however should not create water waste.

iv. Flowers should face the street or sidewalk adjacent to the property or the business entrance.

f. Other

i. Plant material, other than trees, may be installed in areas less than four feet in width. Mature plant sizes shall be utilized to design urban planting areas. See Town of Castle Rock Plant list for mature plant sizes.

ii. Provide adequate plant material for eighty (80) percent coverage within five (5) years.

iii. Provide a mechanism for the specific needs for long-term maintenance of landscaping within the urban environment.

iv. Provide regularity of watering, especially in planting vault situations with CU™ Structural Soil, as CU™ Structural Soil does not hold water as well as standard soil.

v. Areas less than four (4) feet in width along collector or arterial streets shall be hardscaped with stamped concrete, unit pavers, grouted cobble, or flagstone.

vi. Permanently irrigated planters shall not be less than three (3) feet in width.

8.2.2 IRRIGATION DESIGN

i. See **Section 4**.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9.0 INTRODUCTION

This Section describes minimum necessary performance standards and Criteria for streetscapes, rights-of-way, and tracts along rights-of-way. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4** shall apply. For minimum necessary performance standards and Criteria for Urban Area streetscapes see **Section 8**. This Section shall not apply to Town of Castle Rock Capital Improvement Program projects.

9.1 APPLICATION

9.1.1 APPLICABLE USES

This Section applies to all Streetscapes, Rights-of-way, and Tracts along Rights-of-Way within the Town limits or served by Castle Rock Water.

1. Streetscapes
2. Rights-of-way
3. Tracts along rights-of-way within the Town limits and / or areas served by Castle Rock Water

9.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Street Tree Planting Strips
2. Right-of-way area between sidewalk and private property
3. Tracts along rights-of-way
4. Planting strips on private property, along rights-of-way
5. Entry streets

9.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape design and irrigation design for streetscapes, rights-of-way, and tracts along rights-of-way.

9.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to all land uses within this Section. In addition, Overlay Districts shall adhere to these performance standards and Criteria unless specifically called out otherwise in the Overlay District.

1. Overall
 - a. Performance Standards
 - i. Plant material diversity creates visual appeal and limits disease and other environmental problems.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- ii. Plant material shall create a seasonal appearance of greenery throughout the year.
- iii. Plant material shall accommodate environmental conditions associated with streetscapes and rights-of-way, including heat, salts, chemicals, pollution, and snow removal.
- iv. Sight distance triangles are free from visual obstructions and provide a safe view of traffic and pedestrians.
- v. Town water, sanitary sewer, and drainage infrastructure are protected and able to be maintained or replaced.
- vi. Design shall accommodate efficient irrigation and eliminate run-off.
- vii. Medians and round-a-bouts in rights-of-way provide visual appeal, using inorganic material.
- viii. Plant material for entry streets enhance neighborhood character.
- ix. Promote ColoradoScape design elements.
- x. Water features are not allowed.

b. Criteria

- i. Living plant material, which requires irrigation, is not permitted within medians and round-a-bouts in rights-of-way.
- xi. Traditional turf grass is prohibited. Native grasses must be maintained in their natural form.
- xii. Plant material within the streetscape must be hydrozone one (1) or two (2) from the Town of Castle Rock plant list.
- ii. Maximum number of species per deciduous and evergreen plantings shall follow diversity requirements in **Section 4**.
- iii. Slopes steeper than 3:1 are not permitted.
- iv. Landscaping or landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles. Length of sight distance triangles are dependent upon street classification. For length calculation information see Intersection Safety Triangles in the Transportation Design Criteria Manual.
- v. Trees, large shrubs, or permanent objects are not permitted within wet utility easements.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- vi. Landscape design shall meet the requirements of the Composite Landscape Water Use Rating (CLWUR) per Town of Castle Rock Municipal Code Chapter 13.20.
- vii. When implementing ColoradoScape design, soil amendment shall be four (4) cubic yards of organic material per one thousand (1,000) square feet, rototilled to a minimum depth of six (6) inches.
- viii. A minimum coverage of 75 percent live plant material (at maturity) is required; no more than 25 percent may be non-living materials, including organic mulch and rock.

2. Street Trees

a. Performance Standards

- i. Tree type and spacing provides a continuous tree canopy over the streetscape.
- ii. Trees do not interfere with driver visibility of pedestrians, oncoming traffic, traffic control devices, or regulatory signs.
- iii. Trees are planted within adequate space and soil to provide for healthy mature spread.
- iv. A clear and safe walking zone between trees and pedestrians, and trees and structures, including buildings and fences, is provided.
- v. Trees provide shade, but do not cause snow build-up or icing on the street, sidewalk, or right-of-way, particularly for north facing areas.

b. Criteria

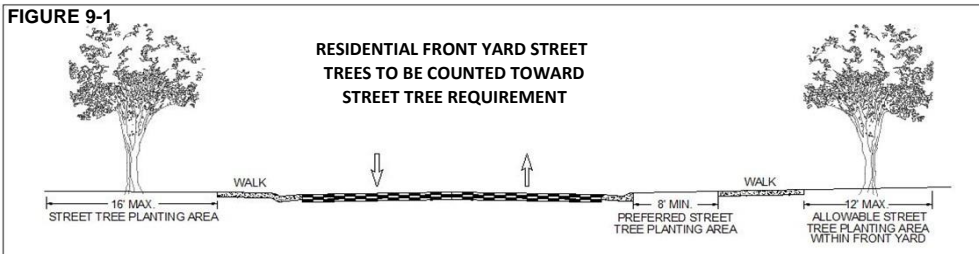
i. Required Street Trees.

- 1. A minimum of one (1) deciduous tree for every forty (40) linear feet of landscaped area within ROW is required.
- 2. A tree planted within the front yard of a private property may be counted toward the minimum tree requirement.
 - a. For streets with attached sidewalks, a tree planted within sixteen (16) feet from back of street curb.
 - b. For streets with detached sidewalks, a tree planted within twelve (12) feet from back of sidewalk. See **Figure 9-1**.
- 3. 75% of street trees shall be large canopy deciduous shade trees.
- 4. Alternative plant material cannot be substituted for any tree requirement.
- 5. All deciduous large and small canopy trees must be permanently irrigated.

ii. Street Tree Spacing.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

1. Trees, when possible, shall be regularly spaced no more than forty (40) feet apart.
2. Deciduous ornamental (small canopy) trees shall be spaced no more than twenty-five (25) feet apart.
3. Spacing may be adjusted for driveways and streetlights.



4. Grouping of trees may be permitted where regular spacing cannot be accomplished or to achieve a desired design aesthetic.
 5. There shall be no gap between trees greater than one hundred and twenty (120) feet.
- iii. Street Tree Planting Location
1. Trees shall be planted on both sides of a detached sidewalk, where feasible.
 2. Trees shall be planted a minimum of forty-two (42) inches from the face of a street curb, whenever possible.
 3. Trees shall not be planted closer than thirty (30) feet from the face of a street curb at intersections and street corners.
 4. Under no circumstance shall trees be planted within sight distance triangles. Evergreen trees shall be planted away from sight distance triangles to not cause encroachment of branches into sight distance triangles.
 5. For non-residential properties, trees shall not be planted closer than ten (10) feet from streetlights.
 6. Evergreen trees shall be planted away from the street and sidewalk edge and should be positioned north of sidewalks to not cause snow build-up or icing problems.
 7. A minimum distance of ten (10) feet shall be provided between trees and buildings or trees and fences.
 8. Trees and large shrubs shall not be planted in wet utility easements, or within ten (10) feet of water, wastewater, or stormwater infrastructure.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9. Trees planted near sidewalks shall be fruitless.

iv. Street Tree Branching Height

1. On the traffic side of the sidewalk, the branching height of mature trees shall be no less than thirteen and one half (13 ½) feet above the street.
2. On the non-traffic side of the sidewalk, the branching height of mature trees shall be no less than eight (8) feet above the sidewalk. See **Figure 9-2**.

v. Street Tree Planting Strips

1. Large Canopy Deciduous Shade Trees

- a. For local streets the minimum width of planting strips, to include large canopy deciduous shade trees, shall be eight (8) feet. See **Figure 9-3**.
- b. For collector and arterial streets, the minimum width of planting strips, to include large canopy deciduous shade trees, shall be ten (10) feet. See **Figure 9-4**.

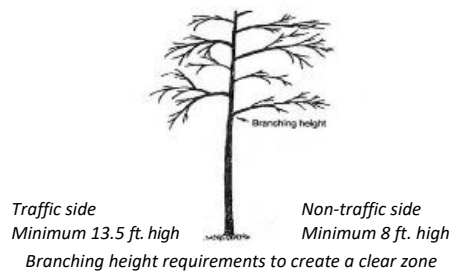
c. If and when permitted, large canopy deciduous shade trees planted in areas less than eight (8) feet are required to use CU™ Structural Soil. For Urban Areas, see **Section 8**.

d. Minimum tree planting width is six (6) feet.

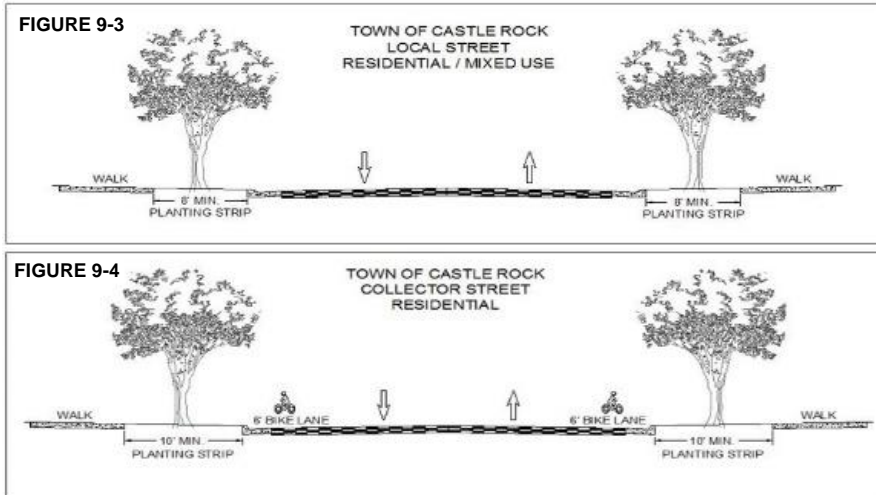
2. Ornamental Trees

- a. For local, collector, and arterial streets the minimum width of planting strips for ornamental trees shall be six (6) feet

FIGURE 9-2



Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way



3. Streetscape Shrubs

a. Performance Standards

- i. Shrubs shall not interfere with driver visibility of pedestrians, oncoming traffic, traffic control devices, or regulatory signs.
- ii. Shrubs shall provide a variety of height and color variations to create visual appeal, limit disease, and other environmental problems.
- iii. Shrubs shall be planted within adequate space and soil to provide for healthy mature spread.

b. Criteria

i. Required Shrubs

1. A minimum of four (4) shrubs per one (1) tree is required.
2. One (1) ornamental grass of equal size at planting may be substituted for one (1) shrub.
3. One (1) additional tree may be substituted for four (4) shrubs.
4. Large shrubs shall not be planted in vehicular access easements or wet utility easements.
5. Where an easement does not exist, large shrubs must not be within ten (10) feet of water, wastewater, or stormwater infrastructure.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

4. Groundcover

a. Performance Standards

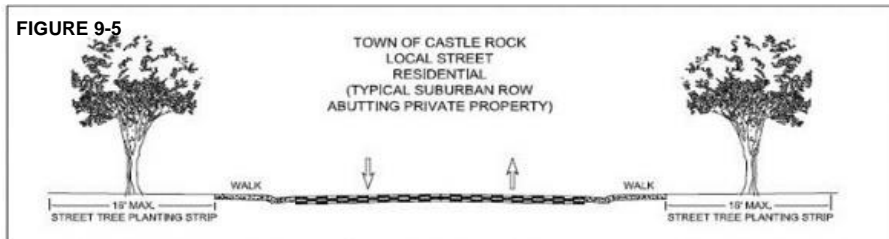
- i. Groundcover design and materials shall consider levels of foot traffic and shall not create pedestrian safety hazards.
- ii. Ground cover shall create a consistent coverage of material.

b. Criteria

- i. Traditional turf grass is prohibited. A native hydrozone one (1) or two (2) plant material is required.
- ii. Areas less than four (4) feet in width along local streets shall contain inorganic mulch, (rock, gravel, or cobble).
- iii. Cobble is discouraged in areas of pedestrian ingress and egress.
- iv. Cobble shall be grouted for safety as determined by the Town.

9.2.2 IRRIGATION DESIGN

This Section describes minimum necessary performance standards and Criteria for streetscapes, rights-of-way, and tracts along rights-of-way land uses. Unless specifically called out in this Section, the general irrigation design requirements in **Section 4** shall apply.



1. Overall

a. Performance Standards

- i. All plant material shall be irrigated per hydrozone as listed in the Town of Castle Rock Plant List.
- ii. Irrigation provides appropriate amount of water based on water demands of groups of plantings. These groups of plantings shall maintain optimal health and appearance.
- iii. The irrigation design accommodates efficient irrigation and eliminates run-off onto streets or sidewalks.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- b. Criteria
 - i. A permanent water efficient irrigation system, providing full coverage to all plant material is required.
 - ii. Drip or sub-surface irrigation is required in areas greater than four (4) feet and less than ten (10) feet in width. Overhead irrigation is not permitted in these areas.
 - iii. Permanent irrigation is not permitted in areas less than four (4) feet in width.
 - iv. Permanent irrigation is not permitted in medians or round-a-bouts.
 - v. Irrigation shall be hydrozoned, grouping similar water demands by irrigation zone.
 - vi. Irrigation design shall meet the requirements of the Composite Landscape Water Use Rating (CLWUR) per Town of Castle Rock Municipal Code Chapter 13.20.

9.3 RESPONSIBLE PARTY

This Section describes who is responsible for the design, installation, and maintenance of landscape and irrigation of streetscape, rights-of-way and tracts along rights-of-way land uses by street type.

9.3.1 DESIGN AND INSTALLATION OF LANDSCAPE AND IRRIGATION RESPONSIBILITY

Design and installation of utility and irrigation sleeving is the responsibility of the initial Developer and must be completed prior to the construction of streets, curb and gutter, and sidewalk.

- 1. Local streets
 - a. Residential
 - i. With attached sidewalk – the Builder or adjacent homeowner
 - ii. With detached sidewalk – the Developer or Builder
 - b. Non-residential including Mixed use / residential – the Developer or Builder
- 2. Arterial and Collector streets – the vertical Developer of the individual parcel adjacent to the right-of-way.
- 3. Entry streets, Medians and Round-a-bouts – the vertical Developer of the individual parcel adjacent to the right-of-way.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9.3.2 MAINTENANCE OF LANDSCAPE AND IRRIGATION

Maintenance of Landscape and Irrigation shall comply with approved plans and adhere to all standards and Criteria herein.

1. Local streets
 - a. Residential
 - i. With attached sidewalk – the adjacent homeowner shall be responsible for maintenance of the streetscape in the right-of-way area, between sidewalk and private property and / or planting strips on private property along the right-of-way (see **Figure 9-5**).
 - ii. With detached sidewalk – an HOA, Metro District or other similar entity.
 - b. Non-residential, including Mixed use / residential – the adjacent property owner or a property maintenance association, Metro District, or other similar entity.
2. Arterial and Collector streets – an HOA, Metro District, or other similar entity.
 - a. Entry Streets, Medians, and Round-a-bouts – an HOA, Metro District, or other similar entity.

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Section 10: Parks, Sports Fields, and Golf

10.0 INTRODUCTION

This Section describes minimum necessary performance standards and Criteria for design, and maintenance responsibility for park, sport field, and golf course land uses. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4** shall apply.

10.1 APPLICATION

10.1.1 APPLICABLE USES

This Section applies to public or private parks, sports fields, and golf courses within the Town limits or served by Castle Rock Water, and includes the following:

1. Passive Parks
2. Passive Recreation Areas
3. Active Parks
4. Sports Fields
5. Golf courses

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10.1.2 APPLICABLE LANDSCAPING AND IRRIGATION

1. Passive Parks
2. Passive Recreation Areas
3. Active Parks
4. Sports Fields
5. Golf Courses
6. Trails within these areas

10.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape and irrigation design for parks, sports fields, and golf courses.

10.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, this 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 unless called out in approved overlay district criteria.

1. Passive Parks and Passive Recreation Areas.
 - a. Performance Standards
 - i. These areas shall be designed to support such intended activities of the area, including layout and pedestrian access.

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Section 10: Parks, Sports Fields, and Golf

- ii. Tree type and placement is intended to provide shade.
- iii. A seasonal appearance of greenery throughout the year shall be provided.
- b. Criteria
 - i. Publicly owned and managed passive use areas shall meet the minimum site requirement of no less than three thousand (3,000) square feet. The following uses may not be counted toward the square foot requirement: streetscapes, islands, buffers, building setbacks, parking areas, detention ponds, or other areas not intended and designed for these uses.
 - ii. Privately owned and managed passive use areas shall meet the minimum site requirement of no less than one thousand (1,000) square feet and no more than three thousand (3,000) square feet. The following uses may not be counted toward the square foot requirement: streetscapes, islands, buffers, building setbacks, parking areas, detention ponds, or other areas not intended and designed for these uses.
 - iii. The square footage configuration shall be such to support non-programmed athletic activities, such as volleyball, softball, or other recreational activities.
 - iv. The following uses do not qualify as passive recreation areas: streetscapes, medians, landscape buffers, setbacks, parking areas, or other areas not intended or designed for recreational use.
 - v. Plant material used in passive recreation areas shall be consistent with the level of use by the residents.
 - vi. Water requirements for turf used for passive recreation areas shall not exceed nineteen (19) inches of irrigation per growing season. Other plant material water demands shall not exceed fifteen (15) inches of irrigation per growing season.
 - vii. A minimum of one (1) large canopy deciduous shade tree per one thousand (1,000) square feet of permanently irrigated area shall be provided.
 - viii. Where native grasses are permitted, trees and shrubs must have the same Hydrozone as the native grasses.
- 2. Active Parks and Sports Fields public or private. Such areas are used for programmed athletic activities, and may include baseball, softball, football, soccer, or other programmed sports activities.
 - a. Performance Standards
 - i. These areas shall be designed to support such intended activities of the area, including layout and pedestrian access.
 - ii. Tree type and placement is intended to provide shade.

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Section 10: Parks, Sports Fields, and Golf

- iii. A seasonal appearance of greenery throughout the year shall be provided.
 - iv. The use of artificial turf on sports fields is encouraged.
 - v. Plant material shall tolerate high traffic and active use.
 - vi. Surrounding areas may be used for more passive recreation activities and site access.
- b. Criteria
- i. For Active Parks, a minimum of one (1) large canopy deciduous shade tree per one thousand (1,000) square feet of permanently irrigated area is required.
 - ii. Where native grasses are permitted, trees and shrubs must have the same Hydro-zone as the native grasses.
3. Golf Courses. The Performance Standards and Criteria for Golf Courses are approved on a case by case basis, usually through a development agreement.

10.2.2 IRRIGATION DESIGN

1. Passive Parks and Passive Recreation Areas.
- a. Criteria
- i. All plant material in these areas shall be permanently irrigated by a dedicated irrigation service connection with an automatic irrigation system.
 - ii. All water requirements for turf shall not exceed nineteen (19) inches of irrigation per growing season.
 - iii. Aesthetic and ornamental plant material water demands shall not exceed fifteen (15) inches of irrigation per growing season. Note: Area shall be included in the Composite Landscape Water Use Rating (CLWUR) development.
2. Active Parks and Sports Fields.
- a. Criteria
- i. All plant material in these areas shall be permanently irrigated by a dedicated irrigation service connection with an automatic irrigation system.
 - ii. Water allocation for Active Parks and Sports Fields shall provide for plant materials that tolerate high traffic and active use. Note: Area shall be included in CLWUR development.
3. Golf Courses.
- a. Criteria
- i. ~~All plant materials in golf courses shall be permanently irrigated by a dedicated~~

Section 10: Parks, Sports Fields, and Golf

irrigation service connection with an automatic irrigation system.

- ii. Irrigation of golf courses shall be accomplished by a non-potable water source, as approved by the Town.

10.3 MAINTENANCE

10.3.1 PASSIVE PARKS AND PASSIVE RECREATION AREAS

1. Areas owned by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to the standards and Criteria defined by the Town Parks and Recreation Department.

10.3.2 ACTIVE PARKS AND SPORTS FIELDS

1. Areas owned and maintained by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to standards and Criteria defined by the Town Parks and Recreation Department.
3. Areas owned and maintained by a school district shall maintain landscape and irrigation to the standards and Criteria contained herein.

10.3.3 GOLF COURSES

1. Areas owned and maintained by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to the standards and Criteria defined by the Town Parks and Recreation Department.

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Appendix

Appendix A: Temporary Irrigation Criteria

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Appendix A



TEMPORARY IRRIGATION

1. Criteria

The purpose of temporary irrigation is to germinate native seed and establish native vegetation, it is not intended for continuous use during establishment period (assumed to be two (2) years). This means that the temporary system will not be operated on a three (3) day per week watering schedule after the initial thirty (30) day irrigation exemption period.

- a. The native soil must be amended with three (3) cu yds. of organic compost per one thousand (1,000) sq. ft.
- b. This amendment must be incorporated into the soil via tractor ripping.

2. Seeding

Seeding shall take place as recommended by Town. Seasonal weather conditions shall be taken into consideration when scheduling seed and mulch installation. Seeding shall not occur between June 15th and September 1st. Coordinate with Castle Rock Water's Conservation Division for guidance. Generally, if a Red Flag Warning and/or local fire restriction has been issued, no seeding shall commence until such time that the warnings/restrictions have been released.

- a. Drill seeding is required.
- b. Slopes steeper than 3:1 are not permitted.
- c. Temporary irrigation systems and irrigation exemptions will meet the following specifications:
 - i. The irrigation system must be above ground and removed at the end of the approved establishment period.
 - ii. Sprinkler heads used for temporary irrigation must have an application rate not to exceed .75"/hour. Traditional spray heads/nozzles are not allowed.
 - iii. The irrigation exemption shall not exceed thirty (30) days.
 - iv. Seed ticket(s) for areas temporarily irrigated are to be provided to Castle Rock Water.
 - v. Town of Castle Rock hydraulic worksheet (required on construction documents) will show both permanent and temporary irrigated areas. These should be listed separately and not combined.
 - vi. Tap sizing will be determined by the permanent irrigated plant material.

3. Irrigation

Watering shall occur between the hours of 12 a.m. and 8 a.m. No watering will be permitted outside of these times.

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Appendix A

- a. A hydrant meter issued by the Town may be used to meter temporary irrigation water. Hydrant meter assembly shall be secured with anti-theft cage and protected from freezing. Hydrant meter shall be connected to 2" fitting on hydrant. The 4" fitting shall be reserved for the fire department to use in fighting fires. Hydrant meter assembly will be removed at end of growing season and returned to the Town. Applicant will follow hydrant meter permit requirements.
- b. Water will be billed at the applicable tier two (2) irrigation rate (see current year rates and fees). An establishment water budget will be implemented as follows:
 - i. For the first four weeks:
 - Two 9 minute cycles per zone @ .4"/hour = .12" of water per day
 - .12"/day x 7 days/week = .84"/week
 - .84"/week x 4 weeks = 3.36" for the first 4 weeks
 - 3.36" x .62 = 2.0832 gallons / square foot
 - 2.0832 gallons/square foot x 43,560 square feet in an acre = 90,744 gallons/acre
 - ii. For the second four weeks (transition to fixed three days per week as indicated on the standard non-residential schedule):
 - One 15 minute cycle per zone @ .4"/hour = .1" of water per day
 - .1"/day x 3 days/week = .3"/week
 - .3"/week x 4 weeks = 1.2" for the second 4 weeks
 - 1.2" x .62 = .744 gallons / square foot
 - .744 gallons/square foot x 43,560 square feet in an acre = 32,409 gallons/acre
 - iii. Moving forward continue to transition to as-needed only, not to exceed 1" per month:
 - 1" per month x .62 = .62 gallons per square foot
 - .62 gallons per square foot x 43,560 square feet in an acre = 27,007 gallons per acre

All water used in excess of the budget will be billed at the applicable tier three (3) excess rate. These rates are subject to change annually based on an annual rates and fees study by the Town.

- c. A waterproof sign measuring a minimum of 2 feet by 2 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)

4. Conclusion

- a. 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.
- b. Upon expiration of the approved establishment period, all components of the temporary irrigation system must be removed. Equipment to be removed includes: irrigation controller, control valves, manual ball valves, all fittings used to connect valves to mainline, valve boxes, above ground lateral piping, sprinkler heads, and all associated staking materials. Below ground irrigation mainline and wiring can be abandoned in place.

TEMPORARY IRRIGATION

05/01/2023 - 05/21/2023

ABC BUILDER, 303-555-5555

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Appendix B

Deleted: Turf Grass Varieties Recommended for Single Family Homes

Type

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