

NORTH PARK MASTER ASSOCIATION DESIGN GUIDELINES JANUARY 2012

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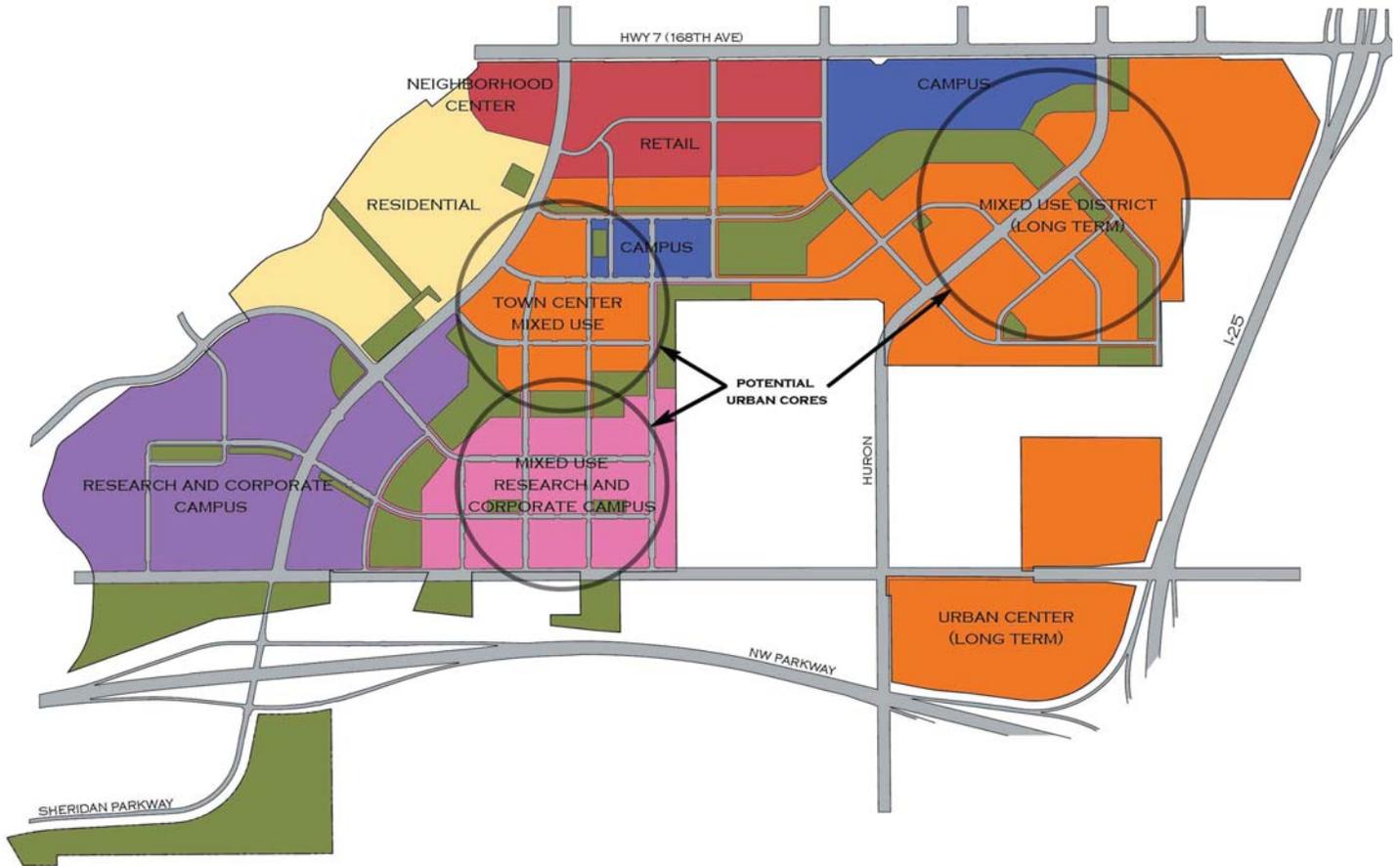
INTRODUCTION

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B R O O M F I E L D





NP - CONCEPTUAL LAND USE -

1.0 PREFACE

A successful planned community depends on setting, view corridors, amenities, environmental sensitivity, and the economic market. A commitment to consistent qualities in the physical appearance of the site, architecture, and landscape is also critical to the success of any community. Achieving a healthy and vibrant image is a primary goal of these guidelines. They advocate a strong and consistent community design vision for North Park, with architecture and landscaping that is reflective of the Community Values established by McWhinney. To that end, these North Park Design Guidelines have been established to assist prospective developers, builders and designers in developing neighborhoods, buildings, places, and landscapes that are consistent with the Community Vision and Values.

2.0 NORTH PARK VISION

Located in Broomfield, Colorado, North Park is a vibrant 935-acre mixed use community that incorporates a balance of urban connectivity, natural open space amenities, and a 150-acre Applied Research Center. Sweeping views of Long’s Peak and the Indian Peaks along with a 1.8 mile long linear central park within easy walking of all areas of the community offers workers, residents, and visitors alike the opportunity to gather and savor the best of Broomfield and north Denver.

The dynamic urban fabric of North Park is defined by a series of village and town centers and campuses connected by both pedestrian-friendly tree lined streets and the natural area trail corridor within the central park. Shopping, dining and entertainment

venues will be aligned side by side with office, research, medical and residential uses. A mixture of horizontal and vertical mixed-use buildings in the core center will complement the horizontal single-use buildings in adjacent blocks. Over 6,200 residences will call North Park home.

Approximately 145-acres of open lands define North Park’s connection to the natural habitats of the region. Strategically located greens, smaller plazas, and squares give added urban alternatives for community events, walking the dog or just relaxing on a park bench. Informal places to gather allow those who live and work at North Park to capture the best of both worlds.

Running diagonally through the community, the 70+ acre central park provides the community’s primary gathering place. Lined by connector pedestrian and bicycle trails, the park will offer a variety of areas for active endeavors alongside a collection of smaller intimate gathering spots. Other park amenities may include an outdoor performance amphitheater, enhanced wetland and waterways, and close proximity to restaurants and workplaces.

The presence of North Park’s Applied Research Center is central to its mission in attracting the best and brightest of the 21st century. Positioned as a place for research-oriented institutions and companies to join forces, the 150-acre Applied Research Center uniquely offers both urban town center locations as well as campus settings. North Park is primed to become a place for incubation of new advances in medicine, renewable energy, applied research, technology, and science.

North Park's convenient central location in the north Denver metro area makes for quick and easy access to Denver International Airport, downtown Denver, Boulder and University of Colorado, Flatiron Crossing Mall, and other regional attractions. To further its connectivity to the surrounding region, North Park plans to accommodate possible regional transit centers along I-25 and the Northwest Parkway in preparation for future north-south and east-west transit.

By connecting walkable mixed-use urban cores to significant employment centers, Broomfield's North Park creates a defined heart and soul and Central Business District for the North Denver region.

3.0 MASTER PLAN

The overall Vision and Master Plan for North Park represents a unique opportunity to create an integrated pattern of land uses and development. Unlike conventional suburban development that emphasizes segregated, poorly linked and auto-reliant land uses, the Master Plan for North Park provides for a mix of integrated land uses; strong connections for pedestrians and bicyclists, a range of housing opportunities in close proximity to jobs, shopping, and entertainment, and social gathering places.

Urban mixed use town center core areas (as shown in the dashed circles above on the map) are supported with surrounding suburban development. The intent is to transition to lower densities to the west of Sheridan and along Highway 7 to complement the adjacent land uses.

4.0 PURPOSE AND INTENT

These North Park Design Guidelines provide prospective parcel developers and builders (and their consultants), with a clear statement of the design Principles, Guidelines, and Standards for development within North Park. The description of Design Principles, coupled with specific Design Guidelines and Standards is intended to assist in the identification and implementation of a strong, consistent design direction and level of quality. Standards **[S]** are to be treated as techniques that are mandatory. Guidelines reinforce the intent of the Principles, but may be subject to interpretation by the designer as approved by the Design Review Committee (DRC). In addition, a variety of photographs and graphic images have been assembled to assist parcel developers and builders (and their consultants), in the design of residential neighborhoods, commercial centers, offices, mixed-use places, and landscapes. After reviewing this document, parcel developers, builders (and their consultants), will have a clear and concise design direction and the knowledge necessary to produce creative and aesthetically pleasing Site Planning, Architecture, and Landscape concepts.

5.0 WHO USES THESE GUIDELINES

These design guidelines along with the City and County of Broomfield's Ordinances and Codes and the North Park PUD are to be used by parcel developers and builders (and their consultants), in developing new mixed use complexes within the North Park Planned Community. As the "keepers" of the vision for North Park, the Design Guidelines will also be used by the North Park DRC relative to the review and approval of proposed development. The design review process encourages a high level of design quality and continuity within the overall community, while providing the flexibility needed to encourage creativity on the part of parcel developers and builders (and their consultants). All

guidelines and standards are subject to the reasonable discretion of the DRC, which shall make final determinations in good faith.

6.0 HOW THE DESIGN GUIDELINES ARE ORGANIZED

The North Park Design Guidelines document is divided into major components that include Site Planning, Architecture, Sustainable Development, Natural Areas, Landscaping, Lighting, and Signage.

1. Site Planning

The Site Planning Section contains Principles, Guidelines, and Standards primarily related to the proper orchestration of buildings, open space, and circulation/parking elements related to commercial, mixed use, residential, and office developments. Each Site Planning component is accompanied by a Conceptual Site Plan with call-outs that visually depicts the desired image and physical layout for each specific land use type that occurs within each District. In addition, each Conceptual Site Plan illustrates a pedestrian circulation network designed to promote connectivity between adjacent developments. Included are a variety of photographic vignettes that depict specific desired site planning conditions.

2. Architecture

The Architecture Section is concerned with the design, image, and function of various building types that include commercial, residential, mixed use, and office, to name a few. The Architecture component includes Prototypical Elevations with call-outs that successfully deconstruct each building type into a series of architectural elements and characteristics. Included are design Principles, Guidelines, and Standards tailored to addressing specific design issues such as Building Massing, Roof Form, Building Facades, and Materials. In addition, various photographic Vignettes have been included, designed to highlight architectural characteristics related to each building type.

3. Sustainable Development

The Sustainability Section provides certain principles and standards that must be met as a minimum, as well as recommendations for resources and techniques for achieving a high level of environmental sensitivity for all projects. For example, it is highly recommended that all developments use the LEED Green Building System to document the level of sustainability for the project and achieve a minimum of 26 points.

4. Natural Areas

Within North Park, many areas of open lands are planned to serve as sustainable landscape for recreational enjoyment and as habitat for plants and wildlife. To make this open land the best habitat it can be, habitat goals have been established that will provide a larger opportunity for both wildlife and plant habitat. The Natural Area and Detention/ Water Quality Pond and Drainage Corridor Section has been developed to aid design teams and installation contractors in creating sustainable ecosystems to provide all of the desired landscape values - sense of place; landscape functions; as well as habitat for the conservation of plants and animals.

5. Landscaping

The Landscape section addresses issues primarily related to on-site landscapes and is designed to provide guidance related to building surrounds, parking lots and open areas. Planting designs

should complement the immediate setting of the site through the use of native and naturalized plants and incorporate low water use goals.

6. Lighting

North Park promotes one simple idea regarding lighting: only light what you need, when you need it. Some light at night is necessary for safety and recreation but all lighting must comply with Dark Sky criteria. By directing light only where it needs to go development will not pollute the night sky, cause light trespass on neighboring property, needlessly disrupt ecosystems nor waste energy. The lighting section addresses light fixture types and light levels for buildings, pedestrian areas and vehicular areas.

7. Signage

Signs and environmental graphics serve a number of critical functions including way finding, branding, identification and commu-

nicating information. North Park intends to promote signage that effectively serves these functions in a tasteful manner without cluttering the landscape. Signs will reinforce the North Park brand as well as campus/center and building identities. The signage section provides guidelines for both temporary and permanent signs at both the community and individual project level.

7.0 DESIGN REVIEW COMMITTEE REVIEW PROCESS AND PROCEDURES

All proposed development in North Park must be reviewed by the North Park Design Review Committee (DRC) to determine compliance with applicable Covenants, Planned Unit Development (PUD), and Design Guidelines. DRC approval is required prior to the City and County of Broomfield review. Refer to the North Park Design Review Committee Procedures and Information publication available from McWhinney for more detailed information and specific submittal requirements.

NORTH PARK DESIGN REVIEW COMMITTEE PROCESS

INDIVIDUAL STEPS IN THE DRC PROCESS	ACTION AND TIMING OF EACH STEP
<p>1. PRE-APPLICATION ORIENTATION AND PRELIMINARY SKETCH CONCEPT CONFERENCE</p> <p>DRC Informal Meeting</p> <p>Participants: Applicant, Architect, Landscape Architect, Civil Engineer, DRC Staff and selected DRC members and City and County of Broomfield Representative.</p>	<p>Action: Applicant Submits to DRC Staff:</p> <p>Applicant should schedule a CCOB Pre-Applicant Meeting - Highly recommended with a member of the Planning staff at least two weeks prior to SDP submittal.</p> <p>Timing: Meeting takes place as required by applicant. Applicant may request additional informal meetings as needed prior to formal DRC submittal.</p>
<p>2. SCHEMATIC DESIGN</p> <p>DRC Meeting and Formal Presentation</p> <p>Participants: Applicant, Architect, Landscape Architect, Civil Engineer, Lighting Consultant, Sign/Graphics Consultant, DRC Staff and DRC members and City and County of Broomfield Representative.</p>	<p>Action: Applicant Submits to DRC Staff:</p> <p>Following the DRC Schematic Design approval: Applicant proceeds to the DRC Design Development Review.</p> <p>Timing: Schematic Design Submittals may be submitted at the same time the Applicant submits to CCOB for the Concept Review. Applicant will need DRC Schematic Design approval prior to CCOB Concept Review Hearing.</p>
<p>3. DESIGN DEVELOPMENT</p> <p>DRC Meeting and Formal Presentation</p> <p>Participants: Applicant, Architect, Landscape Architect, Civil Engineer, DRC Staff, DRC members and City and County of Broomfield Representative</p>	<p>Action: Applicant submits to DRC Staff:</p> <p>Following the DRC Design Development approval, Applicant may submit a Site Development Plan application to the City and County of Broomfield for approval by CCOB staff.</p> <p>Timing: Once the applicant receives approval from the City and County of Broomfield on their SDP Submittal, the applicant may simultaneously submit items for the DRC Construction Document Review as well as the City and County of Broomfield Building Permit Submittal and Construction Plan Submittal.</p>
<p>4A. CONSTRUCTION DOCUMENT</p> <p>Informal DRC Staff Meeting (Applicant Does Not Attend)</p>	<p>Applicant submits to DRC Staff:</p> <p>Following the DRC Construction Document approval and Applicant's receipt of a CCOB Building Permit, the applicant may begin construction of building/improvements.</p>
<p>4B. MATERIALS MOCK-UP PANEL REVIEW</p>	<p>Applicant submits to DRC Staff:</p> <p>Applicant informs DRC Staff when Mock-up panel is ready for review. DRC Staff will schedule on-site review.</p>
<p>5. CERTIFICATE OF COMPLIANCE</p> <p>DRC Conducts Site Compliance Inspection of Project</p>	<p>Applicant submits to DRC Staff:</p> <p>Applicant receives:</p> <p>DRC Final Certificate of Compliance which is a requirement for the City and County of Broomfield to issue a Certificate of Occupancy.</p>

8.0 CONFLICTS WITH OTHER REGULATIONS

All development within North Park is subject to the Performance Standards of these Guidelines. In addition to these North Park Design Guidelines, developers and builders (and their consultants) at North Park are expected to meet all the criteria established by other documents (annexation agreements, PUD, other development plans, etc). The City and County of Broomfield's zoning code and site development performance standards and guidelines also apply. Prospective developers should consult with McWhinney representatives to verify the applicability of any other agreements. These documents should be reviewed specifically for each development. All development within North Park shall comply with the codes and regulations of all Local, State, and Federal bodies and agencies as applicable. All development shall also comply with the Declaration of Covenants, Conditions, and Restrictions (CC&R's) adopted for North Park. The North Park Design Guidelines document may be more restrictive than existing City, County, or State codes and/or ordinances. In the event of conflict or discrepancy, or for subjects not addressed herein, the most restrictive standards shall apply.

9.0 WAIVERS

The Master Developer (McWhinney) or the DRC shall have the right, from time to time, to waive, at its sole discretion, any provisions of this Design Guidelines document as may be applied to any specific site, architecture, or landscape plan. No such waiver shall be construed or held to be a waiver of any provisions of this North Park Design Guidelines document, or of the same provisions as to any other party.

10.0 AMENDMENTS AND SUPPLEMENTS

This North Park Design Guidelines document may, from time to time, be amended or supplemented by the Master Developer (McWhinney) at its sole discretion. Any such amendments shall be applicable to all development plans that are subsequently submitted for review and approval to the Master Developer and DRC.

11.0 APPROVALS

Unless otherwise explicitly provided herein to the contrary, all approvals shall be in writing and may be granted or withheld at the sole discretion of the DRC. Any approval pursuant to these North Park Design Guidelines does not constitute a warranty, assurance, or representation by the approving party; and the approving party shall have no liability as a result of such approval.

12.0 NON-LIABILITY OF THE COMMITTEE

Neither the DRC nor its respective members, secretary, successors, assigns, agents, representatives, or employees shall be liable for damages or otherwise to anyone submitting plans to it for approval, or to any applicant by reason of mistake in judgment, negligence or non-feasance arising out of any action of the DRC with respect to any submission, or to otherwise following these Guidelines and Procedures. The role of the DRC is directed towards review and approval of site planning, appearances, architectural vocabulary and aesthetics. The DRC assumes no responsibility with regard to design or construction, including, without limitation the civil, structural, mechanical or electrical design, methods of construction, or technical suitability of materials.

13.0 ACCURACY OF INFORMATION

Any person submitting plans to the DRC shall be responsible for verification and accuracy of all components of each submission, including, without limitation, all site dimensions, grades, elevations, utility locations, and other pertinent features of the site or plans.

14.0 APPLICANT REPRESENTATION

The Applicant represents by the act of entering into the review process with the DRC that all representatives of Applicant, including, but not limited to, Applicant's architect, engineer, contractors, subcontractors, and their agents and employees, shall be made aware by the Applicant of all applicable requirements of the DRC and shall abide by these Procedures, the Guidelines, and the Covenants.

SITE PLANNING

<u>SITE PLANNING SECTION</u>	<u>PG.</u>
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B R O O M F I E L D



SITE PLANNING

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LARGE FORMAT RETAIL

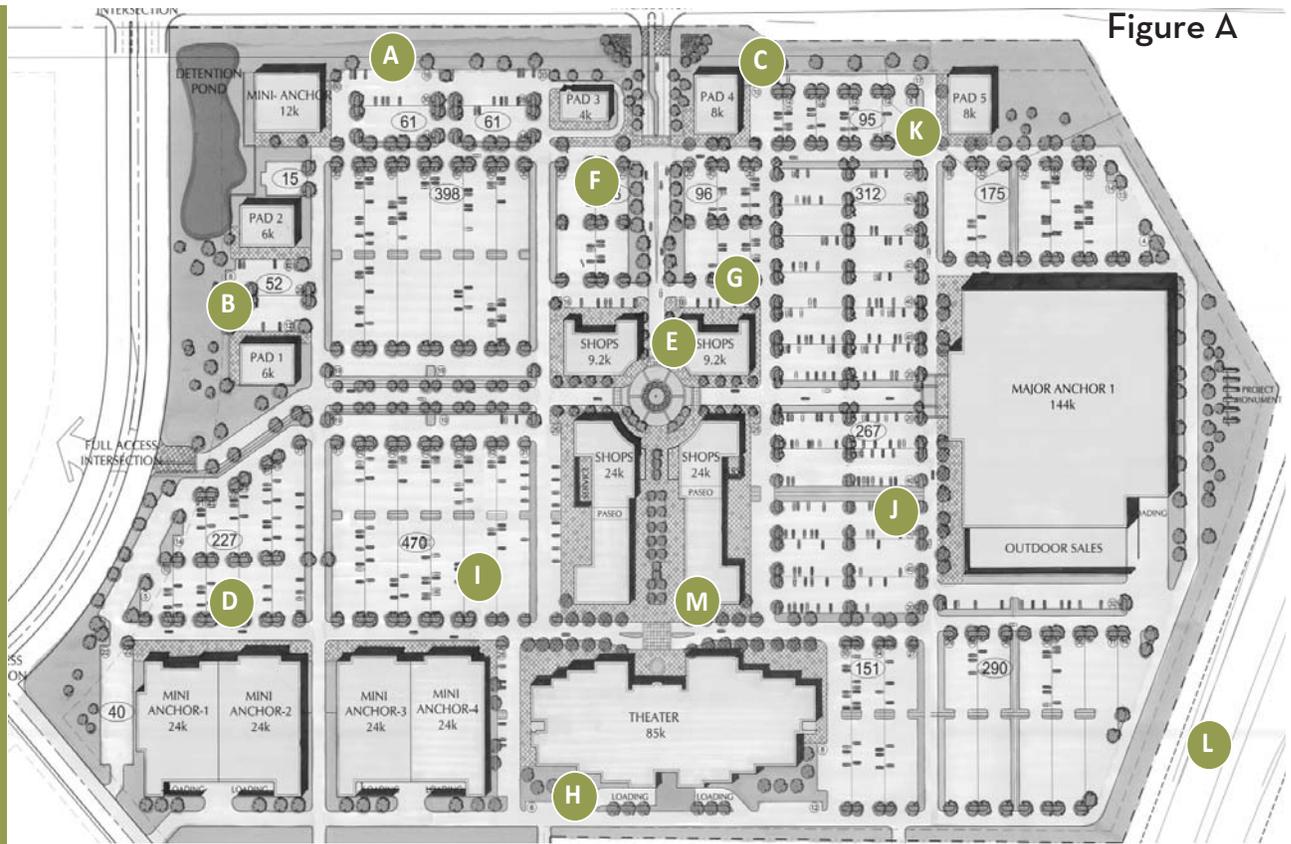


Figure A

- A** **Parkstrip**
Create an ample landscape parkstrip contiguous to Highway 7, designed to soften the streetscape and accommodate grade transition, while allowing visibility to retail establishments
- B** **Outdoor Patios**
Create outdoor patios in appropriate exposures to accommodate patrons of food service establishments.
- C** **Architecturally Significant Buildings**
Locate Pad Buildings contiguous to Highway 7, designed to anchor intersection corners “announcing” entrance into the Large Format Retail Center.
- D** **Articulated Entrances**
Create articulated building entrances designed to “announce” entrance into Large Format architecture, while increasing facade variety and visual interest.
- E** **Pedestrian Promenade**
Create a promenade as a pedestrian gathering space, designed to accommodate the loading and unloading of passengers and merchandise.
- F** **Pedestrian Forecourts**
Use building masses to frame and enclose pedestrian forecourts.
- G** **Convenience Parking**
Provide convenience parking adjacent to pad buildings, providing easy access.
- H** **Loading Docks**
Locate loading docks towards the rear of the site, screened from public view.
- I** **Landscape Islands**
Create landscape islands designed to define on-site internal streets while punctuating the ends of parking bays.
- J** **Pedestrian Connectivity**
Create a strong network of sidewalks and walkways designed to provide opportunities for pedestrians to walk safely and conveniently from one location to another.
- K** **Landscape Medians**
Create landscape medians designed to break-up large expanses of pavement, and to accommodate pedestrian connectivity.
- L** **Landscape Buffer**
Create a substantial landscape buffer contiguous to Interstate 25, designed to soften Large Format architecture while maintaining building identity.
- M** **Storefronts**
Orient storefronts towards the streetscape and pedestrian promenade, designed to optimize visibility and exposure.

PRINCIPLES

1. Site satellite pad buildings at street frontages and higher intensity corner locations.
2. Locate buildings to create and frame meaningful open area.
3. Site satellite pad buildings and large format retail structures to break-up large expanses of pavement.
4. Establish clear circulations between and amongst all sites and uses.
5. Design ample drive-thru facilities that contain stacked vehicles while sensitively accommodating pedestrian movement
6. Sensitively site service, delivery, and outdoor equipment storage facilities to minimize their visual impact.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Locate architecturally significant satellite pad site buildings at street intersections designed to anchor the corner. (fig. A)
- 1.2 Locate In-Line Retail storefronts to create and frame pedestrian promenades creating meaningful formal open space (fig. 1, 5, 7, A).
- 1.3 Orient freestanding satellite pad building storefronts towards the street or formal open space areas such as patios (fig. 1, 4, A).
- 1.4 Avoid locating parking lots between the street and satellite Pad Buildings.
- 1.5 Separate Pad sites from large parking fields with drive aisles and landscape medians designed to define pad site parking areas (fig. A).
- 1.6 Orient building entries so they are easily identifiable from parking lots (fig. 7).
- 1.7 Locate satellite and Large Format Retail buildings to create dispersed parking fields (fig. A).
- 1.8 Orient Large Format building entrances towards pedestrian promenades and entrance forecourts (fig. 7, A).
- 1.9 Orient building masses to frame and enclose pedestrian forecourts (fig. 1).
- 1.10 Orient pedestrian colonnades contiguous to building frontages, creating a shaded and sheltered pedestrian promenade (fig. 9).
- 1.11 Locate articulated Large Format entrances along pedestrian promenades designed to highlight entrance into Large Format structures (fig. 7).
- 1.12 Create pedestrian forecourts at Large Format building entrances designed to accommodate pedestrian gatherings (fig. 8).

2.0 FORMAL OPEN SPACE

- 2.1 Orchestrate the placement of In-Line Retail buildings to frame and enclose meaningful formal open space areas creating pedestrian friendly promenades, forecourts, courtyards, and plazas (fig. 1, 3, 5, 7, 8, 9, A).
- 2.2 Avoid random accumulations of buildings characterized by

leftover, awkward, and unusable open space areas.

- 2.3 Orient formal open spaces to views of site amenities and activities such as architectural landmarks, fountains, and landscape features (fig. A).
- 2.4 Link formal open space areas, such as forecourts, plazas and courtyards, to pedestrian promenades (fig. 1, 3, 4, 7, 9, A).
- 2.5 Create outdoor patios associated with pad site fast food establishments, designed to accommodate pedestrian gatherings and al-fresco dining (fig. A).

3.0 SITE ACCESS

- 3.1 Coordinate entry points into individual parcels with the Master Plan to confine or limit vehicular and pedestrian conflicts (fig. A, B).
- 3.2 Use mid-block street intersections along minor roadways to provide access into the site (fig. A).
- 3.3 Share entrance driveways with neighboring parcels. Reciprocal Access Agreements are desired, designed to allow the passage of vehicles between adjacent parcels (fig. A).
- 3.4 Design entrance points to align with on-site focal points such as building entrances, landmark towers and formal open space features.
- 3.5 **S** Maintain a minimum separation of 200 feet between public street center lines or otherwise required from the City and County of Broomfield (fig. A).
- 3.6 **S** Do not locate entrance driveways near roadway intersections. Entrance driveways should be located a minimum 200 feet from the center line of roadway intersections or otherwise required from the City and County of Broomfield. (fig. A).

4.0 CIRCULATION

- 4.1 Do not 'wall-off' commercial sites from surrounding office and light industrial land uses.
- 4.2 Provide pedestrian and vehicular connectivity between the In-Line Retail site and adjacent office and residential land uses (fig. A).
- 4.3 Use on-site internal streets as direct extensions of adjacent public streets, providing convenient and direct vehicular and pedestrian access to the site (fig. A).



Fig 1 - Use buildings to frame and enclose meaningful, formal open space. Notice how these In-Line Retail buildings create a pedestrian forecourt.



Fig 2 -Orient pad buildings towards the public streetscape to optimize exposure. Locate pad buildings at corners, designed as "gatepost" entrance features.



Fig 3 - Orient In-Line Retail storefronts towards entrance forecourts, cradling outdoor pedestrian plazas and promenades.



Fig 4 - Create outdoor patios associated with pad buildings designed to accommodate opportunities for pedestrian gatherings and outdoor dining.

- 4.4 Maintain a similar parking aisle direction between adjacent parking lots (fig. A).
- 4.5 Provide strong pedestrian connections between various uses. (fig. A).
- 4.6 **S** Establish strong pedestrian linkages via sidewalks and trails to connect all uses together, promoting convenient and safe passage through parking fields.

5.0 DRIVE-THRU'S

- 5.1 **S** Design satellite pad site drive-thru lanes to provide sufficient vehicle stacking behind the menu board to accommodate a minimum of six cars.
- 5.2 Discourage pedestrian walkways that intersect with pad site drive-thru lanes.
- 5.3 Separate drive-thru lanes from site access points.
- 5.4 **S** Provide ample drive-thru aisle width based upon the following standards:
 Drive-thru Aisle Width:
 - Curved Sections: 12 feet
 - Straight Sections: 11 feet
- 5.5 **S** Sensitive locate drive-thru circulation aisles. Drive-thru aisles shall be located a minimum of 20 feet from the public right-of-way.

6.0 PARKING FIELDS

- 6.1 Segment large parking lots into smaller courts enclosed and framed by tree rows designed to minimize the perceived scale of the total parking area (fig. A).
- 6.2 Align parking medians perpendicular to building entries. This alignment minimizes obstacles to pedestrians and encourages walking to remote parking lots (fig. A).

- 6.3 Use curbed landscape medians to shade and screen parked vehicles, while physically breaking-up large expanses of pavement (fig. A).
- 6.4 Provide landscaped islands designed to terminate the ends of parking aisles (fig. A).
- 6.5 Border parking areas with concrete curbs and gutters. Avoid ribbon gutters that drain down the center of drive aisles.
- 6.6 Discourage high-speed driving. Use bulb-outs, roundabouts, and textured pavement treatments to slow vehicles.
- 6.7 Provide separate convenience parking fields for satellite pad sites, buffered from long term parking areas (fig. A,).

7.0 SERVICE, DELIVERY AND OUTDOOR STORAGE AREAS

- 7.1 Avoid placing service and outdoor storage areas where they are visible from adjacent buildings.
- 7.2 Locate loading docks, trash enclosures, service facilities, and outdoor storage areas out of-view from adjacent roadways, pedestrian walkways, and formal open space amenities (fig. 10, A,).
- 7.3 **S** Do not locate loading docks, trash enclosures, service facilities, and outdoor storage areas in setback areas.
- 7.4 Provide separate parking areas for delivery trucks and service vehicles located away from parking lots and pedestrian promenades (fig. 10).
- 7.5 Create shared service areas. Align service areas with those of adjacent buildings so that service drives may be shared between parcels.
- 7.6 **S** Locate loading docks, trash enclosures, service facilities, and outdoor storage areas a minimum of 20 feet from any public street ROW, screened from public view (fig. 10, A).
- 7.7 **S** Screen pad site service facilities and trash enclosures from public view with solid masonry decorative walls, reflective of the architectural style of the pad building.



Fig 5 - Orient In-Line Retail buildings towards the pedestrian promenade, creating window shopping opportunities.



Fig 6 -Orient perimeter landscaping adjacent to buildings. Notice how the dense evergreen border softens In-Line Retail architecture.



Fig 7 - Orient Large Format entrances towards the public realm. Notice how the trellis elements enhances the pedestrian promenade.



Fig 8 - Use buildings masses to frame and enclose pedestrian forecourts and plazas. Notice how the buildings frame and enclose the outdoor patio.



Fig 9 - Orient pedestrian colonnades contiguous to building frontages, contained within the pedestrian promenade, designed to shade and shelter pedestrians.



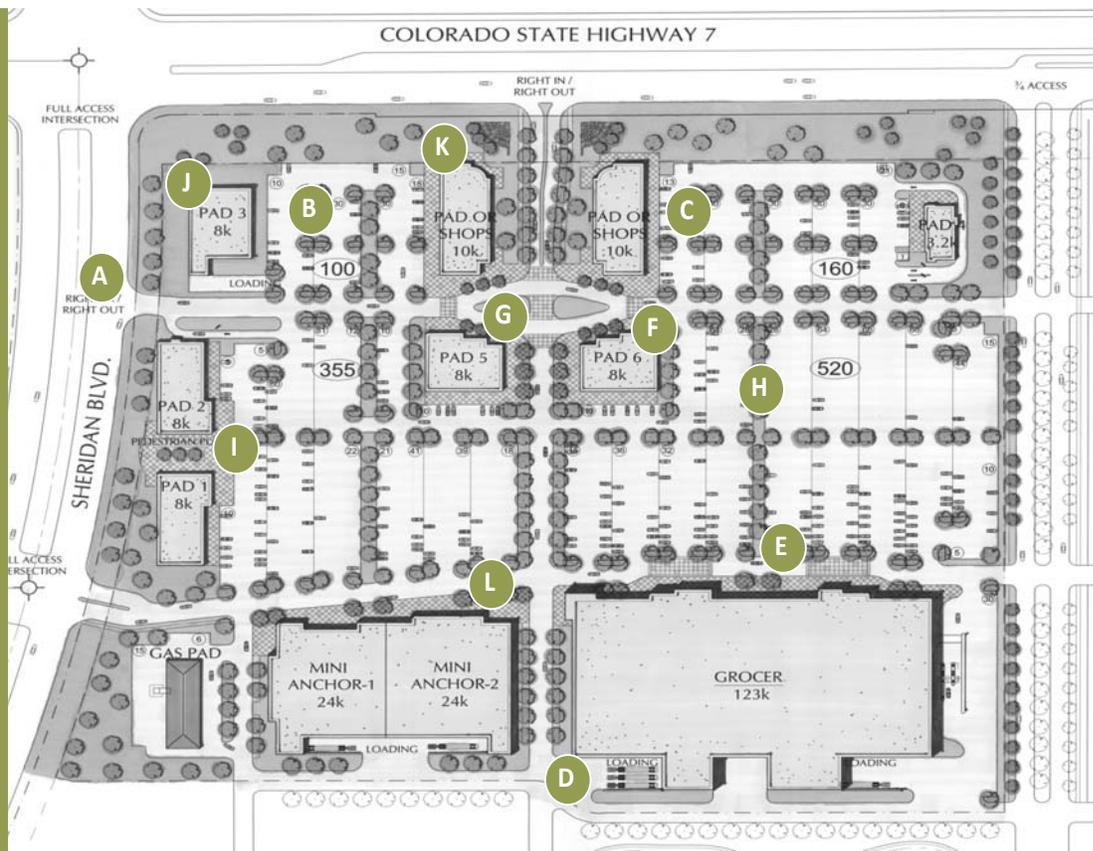
Fig 10 - Orient loading docks towards the side or rear of Large Format buildings, screened from public view.



Fig 11 - Create building perimeter landscape buffers designed to soften Large Format architecture.

NEIGHBORHOOD/GROCERY RETAIL

Figure A



- A** Site Access
Provide mid-block site access from minor roadways, away from intersection conflicts. Use on-site internal streets as direct extensions of adjacent public streets, providing convenient and direct vehicular and pedestrian access into the site.
- B** Landscape Islands
Create landscape islands to break-up large expanses of pavement.

- C** Convenience Parking
Provide short-term convenience parking designed to provide easy access to neighborhood retail storefronts.
- D** Loading Docks
Locate loading docks towards the rear or side of the site, screened from public view through the use of decorative walls, landscaping, and building masses.

- E** Pedestrian Forecourt
Create pedestrian forecourts designed as a semi-public space accommodating landscaping features and street furniture, “announcing” entrance into anchor tenant buildings
- F** Pedestrian Promenade
Create a pedestrian promenade designed to link individual retail storefronts while accommodating pedestrian movements.
- G** Formal Open Space
Locate buildings to frame and enclose formal open space, creating pedestrian oriented forecourts and plazas.
- H** Landscape Medians
Create landscape medians designed to soften large parking fields.
- I** Plazas and Patios
Create plazas and patios designed to accommodate pedestrian gatherings and al-fresco dining.
- J** Pad Buildings
Locate pad buildings adjacent to major roadways, designed to optimize retail exposure.
- K** Gatepost Architecture
Locate “gatepost” architectural expressions at roadway intersections, designed to anchor the corner
- L** Pedestrian Connectivity
Create a strong network of sidewalks and pathways that provide opportunities for pedestrians to walk safely and conveniently from one location to another.

PRINCIPLES

1. SITE SATELLITE PAD BUILDINGS AT HIGHER INTENSITY INTERSECTION LOCATIONS.
2. LOCATE BUILDINGS TO CREATE AND FRAME MEANINGFUL FORMAL OPEN AREA.
3. PROVIDE VEHICULAR AND PEDESTRIAN CONNECTIVITY FROM COMMERCIAL SITES TO SURROUNDING RESIDENTIAL NEIGHBORHOODS.
4. DESIGN AMPLE DRIVE-THRU FACILITIES THAT CONTAIN STACKED VEHICLES WHILE SENSITIVELY ACCOMMODATING PEDESTRIAN MOVEMENTS.
5. PROVIDE SAFE AND EFFICIENT VEHICULAR PARKING LOTS WHILE MINIMIZING THE NEGATIVE VISUAL IMPACTS COMMONLY ASSOCIATED WITH LARGE EXPANSSES OF PAVEMENT.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Locate architecturally significant buildings at street intersections designed to anchor the corner (fig. 4, A).
- 1.2 Locate buildings to create and frame plazas, courtyards, and other formal open spaces that are of a sufficient size and scale, to be usable gathering places (fig. 1, 2, A).
- 1.3 Orient freestanding satellite pad site building storefronts towards the street or formal open space areas such as plazas and courtyards (fig. 4, A).
- 1.4 Do not locate parking lots between the street and satellite building (fig. A).
- 1.5 Orient building entries so they are easily identifiable from parking lots (fig. A).
- 1.6 For specific building setback, please refer to the North Park Planned Unit Development (PUD).

2.0 FORMAL OPEN SPACE

- 2.1 Avoid random accumulations of buildings characterized by leftover, awkward, and unusable open space areas.
- 2.2 Orient open spaces to views of site amenities and activities such as architectural landmarks, fountains, natural landforms, and landscape features.
- 2.3 Orient open spaces to off-site amenities including views of the Rocky Mountains.

3.0 CIRCULATION AND PARKING

SITE ACCESS

- 3.1 Coordinate entry points into individual parcels to reduce vehicular and pedestrian.
- 3.2 Do not locate entrance driveways near roadway intersections. Entrance driveways should be located a minimum of 200 feet (measured center line to center line) from roadway intersections (fig. A) or as otherwise required by the City and County of Broomfield.
- 3.3 Share entrance driveways with neighboring parcels. Reciprocal Access Agreements shall be required, designed to allow the passage of vehicles between adjacent parcels.
- 3.4 Design entrance points to align with on-site focal points such as landmark towers and urban open space.

CIRCULATION

- 3.5 Do not 'wall-off' commercial sites from the surrounding neighborhood.



Fig 1 - Create ample pedestrian promenades contiguous to commercial storefronts designed to accommodate pedestrian movements and street furniture.



Fig 2 -Orchestrate the placement of commercial buildings to frame and enclose formal open space areas. Site landmark tower structures as focal points, designed to identify the Commercial Center.



Fig 3 - Use landscape medians and islands to break-up large expanses of pavement within commercial parking fields.



Fig 4 - Create architecturally significant architectural expressions at corner pad sites. Notice how the stand alone restaurant anchors the corner.

- 3.6 Provide pedestrian and vehicular connectivity between the site and adjacent neighborhood (fig. A).
- 3.7 Provide strong pedestrian connections between various uses within the Neighborhood Retail Center.
- 3.8 Establish strong pedestrian linkages via sidewalks and trails to connect all uses together and to provide convenient and safe passage through parking fields (fig. A).
- 3.9 Use on-site internal streets and drive aisles as direct extensions of adjacent public streets, providing convenient and direct vehicular and pedestrian access to the site.
- 3.10 Maintain a similar parking aisle direction between adjacent parking lots (fig. A).

PARKING

- 3.11 Segment large parking lots into smaller courts enclosed and framed by tree rows designed to minimize the perceived scale of the total parking area (fig. 3, A).
- 3.12 Align parking medians perpendicular to building entries. This alignment minimizes obstacles to pedestrians and encourages walking to remote parking lots (fig. A).
- 3.13 Use landscape medians to shade and screen parked vehicles, while physically breaking up large expanses of pavement (fig. A).
- 3.14 Provide landscaped islands designed to terminate the ends of parking aisles (fig. A).
- 3.15 Discourage high-speed driving. Use bulb-outs, roundabouts, and textured pavement treatments to slow vehicles.

DRIVE-THRU'S

- 3.16 Design drive-thru lanes to provide sufficient vehicle stacking behind the menu board to accommodate a minimum of six cars.
- 3.17 Avoid intersecting major pedestrian walkways with drive-thru lanes (fig. A). Provide defined textural accent paving at conflicts.
- 3.18 Separate drive-thru lanes from site access points (fig. A).
- 3.19 Provide ample drive-thru aisle width based upon the following guidelines:
 - Drive-thru Aisle Width:
 - Curved Sections: 12 feet
 - Straight Sections: 11 feet
- 3.20 Sensitive locate drive-thru circulation aisles. Drive-thru aisles shall be located a minimum of 20 feet from the property line.

CORPORATE CAMPUS
PROFESSIONAL MEDICAL OFFICE

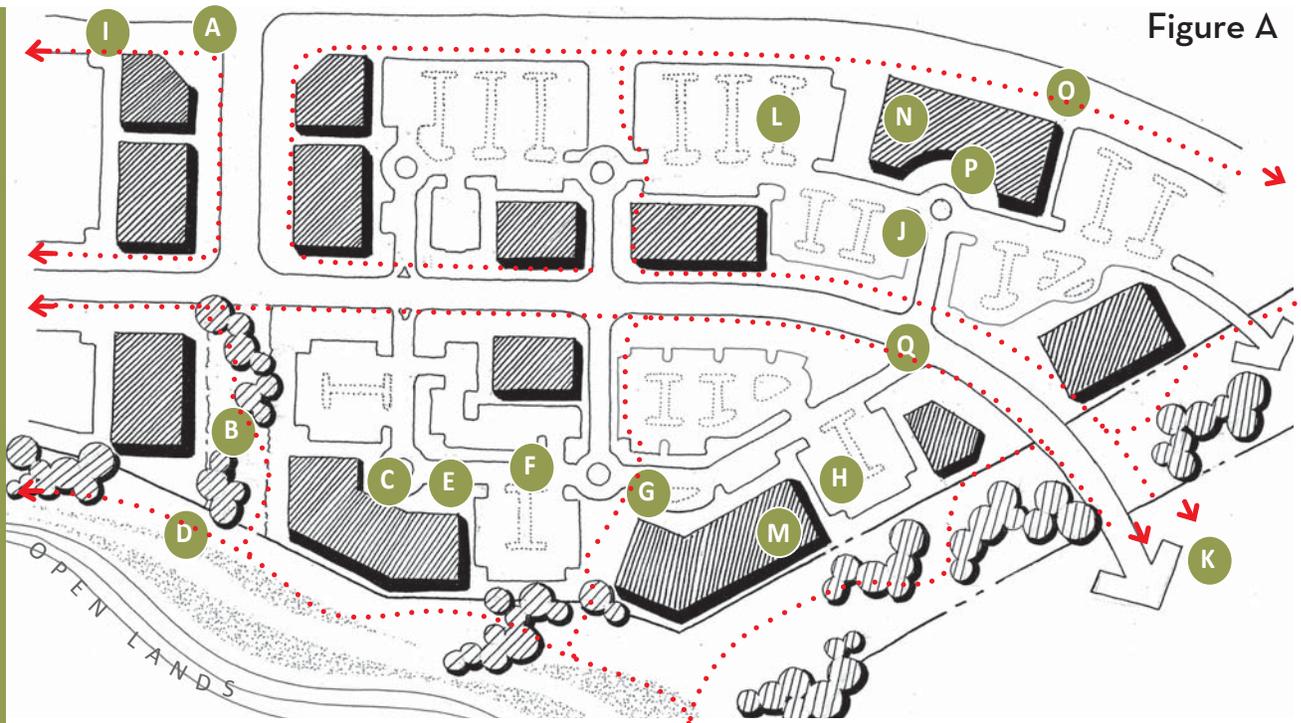


Figure A

- A** Ceremonial Entry
Create a pedestrian oriented ceremonial entrance that faces the public streetscape, designed to accommodate patrons.
- B** View Corridors
Create view corridors to gain vistas of off-site amenities such as open space corridors, and the mountains.
- C** Functional Entry
Create a functional entrance oriented towards the parking field.
- D** Pedestrian Connectivity
Create a strong network of sidewalks and linkages designed to provide opportunities for pedestrians to walk safely and conveniently from one location to another and to provide easy access for trails.
- E** Building Perimeter Landscaping
Provide ample landscaping adjacent to building façades to soften building architecture.

PRINCIPLES

1. SITE OFFICE BUILDINGS TOWARD OFF-SITE VIEWS OF AMENITIES SUCH AS OPEN LAND CORRIDORS AND THE MOUNTAINS.
2. SITE OFFICE BUILDINGS TO FRAME AND REINFORCE ROADWAY INTERSECTIONS AND ENTRYWAYS.
3. CREATE PEDESTRIAN PROMENADES, COURTYARDS, AND PLAZAS THAT HELP LINK BUILDING CLUSTERS.
4. PROVIDE INTERNAL STREETS THAT LEAD MOTORISTS VISUALLY AND FUNCTIONALLY TO BUILDING ENTRIES AND PEDESTRIAN DROP-OFF AREAS.
5. SENSITIVELY SITE SERVICE AND DELIVER FACILITIES TO MINIMIZE THEIR VISUAL IMPACT.

- F** Internal Streets
Create internal streets that provide access to parking drive aisles.
- G** Drop-Off Areas
Create drop-off areas designed to accommodate the loading and unloading of passengers.
- G** Parking Fields
Locate parking areas internal to the site, shielded by buildings and landscaping from major circulation features and other open space amenities.
- I** Corner Articulation
Articulate building corners with tower elements, corner cut-offs, pedestrian forecourts, or other elements designed to accentuate the higher intensity intersection.
- J** Round-About
Use round-abouts where appropriate, designed to accommodate vehicular movements.
- K** Reciprocal Access
Require Reciprocal Access Agreements between adjacent parcels.
- L** Landscape Medians and Islands
Segment parking fields with tree rows, designed to create individual parking courts or "outdoor rooms," breaking up large expanses of pavement.
- M** Building Orientation
Orient buildings towards views of open space amenities and the mountains.
- N** Building Siting
Site buildings adjacent to the roadway or open space to increase streetscape variety and visual interest. Do not surround buildings with parking lots.
- O** Streetscape
Provide ample landscape area adjacent to roadways. Coordinate with the North Park Landscape Master Plan.
- P** Formal Open Space
Create courtyards and plazas designed to accommodate pedestrian gatherings, oriented adjacent to building entries.
- Q** Entrance Drives
Provide entrance drives to establish a sense of entry from the public roadway to the building entrance.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Orient buildings towards adjacent open space amenities to gain views of off-site features such as the mountains, and open land amenities (fig. A).
- 1.2 Cluster buildings at intersections designed to create higher-intensity nodes of concentrated activity (fig. A).
- 1.3 Orient ceremonial building entries towards the public streetscape, designed to accommodate patrons (fig. 3).
- 1.4 Orient functional building entries towards parking fields, designed to accommodate employees (fig. 2, 3).
- 1.5 Articulate building corners with tower elements, corner cut-offs, pedestrian forecourts, or other elements designed to accentuate the corner (fig. A).
- 1.6 Locate new buildings so that they are compatible with the siting of existing, adjacent structures, urban open spaces (e.g., courtyards, plazas, natural areas), and parking areas.
- 1.7 Locate compatible land uses adjacent to each other. Avoid possible conflicts and take advantage of mutual benefits such as shared driveways, service aisles, and pedestrian drop-off areas (fig. A).
- 1.8 Do not surround building with parking lots (fig A).

2.0 FORMAL OPEN SPACE

- 2.1 Orchestrate the placement of buildings to enclose, frame, and define meaningful formal open space (fig. 1, A).
- 2.2 Orchestrate the placement of buildings to enclose formal open space areas creating pedestrian friendly forecourts, courtyards, and plazas (fig. 1, A).
- 2.3 Orient formal open space to views of site amenities such as mountains, lakes, open space, architectural landmarks, fountains, and landscape features (fig. A).
- 2.4 Avoid random accumulations of buildings that create left-over, awkward, and unusable urban open space areas.
- 2.5 Orient pedestrian forecourts towards the public realm, designed to accommodate pedestrian gatherings (fig. A).

3.0 SITE ACCESS

- 3.1 Provide a hierarchy of on-site circulation features that include:
 - Entrance Drives – Entrance Drives are located at parcel peripheries, providing site access and directing users to building drop-off areas (fig. A).
 - Internal Streets – Internal Streets traverse development parcels and are commonly shared by several individual



Fig 1 -Use office buildings to frame and enclose meaningful open space. Notice how the buildings define the pedestrian plaza which contains tree bosques, benches, planters, and seating.



Fig 2 - Create ceremonial entries that address the public realm.

- building sites within a parcel (fig. A).
 - Drive Aisles – Drive Aisles are located within parking lots and are designed to link internal streets with individual parking stalls (fig. A).
 - Service Drives – Service Drives are located to the side or rear of office buildings and provide access to building service doors, dock-high doors, loading zones, and waste pick-up areas within sites or parcels (fig. 4).
 - Drop-Off Areas – Drop-Off Areas are typically located at building entrances at the end of entrance drives, designed to accommodate the loading and unloading of passengers (fig. A).
- 3.2 **S** Establish strong pedestrian linkages via a network of sidewalks and trails in order to connect all sites to each other.
 - 3.3 **S** Require Reciprocal Access Agreements to allow vehicular access between adjacent parcels.
 - 3.4 Use roundabouts where appropriate, designed to accommodate continuous vehicular movements (fig. A).

4.0 SERVICE AND DELIVERY

- 4.1 Avoid placing service areas where they are visible from adjacent buildings, visitor areas, building entrances, and key public spaces.
- 4.2 **S** Locate loading docks, trash enclosures, and service areas out-of-view from adjacent roadways, entry drives, internal streets, pedestrian walkways, and open space (Fig. 4).
- 4.3 Provide separate parking areas for delivery trucks and service vehicles located away from employee parking lots and pedestrian walkways.
- 4.4 Align service areas with those of adjacent buildings so that service drives may be shared.
- 4.5 Locate accessory structures behind buildings. Accessory structures shall not be placed between the roadway and front building elevations.
- 4.6 **S** Do not locate loading docks, trash enclosures, and service areas in setback areas.

5.0 COMMUNICATION DEVICES, TRANSFORMERS, AND GAS METERS

- 5.1 Locate all electrical transformers, gas meters, and other utility cabinets away from pedestrian routes and urban open space areas, such as courtyards and plazas.
- 5.2 Locate transmission and receiving telecommunication equipment on roofs, or if possible at ground level, behind office structures, screened from public view.

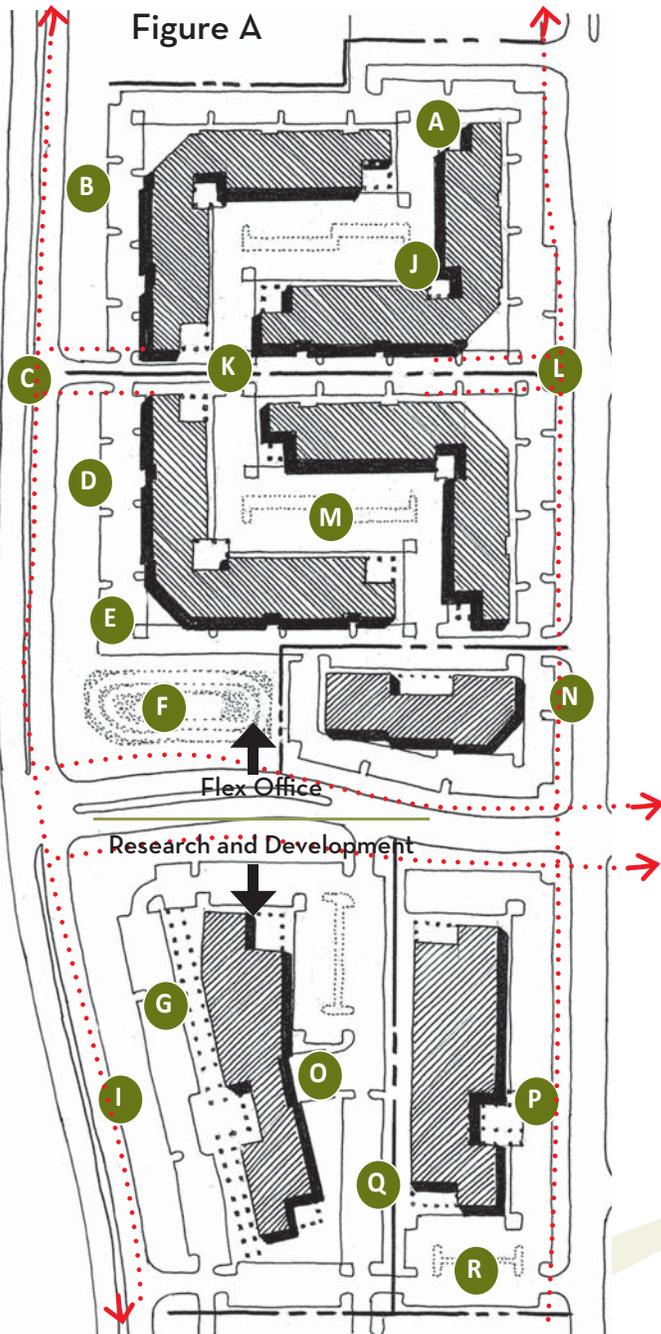


Fig 3 - Orient parking fields towards the rear of the site, using buildings to shield and buffer views from the streetscape and open lands.



Fig 4 -Locate service drives to the side or rear of office buildings, away from parking fields and pedestrian gathering areas. Use decorative walls to screen the loading area.

FLEX OFFICE AND RESEARCH AND DEVELOPMENT



- A** Building Articulation
Articulate building masses designed to distinguish and define plazas and entrance forecourts.
- B** Landscape Islands
Create landscape islands designed to soften large expanses of pavement.
- C** Site Access
Locate parcel access points away from major intersections.
- D** Convenience Parking
Locate convenience parking adjacent to the streetscape, designed to accommodate patrons.
- E** Entrance Forecourts
Provide entrance forecourts designed to accommodate pedestrian gatherings.
- F** Regional Detention
Create aesthetically pleasing detention ponds designed to capture and contain surface run-off.
- G** Building Perimeter Landscaping
Provide building perimeter landscaping designed to soften architecture. Use trellis elements or colonnades to provide rich layers designed to visually break-up continuous building masses.
- I** Parkstrip
Provide ample landscaping contiguous to major perimeter roads, designed to screen convenience parking fields.
- J** Plazas
Use buildings to frame and enclose meaningful formal open space.
- K** Reciprocal Access
Provide reciprocal access between individual adjacent parcels.
- L** Shared Parcel Access
Locate parcel access points on property lines to create shared entrance driveways.
- M** Employee/Service Parking
Locate employee parking internal to the site, designed to accommodate employees and services.
- N** Pedestrian Connectivity
Create a strong network of sidewalks and walkways designed to provide opportunities for pedestrians to walk safely and conveniently from one location to another
- O** Loading Docks
Locate loading docks internal to the site, screened from public view by landscaping, building masses, and screen walls.
- P** Pedestrian Forecourts
Create forecourts designed to accommodate pedestrian gatherings while “announcing” entrance into the building.
- Q** Site Perimeter Landscaping
Provide ample landscaping contiguous to parcel property lines designed to harmonize with adjacent lots.
- R** Landscape Medians
Create landscape medians to break-up large parking fields.

PRINCIPLES

1. CREATE BUILDING ORIENTATIONS THAT ENHANCE AND FRAME THE STREETScape CONTIGUOUS TO MAJOR PERIMETER ROADS AND INTERNAL STREETS.
2. USE BUILDING MASSES TO BREAK-UP LARGE EXPANSES OF PAVEMENT.
3. LOCATE BUILDINGS TO FRAME AND ENCLOSE MEANINGFUL FORMAL OPEN AREA.
4. CREATE INDIVIDUAL INTERNALIZED PARKING COURTS DESIGNED TO ENCLOSE AND SCREEN PARKING.
5. INTERNALIZE DISTRIBUTION, SERVICE, AND DELIVERY FACILITIES SCREENED FROM PUBLIC VIEW.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Orient office bays related to Research & Development buildings towards the public streetscape (fig. A).
- 1.2 Orient technology portions of Research & Development buildings towards rear distribution facilities (fig. A).
- 1.3 Site buildings to cradle and frame meaningful formal open space, designed to accommodate outdoor forecourts, plazas, and pedestrian gathering spaces (fig. 1, 2, A).
- 1.4 Site front building facades contiguous to perimeter pedestrian promenades designed to accommodate pedestrian movements (fig. 2, A).
- 1.5 Orient distribution, service, and delivery facilities towards the rear of Research and Development sites, screened from public view (fig. A).
- 1.6 Orient Flex Office ceremonial entrances towards the public realm, designed to accommodate patrons (fig. 2, A).
- 1.7 Orient Flex Office functional entries towards internal parking areas, designed to accommodate employees (fig. A).
- 1.8 Avoid locating long-term parking between the roadway and building (fig. A).

2.0 VEHICULAR CIRCULATION AND PARKING

- 2.1 Locate convenience parking contiguous to Major Perimeter Streets designed to accommodate business patrons of both Flex Office and Research and Development parcels (fig. A).
- 2.2 Locate employee, distribution, service, and delivery parking internally within Flex Office parcels, screened from public view (fig. A).
- 2.3 Allow vehicular passage between individual parcels. Reciprocal Access Agreements shall be required, designed to allow the passage of vehicles and pedestrians between adjacent parcels.
- 2.4 Use landscape medians and islands to shade and screen parked vehicles, while physically breaking-up large expanses of pavement (fig. A).

3.0 SITE ACCESS

- 3.1 Limit the number of entry access points along Major Perimeter Streets designed to confine or limit vehicular and pedestrian conflicts while facilitating traffic flow (fig. A).
- 3.2 Align on-site internal streets with neighboring parcel driveways across from each other (fig. A).
- 3.3 Create shared parcel access points designed to accommodate joint use driveways (fig. A).

4.0 SERVICE AND DELIVERY AREAS

- 4.1 Avoid placing service and delivery areas where they are visible from public streets.
- 4.2 Locate loading docks, trash enclosures, and service areas out-of-view from adjacent public roadways, pedestrian walkways, and formal open space amenities (fig. 3).
- 4.3 Locate loading docks, trash enclosures, and service areas internally, screened from adjacent roadways by buildings (fig. 3).
- 4.4 **S** Do not locate loading docks, trash enclosures, and service facilities in setback areas.
- 4.5 Create shared service areas. Align service areas with those of adjacent buildings so that service drives may be shared between adjacent Flex Office uses.



Fig. 1 - Create defined open space areas designed to accommodate pedestrian amenities. Notice the outdoor “lunchroom” to the right of the entry.



Fig. 2 - Create usable formal open space. Notice how the building mass defines and encloses the pedestrian forecourt.



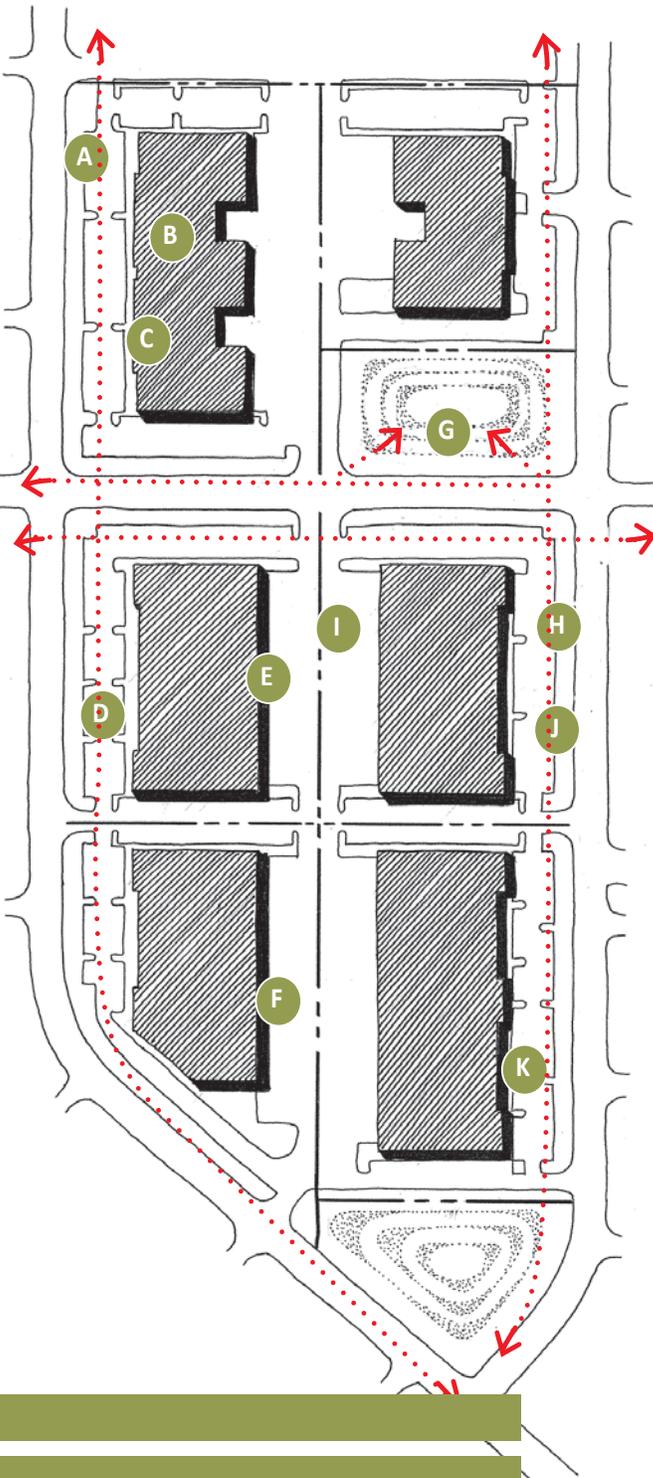
Fig. 3 - Screen loading docks from public view, buffering the service and delivery area.



Fig. 4 - Provide building perimeter landscaping to soften façades. Notice how the hedges, shrubs, and perimeter trees provide a rich landscape layer, buffering the building from the parking field.

LIGHT INDUSTRIAL

Figure A



↑
Light Industrial
↓
High Bay Industrial

- A** Parkstrip
Provide ample parkstrip landscaping designed to screen and soften parking fields.
- B** Building Entries
Articulate building masses designed to accentuate building entries.
- C** Building Articulation
Articulate building masses to distinguish individual Light Industrial spaces
- D** Building Perimeter Landscaping
Provide landscaping adjacent to High Bay Industrial buildings, designed to screen and soften building architecture.
- E** Dock-High Doors
Locate dock-high doors internal to the site, screened from public view through the use of buildings, landscaping, and screen walls.
- F** Tractor-Trailer Staging Area
Orient "big-rig" distribution areas internally, buffered from public view by buildings, landscaping, and screen walls.
- G** Regional Detention
Provide detention basins to capture surface run-off, and to serve as a neighborhood park space.
- H** Pedestrian Connectivity
Create a strong network of sidewalks and walkways designed to provide opportunities for pedestrians to walk safely and conveniently from one location to another.
- I** Service Areas
Create shared service and distribution areas. Align service and distribution areas with those located on adjacent parcels within the sub-area, so that tractor-trailer staging areas may be shared.
- J** Landscape Islands
Provide landscape islands designed to break-up large expanses of pavement.
- K** Customer and Employee Parking
Locate customer and employee parking contiguous to the streetscape

PRINCIPLES

1. CREATE BUILDING ORIENTATIONS THAT ENHANCE AND FRAME THE STREETScape CONTIGUOUS TO MAJOR PERIMETER ROADS AND INTERNAL STREETS.
2. USE BUILDING MASSES TO BREAK-UP LARGE EXPANSES OF PAVEMENT.
3. LOCATE BUILDINGS TO FRAME AND ENCLOSE MEANINGFUL FORMAL OPEN AREA.
4. CREATE INDIVIDUAL INTERNALIZED PARKING COURTS DESIGNED TO ENCLOSE AND SCREEN PARKING.
5. INTERNALIZE DISTRIBUTION, SERVICE, AND DELIVERY FACILITIES SCREENED FROM PUBLIC VIEW.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Locate office portions of Light Industrial and High Bay Industrial buildings contiguous to roadways, designed to frame the streetscape (fig. 1).
- 1.2 Locate Light and High Bay Industrial buildings to accommodate convenient on-site parking adjacent to buildings (fig. A).
- 1.3 Locate Light Industrial buildings to accommodate both street-oriented patron parking and rear-oriented employee parking (fig. A).
- 1.4 Locate High Bay Industrial buildings towards the roadway designed to screen rear-oriented warehouse and distribution facilities (fig. A).
- 1.5 Take advantage of mutual benefits such as shared driveways, and service aisles (fig. A).
- 1.6 Locate building entries so they are easily identifiable from site access points (fig. 1).

2.0 ACCESS AND DRIVEWAYS

- 2.1 Limit parcel access points along arterial roadways to enhance traffic flow and minimize the disruption of landscaping and medians (fig. A).
- 2.2 Align secondary internal street driveway access points with access to properties across the street, whenever possible (fig. A).

3.0 DISTRIBUTION, SERVICE, DELIVERY, AND STORAGE AREAS

- 3.1 Avoid placing distribution, service, delivery, and storage areas where they are visible from public streets (fig. A).
- 3.2 Restrict the location of distribution, service, delivery, and storage facilities to defined areas to the rear or side of buildings (fig. A).

- 3.3 **S** Locate accessory structures behind building.
- 3.4 Locate distribution, service, delivery, and storage areas out-of-view from adjacent roadways, entry drives, internal streets, pedestrian walkways, and formal open space (fig. A).
- 3.5 Provide separate parking areas for “big-rig” distribution vehicles, delivery trucks, and service vehicles located away from street-oriented employee parking lots and pedestrian walkways (fig. A).
- 3.6 Create shared service areas. Align service areas with those on adjacent parcels so that service drives may be shared (fig. A).
- 3.7 **S** Do not locate service, delivery, and storage areas in setback areas.
- 3.8 Use building placements and decorative architectural screen walls, coupled with landscaping, to screen distribution, service, delivery, and storage areas from public view (fig. A).
- 3.9 **S** Service, delivery, and storage areas shall be constructed and maintained according to the following requirements:
 - No materials, supplies, or equipment, including trucks or other motor vehicles, shall be stored on-site, except inside a closed building or behind decorative screen walls to prevent visibility from public view (public row, open space trails, neighboring properties or dissimilar use).
 - Distribution, service, delivery, and storage areas (including dock-high doors) shall be screened.
 - Screen walls shall harmonize with the architectural style of the adjacent building, constructed of similar complementary materials and finishes (fig. 4).

4.0 COMMUNICATION DEVICES

- 4.1 Locate transmission and receiving telecommunication equipment (i.e., satellite dishes) at ground level, behind Light and High Bay Industrial structures, screened from public view.



Fig. 1 - Orient distinct building entrances towards the public realm. Notice how the articulated and easily-identifiable building recess “announces” entrance.



Fig. 2 - Use dense parkstrip landscaping to buffer large industrial buildings. Notice how the street tree clusters and ample earth berm screens the building from public view.



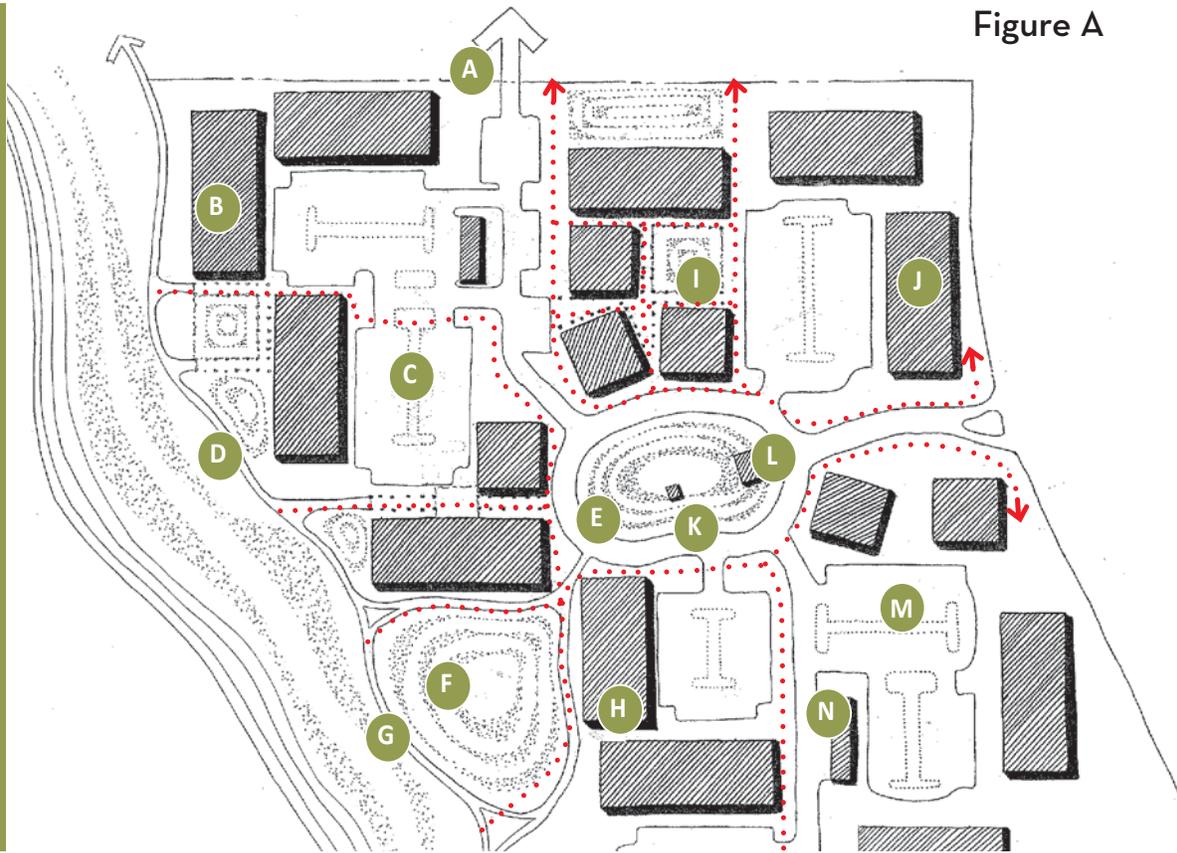
Fig. 3 - Screen service areas. Notice how the screen wall, coupled with landscaping, buffers the loading dock.



Fig. 4 - Screen walls shall harmonize with architectural style of the adjacent building.

MULTI-FAMILY

Figure A



- A** Reciprocal Access
Require Reciprocal Access Agreements between adjacent parcels, as necessary.
- B** Building Siting
Site buildings towards off-site amenities such as open land corridors and views of the Rocky Mountains.
- C** Landscape Medians and Islands
Provide landscape medians and islands to break up large expanses of pavement.
- D** Trail Linkage
Create a trail to link multi-family housing to other North Park Activity Centers.
- E** Village Green
Provide a centralized open land feature designed to accommodate active and passive recreation activities.
- F** Common Open Area
Create common open areas designed to accommodate outdoor activities.
- G** Pedestrian Connectivity
Create a strong network of sidewalks and trails that provide opportunities for residents to walk within the community, providing connections to regional trails.
- H** Building Orientation
Orient buildings to frame and enclose meaningful common open space.
- I** Common Open Area
Use buildings to create and enclose meaningful common open area. Provide a variety of dispersed squares or courtyards designed to soften the built environment.
- J** Building Siting
Site buildings adjacent to roadways and open lands, designed to promote streetscape continuity. Orient buildings to screen parking courts from the streetscape.
- K** Community Buildings
Orient project entries towards community buildings such as a recreation center, designed as focal points.
- L** Tower Elements
Provide tower elements as orientation icons, increasing community identity.
- M** Parking Courts
Disperse parking areas into individual parking courts. Do not encircle sites with “race track” parking/aisle configurations.
- N** Garages
Locate garages internally within the site, screened from public view by dwelling units or dense landscaping.

PRINCIPLES

1. INTEGRATE MULTI-FAMILY PROJECTS WITH SURROUNDING LAND USES, PROVIDING SEAMLESS CONNECTIVITY.
2. AVOID “RACE TRACK” PARKING LOT AND DRIVE AISLE CONFIGURATIONS THAT ENCIRCLE THE PERIMETER OF THE SITE, ISOLATING THE MULTI-FAMILY PROJECT FROM SURROUNDING DISTRICT.
3. ORCHESTRATE AND BALANCE THE PLACEMENT OF BUILDINGS AND PARKING LOTS WITH COMMON OPEN LAND AREAS.
4. SITE MULTI-FAMILY BUILDINGS TO CREATE AND DEFINE MEANINGFUL COMMON OPEN LAND AREAS FOR SOCIALIZING, ENTERTAINING, AND LEISURE.
5. DISCOURAGE ON-SITE PARKING LOTS AND GARAGES THAT DOMINATE THE STREETScape.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Site buildings towards views of off-site amenities such as the Rocky Mountains, open pace corridors, and the lake.
- 1.2 Group buildings in informal clusters, separated from the roadway by deep landscape setbacks, or create a formal streetwall by orienting buildings to frame and enclose the streetscape at high intensity intersections.
- 1.3 Orient multi-family buildings towards streets, greens, and plazas, designed to define, enclose, and frame these open space elements, creating streetwalls and “outdoor rooms” (fig. A).
- 1.4 Orient vehicular project entries towards open space amenities or community buildings. Place prominent community buildings along entry drives as a focal point (fig. 2, A).
- 1.5 Locate buildings in small clusters with associated parking courts (fig. A).
- 1.6 Orient buildings to screen parking courts from the streetscape (fig. A).
- 1.7 Site buildings adjacent to roadways and open space, designed to promote streetscape continuity.
- 1.8 Create tower elements as orientation icons, designed as focal points (fig. A).
- 1.9 **S** Locate garages internally within the site, screened from public view by dwelling units or dense landscaping (fig. A).
- 1.10 Provide recessed entries or covered porches as transitional elements between the public and private realms.

2.0 COMMON OPEN AREAS

- 2.1 Create usable common open areas located contiguous to the units they serve (fig. 3, A).
- 2.2 Create common open areas designed to accommodate active and passive recreation amenities (fig. 3, A).
- 2.3 Avoid small, thin, awkward, and undefined common open areas.
- 2.4 The width of common open areas shall not be less than one-third their length.

3.0 CIRCULATION AND PARKING

- 3.1 Avoid “race track” drive aisle configurations that encircle and dominate the site.
- 3.2 Avoid long, continuous drive aisle configurations. Instead, provide a series of short drive aisle configurations that provide access to individual parking courts (fig. A).
- 3.3 Design drive aisles, based upon the following recommendations:
 - Break-up continuous drive aisle configurations and associated parking stalls. There should be no more than 15 uninterrupted parking stalls, whether in garages, carports, or open parking lots.
 - Each cluster of 15 parking stalls should be separated from additional clusters by a landscape island/peninsula, not less than nine feet wide.
- 3.4 Locate parking lots in a series of dispersed parking courts accessed by individual drive aisles (fig. A).
- 3.5 Group multi-family buildings to create areas of internally oriented parking courts (fig. A).
- 3.6 Locate parking lots either internally, shielded from the roadway, or externally, buffered by landscaping.
- 3.7 Promote connectivity and reciprocal access between adjacent parcels. Connect on-site circulation aisles to adjacent projects (fig. A).
- 3.8 Separate parking courts from each other by buildings or landscape buffers.
- 3.9 Design parking courts, based upon the following recommendations:
 - Maximum Suggested Size: Two double-loaded parking aisles (bays) adjacent to each other
 - Maximum Suggested Length: 15 Stalls
 - Separation: Parking courts should be separated from each other by dwelling units or by a landscape median not less than nine feet wide.
- 3.10 **S** Establish strong pedestrian linkages via a network of sidewalks and trails in order to connect all sites to each other.



Fig. 1 - Orient buildings towards the street or Open Lands edge.



Fig. 2 - Orient project entries towards community buildings. Notice how the community building terminates the entrance axis.



Fig. 3 - Create usable common open space areas. Notice how the tree and shrub plantings frame and define the village green.



Fig. 4 - Locate parking lots in dispersed parking areas, defining and segmenting the parking lot into individual courts.

SENIOR RESIDENTIAL MULTI-FAMILY

Figure A



- A** Pedestrian Connectivity
Create a strong network of sidewalks and pedestrian walkways that provide opportunities for pedestrians to walk safely and conveniently from one location to another.
- B** Connectivity
Link internal streets to adjacent parcels designed to accommodate both pedestrian and vehicular movements.
- C** Plaza Pavilion
Create a plaza pavilion designed to accommodate resort style outdoor activities and pedestrian gatherings.
- D** Landscape Islands
Create landscape islands to break up large expanses of pavement.
- E** Building Perimeter Landscaping
Provide landscaping adjacent to senior housing buildings designed to soften building architecture.
- F** Building Orientation
Orient Independent Senior buildings to frame and enclose meaningful open space, creating a "resort style" amenity.
- G** Ceremonial Entry
Create a ceremonial entry oriented towards the Roadway round-about, designed to accommodate patrons.
- H** Roundabouts
Use roundabouts where appropriate, designed to facilitate passenger drop-off.
- I** Open Areas
Create a "village green" designed to accommodate outdoor activities related to Independent Seniors.
- J** Detention Basins
Create on-site detention basins to capture surface run-off.
- K** Porte Cochere
Create porte cocheres designed to accommodate the loading and unloading of passengers.
- L** Pavilions
Create activity pavilions oriented towards outdoor courtyards.
- M** Building Orientation
Orient Assisted Living buildings to create and enclose meaningful formal open space such as plazas and courtyards.
- N** Parking Fields
Create dispersed parking fields designed to mitigate large expanses of pavement.

PRINCIPLES

1. INTEGRATE SENIOR RESIDENTIAL, MULTI-FAMILY PROJECTS WITH SURROUNDING LAND USES, PROVIDING SEAMLESS CONNECTIVITY.
2. ORCHESTRATE AND BALANCE THE PLACEMENT OF BUILDINGS AND PARKING LOTS WITH OPEN LAND AREAS.
3. ORCHESTRATE THE PLACEMENT OF CONGREGATE CARE, ASSISTED LIVING, AND SENIOR COTTAGES TO FRAME AND ENCLOSE MEANINGFUL COMMON OPEN AREA.
4. SITE MULTI-FAMILY BUILDINGS TO CREATE AND DEFINE MEANINGFUL OPEN AREAS FOR SOCIALIZING, ENTERTAINING, AND LEISURE.
5. AVOID PARKING LOT AND DRIVE AISLE CONFIGURATIONS THAT DOMINATE THE SITE, ISOLATING SENIOR RESIDENTIAL/MULTI-FAMILY PROJECTS FROM THE SURROUNDING DISTRICT.
6. CREATE A STRONG NETWORK OF SIDEWALKS AND PEDESTRIAN WALKWAYS DESIGNED TO CONNECT FORMAL ON-SITE OPEN AREAS WITH OFF-SITE AMENITIES.

1.0 BUILDING SITING AND ORIENTATION

- 1.1 Group buildings in clusters, separated from the roadway by landscaped setbacks in conformance with the North Park PUD.
- 1.2 Orient Senior Residential/Multi-Family buildings towards streets, greens, and plazas, designed to define, enclose, and frame these open area elements, creating “outdoor rooms”.
- 1.3 Orient vehicular project entries towards open area amenities or community buildings. Place prominent community buildings on axis with entry drives, terminating the view.
- 1.4 Orient Congregate Care buildings to frame and enclose meaningful common open space.
- 1.5 Design Congregate Care site entrances to align with building entrances and porte-cocheres.
- 1.6 Site Assisted Living buildings to create common outdoor areas.
- 1.7 Orient Senior Cottages towards the street designed to frame and enclose the streetscape while creating a more compact and intimate atmosphere.
- 1.8 Orchestrate the placement of Senior Cottages to frame and enclose formal open space features.

2.0 COMMON OPEN AREAS

- 2.1 Create useable common open areas. Open areas should be located contiguous to the units they serve.
- 2.2 Avoid small, thin, awkward, and undefined common open areas.
 - The width of common open areas shall not be less than one-third of their length.
- 2.3 Create a strong network of ADA compliant pedestrian sidewalks, with trails for connectivity to other parcels, and to establish on-site “loops”.
- 2.4 Provide covered bus friendly porte cochere/drop-off areas at entries to all senior oriented structures.

3.0 PARKING LOT LOCATION AND CONFIGURATION

- 3.1 Locate parking lots in a series of dispersed parking pods or courtyards accessed by individual drive aisles.
- 3.2 Group Senior Residential/Multi-Family buildings to create areas of internally oriented parking courts.
- 3.3 Locate parking lots either internally, shielded from the roadway, or externally, buffered by landscaping.

4.0 ON-SITE CIRCULATION AND DRIVE AISLES

- 4.1 Promote vehicular connectivity and reciprocal access between Congregate Care, Assisted Living, and Senior Cottages.
- 4.2 Connect on-site circulation aisles to adjacent projects.
- 4.3 Create an internal “theme street” designed to accommodate vehicular and pedestrian circulation to adjacent off-site projects and amenities.
- 4.4 Avoid long, continuous drive aisle configurations. Instead, provide a series of short drive aisle configurations that provide access to smaller parking pods or courts.

4.5 **S** Design drive aisles based upon the following requirements:

- Break up continuous drive aisle configurations and associated parking stalls. There shall be no more than 15 uninterrupted parking stalls whether in garages, carports, or open parking lots.
- Each cluster of 15 parking stalls shall be separated from additional clusters by a landscape island not less than nine feet wide.



Fig. 1 - Orchestrate the placement of buildings to create meaningful formal open space. Notice how the buildings frame and enclose the internal courtyard.



Fig. 2 - Orient porte-cocheres towards building and site entries designed to accommodate to loading and unloading of passengers.



Fig. 3 - Create tower elements as orientation icons designed to identify the senior housing entrance.



Fig. 4 - Orient senior housing covered porches towards the public realm, encouraging outdoor socializing along the streetscape.

ARCHITECTURE

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B R O O M F I E L D



ARCHITECTURE

The Architecture Section is concerned with the design, image, and function of various building types that include commercial, residential, mixed use, and office, to name a few. The Architecture component includes Prototypical Elevations with call-outs that successfully deconstruct each building type into a series of architectural elements and characteristics. Included are design Principles, Guidelines, and Standards tailored to addressing specific design issues such as Building Massing, Roof Form, Building Facades, and Materials. In addition, various photographic Vignettes have been included, designed to highlight architectural characteristics related to each building type.

LARGE FORMAT RETAIL

Figure A



- A** **Roof Form**
Large Format architecture softened through the use of flat and pitched roof segments increasing visual interest.
- B** **Cornice/Parapet Wall**
Cornice/parapet wall terminates the top of the Large Format structure, creating a distinguishable roof cap.
- C** **Perimeter Building Landscaping**
Substantial landscape planters add visual interest to building açades while enhancing the pedestrian environment.
- D** **Building Façades**
Color-blocked stucco façade with reveal lines dominates the upper façade..
- E** **Trellis Element**
Substantial trellis element, characterized by strong stone piers and dimensional timber lattice, creates a layering effect that softens Large Format architecture.

- F** **Transparency**
Storefront windows increase Large Format transparency,
- G** **Promenade Trees**
Formal soldier rows of trees soften Large Format building architecture while shading the pedestrian promenades.
- H** **Building Base**
Stone base anchors the Large Format building to the ground plane, adding variety and visual interest to the façade. The heavy stone base anchors the building to the ground plane while lighter-appearing stucco cladding is located above.
- I** **Lintels**
Flat “basket handle” arch supports the stone building mass above.
- J** **Entrance Pavilion**
Pavilion “announces” entrance into the Large Format structure while sheltering patron from the elements and breaking up the building mass.
- K** **Wall Signage**
Business identification wall sign composed of individually fabricated plastic letters that are internally illuminated.
- L** **Building Materials**
Rugged and durable ashler-laid tone pavilion and building base adds texture and visual relief.
- M** **Pedestrian Promenade**
Pedestrian promenade provides ample area for pedestrian gatherings, while linking individual Large Format structures. Pedestrian promenade is large, capable of accommodating outdoor seating and landscaping.

PRINCIPLES

1. REDUCE THE MASS AND BULK OF LARGE FORMAT RETAIL.
2. TERMINATE THE TOP OF LARGE FORMAT ARCHITECTURE WITH A DISTINGUISHABLE ROOF CAP.
3. ARTICULATE LARGE FORMAT BUILDING ELEVATIONS TO INCREASE FACADE VARIETY AND VISUAL INTEREST.
4. SHELTER PATRONS FROM THE ELEMENTS AT LARGE FORMAT ENTRANCES.
5. CREATE LARGE FORMAT BUILDINGS AND ACCESSORY STRUCTURES THAT REFLECT THE ARCHITECTURAL STYLE OF THE SHOPPING CENTER.



Fig. 1 - Punctuate Large Format buildings with tower elements, adding variety and visual interest to the façade, while anchoring the corner.

1.0 BUILDING MASSING

- 1.1 Use additive elements such as entrance pavilions to break-up Large Format architecture (fig. 6, A).
- 1.2 Use tower elements to accentuate building corners (fig. 1, 5).
- 1.3 Punctuate large building masses with tower elements designed as landmark icons (fig. 1, 5, A).
- 1.4 Use covered arcades and trellis elements as single-story transitional elements to larger scaled building masses (fig. 2, A).
- 1.5 Shelter patrons from the elements at big box entrances (fig. 6, A).

2.0 ROOF FORM

- 2.1 Crown Large Format buildings with a discernible roof cap (fig. 1, A).
- 2.2 Terminate the top of Large Format flat roofs with a substantial roof parapet/cornice (corona) element (fig. 3, A).
- 2.3 **S** Conceal rooftop mechanical equipment. All rooftop mechanical equipment shall be completely screened within a penthouse or hidden behind a roof parapet.

3.0 FACADE ARTICULATION AND TRANSPARENCY

- 3.1 **S** Articulate Large Format façades. No façade shall exceed 50 linear feet without a façade articulation. Façade articulation techniques include the following:
 - Structural piers (fig. 3, 4)
 - Building corners with material changes (fig. 1)
 - Raised planters with landscaping adjacent to building façades (fig. A)
 - Faux window openings and awnings
 - Storefront windows
 - Wall plane projection or recess (fig. 1)
 - Colonnades and trellis elements (fig. 2, 5, A)
- 3.2 Design Large Format facades based upon the following guidelines:
 - Minimum Percentage of Front Storefront Façade Window Area: 25 Percent
 - Minimum Percentage of Facades that contain a Trellis Element or Colonnade: 50 Percent

4.0 FACADE ARTICULATION AND TRANSPARENCY

- 4.1 Design Large Format accessory structures to reflect the architectural style of the entire shopping Center.
- 4.2 Design service station canopies with roofs and substantial piers designed to reflect the architectural style of the primary Large Format building.

5.0 BUILDING MATERIALS

- 5.1 Use consistent building materials and colors on Large Format architecture, reflecting the design of the shopping center as a whole.
- 5.2 **S** The following building materials shall be permitted: All material transitions shall occur at inside corners.

Building Base:

- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Stone Veneer (i.e., Brownstone, Sandstone, Slate)
- Masonry, Stone (i.e., Ashler-laid)

Upper Façade:

- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Split face or smooth face concrete block integrally colored
- Masonry, Stone Veneer (i.e., Brownstone, Sandstone, Slate)
- Masonry, Stone (i.e., Ashler-laid)
- Stucco or EIFS, Smooth

Windows:

- Glass, Transparent
- Glass, Lightly tinted (Allowing 90 percent light transmission)

Roofs:

- Standing Seam Metal (pitched roof sections, only)
- Corten Steel (pitched roof sections, only)
- Rolled metal or rubber membrane roofing (Flat roof sections, only. Screened by a parapet wall and associated cornice.)
- Tile, Concrete



Fig. 2 - Use trellis elements to soften Large Format architecture. Notice how the substantial stone pier and dimensional timber trellis structure adds façade variety and visual interest. Notice also that cart storage is screened from public view.



Fig. 3 - Terminate the top of Large Format buildings with a roof cap, such as a substantial cornice element that provides a building terminus while creating rich shadow lines. Notice also the ample stone pier and building base.



Fig. 4 - Accentuate Large Format architecture with structural piers, adding visual relief to the Big Box façade.



Fig. 5 - Use building materials to add texture and visual interest. Notice how the rugged stone base visually anchors the Large Format building to the ground plane, with lighter stucco walls occurring above.



Fig. 6 - Define Large Format building entrances. Notice the entrance pavilion composed of substantial stone piers, dimensional timber brackets, and a dominant roof cap that “announces” entrance into the structure.

IN-LINE RETAIL

Figure A

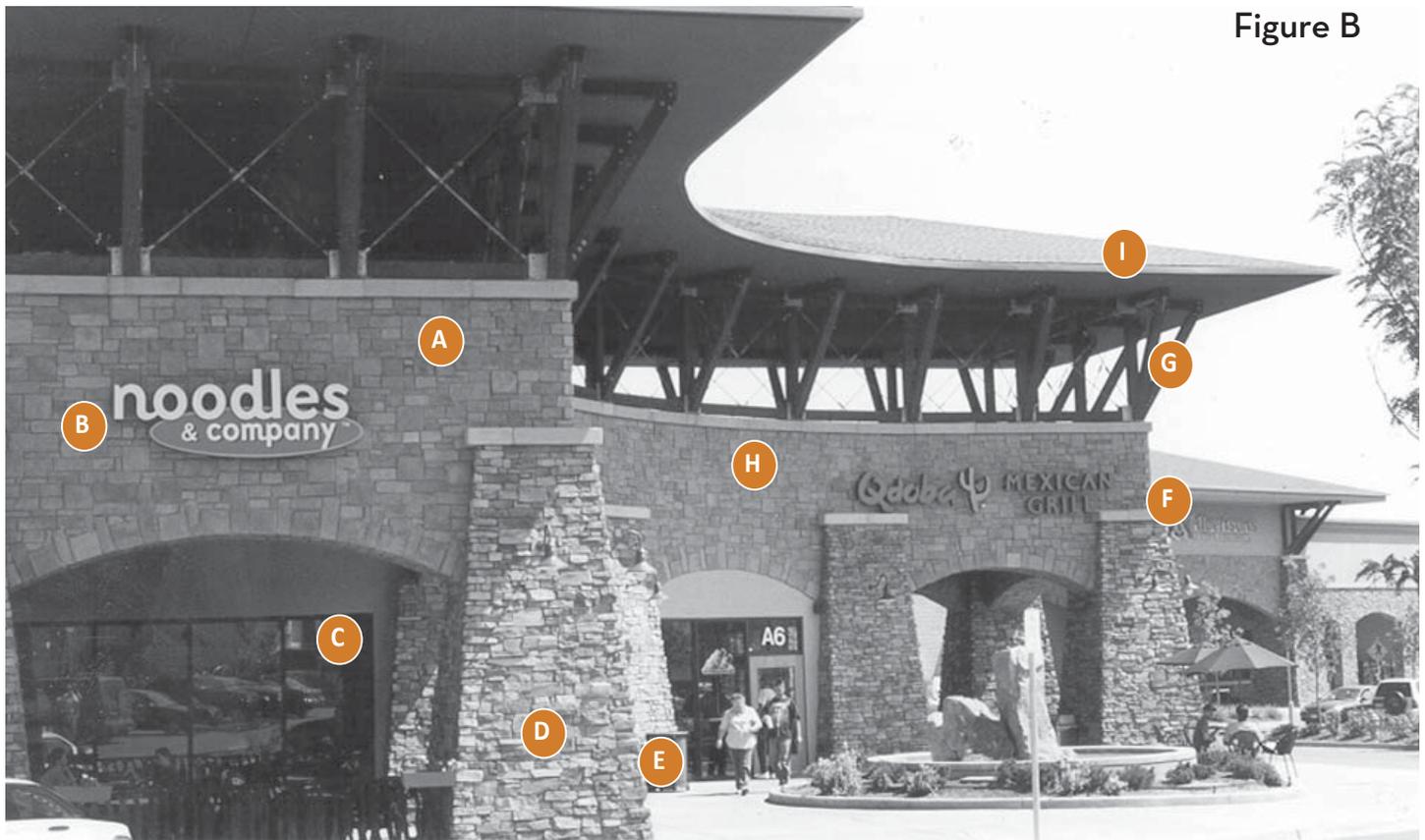


- A** **Roof Form**
Hip roof forms create façade variety and visual interest, while reflecting the architectural style of the building.
- B** **Building Massing**
Single-story colonnade creates a “stair step” to larger building masses.
- C** **Building Materials**
Refined building materials including stone veneer, structural metal, and stone masonry project a polished yet indigenous architectural image.
- D** **Structural Piers**
Ample structural piers anchor the colonnade to the ground plane.
- E** **Colonnade**
Pedestrian colonnade shelters patrons from the elements while functioning as a single-story transitional element to larger building masses.
- F** **Building Transparency**
Storefront windows allow indoor visibility and daylighting.
- G** **Pedestrian Promenade**
Promenade provides ample outdoor gathering space for pedestrians.
- H** **Roof Fascia**
Substantial roof fascia composed of an ample eave overhang creates visual stability.
- I** **Corner Towers**
Tower elements punctuate building corners, providing accent and visual interest.
- J** **Signage**
Individual cut internally illuminated plastic letters identify the business.
- K** **Ornamental Lighting**
Pedestrian lighting complements the architectural style of the building.

PRINCIPLES

1. CREATE BUILDING MASSES AND ROOF FORMS THAT REFLECT THE ARCHITECTURAL STYLE OF THE IN-LINE RETAIL CENTER.
2. INCREASE BUILDING MASS AT AREA OF HIGHER INTENSITY AND PEDESTRIAN CONCENTRATION.
3. ARTICULATE FACADES TO REDUCE THE MASSIVE SCALE AND IMPERSONAL APPEARANCE OF LARGE IN-LINE RETAIL BUILDINGS.
4. DESIGN HUMAN-SCALED BUILDING MASSES. INCORPORATE ARCHITECTURAL FEATURES THAT CREATE VISUAL INTEREST AT THE PEDESTRIAN SCALE.
5. USE BUILDING MATERIALS THAT ARE HUMAN-SCALED. PERCEIVING THE SCALE OF A BUILDING IS IMPORTANT TO A PEDESTRIAN’S ABILITY TO RELATE TO IT COMFORTABLY.

Figure B



- A** Building Materials
Rustic yet refined building materials including ashlerlaid stone and dimensional timber add variety and visual interest.
- B** Wall Signage
Individually cut, internally illuminated letters identify the business.
- C** Transparency
Store front windows provide interior daylighting while displaying merchandise.
- D** Piers
Battered piers composed of ashlerlaid stone create repetitive structural bays.
- E** Pedestrian Plaza
Plaza creates a platform for outdoor dining and socializing, while accommodating pedestrian gatherings.
- F** Stone Cap
Stone cap terminates the top of the pier.
- G** Dimensional Timber Truss
Dimensional timber elements project a rustic, yet refined architectural image.
- H** Building Mass
Building mass cradles and encloses meaningful formal open space. Covered arcade shelters patrons from the elements.
- I** Roof Form
Large sweeping hipped roof form creates substantial roof cap, terminating the top of the building.

1.0 BUILDING MASSING

- 1.1 Locate higher-intensity “gatepost” satellite building masses at corners designed to “announce” entrance into the retail center (fig. 10).
- 1.2 Locate higher-intensity building masses towards the center of the building complex. Transition buildings height outward and down to adjacent developments (fig. A, B).
- 1.3 Punctuate large building masses with towers designed as landmark icons (fig. 10, A).
- 1.4 Segment buildings with a distinguishable base, middle, and cap (fig. 2, B).
- 1.5 **S** Reduce building mass. Use the following techniques to diminish the size and scale of In-Line Retail buildings:
 - Variation of roof form and height (fig. 5, A)
 - Variation of building color and texture (fig. A, B)
 - Expression of building storefront structural bays characterized by columns/piers and spandrels (fig. 9).

2.0 ROOF FORM

- GENERAL:
- 2.1 Create roof forms that contribute to the unified appearance of each commercial center.
 - 2.2 Design roof forms to correspond to building functions. Use roof forms to identify and accentuate building entrances and staircases (fig. A).
- PITCHED ROOFS:
- 2.3 Use a consistent roof pitch for all buildings within the retail center, designed to knit together or unite the entire complex.
 - 2.4 **S** Avoid continuous roof planes. Sloping roof planes exceeding 60 linear feet shall incorporate one of the following elements:
 - A cross gable (fig. 6)
 - A cross hip
 - A vertical plane break (fig. 6)
 - Flat roof segment (fig. A)

IN-LINE RETAIL

- 2.5 Terminate the top of pitched-roofed retail buildings with a distinctive cap. Design roof caps using the following techniques:
 - Provide ample roof overhangs accompanied by substantial eave fascias
 - Support pitched roof eave overhangs with corbels or brackets
 - Sheath sloped roofs with a roofing material that is complementary to the architectural style of the building
 - Discourage radical roof pitches that create overly prominent or out-of-character buildings
- 2.6 Enclose rooftop mechanical equipment completely within the interior of the pitched roof structure (fig. 6).

FLAT ROOFS:

- 2.7 **S** Terminate the top of flat-roofed commercial buildings with a distinctive cap. Design roof caps using the following techniques:
 - Terminate the top of flat roofs with a distinctive cornice and parapet wall (fig. 7, A).
 - Distinguish the cornice from the building façade. Corbel-forward from the front plane of the building façade to articulate the cornice.
 - Top roof parapet walls with a distinctive cap or coping (fig. 7, A).
- 2.8 **S** Screen rooftop mechanical equipment with a parapet wall from public view (fig. A).

3.0 STOREFRONT ELEVATIONS

- 3.1 Create pedestrian interest at storefront elevations. Use the following elements to provide storefront elevation variety and visual interest:
 - Arcades, Colonnades, and Trellis Elements (fig. 1, A)
 - Awnings (fig. 3)
 - Bulkheads (fig. 4)
 - Canopies
 - Storefront display windows (fig. 2, A)
 - Transom windows
- 3.2 Create visual rhythms with structural bays that divide storefronts into a series of repetitive components. Storefronts should be segmented through the application of vertically repeating columns, piers, posts, and horizontal spandrels (fig. A).



Fig. 1 - Soften building façades with trellis elements. Notice how the trellis, characterized by masonry piers and dimensional timber lattice, creates a shady and sheltered pedestrian promenade.



Fig. 2 - Use tower elements and awnings to define and accentuate In-Line Retail building entrances. Notice how the tower element signals an end to the façade.



Fig. 3 - Use awnings that conform to individual structural bays while allowing light to penetrate transom windows.



Fig. 4 - Anchor In-Line Retail store fronts to the ground plane. Notice how the stone veneer bulkhead provides a substantial base or pedestal for the building to rest upon.



Fig. 5 - Use Secondary roof elements such as dormers to animate the roofscape, adding visual interest to the roofscape..



Fig. 6 - Use individual awnings to define structural bays. Notice how the shed-style awnings conform to each structural bay, sheltering patrons from the elements.



Fig. 7 - Terminate the top of flat roof structures with a distinguishable roof cap.

4.0 SIDE AND REAR ELEVATIONS

- 4.1 Promote four-sided architecture. Use similar storefront elements on side and rear building elevations that are visible from public view (fig. 1.).
- 4.2 Incorporate architectural elements designed to articulate large commercial building facades. Use the following techniques to provide side and rear façade variety and visual interest:
 - Colonnades: Projecting from the building (fig. A, B)
 - Building Offsets: Changes in wall plane (fig. A, B)
 - Color Change: Changes in building color
 - Material Change: Changes in building material (fig. A, B)

5.0 BUILDING MATERIALS

- 5.1 Use building materials that are familiar in their dimensions and can be repeated in understandable modules or units (human scale).
- 5.2 Use materials such as brick and stone that help people interpret the size of a building.
- 5.3 Combine building materials in modules that can be visually measured.
- 5.4 **S** Avoid large, featureless building surfaces such as large all glass curtain walls and metal spandrel panels
- 5.5 Use heavier materials such as brick and stone at the building base, designed to visually anchor the building to the ground plane.
- 5.6 **S** The following building materials shall be permitted:

Storefronts:

- Glass, Lightly Tinted (Allowing 90 percent light transmission)
- Glass, Transparent
- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Split face concrete block, with integral color
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework, Pitched Face, Quarry-faced)
- Masonry, Stone Veneer (i.e., Brownstone, Granite, Sandstone, Slate)
- Metal (structural metal such as I-beam spandrels and corrugated, subject to DRC review and approval)
- Tile (Bulkheads and decorative accents only).

Side and Rear Façades:

- Concrete, sandblasted or textured (subject to DRC approval)
- Concrete, with light colored aggregate (subject to DRC approval)
- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Split face concrete block with integral color.
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework, Pitched Face, Quarry-faced)
- Masonry, Stone Veneer (i.e., Brownstone, Granite, Sandstone, Slate)
- Metal, Corrugated
- Metal , Corten
- Metal (structural metal such as I-beam spandrels and corrugated, subject to DRC approval)
- Stucco, Smooth

Roofs:

- Metal, Standing Seam
- Flat Tile (modern slate)
- Rolled metal or rubber membrane roofing (Flat roof sections, only. Screened from public view by a parapet and associated cornice.)

Wood:

- Wood may be used as a minor structural element (posts, beams, corbels, and brackets)



Fig. 8 - Reduce building mass by creating a variety of building shapes and varied roof forms that add visual impact.



Fig. 9 - Segment retail storefronts into a series of structural bays composed of piers, spandrels, and bulkheads that define storefront windows and transoms.



Fig. 10 - Create satellite pad building architecture that is reflective of the shopping center as a whole.

RESTAURANT AND PAD RETAIL

Figure A



- A** **Roof Form**
Combination of flat, pitched, or vaulted roof forms create roofscape variety and visual interest.
- B** **Building Massing**
Building composed of various volumes and roof planes creates visual interest.
- C** **Cornice/Parapet Wall**
Cornice (corona) terminates the top of the building. Parapet wall screens mechanical equipment from public view. Notice how the cornice is “corbeled forward” creating a substantial building cap.
- D** **Window Openings**
Substantially recessed window openings express mass and depth.
- E** **Structural Bays**
Structural bays composed of brick masonry piers and spandrels surround window openings expressing the underlying structure of the building.
- F** **Building Materials**
Brick masonry, structural steel, and standing seam metal project an indigenous Colorado image
- G** **Building Base**
Brick masonry base anchors the building to the ground plane, creating a pedestal for the building to rest upon.
- H** **Bulkhead**
Brick masonry bulkhead defines the building base.
- I** **Signage**
Sign pinned to the building façade identifies the restaurant.
- J** **Outdoor patio**
Patio provides an opportunity for outdoor socializing and dining.
- K** **Storefront Windows**
Traditional storefront window heights promote daylighting of the interior, while enhancing views to mountains and site amenities.
- L** **Canopy**
Canopy provides ample shade while sheltering pedestrians from the elements. Notice how the canopy does not obstruct the transom windows above.
- M** **Brackets**
Substantial brackets support the canopy structure.
- N** **Gatepost Architecture**
Gatepost building anchors roadway intersections.

PRINCIPLES

1. USE BUILDING MASSES TO ANCHOR HIGH INTENSITY INTERSECTIONS.
2. SEGMENT BUILDINGS INTO THREE MAJOR COMPONENTS: THE GROUND FLOOR BASE THAT ANCHORS THE BUILDING TO THE GROUND; THE RESTAURANT STOREFRONT FACADE, THAT PROVIDES TRANSPARENCY; AND THE CAP THAT TERMINATES THE TOP OF THE BUILDING.
3. ORCHESTRATE BUILDING STRUCTURAL BAYS TO CREATE REPETITIVE BUILDING RHYTHMS.
4. USE REFINED URBAN-ORIENTED MATERIALS THAT ARE HUMAN-SCALED.
5. PROVIDE “FOUR-SIDED” ARCHITECTURE FOR ALL BUILDINGS WITH MULTIPLE EXPOSURES TO PUBLIC VIEW.

Fig. 1 - Use tower elements to anchor building corners. Provide tower elements at high intensity intersections as identity icons.



1.0 BUILDING MASSING AND FORM

1.1 Design retail and restaurant buildings that are scaled to the human (human scale). Reduce buildings into a series of scale-giving elements, ornamentations, textures, and building materials that respect the scale of the building (fig. A).

2.0 BUILDING BASE

2.1 Rest the building on a ground floor storefront base or pedestal designed to visually anchor the building to the ground plane (fig. 2, A).

2.2 Incorporate foundation landscape planting along at least 50 percent of the restaurant building perimeter.

3.0 BUILDING STOREFRONT

3.1 Divide buildings into a series of structural bays composed of columns/piers and spandrels.

3.2 Use traditional commercial storefront heights to allow natural light to penetrate interiors. Ground floor storefronts shall be designed, based upon the following standards:

- Minimum Storefront Height: 10 feet
- Minimum Storefront Transparency: 75 percent (void)

4.0 ROOF CAP

4.1 Terminate the top of the building with a distinctive roof cap. Design roof caps using the following techniques:

Flat Roofs

- Terminate the top of flat roofs with a distinctive cornice and parapet wall (fig. 2,3, A).
- Distinguish the cornice from the building façade. Corbel-forward the cornice element from the front plane of the



Fig. 2 - Create a distinguishable base, middle, and cap. Notice how the building rests on a masonry pedestal and is topped by a substantial cornice element that terminates the top of the building.



Fig. 3 - Create structural bay that display the underlying structure of the building. Notice also the storefront bulkhead, awning, transom, and storefront display window which are enclosed by the structural bay.



Fig. 4 - Design awnings that conform to individual structural bays. Notice the traditional shed awnings with drop valance that defines each individual structural bay.



Fig. 5 - Use transom windows to provide ample interior daylighting.

building façade to articulate the cornice (fig. 2, 3, A).

- Top roof parapet walls with a distinctive cap or coping (fig. 2, 3, A).

Pitched and Vaulted Roofs

- Sheath roofs with a roofing material that is complementary to the architectural style of the building.
- For pitched roofs, support roof eave overhangs with corbels or brackets.
- For pitched roofs, create substantial, significant, and decorative fascia board and ornamental rafter tails.

4.2 Conceal rooftop mechanical equipment.

5.0 BULKHEADS

5.1 Where glazing to the floor is not used, anchor storefronts with bulkheads, based upon the following guidelines:

- Minimum Height: 18 inches
- Maximum Height: 36 inches

6.0 AWNINGS AND CANOPIES

6.1 Design awnings and canopies to complement the architectural framework of the building. Awnings shall express the shape and proportion of window openings and conform to individual structural bays (fig. 3, 4).

6.2 Do not obstruct transom windows with awnings or canopies. When transom windows occur, awnings and canopies shall be located between the top of the storefront window and bottom of the transom to allow light penetration (fig. 2, 5, A).

6.3 **S** Prohibit internally illuminated awnings. Awning shall not be backlighted/under lighted.

7.0 PERMITTED BUILDINGS MATERIALS

7.1 **S** The following building materials shall be permitted: All material transitions shall occur at inside corners.

Façades

- Glass, Lightly Tinted (Allowing 90 percent light transmission)
- Glass, Transparent
- Masonry, Brick (i.e., Face Brick, FBX, Narrow Gage Roman)
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework, Pitched Face, Quarry-faced)
- Masonry, Stone Veneer (i.e., Brownstone, Granite, Sandstone, Slate)
- Metal (structural metal only, such as I-beam spandrels, subject to DRC review and approval)
- Siding, Clapboards (cementitious)
- Siding, Shingles (cementitious)
- Tile (Bulkheads or accent decor only.)
- Stucco (EIFS allowed on upper portions of facade only)
- Timber dimensional (wood)
- Stucco, Exterior Plaster

Roofs (Building Cap)

- Metal, Corten Steel
- Metal, Standing Seam
- Rolled metal or rubber membrane roofing (flat roof sections, only. Screened from public view by a parapet and associated cornice).
- Tile, Concrete

HOTEL



Figure A

- A** **Roof Form**
Roof composed of various cross-gables provides a distinguishable cap, terminating the top of the building.
- B** **Eave Fascia.**
Substantial eave fascia provides a distinguishable roof cap that reflects the architectural style of the building.
- C** **Balconies**
Recessed balconies provide semiprivate space for accommodating outdoor gazing, socializing, and leisure.
- E** **Posts**
Dimensional timber posts support balconies and roof overhangs, while reflecting the architectural style of the hotel.
- F** **Lintels**
Lintels support the weight of the building mass above, accommodating the building opening.
- G** **Structural Bay**
Structural bay grid expresses the underlying structure of the building. Structural bays, composed of vertical piers and horizontal spandrels, define and support balconies.
- H** **Building Materials**
Heavier stucco clad masonry base anchors the hotel to the ground plane, while lighter shingle cladding appears above.
- I** **Colonnade**
Single story colonnade functions as a pedestal or base, visually anchoring the hotel to the ground plane.
- J** **Roof Monitor**
Roof monitor encloses mechanical equipment, screened from public view.
- K** **Semi-Public Space**
Semi-public space occurs at the ground level, containing hotel lobbies, convention rooms, gift shops, restaurants, and bars.
- L** **Awnings**
Awnings conform to individual structural bays.
- M** **Balustrade**
Ornamental balustrade, composed of milled wood balusters, reflects the architectural style of the hotel.
- N** **Eave Brackets**
Substantial brackets support widely overhanging eaves.
- O** **Building Mass**
Building composed of a distinctive base, middle, and cap. Recessed hotel balconies express mass and depth.

PRINCIPLES

1. SEGMENT HOTEL BUILDINGS INTO THREE MAJOR COMPONENTS: THE GROUND FLOOR BASE THAT VISUALLY ANCHORS THE BUILDING TO THE GROUND; THE UPPER-STORY MIDDLE THAT PROVIDES TRANSPARENCY; AND THE ROOF CAP THAT TERMINATES THE TOP OF THE BUILDING.
2. USE STRUCTURED ELEMENTS TO BREAK-UP LARGE BUILDING MASSES INTO A SERIES OF INDIVIDUAL COMPONENTS.
3. ORCHESTRATE FACADE OPENINGS TO CREATE REPETITIVE BUILDING RHYTHMS.
4. USE BUILDING MATERIALS THAT ARE AESTHETIC, DURABLE, AND REQUIRE LOW MAINTENANCE.
5. USE BUILDING MATERIALS THAT ARE HUMAN-SCALED. PERCEIVING THE SCALE OF A BUILDING IS IMPORTANT TO A PEDESTRIAN'S ABILITY TO RELATE TO IT COMFORTABLY.

1.0 BUILDING BASE

- 1.1 Rest the hotel on a ground floor base or pedestal designed to visually anchor the building to the ground plane (fig. 6, A).
- 1.2 Use smaller-scale building masses such as hotel restaurants, porte cocheres, colonnades, gift shops, and out buildings as “stair steps” to larger multi-story building volumes (fig. 1, 3, 4, A).
- 1.3 Integrate porte-cocheres into the fabric of the hotel. Porte-cochere roof forms shall be connected to the main body of the hotel building and shall not be designed as a “tacked on” afterthought.
- 1.4 Use traditional building base heights to allow natural light to penetrate interiors.
- 1.5 Ground floor storefront heights shall range between 12 and 16 feet (fig. A).

2.0 BUILDING MIDDLE

- 2.1 Divide upper story facades into a series of structural bays composed of columns/piers and spandrels (fig. 1, 5, 6, A).
- 2.2 Design upper story facades that are composed of solid flat surfaces with punched window or balcony openings placed in a regular pattern (fig. 1, 6, A).
- 2.3 Recess windows into the building façade, designed to express building mass. Windows shall be recessed into the façade a minimum of four inches.

3.0 BUILDING CAP

- 3.1 Terminate the top of the building with a distinctive roof cap (fig. 1, 2, 6).
- 3.2 Support pitched roof eave overhangs with corbels or brackets (fig. 2, A).
- 3.3 Sheath sloped roofs with a roofing material that is complementary to the architectural style of the building.
- 3.4 Discourage radical roof pitches that create overly prominent or out-of-character buildings.

4.0 BUILDING MATERIALS

- 4.1  The following building materials shall be permitted: All material transitions shall occur at inside corners.

Ground Floor (Building Base)

- Glass, Lightly Tinted (Allowing 90 percent light transmission)
- Glass, Transparent
- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework, Pitched Face, Quarry-faced)
- Masonry, Stone Veneer (i.e., Brownstone, Granite, Sandstone, Slate)
- Metal (structural metal only, such as I-beam spandrels, subject to DRC review and approval)
- Stucco, Smooth

Upper Story Facades (Building Middle)

- Glass, Lightly Tinted (Allowing 80 percent light transmission)
- Glass, Transparent
- Masonry, Brick (i.e., Face Brick, FBX)
- Siding, Clapboard)
- Siding, Shingles
- Siding, Metal (Corten steel or corrugated metal)
- Stucco, Smooth

Roofs (Building Cap)

- Metal, Corten Steel
- Metal, Standing Seam
- Rolled metal or rubber membrane roofing (Flat roof sections, only. Screened from public view by a parapet and associated cornice)
- Tile, Concrete



Fig. 1 - Create porte cocheres designed to shelter patrons from the elements, accommodating the loading and unloading of passengers.

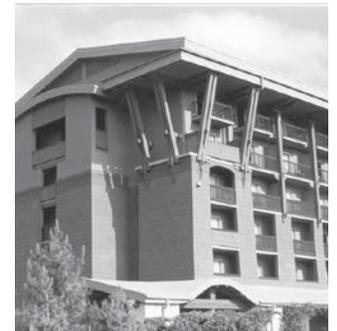


Fig. 2 - Crown hotel buildings with a discernible cap designed to terminate the top of the building. Notice how the widely overhanging eave is supported by ample brackets



Fig. 3 - Create single-story restaurant pavilions as transitional elements to larger-scaled building masses.



Fig. 4 - Use single-story porte cocheres as transitional “stair-steps” to larger building masses.



Fig. 5 - Express the underlying structure of the hotel through the use of substantial piers. Notice how the battered pier reflects the architectural style of the hotel.



Fig. 6 - Divide middle stories into a series of structural bays composed of piers and spandrels that surround recessed window openings and balconies.

CORPORATE CAMPUS
PROFESSIONAL MEDICAL OFFICE

Figure A



- A** Recessed Window
Recessed window opening expresses the depth and mass of the building.
- B** Roof Cap
Ample cornice element/eave overhang terminates the top of the building, creating a distinctive roof cap.
- C** Balcony
Balcony provides space for outdoor socializing.
- D** Building Massing
Tiered building step-back reduces apparent building mass. Notice how the upper stories appear lighter, with less bulk, than the building base.
- E** Piers
Structural piers visually transfer the building load to the ground plane.
- F** Foundation Plantings
Rich building perimeter landscaping softens the building architecture.
- G** Subdued down wall-wash lighting complements the building architecture and minimizes nuisance glare and illuminating the sky. Wall pack flood lighting shall not be permitted.
- H** Stone veneer panels add texture and relief.
- I** Building Materials
Individual brick masonry units promote human scale while creating visual interest.
- J** Entrance
Vertically oriented feature, identifies the building entrance.
- K** Structural Bay
Strong structural bay consists of brick masonry piers and spandrels, expresses the inherent underlying structure of the building.
- L** Fenestration
Mullions divide the horizontal window opening into a series of individual vertically-oriented windows.
- M** Building Base
Ample base visually anchors the building to the ground plane.

PRINCIPLES

1. PROVIDE BUILDING SCALE BY CREATING BUILDING PROFILES THAT DECREASE IN MASS AS THE BUILDING RISES.
2. CREATE BUILDINGS COMPOSED OF A DISCERNIBLE BASE, MIDDLE, AND CAP
3. CREATE ARTICULATED BUILDING FACADES THAT HELP PEDESTRIANS ESTABLISH A SENSE OF SCALE BY EXPRESSING BUILDING STRUCTURE AND INDIVIDUAL FLOORS.
4. PROMOTE FACADE ARTICULATION BY SEGMENTING BUILDING WALLS INTO A SERIES OF INDIVIDUAL STRUCTURAL BAYS.
5. USE FACADE ARTICULATION BY SEGMENTING BUILDING WALLS INTO A SERIES OF INDIVIDUAL STRUCTURAL BAYS.
6. USE DURABLE BUILDING MATERIALS MANUFACTURED IN UNITS MEASURABLE IN HUMAN PROPORTIONS.



Fig. 1 - Step-back upper floors to soften overall building mass. Notice how the building is divided by piers and spandrels into individual structural bays with recessed windows.



Fig. 2 - Use changes in wall planes to add variety to facades. Notice also how material changes add visual interest.

1.0 BUILDING MASSING

- 1.1 Promote tiered “wedding cake” building profiles that are wider at the bottom than the top (fig. 1, A).
- 1.2 Create a distinctive ground floor building base distinguishable from a building’s upper stories (fig. 4).
- 1.3 Rest the building on a discernible base, designed as a pedestal or plinth supporting the weight of the building (fig. 4, 5, 7).
- 1.4 Create a perceivable building middle as a transitional façade that links the base and roof cap (fig. 3, 4).
- 1.5 Rest the building on a pedestal or plinth that is wider and larger than the building’s upper stories (fig. 1, 3, A).
- 1.6 Provide a strong ground-floor building form designed to anchor the building to the ground plane (fig. 1, 3, 4, A).
- 1.7 **S** Distinguish the ground floor base from upper story facades. Increase ground floor height, based upon the following standards:
 - Minimum Ground Floor Height: 15 Feet
- 1.8 Express and distinguish both horizontal floor lines and vertical structural piers (fig. 3, 5, A).
- 1.9 Use smaller structural bays to break-up larger building masses designed to reduce perceived scale (fig. 1, 3, 5, A).

2.0 BUILDING SCALE

- 2.1 Use human-scaled building materials that are familiar in their dimensions and can be repeated in understood modules.
- 2.2 Crown the building with a distinguishable cap, designed to terminate the top of the building (fig. 3, 7, A).
- 2.3 Express facade components in ways that emphasize repetitive recessed window openings (fig. 1, 3, 4, 7, A).

3.0 BUILDING BASE

- 3.1 Use the following techniques to create a distinguishable ground floor building base:
 - Use belt courses and cornice elements signaling a change between the building base and upper floors (fig. 4).
 - Vary building materials and color between the building base and upper floors (fig. 4).

- Provide commercial storefronts at the ground level to promote pedestrian activity (fig. 5).
- 3.2 Use the following architectural elements to define and organize space at the ground floor building base:
 - Create repetitive structural bay rhythms composed of vertical piers and horizontal spandrels (fig. 1, 3, 5, A).
 - Use awnings and canopies to accentuate structural bays (fig. 11).
 - Use recessed arcades to accommodate and shelter pedestrians (fig. 5, 8).
 - Create projecting trellis elements to soften ground floor façades.
- 3.3 Employ durable building materials at the building base. The building base is exposed to considerable wear and tear, thus the material used is commonly more durable than upper floors. Use masonry or textured concrete materials to create a durable building base.

4.0 UPPER STORY FACADES

- 4.1 Express the horizontal position of each floor in the upper-story façade design of a building using the following techniques:
 - Change in material (fig. 4)
 - Reveal or recess (fig. A)
 - Masonry belt courses (fig. 4)
 - Repetitive bands of individual recessed window openings (fig. A, B)
 - Window awnings (fig. 11)
 - Continuous cornice element (fig. A)
- 4.2 Reflect the quality and integrity of the underlying structure of the upper story façade in a clear and consistent manner through the use of structural bay rhythms (fig. 1, 3, A)
- 4.3 **S** Segment the building into a series of structural bays composed of a column/pier, Recessed window, and spandrel designed to visually segment an otherwise massive upper story façade into a series of individual units. Design structural bays, based upon the following standards:
 - Minimum Window Recess: Two inches deep
 - Solid to Void Ratio: Not less than: 60 percent solid; no more than: 40 percent void
- 4.4 **S** Boxy and monotonous facades that lack a sense of scale shall not be permitted.



Fig. 3 - Segment office buildings into a series of individual structural bays composed of piers and spandrels. Notice also how the top of the building is terminated by a substantially overhanging hipped roof form.



Fig. 4 - Create a ground floor building base distinguishable from the building’s upper stories. Notice the quarry-faced stone base that visually anchors the building to the ground plane.



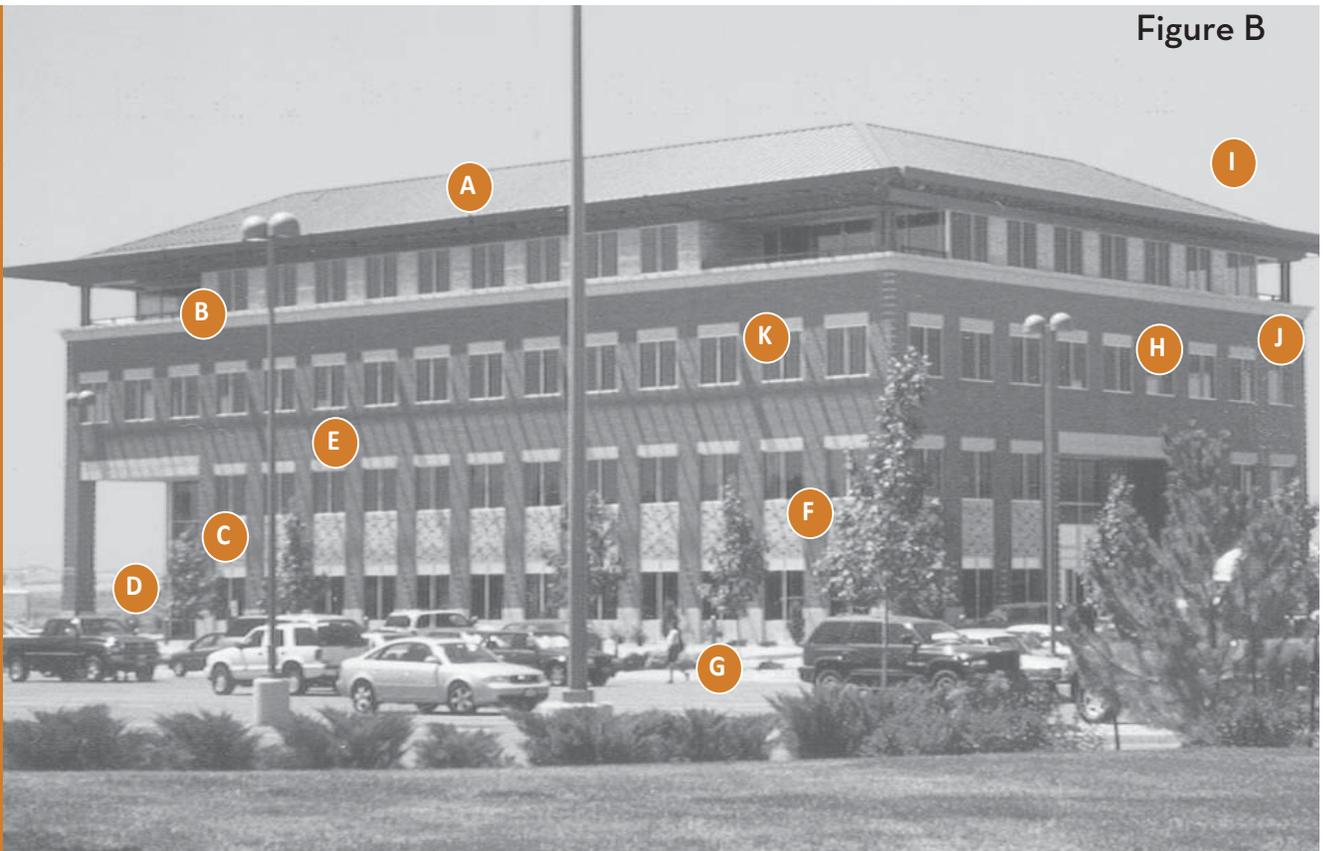
Fig. 5 - Segment the building into a series of structural bays. Notice how the brick masonry piers, spandrels, and recessed window openings express the underlying structure of the building.



Fig. 6 - Accentuate building entrances and corners. Notice how the building entrance is accentuated through the use of a vertically oriented tower element.

CORPORATE CAMPUS
PROFESSIONAL MEDICAL OFFICE

Figure B



- A** **Roof Cap**
Standing seam metal roof terminates the top of the building.
- B** **Building Massing**
Building divided into a distinctive base, middle, and Cap. Notice the horizontal cornice element that defines the upper story building cap.
- C** **Structural Bays**
Repetitive piers and spandrels segment the building into a series of individual structural bays.
- D** **Corner Articulation**
Articulated recessed building corner functions as a ceremonial entry and focal point.
- E** **Fenestration**
Window openings divided by mullions into vertically-oriented windows.
- F** **Building Perimeter Landscaping**
Perimeter building landscaping softens building architecture.
- G** **Building Base**
Masonry base anchors the building to the ground plane.
- H** **Building Materials**
Durable masonry building materials add variety and visual interest to the façade.
- I** **Roof Overhang**
Large roof overhang responds to Colorado's unique climatic conditions, providing summer shade and shedding winter snow.
- J** **Balconies**
Balcony provides opportunities for outdoor socializing.
- K** **Lintels**
Lintels span window openings, supporting the building mass above.



Fig. 7 - Create a distinctive base, middle, and cap. Notice how the masonry base anchors the building to the ground plane and the widely overhanging pitched roof caps the building.



Fig. 8 - Use arcades to shelter patrons from the elements. Notice also how the single-story arcade transitions upwards to the second-story building mass.



Fig. 9 - Create roof forms that respond to Colorado's unique climate. Notice how the pitched roof forms and large roof overhang provide shade and ample protection from the elements.

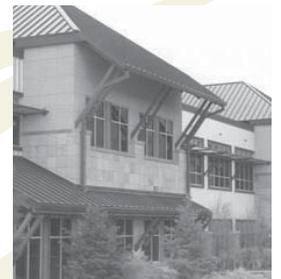


Fig. 10 - Use roof forms that reflect indigenous Colorado vernacular styles. Notice how the standing seam metal roof and dimensional timber brackets project a contextual Colorado image.

- 4.5 Discourage weak or token expressions of structure or an inconsistent statement of structure.
- 4.6 **S** Avoid flush building surfaces. Continuous all glass curtain walls dropped straight into the ground plane without transition shall not be permitted unless specifically approved by the DRC.

5.0 FENESTRATION

- 5.1 Provide human-scaled window openings. Dress window openings using the following techniques:
 - Use three-dimensional mullions to create individual window openings (fig. 1, 7, 11, A).
 - Use lintels above windows to support the building mass above (fig. B).
 - Define the base of the window with a sill.
 - Use transparent windows that “reveal” indoor working environments and activities.
 - Use shade structures to articulate window openings (fig. 10, 11).

6.0 BUILDING CAP

- 6.1 Crown the building with a distinguishable cap designed to terminate the top of the Building. Design roof forms, based upon the following guidelines:
 - Roof Shapes: Hip, gable, vault, flat roof with protruding cornice, or flat roof with large overhanging eaves.
- 6.2 Create roof forms that respond to Colorado’s unique climate. Use pitched roof forms or large flat roof overhangs to shed winter snow, provide summer shade, and shelter pedestrians from the elements (fig. 3, 7, 9, 10, B).
- 6.3 Use a consistent roof form to create building continuity. New buildings should use the same roof form and materials as used on existing adjacent buildings.
- 6.4 **S** Conceal rooftop mechanical equipment. All rooftop mechanical equipment shall be contained within the pitched roof structure, completely screened within a penthouse, or screened by a roof parapet that harmonizes with the architectural style of the building.
- 6.5 Promote roofscape diversity. Use the following techniques to add variety to the Roofscape:
 - Use a combination of hip and gable roof forms.

- Terminate the top of flat roof forms with a distinguishable cornice (fig. A).
- Create large eave overhangs forming a distinguishable roof cap (fig. 3, 7, 9, 10, B).
- Use brackets and corbels to support roof overhangs (fig. 7, 10).

7.0 BUILDING MATERIALS

- 7.1 Employ durable building materials at the building base.
- 7.2 Use material texture, color, control joints, and patterns of materials to add visual interest to building surfaces.
- 7.3 Avoid highly reflective surfaces that generate glare such as mirrored glass.
- 7.4 Avoid large, featureless building surfaces. Large all glass curtain wall are typically unacceptable unless used in combination with building structural bays that can provide a sense of scale and rhythm.
- 7.5 **S** The following building materials shall be permitted: All material transitions shall occur at inside corners.

Building Base and Upper Story Façades:

- Concrete, poured-in-place or pre-cast (sandblasted or textured)
- Concrete with light colored aggregate
- Masonry, Brick (i.e., Face Brick, FBX, Narrow Gage Roman)
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework, Pitched Face, Quarry Faced)
- Masonry, Stone Veneer (i.e., Brownstone, Sandstone, Slate)
- Metal (such as I-beams, Corten steel or corrugated metal, subject to DRC review and approval)

Windows:

- Glass, Transparent
- Glass, Lightly tinted glass (Allowing 80 percent light transmission, minimum)

Roofs:

- Metal, Standing Seam
- Metal, Corten Steel
- Tile, Flat (concrete)
- Rolled Metal or Rubber Membrane (flat roof sections only, screened from public view by a parapet wall and associated cornice).



Fig. 11 - Dress window openings. Use window elements such as shade structures and muntins to ornament window openings.



Fig. 12 - Use single story arcades and trellis features as transitional elements to larger upper story building volumes. Notice how the covered arcade provides a sheltered pedestrian gathering space.

FLEX OFFICE AND RESEARCH AND DEVELOPMENT

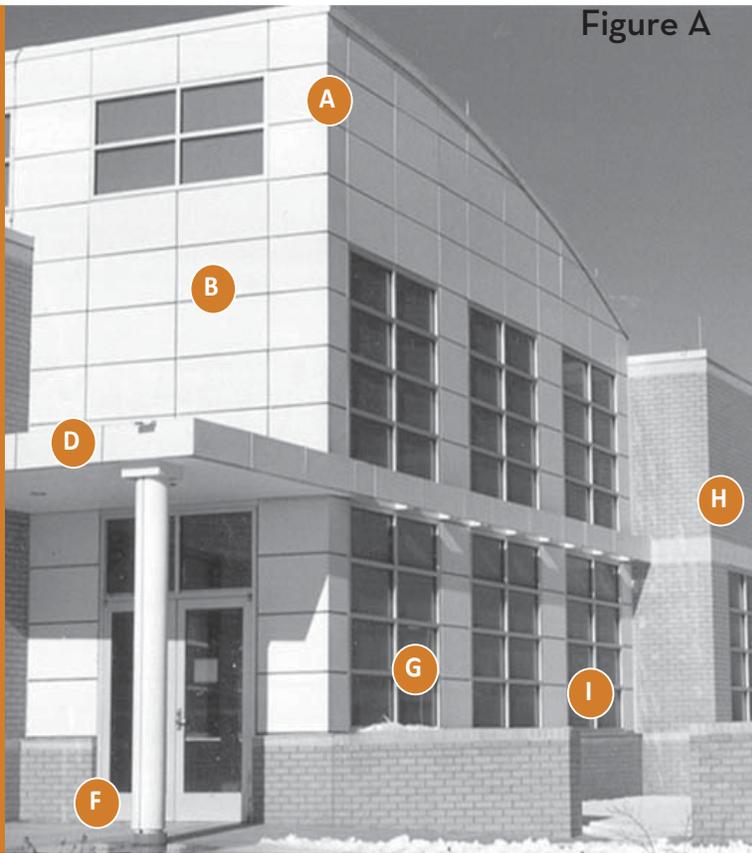


Figure A

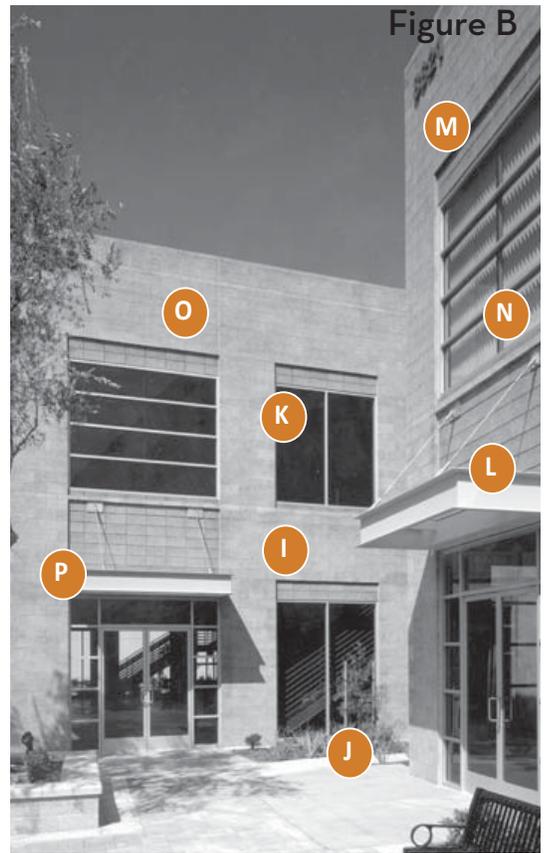


Figure B

- A** Building Entrance
Half-vault building projection creates an identifiable entrance feature designed to “announce” entrance into the Flex Office building.
- B** Reveal Lines
Recessed reveal lines add detail to the building façade.
- C** Cornice Element
Subtle cornice element and change in brick course terminates the top of the building.
- D** Building Canopy
Building canopy shelters patrons from the elements.
- E** Wainscot Cap
Brick masonry cap terminates the wainscot wall.

- F** Building Materials
Brick Base anchors the building to the ground plane. Lighter stucco cladding occurs above.
- G** Fenestration
Mullions divide recessed window openings into individual panes, adding façade visual interest.
- H** Structural Bays
Flex Office building divided into a series of structural bays characterized by spandrels and brick piers which frame recessed window openings.
- I** Piers
Piers visually exhibit the underlying structure of the building, physically transferring the weight of the building to the ground plane.

- J** Spandrels
Spandrels span window openings, visually supporting the building mass above.
- K** Structural Bays
Building divided into a series of structural bays characterized by piers, spandrels, and recessed window planes, creating a repetitive and rhythmic building base.
- L** Entrance Canopy
Protruding Entrance Canopy adds visual interest to the façade while sheltering patrons from the elements.
- M** Recessed Windows
Recessed window openings express the mass of the building.
- N** Window Fenestration
Window openings divided into individual panes by mullions, enhancing façade variety and visual interest.
- O** Building Mass
Simple building volumes composed of repetitive rectilinear forms and punched windows.
- P** Building Materials
Different concrete block textures add visual interest to the façade.

PRINCIPLES

1. CREATE FOUR-SIDED ARCHITECTURE CHARACTERIZED BY ALL BUILDING ELEVATIONS EXPRESSING VARIETY AND VISUAL INTEREST.
2. CREATE BUILDINGS COMPOSED OF A DISCERNIBLE BASE, MIDDLE, AND CAP.
3. EXPRESS FACADE COMPONENTS IN WAYS THAT HELP ESTABLISH BUILDING SCALE AND STRUCTURE.
4. CREATE CLEARLY IDENTIFIABLE BUILDING ENTRANCES.
5. PROMOTE DAYLIGHTING BY PROVIDING AMPLE WINDOW AREA, ATRIUMS, AND SKYLIGHTS.
6. USE BUILDING MATERIALS AND COLORS THAT EXPRESS A SENSE OF SOPHISTICATED, PERMANENCE, AND DURABILITY.

1.0 BUILDING MASSING AND SCALE

- 1.1 Use smaller-scaled building modules to break-up large building masses designed to reduce the perceived scale of Flex Office and Research and Development buildings (fig. 4, 6, A, B).
- 1.2 Use structural bays to break-up larger building masses designed to reduce perceived building scale (fig. 1, 2, 6, A, B).
- 1.3 **S** Avoid glass boxes and unarticulated facades. Boxy and monotonous building masses that lack a sense of scale shall not be permitted.

2.0 BUILDING BASE

- 2.1 Rest the building on a discernible base, designed as a pedestal visually supporting the weight of the building (fig. 3, A).
- 2.2 **S** Use the following techniques to differentiate the building base from upper story facades:
 - Masonry pedestal with cap (fig. 3, 6, A, B).
 - Color material variation between the base and upper façade
 - Raised planters
 - Berming against the building (30 inches, minimum)
 - Window awnings and canopies
 - Belly bands (fig. A)



Fig. 1 - Express the underlying structure of the building through the use of distinctive piers, spandrels, and recessed windows that express mass, stability, and strength.



Fig. 2 - Recess windows, expressing the mass of the building. Notice the prominent lintel which spans the window opening, visually supporting the building mass above.



Fig. 3 - Rest buildings on a discernible base. Notice how the stone veneer base provides a pedestal for the building to rest upon.



Fig. 4 - Distinguish building corners through the use of tower elements that anchor corners, creating visual interest.



Fig. 5 - Layer wall planes creating rich shadow patterns which express depth.



Fig. 6 - Create a distinctive roof cap. Notice how the substantial hipped roof terminates the top of the Research and Development Office building.

3.0 FACADE ARTICULATION

- 3.1 Discourage weak or token expressions of structure or an inconsistent statement of structure.
- 3.2 Reflect the quality and integrity of the underlying structure of the façade in a clear and consistent manner through the use of structural bays (fig. 1, 2, A, B).
- 3.3 Segment the façade into a series of structural bays composed of a column/pier, recessed window, and spandrel designed to visually segment an otherwise massive façade into a series of individual units (fig. 1, 2).
- 3.4 **S** Avoid flush building surfaces. Continuous all glass curtain walls dropped straight into the ground plane without transition shall not be permitted.
- 3.5 Recess windows to express building mass (fig. 1, 2, A, B).

4.0 BUILDING CAP

- 4.1 Crown the building with a distinguishable cap designed to terminate the top of the building (fig. 2, 4, 6).
- 4.2 **S** Conceal rooftop mechanical equipment. All rooftop mechanical equipment shall be contained within the pitched roof structure, completely screened within a penthouse, or hidden behind a roof parapet (fig. B).

5.0 BUILDING MATERIALS

- 5.1 **S** The following building materials shall be permitted: All material transitions shall occur at inside corners.

Façades:

- Concrete, poured-in-place, pre-cast, and tilt-up (sandblasted or textured)
- Concrete, with light colored aggregate
- Masonry, Split face concrete block with integral color
- Masonry, Stone Veneer (i.e., Brownstone, Sandstone, Slate)
- Masonry, Stone (i.e., Ashler-laid, Pitched Face)
- Masonry, Brick (i.e., Face Brick, FBX)
- Metal (such as I-beams, Corten steel, or corrugated metal, subject to DRC review and approval)
- Stucco, Smooth
- Sustainable Materials are encouraged

Windows:

- Glass, Lightly tinted (Allowing 80 percent light transmission)
- Glass, Transparent
- Openable Windows are encouraged

Roofs:

- Metal, Standing Seam
- Metal, Corten Steel
- Rolled metal or rubber membrane roofing (Flat roof sections, only. Screened by a parapet wall and associated cornice).

LIGHT AND HIGH BAY INDUSTRIAL

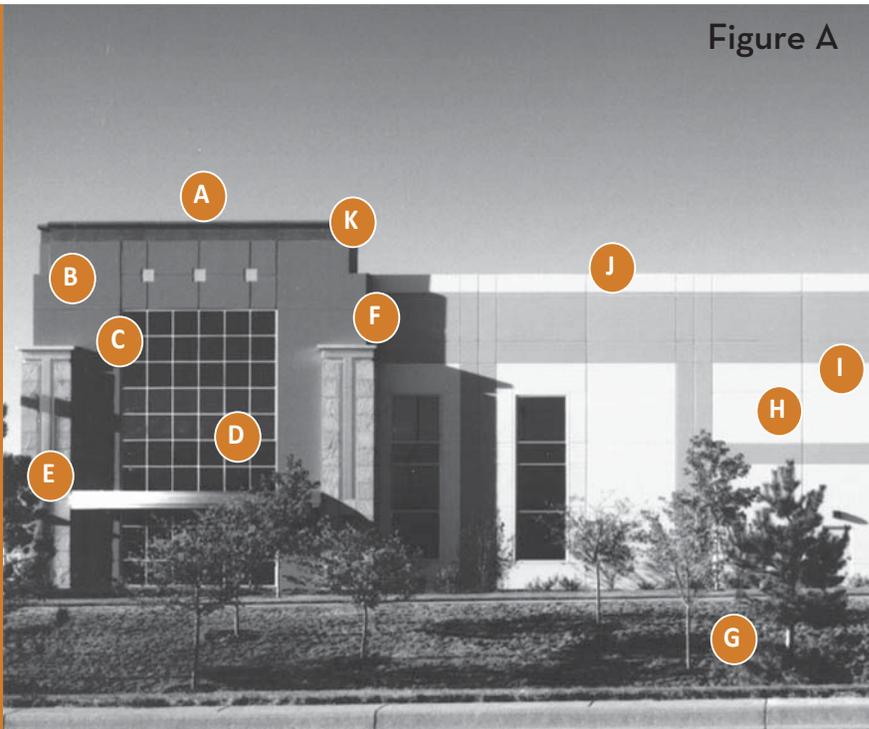


Figure A

- A** **Roof Form**
Contemporary flat roof form with parapet wall screens mechanical equipment from public view.
- B** **Building Massing**
Simple rectilinear building masses with surface decoration, allow ample interior space for light manufacturing and warehouse/ distribution facilities.
- C** **Entrance Pavilion**
Distinguishable pavilion “announces” entrance into the building. Notice how the projecting pavilion tower is capped by a distinctive overhanging roof form, which functions as an identity icon.
- D** **Fenestration**
Protruding mullions divide window openings into individual windows, adding visual interest.
- E** **Canopy**
Projecting entrance canopy shelters patrons from the elements.
- F** **Ornamental Piers**
Ornamental masonry piers frame and enclose the entrance pavilion.
- G** **Building Perimeter Landscaping**
Perimeter landscaping softens building elevations.
- H** **Surface Reveal**
Recessed reveal lines provide surface indentations that subtly define building segments.
- I** **Structural Bay**
Structural bays composed of concrete piers and in-filled spandrels create simple visual relief.
- J** **Cornice**
Subtle cornice element terminates the top of the building.
- K** **Building Materials**
Building composed of textured concrete piers and lightly sandblasted concrete spandrels, creates a durable surface. The entrance pavilion is clad with metal panels.



Fig. 1 - Distinguish the building entry. Notice how the entrance tower pavilion punctuates the roofscape, functioning as an identity icon while clearly identifying the building entry.



Fig. 2 - Layer building planes to increase façade variety and visual interest, creating a layered effect that adds rich shadow patterns.



Fig. 3 - Use building recesses and changes in color to add visual interest to façades.



Fig. 4 - Segment building facades into a series of individual structural bays composed of piers; spandrels, and window openings.



Fig. 5 - Create clean cornice lines designed to terminate the top of the building.

PRINCIPLES

1. CROWN BUILDINGS WITH A DISCERNIBLE BUILDING CAP.
2. CREATE ARTICULATED BUILDING FAÇADES THAT PROVIDE VARIETY AND VISUAL INTEREST BY EXPRESSING BUILDING STRUCTURE.
3. PROMOTE FAÇADE ARTICULATION BY SEGMENTING BUILDING WALLS INTO A SERIES OF INDIVIDUAL STRUCTURAL BAYS.
4. CREATE A DISTINGUISHABLE PAVILION DESIGNED TO IDENTIFY THE BUILDING ENTRY.
5. USE DURABLE HIGH-QUALITY BUILDING MATERIALS.

1.0 BUILDING MASSING AND SCALE

- 1.1 Create a simple ground floor building base designed to visually anchor the building to the ground plane (fig. 4).
- 1.2 Crown the building with a distinguishable cap, designed to visually terminate the top of the building (fig. 1, A).
- 1.3 **S** Distinguish the ground floor base from upper story facades. Increase ground floor height, based upon the following requirements:
 - Minimum Ground Floor Height: 16 Feet.
- 1.4 Primary building entrances, for the use of customers and visitors, shall be easily identified through the use of architectural features and design. Where possible, primary entrances, those utilized by customers and visitors, shall be located where clearly identifiable from primary driveways. The following techniques may be used to enhance building entrances:
 - The use of canopies, porticos, arcades, arches, overhangs, at the entrance location.

2.0 ROOF FORM

- 2.1 Use distinguishable roof forms. Use the following roof forms to create a identifiable roof cap:
 - Hip
 - Vault
 - Flat roof with a distinctive cornice (corona) (fig. 5)
 - Flat roof with a large protruding roof overhang
- 2.2 **S** Conceal rooftop mechanical equipment. All rooftop mechanical equipment shall be contained within the pitched roof structure, completely screened within a penthouse, or screened by a roof parapet that harmonizes with the architectural style of the building (fig. 2).

3.0 BUILDING FACADES

FRONTS AND SIDES

- 3.1 Express and distinguish both horizontal floor lines and vertical structural piers (fig. 4).
- 3.2 Visually segment the building into a series of structural bays composed of a column/ pier and spandrel designed to visually segment an otherwise massive façade into a series of individual units. May use scoring patterns (fig. 2,4).
- 3.3 **S** Discourage unarticulated architecture. Boxy and monotonous facades that lack a sense of scale shall not be permitted on sides subject to public view.
- 3.4 **S** Avoid flush building surfaces. Continuous all glass curtain walls dropped straight into the ground plane without transition shall not be permitted.

REAR LOADING DOCKS

- 3.5 **S** Continue same materials and colors from front and side elevations.
- 3.6 **S** Organize overhead doors and loading docks in simple clean and consistent lines.
- 3.7 **S** Use consistent color band across doors to minimize visual clutter of numerous openings.

3.8 Massing breaks, recesses and projections are not required but use of color and scoring patterns are strongly encouraged to reduce the impact of the large single plane wall.

- 3.9 **S** Screen walls must be used to minimize views of the loading docks and overhead doors from public view. Screen walls shall be architectural extensions of the main building.

4.0 BUILDING MATERIALS

- 4.1 **S** Use texture and application of color to add visual interest to an otherwise ordinary building surface.
- 4.2 The use of subdued colors typical of the muted native grasses, wood, rocks and soil of the high Colorado plains and North Park's natural setting are to be used as primary building colors. The use of warm and darker tones, with low reflectivity is recommended. Colors or accents considered by the North Park DRC to be bold, brash, intense, fluorescent, black or metallic shall not be used, unless approved in writing by the DRC for specific and limited purpose.
 - Accent and trim colors shall complement and enhance the effect of the primary building color.
 - Use of bright colors (including bright white) that may streak, fade or generate glare is discouraged.
 - A bright or primary color used for accent elements such as door and window frames, and architectural details is encouraged.
- 4.3 Use material texture, color, control joints, and patterns of materials to add visual interest to building surfaces.
- 4.4 Avoid highly reflective surfaces that generate glare such as mirrored and reflective glass.
- 4.5 **S** The following building materials shall be permitted:

Building Base and Façades:

- Concrete, poured-in-place, pre-cast, and tilt-up (sandblasted or textured)
- Concrete, with light colored aggregate
- Masonry, Brick (i.e., Face Brick, FBX)
- Masonry, Stone (i.e., Ashler-laid, Broken Rangework)
- Masonry, Stone Veneer (i.e., Brownstone, Sandstone, Slate)
- Concrete Masonry Block (i.e. Textured and/or ground face with integral color)
- Metal (such as I-beams, Corten steel, or corrugated metal, subject to DRC review and approval)

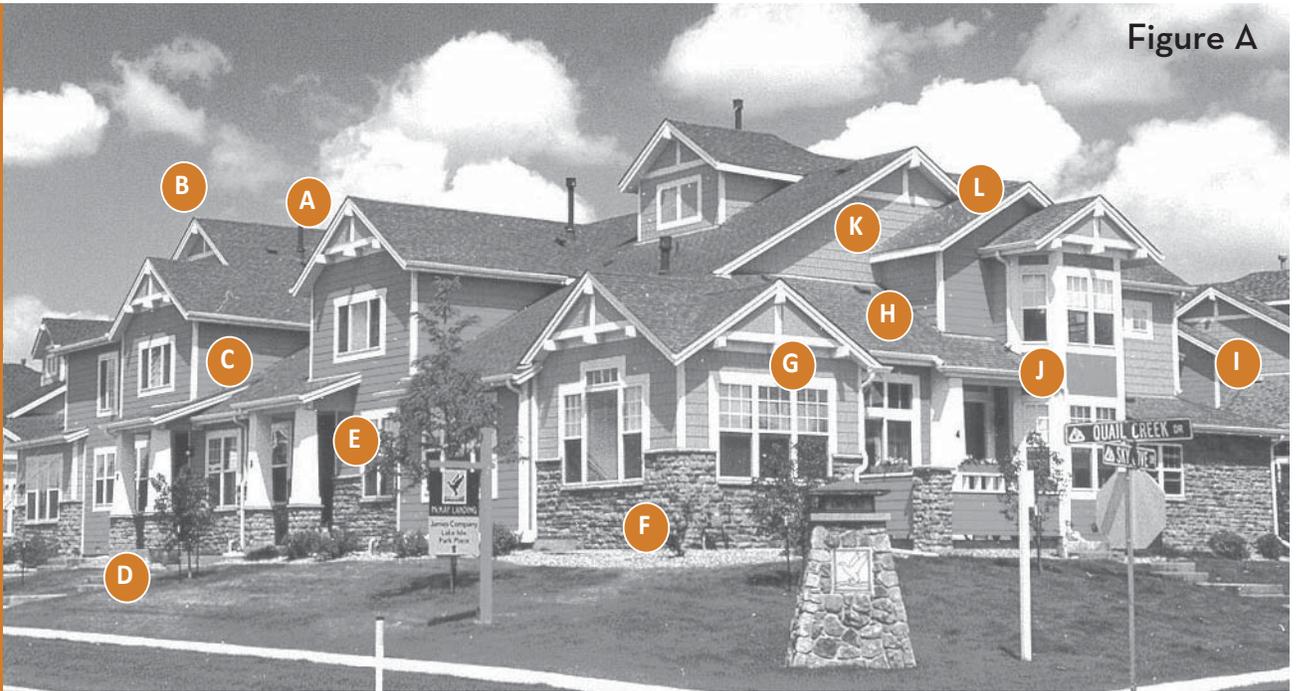
Windows:

- Glass, Transparent
- Glass, Lightly tinted (Allowing 80 percent light transmission)

Roofs:

- Metal, Standing Seam
- Metal, Corten Steel
- Rolled metal or rubber membrane roofing (fl at roof sections, only). Screened by a parapet wall and associated cornice (corona).

Figure A



- A** Ornamentation
Decorative elements such as beam and gable end ornamentations add visual interest.
- B** Roof Form
Consistently pitched gable roof forms create roofscape continuity.
- C** Building Trim
Building trim, such as corner boards, frieze boards, and window surrounds provide rich detailing and visual relief.
- D** Piers and Columns
Stone piers supporting ample wood box column.
- E** Wainscot Cap
Stone wainscot cap functions as a transitional element, signaling a change in materials.
- F** Building Base
Stone base anchors the building to the ground plane.
- G** Windows
Horizontal window opening divided by mullions into three vertically oriented double-hung windows.
- H** Building Massing
Single-Story building volumes function as transitional elements to two-story building masses.
- I** Secondary Roof Elements
Roof dormer animates the roofscape.
- J** Building Projections
Full-length building projection extends to the ground plane, providing relief to the façade.
- K** Façade Materials
Shingles provide rich façade texture. Stone base functions as an extension of the ground plane.
- L** Roof Overhang
Ample roof overhangs provide rich shadow lines while responding to Colorado's unique climatic conditions.

PRINCIPLES

1. CRAFT BUILDING AND ROOF FORMS THAT HARMONIZE WITH THEIR SETTING AND SURROUNDINGS, COMPLEMENTING THE ARCHITECTURAL STYLE OF THE MULTI-FAMILY STRUCTURE, CORRESPONDING TO FORMAL AND INFORMAL BUILDING SHAPES.
2. PRODUCE BUILDING FORMS WITH A DESIRABLE BASE (FOUNDATION), MIDDLE (BUILDING FACADES), AND CAP (ROOF).
3. CREATE RECESSED ENTRIES OR COVERED PORCHES AS TRANSITIONAL ELEMENTS BETWEEN THE PUBLIC AND PRIVATE REALMS, DESIGNED TO COMPLEMENT THE ARCHITECTURAL STYLE OF THE BUILDING.
4. DESIGN BALCONIES, BALUSTRADES, STAIRCASES, AND STOOPS THAT REFLECT THE ARCHITECTURAL STYLE OF THE BUILDING.
5. DESIGN BUILDINGS TO AVOID LONG EXPANSES OF BLANK WALLS AND WINDOWLESS ELEVATIONS. USE BUILDING ELEMENTS SUCH AS STRUCTURAL PROJECTIONS, AND RECESSES TO SECTION MULTI-FAMILY BUILDINGS MASSES AND PARTITION LONG EXPANSES OF BLANK WALL.
6. DESIGN ACCESSORY STRUCTURES, GARAGES, AND CARPORTS TO COMPLEMENT AND HARMONIZE WITH MULTI-FAMILY BUILDINGS.



Fig. 1 - Articulate building masses. Notice how the single-story covered porch functions as a transitional element to larger two-story building masses. Notice also the rich use of materials such as stone and shingles.



Fig. 2 - Create building masses as a cluster of individual components. Notice how the mix of one and two-story building volumes, varied roof planes, and vertically-oriented windows add variety and visual interest to the streetscape.

1.0 BUILDING MASSING

- 1.1 Differentiate the building base, individual floors, and the roof.
- 1.2 Create building masses that appear as a cluster of individual homes, rather than a single building.
- 1.3 Segment buildings into a series of smaller, controllable sizes discouraging long barrack like structures.
- 1.4 Use a combination of one, two, and three-story building forms to convey a sense of human scale, massing towards the center. Two and three-story buildings should step down in height at the edges.
- 1.5 Use smaller-scaled building elements such as covered porches as transitional elements to large-scaled upper-story building masses.
- 1.6 Create articulated building forms. Use pop-outs, building projections, and changes in wall plane to break-down large building masses into a collection of individual elements.

2.0 ROOF FORM

- 2.1 Create roof pitches and forms that complement the architectural style of the building.
- 2.2 Use consistent roof pitches and forms throughout the entire attached residential complex.
- 2.3 Create both horizontal and vertical roof articulations. A variety of roof breaks (roofs that turn a corner or change elevation) should be provided.
- 2.4 Complement main body roof forms with smaller roof planes or elements. Minor roof elements such as gable ends and dormers should be proportional to the spaces they cover and to the overall roof size and form.

3.0 RECESSED ENTRIES AND COVERED PORCHES

- 3.1 Create human-scaled recessed entries and covered porches for buildings that provide direct access to individual units.
- 3.2 Orient recessed unit entries and covered porches to be visible and accessible from roadways, internal streets, walkways, and common open space areas.

- 3.3 **S** Design recessed entries that provide individual unit access, based upon the following minimum standards:
 - Area: 20 square feet
 - Depth: Four Feet
 - Height above grade: 18 inches (preferred)
- 3.4 **S** Design covered porches, based upon the following minimum standards:
 - Area: 60 square feet
 - Depth: Six feet
 - Height above grade: 18 inches (preferred)

4.0 DECKS

- 4.1 Integrate elevated decks into the fabric of the building. Decks should not appear as “tacked-on” afterthoughts.
- 4.2 Create covered deck roofs of similar roof cladding and complementary roof pitches, designed to harmonize with the main building.
- 4.3 **S** Paint or stain all deck elements such as balustrades, railings, columns, and staircases to match the main building. Deck elements shall not be left to weather naturally.
- 4.4 **S** Design decks and storage closets, based upon the following minimum standards:
 - Deck Area: 40 square feet
 - Storage Closet Volume: 200 cubic feet

5.0 FACADE ARTICULATION

- 5.1 Articulate walls by using one-story building forms, such as a covered porch, as a transitional element to second-story building masses.
- 5.2 Use additive elements, such as single-story sheds, trellis structures, and chimney stacks to break-up building facades.
- 5.3 Create building recesses, such as covered patios, balconies, and stairwells, to add visual depth and variety.
- 5.4 Create building projections, such as cantilevered window bays, that do not appear to float. Support cantilevered building projections with brackets, corbels, or substantial trim-bands, designed to secure the projection to the wall plane.



Fig. 3 - Provide recessed entries and covered porches. Notice how the covered porch provides a platform for outdoor socializing.



Fig. 4 - Articulate walls by using one story building forms as transitional elements to second-story building masses. Notice also the use of rustic shingle and board and batten siding that projects a Residential image.



Fig. 5 - Integrate elevated decks into the fabric of the building. Notice how the deck is nestled into the facade between two wall planes. Notice also how the balustrade is ornamental, reflecting the architectural style of the building.



Fig. 6 - Create four-sided multi-family architecture. Notice how the bay windows, second story balconies, and clapboard siding reflect the architectural style of the building.

MULTI-FAMILY



Figure B

- A** Step-Backs
Third-story building step-backs reduce apparent building mass. The upper story appears lighter, with less bulk than the lower stories.
- B** Corner Tower
Tower element anchors the corner, reflecting the higher intensity nature of the intersection.
- C** Balustrade
Substantial balustrade post with distinctive base, shaft, and capital. Balustrades reflect the architectural style of the building.
- D** Window Muntins
Muntins divide window openings into individual human-scaled panes.
- E** On-Street Parking
Internally-oriented on-street parking provides a physical and psychological buffer, protecting pedestrians from the traffic lane.
- F** Consistently spaced canopy style street trees promote streetscape continuity.
- G** Box Column
Substantial wood box column with distinctive base, shaft, and capital.
- H** Covered Entry
Covered Entry shelters residents from the elements.
- I** Window Trim
Substantial window trim defines window openings.
- J** Cladding
Clapboard siding projects a Western Lakefront image.
- K** Decks
Upper-story decks integrate and harmonize with building architecture, providing a platform for outdoor living.
- L** Frieze Board
Frieze board functions as a transitional element between the clapboard siding and cornice element.
- M** Roof Cap
Ample cornice element terminates the top of the building.
- N** Windows
Vertically-oriented double-hung windows. Notice how the windows align vertically between floors.
- O** Building Massing
A variety of wall plane placements creates streetscape variety and visual interest.
- P** Street Lights
Pedestrian-oriented street lights are functional and decorative.
- Q** Cast iron tree grates are durable. Grate openings are small, allowing pedestrians to traverse the grate.



Fig. 7 - Use building projections to add variety and visual relief to building façades. Notice how the bay window projection and second-story deck integrates and harmonizes with the building mass.



Fig. 8 - Provide window shutters that appear visually functional, capable of visually covering window openings.

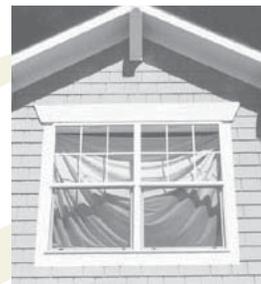


Fig. 9 - Divide horizontal window openings into groups of vertically-oriented windows. Notice how the mullion divides the horizontal opening into two vertically-oriented double-hung windows.



Fig. 10 - Create carports with pitched roof forms reflective of the architectural style of the multi-family complex. Notice how the gable-on-hip roof form and stone piers add character to the carport structure.

6.0 WINDOWS

- 6.1 Divide large horizontal window openings by mullions into a group or series of vertically oriented windows.
- 6.2 Use muntins to divide windows into individual vertical or square-oriented window panes. Muntins should be either simulated muntins or real three-dimensional muntins.
- 6.3 Use headers or lintels above window openings designed to visually support the weight of the building mass above.
- 6.4 Use projecting bottom sills to define the base of the window.
- 6.5 Provide visually functional window shutters capable of fully covering window openings.
- 6.6 Locate windows generally centered on the building mass, aligned both horizontally and vertically.
- 6.7 **S** Design windows based upon the following standards:
 - Window Proportions: Window height shall be greater than or equal to window width
 - Trim Width: Four inches (minimum)
 - Recess Depth: Three-inches (for masonry or stucco wall openings)
 - When shutters are provided, they shall appear capable of covering the window opening.

7.0 ACCESSORY STRUCTURES

- 7.1 Create architecturally compatible accessory structures. Accessory structures such as sales/lease offices, recreation buildings, clubhouses, carports, garages, and laundry buildings shall be designed to harmonize with the form, material, color, and details of multi-family dwellings.
- 7.2 **S** Enclose trash bins within a decorative masonry enclosure equipped with solid metal gates.
- 7.3 Design attached enclosed garages as an integral part of the architecture of the multifamily building.



Fig. 11 - When the site slopes, extend building materials to the ground plane. Notice how the stone and shingle siding wrap the corner, creating a convincing material transition.



Fig. 12 - Use decorative elements that reflect the architectural style of the building.

- 7.4 **S** Use similar forms, materials, colors, and details on detached garage structures and carports, designed to harmonize with multi-family architecture.
- 7.5 **S** Discourage flat-roofed carports. Carports shall be composed of similar hipped or gabled roof forms, designed to complement multi-family architecture.
- 7.6 **S** The use of prefabricated carports shall not be permitted.
- 7.7 **S** Discourage walled compounds. Carports shall not be incorporated into exterior perimeter project walls adjacent to roadways.

8.0 BUILDING MATERIALS

- 8.1 **S** The following building materials shall be permitted:

Walls:

- Masonry, Brick (Narrow Gage Roman, Facebrick, FBX)
- Masonry, Stone
- Siding, Clapboards (wood or cementitious)
- Siding, Board and Batten
- Siding, Drop (wood or cementitious)
- Siding, Lap (wood or cementitious)
- Siding, Shingle (cedar, redwood, or cementitious)
- Siding, Tongue and Groove (wood or cementitious)
- Stone (natural or cultured)
- Stucco (exterior plaster)

Pitched Roofs:

- Composition Roofing
- Concrete Shakes (Raked to mimic a natural wood shake).
- Concrete Tile, Flat (Smooth-surface modern slate).
- Metal, Corrugated (Used with discretion, subject to review and approval by the DRC).
- Metal, Standing Seam (Seams shall be spaced a maximum of 18 inches).
- Slate (real or cultured).

Flat Roofs:

- Rolled asphalt/paper
- Rolled asphalt/crushed rock
- Rolled metal
- Rubber membrane

9.0 MATERIAL TRANSITION

- 9.1 **S** Change wall materials only at a change in wall plane on an inside corner.
- 9.2 **S** On sloping sites, extend building materials to the ground plane. Do not design unconvincing “floating” masonry foundation walls that appear awkward and unbalanced, lacking conviction.

SENIOR RESIDENTIAL
MULTI-FAMILY

Figure A



- A** Timber Brackets
Dimensional timber brackets support widely overhanging roof eaves.
- B** Balcony
Balcony recess creates façade variety and visual interest.
- C** Tower Element
Tower element functions as an orientation icon and landmark structure, punctuating the building mass.
- D** Lintels
Stone lintels support the building mass above.
- E** Building Base
Stone masonry base visually anchors the building to the ground plane.
- F** Building Massing
Single story building forms function as “stair-steps” to second-story building masses.

- G** Piers
Masonry stone piers provide a substantial base, supporting the rugged dimensional timber posts.
- H** Dimensional Timber
Dimensional timber elements project a rustic image while functioning to support large roof overhangs.
- I** Building Materials
Building materials including shingle and board and batten siding project a rustic, indigenous architectural image.
- J** Ribbon Windows
Horizontal window openings divided by mullions into four individual vertically oriented windows.
- K** Roof Form
Low-pitched gable roof forms with largely overhanging eaves shed snow and rain.

PRINCIPLES

1. CRAFT BUILDING AND ROOF FORMS THAT HARMONIZE WITH THEIR SETTING AND SURROUNDINGS, COMPLEMENTING THE ARCHITECTURAL STYLE OF THE SENIOR RESIDENTIAL/MULTI-FAMILY STRUCTURE, AND CORRESPOND TO FORMAL AND INFORMAL BUILDING SHAPES.
2. PRODUCE BUILDING FORMS WITH A DESIRABLE BASE (FOUNDATION), MIDDLE (BUILDING FACADES), AND CAP (ROOF).
3. CREATE RECESSED ENTRIES OR COVERED PORCHES AS TRANSITIONAL ELEMENTS BETWEEN THE PUBLIC AND PRIVATE REALMS, DESIGNED TO COMPLETE THE ARCHITECTURAL STYLE OF THE BUILDING.
4. DESIGN BALCONIES, PATIO BALUSTRADES, STAIRCASES, AND STOOPS THAT REFLECT THE ARCHITECTURAL STYLE OF THE BUILDING.
5. DESIGN BUILDINGS TO AVOID LONG EXPANSES OF BLANK WALLS AND WINDOWLESS ELEVATIONS. USE BUILDING ELEMENTS SUCH AS STRUCTURAL BAYS, PROJECTIONS, AND RECESSES TO SECTION SENIOR RESIDENTIAL/MULTI-FAMILY BUILDINGS MASSES AND PARTITION LONG EXPANSES OF BLANK WALL.
6. DESIGN ACCESSORY STRUCTURES, GARAGES, AND CARPORTS TO COMPLETE AND HARMONIZE WITH SENIOR RESIDENTIAL/MULTI-FAMILY BUILDINGS.



Fig.1 - Discourage large “institutional” appearing Senior Residential structures. Provide Senior Residential structures that are “broken” into smaller scale elements. Notice the one-story building forms that function as transitional elements to two-story masses.

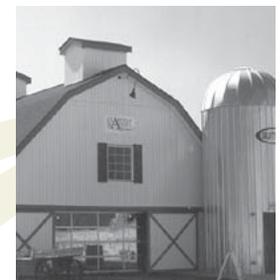


Fig. 2 - Use indigenous building forms to complement Senior Residential developments. Notice how these agrarian-oriented building forms house senior-oriented recreation amenities and administrative offices.

1.0 BUILDING MASSING

- 1.1 Differentiate the building base, individual floors, and the roof.
- 1.2 Create building masses that appear as a cluster of individual homes, rather than on single building.
- 1.3 Segment buildings into a series of smaller, controllable sizes discouraging long barrack-like structures.
- 1.4 Use a combination of one, two, and three-story building forms to convey a sense of human scale, massing towards the center.
- 1.5 Use single-story building elements as transitional elements to large-scaled upper-story building masses.
- 1.6 Create articulated building forms. Use pop-outs, building projections, and changes in wall plane to break-down large building masses into a collection of individual massing elements.

2.0 ROOF FORM

- 2.1 Create roof pitches and forms that complement the architectural style of the building.
- 2.2 Use consistent roof pitches and forms throughout the entire attached residential complex.
- 2.3 Create both horizontal and vertical roof articulations. A variety of roof breaks (roofs that turn a corner or change elevation) shall be provided.
- 2.4 Complement main body roof forms with smaller roof planes or elements. Minor roof elements such as gable ends and dormers should be proportional to the spaces they cover and to the overall roof size and form.

3.0 RECESSED ENTRIES AND COVERED PORCHES

- 3.1 Create human-scaled recessed entries and covered porches for buildings that provide direct access to individual units.
- 3.2 Orient recessed unit entries and covered porches to be visible and accessible from internal streets and walkways.
- 3.3 Create single-story covered porches that function as transitional elements to larger-scaled building masses.



Fig. 3 - Provide tower elements as orientation icons and landmarks. Notice also the use of indigenous building materials including stone, board and batten, and shingle siding.



Fig. 4 - Provide balconies and covered porches that create opportunities for outdoor socializing and leisure.



Fig. 5 - Use consistently pitched roof forms to promote roof- scape continuity. Notice how the gable roof forms and large roof overhangs create roofscape visual interest.

4.0 FACADE ARTICULATION

- 4.1 Articulate walls by using one-story building forms, such as a covered porch, as a transitional element to second-story building masses.
- 4.2 Use additive and subordinate elements, such as single-story sheds, trellis structures, and building projections to break-up building facades.
- 4.3 Create building recesses, such as covered patios, balconies, and stairwells, to add visual depth and variety.
- 4.4 Create building projections, such as cantilevered window bays, that do not appear to float.
- 4.5 Support cantilevered building projections with brackets or corbels designed to secure the projection to the wall plane

5.0 WALL MATERIALS

- 5.1 **S** The following exterior wall materials shall be permitted:
 - Board and Batten (wood or cementitious)
 - Brick (Narrow Gage Roman, Facebrick, FBX)
 - Clapboards (wood or cementitious)
 - Masonry, Stone (natural)
 - Masonry, Stone (cultured)
 - Masonry, Stucco (exterior plaster)
 - Siding, Drop (wood or cementitious)
 - Siding, Lap (wood or cementitious)
 - Siding, Shingle (cedar, redwood, or cementitious)
 - Siding, Tongue and Groove (wood or cementitious)

6.0 ROOF MATERIALS

- 6.1 **S** The following roof materials shall be permitted: All material transitions shall occur at inside corners.

Pitched Roofs

- Composition Roofing (Architectural grade dimensional fiberglass mat shingles, straight cut or color-framed mitered corners, with weathering grade asphalt and ceramic granules, heavy weight, Class A fire and wind rated) .
- Concrete Shakes (Raked to mimic a natural wood shake).
- Concrete Tile, Flat (Smooth-surface modern slate).
- Metal, Corten
- Metal, Corrugated (Used with discretion, subject to review and approval by the DRC).
- Metal, Standing Seam (Seams shall be spaced a maximum of 18 inches).
- Slate (real or cultured).

Flat Roofs

- Rolled asphalt/paper
- Rolled asphalt/crushed rock
- Rolled metal
- Rubber membrane

SUSTAINABILITY

<u>SUSTAINABILITY SECTION</u>	<u>PG.</u>
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2.0 OVERVIEW AND GUIDELINE ORGANIZATION	58
3.0 DETAILED PLAN	58



SUSTAINABILITY

The Sustainability Section provides certain principles and standards that must be met as a minimum, as well as recommendations for resources and techniques for achieving a high level of environmental sensitivity for all projects. For example, it is highly recommended that all developments use the LEED Green Building System to document the level of sustainability for the project and achieve a minimum of 40 points.

1.0 SUSTAINABLE DEVELOPMENT AT NORTH PARK

Sustainable development can be defined as development that incorporates economically viable and cost effective strategies to balance the accommodation of human needs without diminishing the health and productivity of the natural systems of the world we share.

Key principles of Sustainable Development at North Park include:

1.1 Smart Growth Master Planning

- Integrated mix of land uses
- Range of housing opportunities
- Walkable neighborhoods and districts
- Transportation choices
- Strong sense of place

1.2 Green Buildings

- Utilize U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System, a national green building rating system
- Utilize the Energy Star Program to jointly run by the U.S. Environmental Protection Agency (E.P.A.) and the U.S. Department of Energy

1.3 Sustainable Sites

- Energy Efficiency
 - Reduce consumption on sites and in the public realm
 - Respect shade, sun, and wind orientation
 - Consider renewable and other alternative energy sources
- Water Conservation
 - Reduce consumption on sites and in the public realm especially landscape irrigation
 - Utilize non-potable water for construction and landscape irrigation
- Water Quality
 - Implement Low Impact Development (LID) strategies
 - Utilize best practices for stormwater management
- Natural Resources
 - Protect and enhance wetland and riparian habitats
 - Promote native plantings and remove invasive species
 - Encourage wildlife diversity
 - Create ecological corridor connections
- Dark Sky Policy
 - Protect the night sky by minimizing or eliminating light pollution

1.4 Waste Reduction and Recycling

- Design for durability, flexibility and adaptability
- Design to minimize and efficiently use materials
- Divert and recycle construction waste
- Promote recycling and composting for residents and businesses

1.5 Cultural, Social and Educational

- Provide social interaction opportunities in the urban center cores with central plazas, shops, restaurants, sidewalk cafes, offices and residences
- Provide neighborhood gathering places and recreation opportunities throughout the community
- Sponsor/encourage social and educational events and activities throughout the year

2.0 OVERVIEW AND GUIDELINE ORGANIZATION

The following sections address each of the key sustainable development principles listed above in more detail. The sections are organized into three segments:

Key Principles – explains the broad, general concepts of intended sustainable goals.

Guidelines – promote the intended objectives and typically use the term “should” to indicate that compliance is not mandated but is highly encouraged to achieve the overall North Park vision. Performance Standards **S** – are specific criteria based on a stated sustainability goal and typically use the terms “shall” and “will” to indicate mandatory compliance.

Depending on the scale of the project (Example - Master Developer Infrastructure/Amenities, large campus or small single building) the appropriate and applicable guidelines and standards will further be determined by the DRC at the time of Preliminary Review.

3.0 DETAILED PLAN

3.1 Key Principle - Smart Growth Master Planning

3.1.1 Supporting Principle - Integrated Mix of Land Uses

Mixed use means that a variety of commercial, civic, institutional and personal activities take place within close proximity. Uses may be mixed horizontally (side by side) or vertically (occupying different floors of the same building). By doing this, alternatives to driving such as walking and biking once again become viable. It can enhance the vitality and perceived security of an area by increasing the number and attitude of the people on the street. It helps streets, public spaces and pedestrian-oriented retail to again become places where people meet, attracting pedestrians back onto the street and helping revitalize community life. (see fig. A).

- Guidelines

1. Provide multiple urban center cores comprised of vertically and horizontally mixed use buildings.
2. Emphasize street level uses that maximize pedestrian activity in both the number of hours they are open and in the number of users they attract.
3. Target the inclusion of all the following broad category of uses within the community:
 - Retail
 - Restaurants
 - Entertainment
 - Educational Facilities
 - Residential
 - Civic
 - Government Services

- Offices
- Medical
- Lodging
- Recreational Facilities

- Performance Standards

S Within each ½ mile district, campus, and/or neighborhood areas shall include a minimum of 4 different land uses.

3.1.2 Supporting Principle - Range of Housing Opportunities

A diverse range of housing serves different market segments (age and lifestyles) and socio-economic categories. Variety and choice of housing broadens the accessibility of living in the community to more types of people. Placing housing in close proximity to more types and other mixed uses adds to the vibrancy of the community after “work hours” and on weekends.

- Guidelines

1. Provide a variety of unit types, sizes, and price points.
2. Provide both rental and for-sale units.

3.1.3 Supporting Principle - Walkable Neighborhoods and Districts

Walkable communities locate desirable destinations such as goods (housing, offices, and retail) and services (schools, libraries, and recreation) that a community resident or employee needs on a regular basis within an easy, safe walk of each other. Easy walking distance is considered to be 0.25 mile (1320 feet) which is roughly equal to a 5 minute walk. In addition to safety and distance, the quality of the experience is also important to encourage walking. Sidewalks, tree canopies, variety of building frontages and smaller block lengths all have positive influences on walkability. (see fig. B).

- Guidelines

1. Provide a connected framework of streets based on a grid or modified grid system.
2. Block length should not exceed 660 feet.
3. Discourage high speed traffic.
4. Provide easy, safe and interesting access to all destinations by streets, pedestrian paths and bike paths.
5. Each district, campus and/or neighborhood should have a defined center with occupants being no farther than ¼ mile from the center.

- Performance Standards

1. **S** Minimum 80% of all residential units shall be located within a 5-7 minute walk (1650 feet) of a village green, plaza, park, garden or other community gathering area and within a 2-3 minute walk (660 feet) of an open play area, recreational facility, natural area or trail corridor.
2. **S** Connector and Arterial streets shall provide bike lanes and detached sidewalks.
3. **S** Local streets shall provide street trees and sidewalks.
4. **S** All sidewalks and pedestrian paths shall provide appropriate pedestrian amenities (benches, waste and recycling receptacles, lighting, etc.).

3.1.4 Supporting Principle - Transportation Choices

As discussed above a walkable community places the same level of importance on pedestrian and bicycle transportation as on cars. Transportation choices also include the support of public transit options.

- Guidelines

1. Plan for future local and regional bus circulation and

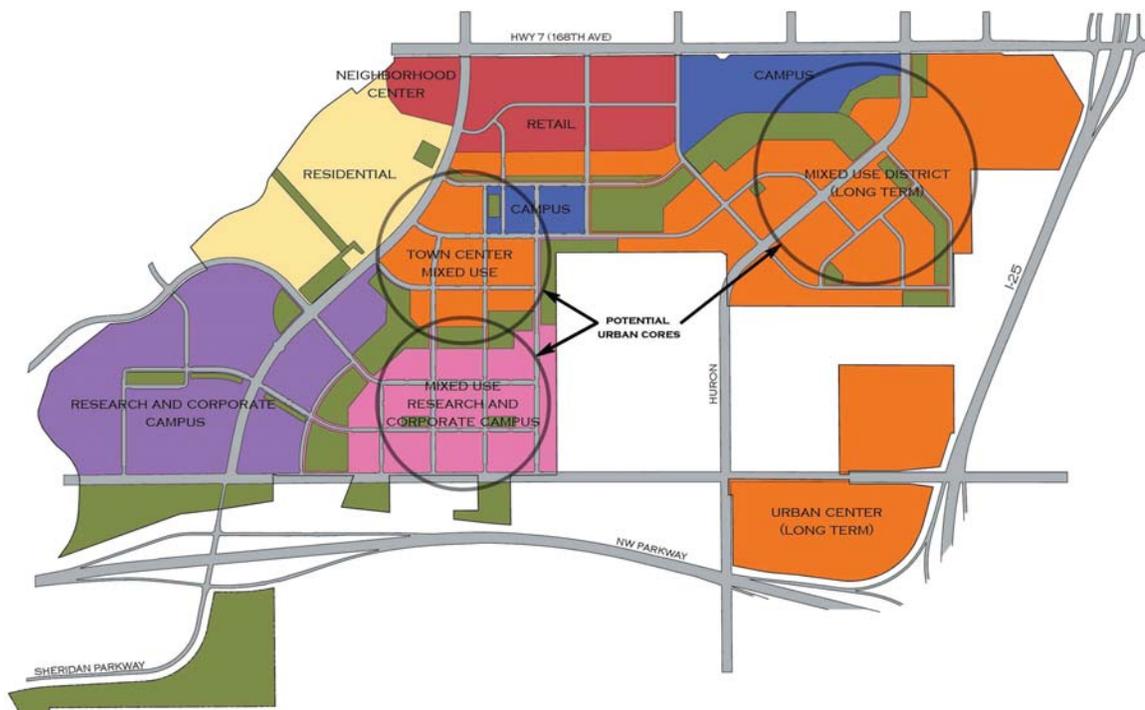


Figure A

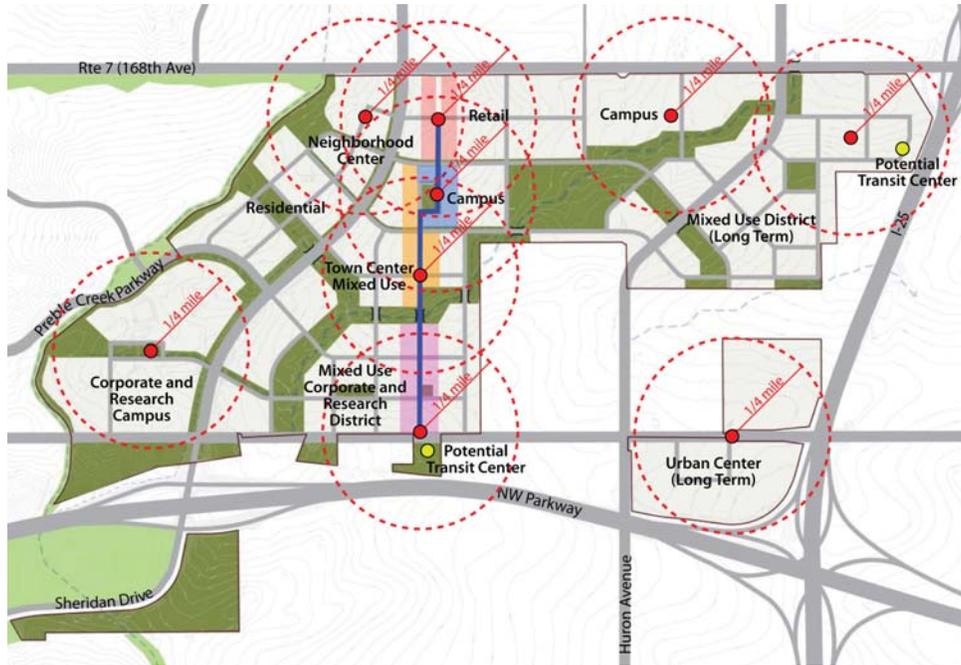


Figure B

the need for bus stops convenient to activity centers.

2. Plan for future regional multi modal transit stops on both I-25 and Northwest Parkway.

- Performance Standards

1. **S** Dedicate land south of 160th Avenue to Broomfield for a future transit center.
2. **S** Provide bicycle parking at all non-residential projects.

3.1.5 Supporting Principle - Strong Sense of Place

A strong sense of place results when people identify with a physical environment that has special meaning to them. People have an authentic human attachment to the place and a sense of belonging. The place is felt to be of value and memorable. The physical environment usually includes a combination of natural and cultural features and also includes the people who occupy the space. People form bonds with these places through direct engagement and experiences. The places are unique and hold a special relationship to the surrounding community and region. (see fig. C).



Figure C

- Guidelines

1. Neighborhoods should be organized around a strong central activity center or focal point/landmark.
2. Neighborhoods should have their own distinctive character and identity.
3. Provide a variety of social and recreational gathering areas throughout the neighborhoods and the community.
4. Provide natural areas for native habitat, wildlife and opportunities for some human interaction.
5. Provide civic and cultural facilities and elements in the community.

3.2 Key Principle - Green Building

In the United States alone, buildings account for:

- 74% of electricity consumption,
- 39% of primary energy use,
- 38% of all carbon dioxide (CO2) emissions (more than transportation or industry),
- 40% of raw materials use,
- 30% of waste output (136 million tons annually), and
- 14% of potable water consumption.

(Sources: Environmental Information Administration 2008 EIA Energy Outlook and USGS)

Green buildings can reduce:

- Energy Use by 24% - 50%
 - CO2 Emissions by 33% - 39%
 - Water Use by 40%
 - Solid Waste by 70% (construction waste to land fills)
- (Sources: Turner, C. and Frankel, M. 2008 Energy Performance of LEED for New Construction Buildings; Kats, G. 2003 The Costs and Financial Benefits of Green Building-A Report)

to California’s Sustainable Building Task Force; GSA Public Building Service 2008 A Post Occupancy Evaluation of 12 GSA Buildings)

In the U.S., people spend, on average, 90% or more of their time indoors. Green buildings typically have better indoor air quality and lighting. These improvements to the indoor environment contribute to healthier and more productive occupants.

Leadership in Energy and Environmental Design (LEED)

The U.S Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System is an internationally recognized certification system that measures how well a building or community performs across all the metrics that matter most: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the USGBC, LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. (see fig. D).



Figure D - McWhinney Rangeview Office Building LEED Silver Certified

LEED is flexible enough to apply to all building types – commercial as well as residential. It works throughout the building life-cycle – design and construction, operations and maintenance, tenant fitout, and significant retrofit. LEED is a voluntary certification program that promotes a whole-building approach to sustainability by recognizing performance in the following key areas.

Excerpted from LEED Performance Guidelines

 Sustainable Sites

Choosing a building’s site and managing that site during construction are important considerations for a project’s sustainability. This category minimizes a building’s impact on ecosystems and waterways; encourages regionally appropriate landscaping; rewards smart transportation choices; controls stormwater runoff; and reduces erosion, light pollution, heat island effect and construction-related pollution.

 Water Efficiency

Buildings are major users of our potable water supply. The goal of the Water Efficiency credit category is to encourage smarter use

of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside.

 Energy & Atmosphere

According to the U.S. Department of Energy, buildings use 39% of the energy and 74% of the electricity produced each year in the United States. The Energy & Atmosphere category encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or off-site; and other innovative strategies.

 Materials & Resources

During both the construction and operations phases, buildings generate a lot of waste and use a lot of materials and resources. This credit category encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes the reduction of waste as well as reuse and recycling, and it takes into account the reduction of waste at a product’s source.

 Indoor Environmental Quality

The U.S. Environmental Protection Agency estimates that Americans spend about 90% of their day indoors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality credit category promotes strategies that can improve indoor air as well as providing access to natural daylight and views and improving acoustics.

 Locations & Linkages

The LEED for Homes rating system recognizes that much of a home’s impact on the environment comes from where it is located and how it fits into its community. The Locations & Linkages credits encourage homes being built away from environmentally sensitive places and instead being built in infill, previously developed and other preferable sites. It rewards homes that are built near already-existing infrastructure, community resources and transit, and it encourages access to open space for walking, physical activity and time spent outdoors.

 Awareness & Education

The LEED for Homes rating system acknowledges that a green home is only truly green if the people who live in it use the green features to maximum effect. The Awareness & Education credits encourage home builders and real estate professionals to provide homeowners, tenants and building managers with the education and tools they need to understand what makes their home green and how to make the most of those features.

 Innovation in Design

The Innovation in Design credit category provides bonus points for projects that use new and innovative technologies and strategies to improve a building’s performance well beyond what is required by other LEED credits or in green building considerations

that are not specifically addressed elsewhere in LEED. This credit category also rewards projects for including a LEED Accredited Professional on the team to ensure a holistic, integrated approach to the design and construction phase.



Regional Priority

USGBC's regional councils, chapters and affiliates have identified the environmental concerns that are locally most important for every region of the country, and six LEED credits that address those local priorities were selected for each region. A project that earns a regional priority credit will earn one bonus point in addition to any points awarded for that credit. Up to four extra points can be earned in this way. See the Regional Priority Credits for Colorado.

LEED enables project teams to deliver certified performance for their buildings. Third-party certification through the independent Green Building Certification Institute (GBCI.org) assures that LEED buildings are constructed and operated as intended. GBCI includes a network of ISO-compliant international certifying bodies, ensuring the consistency, capacity and integrity of the LEED certification process.

An organization's participation in the voluntary and technically rigorous LEED process demonstrates leadership, innovation and environmental stewardship. (see fig. E).



Figure E - Medical Center of the Rockies - Certified LEED Silver

LEED Rating Systems currently cover the following building categories:

- New Construction
- Core and Shell
- Retail
- Healthcare
- Labs (Under development)
- Commercial Interiors
- Retail Interiors
- Existing Building – Operations and Maintenance

Certification levels for LEED include:

- Certified (Lowest)
- Silver
- Gold
- Platinum (Highest)

Energy Star

Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. Because a strategic approach to energy management can produce twice the savings — for the bottom line and the environment — as typical approaches, EPA's Energy Star partnership offers a proven energy management strategy that helps in measuring design goals, current energy performance, tracking savings, and rewarding improvements. EPA provides an innovative energy performance rating system which businesses have already used for more than 80,000 buildings across the country. EPA recognizes top performing buildings with the Energy Star certification.

To determine how a building's energy use compares to other similar buildings in the country, the U.S. EPA's Energy Star program developed an energy performance rating system that rates a building's energy efficiency on a scale of 1–100. A building that scores in a 75 or above on this scale (placing its energy performance among the top 25 percent among similar buildings) can earn an Energy Star label. An Energy Star qualified facility meets strict energy performance standards set by EPA and uses less energy, is less expensive to operate, and causes fewer greenhouse gas emissions than its peers. All types of buildings are eligible to qualify for Energy Star including office, medical office, hospitals, hotels, industrial, warehouse, labs, educational, and residential among others.

Energy Star Building Design Guidance Checklist

Set Goal

- Set an energy performance goal
- Review case studies that demonstrate enhanced energy performance
- Allocate sufficient funds for an integrated design process

Assemble Design Team

- Select a multi-disciplinary team
- Adopt an integrated design approach
- Educate the project team on goals, costs, and benefits

Pre-Design

- Conduct a comprehensive charrette that addresses architecture, energy, and environmental issues
- Identify synergies between design concepts and energy use
- Develop scope of work, project budget, and schedule

Schematic Design

- Analyze the site and building orientation with energy performance in mind
- Use natural shading features to reduce cooling load
- Consider daylighting to reduce electrical lighting requirement and the air-conditioning load
- Review energy strategies with an energy expert
- Begin energy analysis of design concepts
- Right-size mechanical systems based on anticipated performance and loads

- Compare estimated energy use to design target
- Make adjustments and integrate energy performance strategies

Design Development

- Refine the project to achieve the energy performance goal
- Prepare energy performance specification for construction documents
- Assemble resources that explain installation, operation, and other requirements

Construction & Bid Documents

- Include Statement of Energy Design Intent (SEDI)
- Specify design team participation during construction
- Include approval process for change orders to methods and materials
- Encourage building owner to hold all parties accountable for achieving the energy performance goal
- Seek incentives for meeting the energy performance goal
- Include design team's summaries of energy-efficient features and anticipated functions
- Select qualified manufacturers
- Place the "Designed To Earn The ENERGY STAR" graphic on final drawings that achieve 75 or better in Target Finder

Commissioning the Building

- Specify detailed commissioning activities in project contracts
- Seek separate funding and hire specialists
- Include the commissioning firm as part of the design team early in the project
- Communicate your energy performance goal
- Encourage energy-use tracking over time

Tracking, Measuring & Verification

- Communicate the energy performance target to the M&V team
- Document how energy performance compares to the design intent
- Use EPA's Portfolio Manager to track and rate annual energy performance

The Energy Star for Commercial Buildings

- Compare the building's actual energy consumption to the industry benchmark using Portfolio Manager
- Apply for the ENERGY STAR if the building achieves a 75 or higher
- Complete the application letter and the Statement of Energy Performance (SEP)
- Have a licensed Professional Engineer certify indoor environmental criteria

- Communicate the success of the building design team/firm and their energy design strategies

- Guidelines

1. Project teams are strongly encouraged to reach for the highest level LEED certification possible for both their building and tenant finish.
2. Project teams are strongly encouraged to obtain the Energy Star certification.

3.3 Key Principle – Sustainable Sites

3.3.1 Supporting Principle - Energy Efficiency

- Reduce consumption on sites and in the public realm
- Respect shade, sun, and wind orientation
- Consider renewable and other alternative energy sources

While reducing energy consumption in buildings has by far the most impact to reducing carbon footprints, there are still many strategies which can be applied to minimize outdoor energy use.

- Guidelines

1. Use lighting only where necessary for safety, directional or identification purposes and use the least amount of lighting required to perform the function properly.
2. Maximize the use of LED lights. (see fig. F).



Figure F

3. Maximize use of on-site generated solar powered fixtures for facilities such as bus stops, restrooms, etc. (see fig. G).
4. Plant deciduous trees in appropriate places to shade buildings and parking lots in summer to reduce building cooling demand and the urban heat island effect.
5. Consider purchasing electricity from renewable energy sources.



Figure G

- Performance Standards

1. **S** Compliance with Section 6.25 Lighting of the North Park PUD is required.
2. **S** All landscape in public areas shall utilize a centralized computer controlled irrigation system to minimize both water and electric usage.

3.3.2 Supporting Principle - Water Conservation

- Reduce consumption on sites and in the public realm especially landscape irrigation
- Utilize non-potable water for construction and landscape irrigation

The Colorado High Plains along the Front Range is a semi-arid environment where the most significant water conservation measures can be achieved through a reduction of landscape irrigation. Typically, half of irrigation water can be wasted as a result of evaporation, wind, improper system design and over watering. Selecting high efficiency irrigation systems and planting vegetation appropriate for site conditions and climate can reduce water waste and consumption.

- Guidelines

1. Use Xeriscape landscape design principles and a native plant palette to design drought tolerant landscapes. (see fig. H).

2. Limit use of water consumptive turf areas to active play areas and small visually important impact areas.
3. Maximize use of drought tolerant turf-like plants such as Streambank Wheat Grass.
4. Direct run off to maximize its use in the landscape with a rain garden or bioswale approach.
5. Minimize the use of potable water in ornamental landscape features.

- Performance Standards

1. **S** Landscape in public areas shall utilize a centralized computer controlled irrigation system to minimize both water and electric usage.
2. **S** Landscape plans shall be designed with plants from the approved North Park Plant List for Landscaping and Natural Habitat Areas.
3. **S** Soil amendments (coarse organic material) shall be installed. (Required rate of at least three cubic yards per 1000 square feet of installed landscape area and tilled to a depth of 4-6", based on soil analysis.)
4. **S** Maximize the use of Broomfield's non-potable water supply for landscape irrigation.
5. **S** Whenever possible use raw water or non-potable water for construction purposes.

3.3.3 Supporting Principle - Water Quality

- Implement Low Impact Development (LID) strategies
- Utilize best practices for stormwater management

Effective stormwater management can improve water quality, nourish and enhance the watershed habitat and increase ground water recharge.



Figure H



Figure I

- Guidelines

1. Reduce flood impacts by dispersing, slowing and regulating flood flows.
2. Reduce soil erosion through best practices in grading design – eliminate steep slopes and channelized, concentrated drainage.
3. Protect drainages, natural habitat and wetlands from sedimentation with landscape buffers and water quality basins.
4. Treat polluted runoff from parking areas and roads close to the source with focused structures and basins and before it enters valuable environments.
5. Consider pervious paving options for parking, roads and pedestrian plazas.
6. Minimize use of chemical fertilizers and pesticides.
7. Consider green roofs to reduce the amount of impervious surfaces in the urban environment.

- Performance Standards

1. **S** On-site stormwater systems shall be designed to comply with the overall North Park Master Stormwater Management Plan.
2. **S** Drainage corridors and detention areas shall comply with the North Park Design Guidelines for creating natural habitat. (see fig. I).

3.3.4 Supporting Principle - Natural Resources

- Protect and enhance wetland and riparian habitats
- Promote native plantings and remove invasive species
- Encourage wildlife diversity
- Create ecological corridor connections

Sustainable communities respect the interdependency natural systems have with the built environment. Healthy natural systems benefit residents' and occupants' well being by providing opportunities for outdoor recreation, passive places for mental restoration, connections and interactions with nature, and views from the surrounding buildings that positively impact the indoor experience.

- Performance Standards

1. **S** Landscape plans shall be designed with plants from the approved North Park Plant List for Landscaping and Natural Habitat Areas.

2. **S** Provide a network of dedicated linked open lands and trails for recreation and wildlife movement.
3. **S** Drainage corridors and detention areas shall comply with the North Park Design Guidelines for creating natural habitat.
4. **S** Provide wildlife facilities such as bat boxes, bird houses and butterfly boxes to attract and shelter desirable animal species. (see fig. J).
5. **S** Include signage to prohibit off leash pets.
6. **S** Actively manage invasive plant species.
7. **S** Consider wildlife value and attraction of desirable animal species in addition to aesthetic qualities when selecting plants and designing landscapes.
8. **S** Provide visual and physical connections from developed areas to the natural areas.
9. **S** Provide buffers to sensitive ecosystems.



Figure J

3.3.5 Supporting Principle - Dark Sky Policy

- Protect the night sky by eliminating light pollution

Light pollution is an aesthetic concern, impacts wildlife, and wastes energy. Over illumination, glare, hot spots and light trespass actually reduce the effectiveness of lighting for the purposes of safety and navigation and create irritation and worse for the general observer. Increased nocturnal light levels also adversely impact foraging, breeding and sleeping patterns of animals and insects. By over illuminating and lighting unnecessary areas much energy is wasted.

- Guidelines

1. Provide lighting designs with tight uniformity ratios which produce better quality illumination.
2. Zone light levels based on the area's function.
3. Specify energy efficient fixtures.

- Performance Standards

1. **S** Development projects and public area lighting shall comply with Section 6.25 or Section 9 (whichever is appropriate for the project's location) of the North Park PUD.



Figure K

2. **S** Install timers and controllers to automatically shut off all non-essential lights after business hours.

3.4 Key Principle - Waste Reduction and Recycling

- Design for durability, flexibility and adaptability
- Design to minimize and efficiently use materials
- Divert and recycle construction waste
- Promote recycling and composting for residents and businesses

Between now and 2045, North Park has the potential to develop 17 million square feet of commercial buildings and 6,200 multi-family residential units. Given traditional waste removal methods, North Park's commercial development will potentially produce 153 million pounds of construction waste. The residential development will potentially produce 34 million pounds of construction waste. Through construction waste recycling, most of this waste can be diverted from the region's landfills and reused.

Once built, the commercial and residential building could potentially house over 33,000 workers and 12,000 residents. A comprehensive waste management system would both reduce solid waste streams bound for the landfill and promote recycling and reuse in the community.

- Guidelines

1. Simplify building geometry to optimize standard building material sizes.
2. Use alternative materials including salvaged, reused and recycled materials.
3. Use locally or regionally produced materials.
4. Restaurants should provide facilities to support composting of food waste.
5. Partner with Broomfield to provide comprehensive curbside recycling services for residents.
6. Partner with the Commercial Owner's Association to provide comprehensive recycling services for businesses.

- Performance Standards

1. **S** Building and tenant finish construction projects shall implement Construction Waste Management Plans that target a minimum goal of diverting/recycling 60% of the total construction waste.
2. **S** Private and public development projects shall provide receptacles for both recycling and trash in all public areas. (see fig. K).

3.5 Key Principle - Cultural, Social and Educational

- Provide social interaction opportunities in the urban center cores with central plazas, shops, restaurants, sidewalk cafes, offices and residences
- Provide neighborhood gathering facilities and recreation opportunities throughout the community
- Sponsor/encourage social and educational events and activities throughout the year



Smart Growth planning, green buildings and sustainable sites are only the physical manifestation of a sustainable community. People living their daily lives – interacting with each other, connecting to their environment, doing the activities that create a full rich quality of life - are another part of a sustainable community. Advancing awareness and understanding of sustainability through social and educational opportunities guides the decisions on the types of initiatives to be deployed throughout the community. (see fig. L).

- Guidelines

1. Cooperate/partner with Broomfield to incorporate public art throughout the community.
2. Partner with Broomfield, non-profits and other entities to provide social and educational events, activities, programs and services in the community throughout the year.
3. Highlight/incorporate sustainability throughout the above efforts.

- Performance Standards

1. **S** Provide civic facilities and spaces within the community.
2. **S** Provide neighborhood gathering facilities, parks, community gardens and other recreation spaces within the community.
3. **S** Provide “third places” within the community.
4. **S** Provide sustainability awareness signs throughout the community including buildings, parks and trails to educate the public about the natural environment, responsible development, efficiency and conservation.
5. **S** Sponsor, host and encourage Zero Waste events.
6. **S** Provide a community web site to foster social interaction and community education.



Figure L

NATURAL AREA

<u>NATURAL AREAS AND DETENTION/ WATER QUALITY POND AND DRAIN- AGE CORRIDOR SECTION</u>	<u>PG.</u>
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NATURAL AREAS

Within North Park, many areas of open lands are planned to serve as sustainable landscape for recreational enjoyment and as habitat for plants and wildlife. To make this open land the best habitat it can be, habitat goals have been established that will provide a larger opportunity for both wildlife and plant habitat. The Natural Area and Detention/ Water Quality Pond and Drainage Corridor Section have been developed to aid design teams and installation contractors in creating sustainable ecosystems to provide all of the desired landscape values - sense of place; landscape functions; as well as habitat for the conservation of plants and animals.

1.0 INTRODUCTION

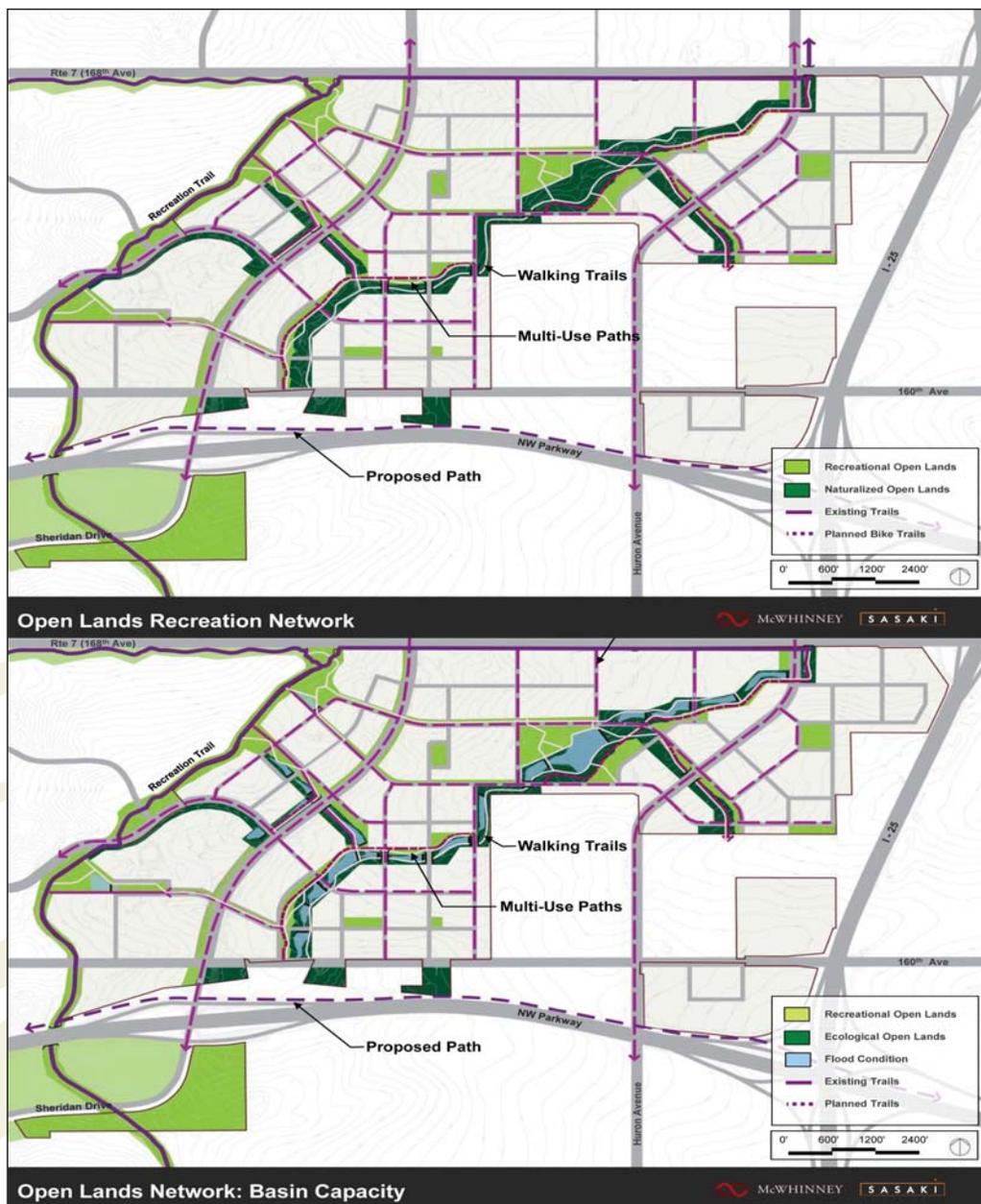
To create, restore, enhance, and protect diverse, healthy, and visually appealing historic native ecosystems that serve a variety of site appropriate landscape functions (ecosystem goods and services). These ecosystems will shape visitor movement and use patterns, wildlife use and movement, resource interpretation, and provide a backdrop for which conservation can occur.

Habitat restoration in urban and suburban environments involves mimicking the proper composition and structure of food, water, shelter, and space as found in natural habitats. Additionally, it involves the functional processes necessary to perpetuate the habitat composition and structure. Restoration involves educating visitors about ethical wildlife viewing and

habitat appreciation. It also involves ecological designs that direct visitor activities and shape visitor use patterns. In some areas guidelines may require excluding visitors whereas other areas may be open and enhance visitor experiences with good views and interpretive areas.

Within North Park, many areas of open lands are planned to serve as sustainable landscape for recreational enjoyment and as habitat for plants and wildlife. To make this open land the best habitat it can be, habitat goals have been established that will provide a larger opportunity for wildlife and plant habitat. The following guidelines have been developed to aid design teams and installation contractors in creating sustainable ecosystems to provide all of the desired landscape values - sense of place; landscape functions; as well as habitat for the conservation of plants and animals.

North Park Conceptual Open Lands



2.0 HABITAT GOALS AND OBJECTIVES

Plant and Animal Diversity

Create and protect habitat for a diverse array of plants and animals, particularly birds, butterflies, amphibians, and rare wetland plants.

- Increase plant species diversity including the number and variety of butterfly host grasses, forbs, and shrubs as well as the number of nectar plants and shelter plants.
- Increase the number and variety of native shrubs and trees that provide valuable cover, berries, insects, nest sites and other resources for migratory, nesting, and wintering birds.
- Increase the number and variety of wetland-dependent reptiles and amphibians, especially creating better places for amphibian breeding to occur.

Aesthetic Appeal

Create a beautiful landscape that visitors will enjoy and appreciate without sacrificing its value for wildlife and plant habitat.

- Increase the amount of shade and resting areas along trails and open spaces while providing habitat for wildlife and viewing opportunities for visitors.
- Use plant species that maintain their beauty in a variety of seasons, such as a species with colorful and showy flowers, fall leaf color, winter texture, and grasses that persist through the winter while they provide good wildlife habitat.
- Use vegetation to frame viewsheds and enhance the natural aesthetic qualities of the site.

Stormwater Function

- Maintain the primary functions of detention ponds and stream drainages to attenuate floods and improve water quality while creating and improving wildlife habitat.
- Manage vegetation to insure proper drainage functions are maintained while allowing habitat values to be expressed to the extent possible.

Shape Visitor Use Patterns

Use available high water tables and stormwater runoff to create opportunities to improve and restore habitat while shaping visitor use patterns to improve the conservation value of the land.

- Create ecosystems where habitat can be established for American Black Currant, Giant Burreed, Sweet Flag, Tulip Gentian, and other rare and interesting wetland plants. Use

these resources to restore tallgrass prairie plant communities and other rare plant communities.

- Create ecosystems that will buffer high quality resources such as Western Grebe nesting areas from visitor disturbance and future community development.
- Improve duck nesting habitat by increasing the total tall wetland and subirrigated prairie as nesting cover, reducing susceptibility to predators and disturbance by visitors.
- Use water to wet areas and create denser plant communities that are attractive to wildlife while limiting human presence in these areas.
- Use water to enhance the overall site’s species, habitat, and landscape diversity.

Sense of Place

Fit the character and context of the site and create a sense of place with the planned habitat modifications.

Habitat Guidelines Planning and Adaptive Management Process

3.0 OVERVIEW

The following guidelines provide step by step instruction for applicants use during development of site design of natural areas, detention ponds and stream channels within North Park. The steps are summarized below and then illustrated in more detail in the following paragraphs.

Inventory

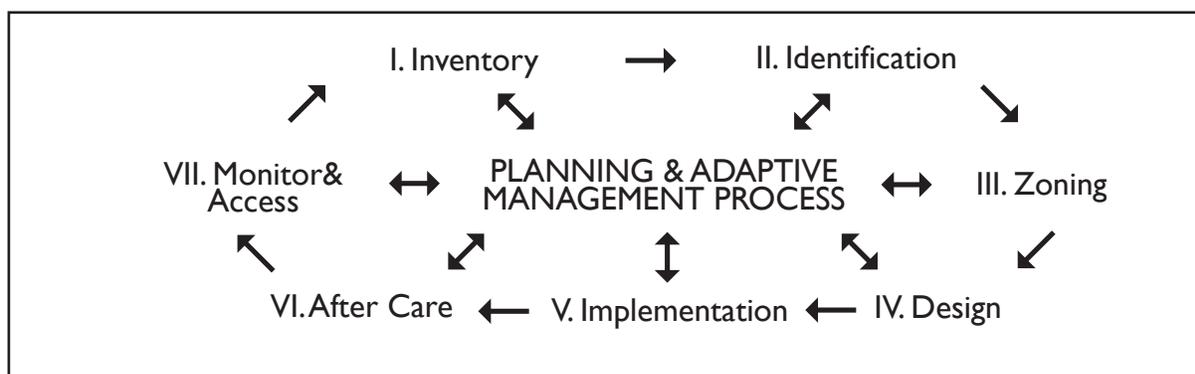
- Assess the ecological and cultural site conditions of the proposed natural area, detention pond, stream channel (“project area”), and the adjacent lands.

Identification

- Determine the primary landscape functions (aesthetics, water and sediment, wildlife and plant conservation) that are important to the project area, any unique opportunities, and primary project constraints.

Zoning

- Delineate the project area into functional groups - those that have similar aesthetic needs and desires, similar water and sediment functions, and similar wildlife and animal conservation opportunities and constraints.



Design

- Develop a plan which mimics the specific ecological attributes and conditions found in high quality natural areas to achieve the landscape function and specific conservation goals desired in the project area. Use the design guidelines in Section 4.4 on pages 74 through 76 and Appendix A, B, C and D Charts; 1A through 9B on pages 91 through 103. The description of Design Principles, coupled with specific Design Guidelines and Standards is intended to assist in the identification and implementation of a strong, consistent design direction and level of quality. Standards **S** are to be treated as techniques that are mandatory. Guidelines reinforce the intent of the Principles, but may be subject to interpretation by the designer as approved by the North Park Design Review Committee.

Implementation

- Create the design in the project area making appropriate on-site adjustments to fit the specific site conditions.

After Care

- Manage the project area making mid-course corrections and adapting the design to site conditions to achieve the landscape function and conservation goals.
- Provide a two year (minimum) management period. The period begins at the time of substantial completion for restoration areas.

Monitoring and Assessment

- Create photo points, plots, transects, and collect appropriate information on the composition, structure, and functions on the project including the desired landscape functions and conservation goals.
- Feed this information back into the next project.

4.0 PROCESS

4.1 Inventory

Obtain information on the following topics prior to developing a detention pond or natural area landscape plan.

- 4.1.1 Topography, slope, and aspect (Civil).
- 4.1.2 Determine hydrology including depth to groundwater (Geotechnical), and flood frequency intervals (Hydrology).
- 4.1.3 Obtain agronomic soil tests from topsoil and subgrade. Submit soil samples to soil testing laboratory for an agronomic evaluation of texture, pH, salinity, and nutrients.
- 4.1.4 Inventory existing undisturbed and disturbed plant communities, including noxious weeds. Evaluate wildlife potential as part of an environmental analysis.
- 4.1.5 Evaluate the biological conservation potential of the project site and adjoining parcels including habitat patch size, corridors and connectivity, edge effects, and buffer potential. Evaluate cultural conditions and regional influences on the site such as proposed adjacent developments and other potentially connecting open lands. In addition, evaluate the relationship of the site to current and anticipated trails, developed recreation sites, level of human presence, and other recreational facilities.

4.2 Identification

4.2.1 Based on the inventory, identify landscape functions that might be needed or best expressed on the site and determine the site's overall potential as a natural ecosystem including the opportunities and constraints of the site

4.2.2 Typical landscape functions might include the following (See Appendix D on page 104 for a detailed description of the various functions):

Aesthetic Considerations:

- Tall Visual Screen
- Low Visual Screen
- Trail Screen
- Viewshed
- Viewshed Framing
- Auditory Screen
- Wind Moderator
- Temperature Moderator

Water and Sediment

- Water Quality Filter
- Flood Attenuation
- Erosion Control
- Sediment Storage

Wildlife and Plant Conservation

- Movement Corridor
- Stepping Stone
- Buffers
- Wildlife Breeding
- Wildlife Feeding
- Wildlife Resting
- Migratory Stopover
- Targeted Restoration Area
- Protection of Local Existing Historic
- Herbaceous Wetlands
- Riparian Shrubland
- Upland Shrubland
- Park-like and Shrubby Woodlands
- Short, Medium and Tallgrass Prairie

4.3 Zoning

Use Appendix B, Charts 5, 6A, 6B and 7 on pages 97 through 99, compiled with collected data to identify appropriate ecosystems and plant communities (additional plantlists can be found in Appendix A, Charts 1A, 1B, 2, 3 and 4 on pages 91 through 96).

4.3.1 Delineate land areas into functional groups which have similar desired landscape function.

4.4 Design

4.4.1 General Design Considerations

- a. **S** Create an ecosystem that is as diverse and practical as possible to accomplish the habitat goals as set forth in the goals section of these guidelines, keeping in mind the context of the site, including aesthetics and landscape functions.
- b. **S** Mimic existing native ecosystems that are found in Colorado, from the base of the Rocky Mountains to the eastern edge of the state.
- c. Restore the site's composition (components), structure (horizontal and vertical arrangement), and to the extent possible the functions (processes and stressors).
- d. Detention ponds should be designed so that natural processes such as fire, flooding, grazing, and soil disturbances can be prescriptively applied on the site. These functional process help to reduce the dominance of aggressive plants, allowing opportunities for other conservative native plants to become established and aid in biological diversity.
- e. **S** Create unique opportunities for diversity by making flat areas more topographically diverse by creating a variety of slopes, aspects, and depths to ground water. Plant forbs, shrubs, or trees that compete better in these environments less suitable for grasses and grass-like plants, which generally dominate and out compete other plants in flat areas. Combine these techniques to create an array of diverse soils and exposures for plants and animals to thrive.
- f. **S** Use appropriate native plant materials from the closest ecotypes available in the seed and plant market (e.g.: Western Native Seed, Pawnee Buttes Seed Company, Arkansas Valley Seed).

4.4.2 Other Design Considerations

a. General Wildlife Considerations

- If possible, open channel drainage into the detention ponds shall be used to facilitate habitat connectivity and reduce culvert maintenance issues. Oversize culverts to facilitate flood flow conveyance, wildlife movement through the structures, and easier access for maintenance.
- Design detention ponds to the extent possible with positive grades to the outlet to limit mosquito production.
- Fallen logs, old tree trunks, or large limbs can be added to the pond to provide perching sites for birds, basking areas for reptiles and amphibians, loafing sites for waterfowl, and add structural habitat elements to the detention basin. These need to be anchored to the bottom so that when water is in the basin they do not float up and clog outlet structures.

b. Sedimentation, Erosion, and Water Flow

- **S** Critical flow areas, especially at inlets and outlets where erosion is possible, should be planted with wetland plugs and/or should be armored with permanent turf reinforcement mats as a substitute for at-grade riprap. Riprap may be used below-grade in certain situations, but should be limited on the surface to achieve a more natural appearance at the ponds and to improve water quality.
- **S** Proper grading should be used to facilitate the flow of water from outlet structures and to dissipate its energy.
- **S** Outlets need to be designed in such a way that the lakeshore, downstream wetlands or riparian areas are not degraded. Elevations need to be precise and field fit to make sure they work and do not degrade the area near the outlet. Run down channels may need to be created to a lower water line elevation depending on the slope of the lakeshore or the stream at the outlet. It will be important to design these outfalls correctly so as not to adversely impact high quality areas or, high quality receiving areas need to be created to be able to receive the additional flows. Knowledge of outlet release flows and velocities will be important, as well as current vegetation composition and structure at these outfall points.
- **S** Design drop structures to be aesthetically pleasing while still achieving energy dissipation characteristics.
Drop Structure Examples:
- Sediment catchments of unnatural sources such as



parking lots and roads should be created as close to the sediment source as possible to improve the water quality of receiving waters and downstream detention ponds. Design sediment traps for easy cleaning.

- In addition to the sediment catchments above, or as a substitute, pre-forebays can be designed adjacent to detention ponds to act as a first filter before the main water quality or detention ponds. Design forebays for ease of maintenance and cleaning.
- **S** Design sides of ponds with a 4:1 or flatter slope to reduce the possibility of rill and gully erosion on slopes, improve the ability to manage these slopes, and to create wider planting zones for wetland and subirrigated plant species. Employ erosion control fabric or similar erosion control measures on slopes steeper than 6:1.
- **S** Depending on the water surface elevations and the size of the ponds, most ponds should be created with some topographic diversity on the bottom including high spots, low areas, and peninsulas of higher ground while maintaining positive drainage to the outlet. Some flat bottom ponds are permissible to add a diversity of ponds to the overall palette, but generally topographic variability adds to plant species diversity, structural complexity, aesthetic interest, and generally creates better habitat.

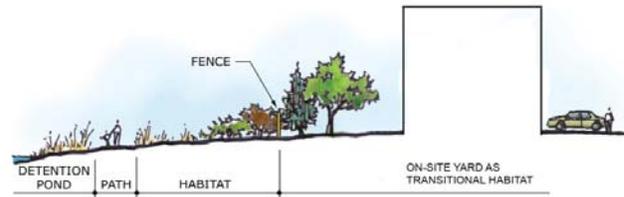
c. Aesthetics and Visitor Management

- **S** Detention ponds should be integrated into the existing landscape so as not to be a visual intrusion but an enhancement to the topography and an aesthetic amenity.
- **S** Detention ponds in identified sensitive natural areas should be used strategically to shape visitor use patterns, to allow people to view wildlife and scenery while acting as a wildlife blind to screen movement of visitors. Properly sized berms integrated with the proper elevation of trail corridors can achieve this balance between good viewing opportunities while screening visitor movement. Vegetation on pond berms can help balance viewing lanes with screening as well. Detention ponds including berms and vegetation should be used to reduce the trail's zone of influence on the surrounding habitat. A well scaled cross sectional drawing including walkers (children and adults), bicyclists and vegetated berms can aid in designing these features. A variety of recreational and visual experiences are desired.
- **S** Access by trails should generally not encircle the entire pond in a loop fashion, unless the trail is screened or set back far enough so as not to disturb the whole shoreline.

d. Relationship to the Built Environment

- **S** Generally buildings constructed next to detention ponds and other habitats should "back" to these areas and act as a viewing blind. The activities of people and associated facilities such as parking lots, public entrances, and primary doors should generally be on the opposite side from the detention ponds and other habitat areas.
- **S** Buildings should be set back to the degree possible

so as to buffer high quality habitats. This will help to limit the intrusion of light, noise and pets into the open space.



- **S** Landscaping on the habitat side of the building should consist of native plantings, to the degree possible, and provide a natural transition between the built environment, detention ponds, stream corridors, and other habitat areas.
- **S** All native and natural planting areas should use plants depicted in the Appendix A, Charts 1A, 1B, 2, 3 and 4 on pages 91 through 96.
- **S** All horticultural or non-native plants should be screened for invasiveness into natural areas by using the Nature Conservancy's Nature Serve Explorer web site as well as using a general Internet search with the "species name" and the word "invasiveness". Invasive and aggressive non-native or horticultural plants should be strictly avoided, especially adjacent to natural areas, open spaces, or detention pond habitats where additional moisture may aid in the establishment and reproduction of these non-native plants. Nature Serve Website: <http://www.natureserve.org/explorer/servlet/NatureServe?init=Species>
- **S** Access trails or other entrance points into detention pond habitat and open space areas should be limited by design to selected areas that are not adjacent to high quality habitat.
- **S** The intrusion of light and noise should be limited in quality habitat areas. Install only low-level or ground level lights and cutoff lights so as to reduce impacts of light on wildlife, night time educational programs, and star viewing. The use of well designed berms with vegetation and other types of vegetated landscape buffers can be used to reduce noise and the effects of lighting. All lighting within the 20' boundary of natural areas should be 0.1 tenth footcandle or lower.
- **S** Dogs and cats can have a tremendous impact on native wildlife, particularly small mammals and songbirds. Provide appropriate signage that requires all pets to be leashed and kept on trails.

e. Trees, Shrubs and Vines

- Plant trees, shrubs, and vines after drill seeding, generally in the early spring or fall. This can be done right after the initial seeding effort or after herbaceous plants are established and weeds are under control. Remember that established grasses compete well with woody plants for water and nutrients, especially in fine textured soils. Planting woody plants in bare areas, providing supplemental water for two to three years, and mulching are helpful to get plants established. One gallon vines and five gallon trees and shrubs are recommended for good establishment.

- **S** Concentrate or mass woody plants into beds or planting zones to create more habitat impact for wildlife more quickly. This will also reduce watering, weeding, and other management costs. Steel header shall not be used to edge planting beds in natural areas.
- **S** Plant each species in the optimal moisture zones as per the tree and shrub list in Appendix A, Chart 2 on page 94.
- **S** Select woody plants that can be used strategically above and around inlets and outlets to lessen the negative aesthetic affects of such man-made structures.
- **S** Trees and shrubs should be caged for several years to keep voles, cottontail rabbits, and beavers from chewing on the bark. Cages consist of an 18" to 24" diameter ring of ½" hardware cloth or narrow gauge chicken wire held down by rebar and landscape staples. Cages shall be installed prior to substantial completion.
- **S** Construct tree wells around each woody plant with 3-4" of wood chip mulch to help hold moisture, increase mycorrhizal activity, reduce weed and grass encroachment and competition, and direct supplemental water to the roots.
- Masses of plants can be treated like a bed with each tree or shrub having an individual tree well. However, the entire bed may be caged as a group and the whole planting mass mulched. This reduces installation costs and may save wire.

f. Wetland and Sub-irrigated Plugs

- Generally, plugs are planted after drill seeding from mid-May through July. Planting small plugs in the fall is not generally recommended because of plant loss due to Canada geese herbivory. Planting plugs can be done right after the initial seeding effort or after seeded herbaceous plants are established and weeds are under control. This could be 2 to 5 seasons after initial seeding. For these later plantings, wetland plugs should be concentrated in bare areas and areas needing erosion protection.
- Plant wetland and subirrigated plugs in super cells, 2.5" pots, deep pots, or one gallon plants for good establishment.
- Concentrate or mass wetland plugs in critical areas where erosion is anticipated or where moisture regimes favor establishment and growth of the particular species. Because water regimes are not always clearly known and weather patterns are not predictable,
- **S** Plant each species in the optimal moisture zones as per Appendix A, Charts 3 and 4 on pages 95 through 96.
- **S** In addition to the above planting technique, if the hydrology is very unpredictable, use species with wider tolerances to moisture conditions and species with a taller stature so that they do not become completely inundated.

- Critical areas may be planted on one foot centers or two foot centers and can be protected with turf reinforcement mats, jute or other erosion control blankets, depending on the situation. With landowner permission and on non-jurisdictional sites, larger plugs may be selectively hand dug from open space areas to supplement purchased plant material, especially for stabilization of critical sites.
- Plugs can be used to improve habitat, add color and aesthetic interest, improve species diversity, or increase populations of unique and rare wetland plants.
- Selected wetland and subirrigated plugs can be used strategically around inlets and outlets to lessen the negative aesthetic affects of such man-made structures.
- If herbivory by geese, muskrats or other animals is anticipated or becomes a major problem, plugs can be caged or covered with chicken wire, jute, or other products to protect them. Grids of string slightly above the water elevation can also be laid out across the site to reduce waterfowl access to newly planted wetlands.
- **S** Wetland plugs may be necessary in areas that cannot be seeded due to constant inundation or extreme saturation of the pond bottom or periodic inundation during the seasonal seeding windows. Pumping water out of the pond to seed or waiting for a dry period to seed may be another option to putting in plugs.
- **S** Follow the specifications in the Section 4.5 Implementation for seeding.

4.5 Implementation

4.5.1 General Seeding Guidelines for Ecological Zones in Detention Ponds Depending on Their Hydrological Regime

a. Planting Prior to Site Development

If the detention pond is being created several years before the development occurs and before the pond will experience any consistent water regime, use the following seeding guidelines:

- Apply herbicides to weeds prior to beginning detention pond development to reduce noxious weeds and other aggressive non-desirable plants. Several seasons of weed control could greatly improve the establishment of desirable native vegetation. When controlling weeds just before the detention ponds are constructed, proper herbicide selection is important, preventing weeds from persisting in the soil, affecting seedling establishment or water quality.
- Seed with a Pre-development Mix which is a diverse mix with a wide ecological amplitude. In this mix there are species that can tolerate a wide array of moisture conditions. There are a few species that grow well in wet conditions, several species that can handle mesic conditions, and few species that grow in dry conditions (Seed Mix A).
- OR, if the water from the development will be arriving to the pond within one year, one could substitute a cover crop like Regreen, Quick Guard, or sterile oats for the Pre-development Mix. Do NOT use Cereal Rye

NATURAL AREAS

(*Secale cereale*) or Wheat (*Triticum aestivum*), or other crop or non-native species that will persist or reseed after one year's growth. Cover crops should be sterile hybrids which are unable to reseed.

- Detention ponds need to be assessed the year before development is completed to determine if there is a need to reseed.
- Assessment should be ongoing as local or regional conditions in the watershed change which may affect the water regime, including periods of drought, frequent flooding, accelerated or delayed development schedules, or other factors which may affect establishment or survival of species seeded into detention ponds.

b. High Ground Water Detention Ponds

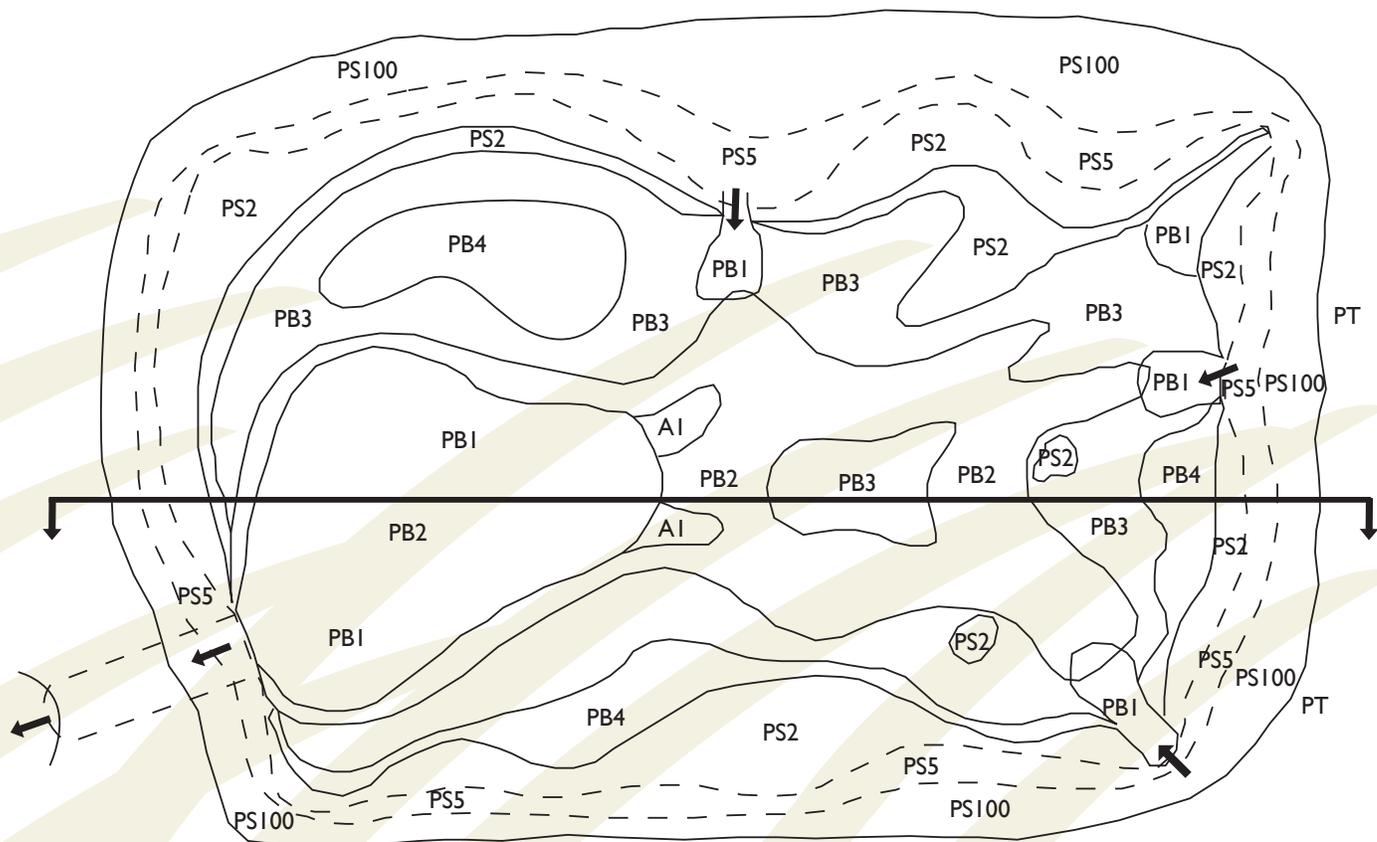
Defined as ponds where the bottom soil surface elevation is within 18" of the ground water and soils are loamy to clayey, or the bottom is within 12" to 6" of the ground water and soils are sandy to gravelly (See Detention Pond Plan below and Appendix C Charts 8A and 8B on Pages 100 through 101 for Zone Descriptions).

- If the bottom of the pond is not too wet to support equipment, drill seed wetland subirrigated grass seed (part of the wetland subirrigated grass and shrub mix) into the bottom of the pond and lower side slopes in zones PB1, PB2, PB3, PB4, and PS2 and PS5. Make two

passes in opposite directions (15 to 45 degree angles), each pass applying half the total rate, except in the PS5 Zone where one pass is needed.

- OR, if the pond bottom is too wet, broadcast or hydro seed wetland subirrigated grass seed (part of the wetland subirrigated grass and shrub mix into the bottom of the pond and lower side slopes in zones PB1, PB2, PB3, PB4, and PS2 and PS5). Raking or harrowing this grass seed into the soil will be necessary, especially on pond slopes.
- Drill one pass of the upland grass and shrub mix in the PS5 zone which has received one pass with the wetland subirrigated grass and shrub mix, and 2 passes on the rest of the slope and the top of the pond above slope (PS100 and PT). This completes the drill seeding.
- Broadcast the rest of the wetland mix (packaged separately) including wetland wildflowers (if applicable) onto the bottom of the pond (PB1, PB2, PB3, PB4). Make two passes in opposite directions, each pass applying half the total rate.
- Broadcast the upland slope wildflowers on the slopes of the pond in zones PS5, PS100 and PT. Make two passes in opposite directions, each pass applying half the total rate.
- Apply appropriate erosion control blankets or mulch per specification in this Section.

DETENTION POND - PLANVIEW



c. Normal Detention Ponds

Defined as ponds where the bottom soil surface elevation is greater than 18" above the ground water and soils are loamy to clayey, or the bottom is greater than 12" to 6" above ground water and soils are sandy to gravelly (See Detention Pond Plan above and Appendix C Charts 8A and 8B on pages 100 through 101 for Zone Descriptions).

- Drill seed the bottom of the pond with the subirrigated grass and shrub seed mix up to the 5 year water surface elevation (PS5), using only one pass on low spots and near inlets and outlets (PB1), one pass on slopes (PS2 and PS5), and two passes in all other areas (PB2, PB3, and PB4). Each drill seeding pass should be seeding only half of the desired total rate of grass seed (about 4-5 lbs per acre).
- Drill one pass of the upland grass and shrub mix in the PS2 and PS5 zone which has received one pass with the subirrigated grass mix, and 2 passes on the rest of the slope and the top of the pond above slope (PS100 and PT). This completes the drill seeding.
- Broadcast the wetland seed mix including wetland wildflowers on the bottom of the pond near any inlet or outlet structure and in all low spots within the pond (PB1). Make two passes in opposite directions, each pass applying half the total rate.
- Broadcast the subirrigated wildflowers on the bottom of the pond in zones PB2, PB3, PB4, and PS2. Make two passes in opposite directions, each pass applying half the total rate.
- Broadcast the upland slope wildflowers on the slopes of the pond in zones PS5, PS100 and PT. Make two passes in opposite directions, each pass applying half the total rate.
- Apply appropriate erosion control blankets or mulch per specification on page in this Section.

d. Drainage Channels and Corridors

- Drainage channels and corridors must comply with the guidelines and specifications listed in Appendix C on Charts 9A and 9B on Pages 102 through 103.

e. Application of Erosion Control Blankets and Mulch

- The side slope of the detention ponds should not be graded steeper than 3:1. 4:1 or flatter is preferred.
- Because vegetation on hotter south-facing and west-facing slopes is more difficult to establish, especially if the pond slopes are not irrigated, these slopes should be blanketed to improve surface soil moisture and thus improve germination.
- All slopes steeper than 6:1 should be covered with erosion control blankets.
- Erosion control blankets should last for a minimum of two full growing seasons, and thus, if installed in the fall, should be a 24 month blanket and if installed in spring should be an 18 month blanket. Natural fiber blankets such as North American Green Straw Coconut 150 BioNet or North American Green Coconut 125 BioNet are preferred to synthetic blankets because the synthetic tend to trap and kill reptiles and amphibians.
- All blankets should be installed per manufacturer's recommendations.

- Especially in close proximity to developed sites, hydromulch should be used at 1500 to 2000 pounds per acre to mulch the site. Blankets or hydromulch are preferred over crimped hay or straw due to the reduced chance of introducing weeds, and because they do not blow off site. In addition, they have a cleaner look if next to a developed site.
- OR, on more remote sites, certified weed-free hay or certified weed-free straw with no seed heads can be crimped into the seedbed after seeding.
- Very wet to moist pond bottoms may not be able to be mulched.
- Periodic inspections should occur to insure that no erosion is occurring on-site, especially around inlet and outlet structures, on steep slopes, and around irrigation heads.

4.5.2 Construction and Restoration for Native Areas Adjacent to Development Areas

a. Guidelines, Activities and Restrictions

- Construction shall be limited to as small as possible size to complete the work in a timely and efficient manner without unnecessary disruption to native open space. The location of staging areas and development access should be designated by the contractor and agreed upon by the North Park DRC. (Example: For a one acre or smaller detention pond, it is recommended to have a 15 to 20 foot permanent easement from the top of the pond and a 30 to 50 foot construction easement with one 50 by 50 foot staging area.)
- All installation of woody plants shall be done by a Landscape Architect or qualified party.
- Construction, including any staging area, shall be fenced with standard orange construction fencing to clearly define the limits of work. Sensitive natural areas shall be protected with orange construction fencing.
- Vegetation of significance that is agreed upon as a disturbance free zone that will not be cleared, grubbed, or disturbed shall be fenced. No work or disturbance shall occur in these zones.
- Limit construction and disturbance envelope to minimize disturbance to the site. Keep construction activities within 20' of the property line.
- Equipment and materials must stay within the designated construction area and out of disturbance free zones.
- Fines shall be issued to the contractor on a per square foot basis for uplands and wetlands disturbed outside the easement or in disturbance free zones agreed upon and fenced within the easement. Fines range from \$100 to \$500 per square yard of damage outside of the easement, depending on the type and location of damage.
- Fines shall be issued on a per tree and per shrub basis for damage done outside the easement or in disturbance free zones agreed upon and fenced within the easement. Fines are issued on a per individual basis. Tree and shrub species, diameter, and size are used to determine replacement and establishment costs.

- Cash shall be required up front or a “bond” from the CONTRACTOR or OWNER on a “per square foot disturbed” basis. These funds will be used to restore or fix areas outside of the easement or in disturbance free zones as designated within the easement. They also ensure that proper restoration has occurred within the construction easement.
 - A pre-construction meeting shall be held on the work site with all personnel who will be working onsite so that all “workers and especially equipment operators” clearly understand the limitations and locations of approved activities and the consequences if they don’t follow the easement restrictions. This should include a walk through of the entire easement.
 - Any new workers starting after the beginning of the work shall be informed of the easement restrictions.
 - A three to five year weed control plan and restoration guarantee shall be included in the easement documents. Restoration guarantees shall include establishment of 75% of target species, percent cover requirements of target species equal to 75% of pre-construction cover, and percent cover of weeds equal to or less than that of pre-construction conditions.
- b. Selection of Qualified Contractors
- The contractor and subcontractors shall be selected by an evaluation process in addition to the bid process to ensure that they can do quality work in a native open space setting.
 - Contractors and their subcontractors must submit a list of their previous work in sensitive open land sites or environmentally sensitive areas, references for this work, and they must be approved by LANDOWNER or LANDOWNER’S REPRESENTATIVE before the final award of bid is given to the contractor.
 - All contractor documents and specification should be approved by the LANDOWNER or LANDOWNER’S REPRESENTATIVE prior to their issuance.
- c. Above Ground Design Guidelines
- All manholes or other above ground utility structures, except those indicated below, should be within 3” of existing grade so as not to be a visual intrusion or to impair future open space mowing and management operations.
 - Taller structures such as air vents, transformers, etc. must be painted “Sandalwood Tan” or an appropriate color to blend in with the existing vegetation during the majority of the year.
 - Outlet structures and inlet pipes must blend in with the side slope grade and not protrude into the pond unless necessary to perform the desired function, and approved by the DRC.
 - Outlet structures and inlet pipes shall not be placed in drainage ways, flood plains, or flood prone areas.
- d. General Construction Practices
- The CONTRACTOR or OWNER must notify the LANDOWNER or LANDOWNER’S REPRESENTATIVE one week prior to any access or commencement of construction activities.
 - Absolutely no vehicles, equipment, or materials are allowed outside the construction easement at any time before, during, or after the construction operations.
 - Work should be halted during moderate to heavy rains or snows to reduce the erosion of soils offsite and for the protection of downstream waterways.
 - All dewatering techniques and activities, if necessary, shall follow Colorado Department of Health guidelines, or guidelines approved by the LANDOWNER or LANDOWNER’S REPRESENTATIVE.
 - Where needed, the open space shall be protected from sedimentation with a silt fence, straw bales, and other standard sediment control practices.
 - If required, all plant salvage operations required of the CONTRACTOR shall be protected from damage with fencing and must be reinstalled as soon as topsoil has been replaced.
- e. Restoration: Finish, Grading, Clean-Up and Damage Repair, Topsoil, Scope of Work, Seed Quality, Materials, Execution - Restoration and Seeding
- Finish Grading of Natural Areas and Detention Ponds
 - Upon completion of other construction work and prior to final payment, the CONTRACTOR shall remove all construction debris, material and equipment. They shall restore the existing area to as clean of a condition as existed before their operations began. All stockpiles of topsoil shall be used on disturbed areas and all excess bedding, subsoils, or other backfill materials shall be removed as directed by the OWNER, LANDOWNER, or LANDOWNER’S REPRESENTATIVE. All remaining areas shall be worked as herein specified.
 - The CONTRACTOR shall then grade the entire site designated as a natural area or detention pond to a finished grade, leaving small irregularities and rough spots to provide microhabitat and topographic diversity to aid in plant establishment. Rough grading may be sufficient to meet this specification if approved by the OWNER, LANDOWNER, or LANDOWNER’S REPRESENTATIVE and the SEEDING CONTRACTOR. The CONTRACTOR shall meet existing grades at the boundaries of the limit of work. Allowance shall be made for topsoil and any other surface material, which is called for in the Contract Drawings and Specifications.
 - Clean-up and Damage Repair
 - All debris and excess excavated material shall be disposed of offsite by the CONTRACTOR and at their own expense. All fences, gates, signs, and any other structures damaged shall be repaired or replaced as necessary. All damage shall be repaired as soon as possible by the CONTRACTOR and at their own expense after all initial restoration and seeding operations are completed.
 - Amendment of Existing Onsite Topsoil
 - This work consists of providing and replacing suitable topsoil at locations and thicknesses shown as existing prior to construction and called for elsewhere in these Specifications, but in no case shall it be less than 4” unless approved by the OWNER,

LANDOWNER, or LANDOWNER'S REPRESENTATIVE. No imported topsoil is required.

- Topsoil shall consist of loose, friable native soils that existed prior to construction. These soils shall be reasonably free of admixtures of subsoil, refuse, stumps, roots, rocks, brush, weeds or other material which would be detrimental to the proper development of vegetative growth.
- Topsoil has living components and thus should be placed in small piles adjacent to detention pond installation operations where it will not be mixed with bedding materials, subsoils, and other contaminants. Large piles of topsoil placed for more than a few days, especially during warm conditions, is not an acceptable practice. Topsoil shall not be replaced until the areas to be covered have been properly prepared and the detention pond, compaction, and subsoil grading operations have been completed for a particular area of the pond.
- Topsoil shall be keyed to the underlying material by the use of harrows, roto tillers, rollers, or other equipment suitable for the purpose.
- Scope of Work
 - Seeding shall consist of furnishing and sowing seed at locations shown on plans, or as designated, in conformity with the requirements of these specifications. This item includes any necessary ground preparation prior to seeding, including but not limited to chiseling, disking, and hand raking as necessary to prepare the soil for seeding. It shall also include the furnishing and application of Colorado certified weed-free native grass hay mulch or approved equivalent.
- Seed Quality
 - All brands furnished shall be free from such noxious seeds as Canadian Thistle, Russian Thistle, Bindweed, Leafy Spurge, Diffuse Knapweed, and all noxious weeds listed by the State of Colorado. Additionally, all brands furnished for use in native areas shall be free of undesirable non-native grasses such as Smooth Brome, Intermediate Wheatgrass, Tall Fescue, Kentucky Bluegrass or Crested Wheatgrass.
 - The landscape contractor shall furnish to the LANDOWNER or LANDOWNER'S REPRESENTATIVE a signed statement certifying that the seed furnished is from a lot that has been tested by a recognized laboratory. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.
- Materials
 - Seed
 - 1.) Owner shall designate the type of seed mix. No changes or substitutions shall be made without permission from the LANDOWNER or LANDOWNER'S REPRESENTATIVE two weeks prior to restoration and seeding.
 - 2.) Seed types and amount of pure live seed (PLS) required per acre are based on soil type and irrigation regime.
- 3.) Seed mixes at the rate indicated on the mix in PLS when drill seeding. For slopes 3:1 or greater, double the PLS per acre when broadcast seeding.
- 4.) If seed available on the market does not meet the minimum purity and germination percentages specified, the landscape contractor must compensate for a lesser percentage of purity or germination by furnishing sufficient additional seed to equal the specified product. The tags from the seed mixes must be supplied to owner.
- 5.) Pack seeds of the latest season's crop for delivery in suitable rodent proof bags in accordance with standard commercial practices. If seed is stored after delivery to the work site, store in cool, dry, and weatherproof place in a manner that protects the seed from deterioration and permits easy access for inspection. All labeling required by law shall be intact and legible.
- 6.) The formula used for determining the quality of PLS shall be: (Pounds of seed) x (purity) x (germination) = pounds of PLS.
- Hay Mulch
 - 1.) The material will be certified weed-free native grass hay. Each delivery of certified weed-free native grass hay shall have the proper weed-free certifications, transit certificate, and weight slip. Hay shall not be musty, moldy, decayed, caked or of otherwise low quality. Hay shall be free of weeds and viable seeds.
 - 2.) At least 75% of the hay by weight shall be 10" or more in length.
 - 3.) Do not conduct the mulching application when wind conditions may cause the mulch to blow from the intended target area.
- Execution - Restoration and Seeding
 - Submittals
 - 1.) CONTRACTOR shall notify LANDOWNER or LANDOWNER'S REPRESENTATIVE and NORTH PARK DRC 48 hours prior to seeding.
 - 2.) CONTRACTOR shall supply LANDOWNER or LANDOWNER'S REPRESENTATIVE and NORTH PARK DRC with tags from every bag of seed and all load tickets for native hay mulch at the time of execution.
 - Site Preparation
 - 1.) Area should be shaped and graded according to pre-construction topographic features or appropriate restoration plan. Existing drainage patterns upstream and downstream of the detention pond should be maintained unless specifically stated otherwise.
 - 2.) Topsoil and strippings removed by the CONTRACTOR prior to construction shall be placed to a minimum depth of 6" prior to tilling, unless approved otherwise by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. Remove tree limbs, trash, large rocks, and other debris.

- 3.) The top 4" of the surface shall be chiseled, disked, and/or tilled, and roughed parallel to slope contours to prepare soil for seeding.
 - 4.) Finished graded areas shall be protected from damage by vehicular and pedestrian traffic and erosion.
- Fertilizer Application and Organic Amendment – None shall be applied.
 - Seeding
 - 1.) Native grass and wildflowers seeding shall be accomplished in one or another of two seeding seasons within a calendar year; namely the "spring seeding season" from February 21 through May 15 and the "fall seeding season" from October 15 through December 15. Either of these seasons shall be understood to comprise that period of time in the spring or fall, respectively, favoring the healthy growth of native grasses and wildflowers in the locality in which the seeding is done.
 - 2.) Seeding of portions of the areas designated may be permitted before the construction is completed in order to take advantage of growing conditions, but should be protected from vehicles, compaction, erosion, and other disturbances that may disrupt future germination and establishment of seeded species.
 - 3.) Seed shall not be sown during windy weather, or when ground is frozen or otherwise un-tillable.
 - 4.) Method of Seeding
 - i. Drills: A grass drill shall be used unless the LANDOWNER or LANDOWNER'S REPRESENTATIVE approves another method. Grass drills are to be used to seed native grasses only, not native wildflowers unless specifically directed by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. The drill should be equipped with a satisfactory feeding mechanism, agitator, double disk furrow openers, depth adjustment mechanism, and packer wheels. Depending upon the seeding recommendation, it may be necessary to have separate boxes for fluffy grasses, small seeded grasses and for legumes. Drill seeding shall be at approximately 6" to 7" spacing, to a depth of ¼" to ½". All seeding on slopes shall be parallel to the contours unless otherwise approved by the Owner. In areas where the smallest dimension (width or length) exceeds 300 feet, the site shall be cross-seeded at an angle of approximately 45 degrees.
 - ii. Hydraulic Equipment: This shall be restricted to areas inaccessible to drills as determined by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. If hydromulch is to be applied, the seed should be applied in a separate operation prior to mulching. Hydraulic mulching equipment shall include a pump capable of being operated at 100 gallons per minute and 100 pounds per square inch pressure, unless otherwise directed. The equipment shall have an acceptable pressure gauge and a nozzle adaptable to hydraulic seeding requirements. Storage tanks shall have a means of agitation and a means of estimating the volume used or remaining in the tank.
 - iii. Hand Application: Broadcast seeding by hand or a manually operated broadcast type seeder is to be used to seed native wildflowers. For grasses, it is only acceptable on small areas and areas not accessible to drills as determined by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. Native grass seed only will be covered ¼" to ½" deep by raking or harrowing. Application rate shall be increased by 50% for all native grasses to be hand seeded at the sole expense of the Contractor.
 - iv. Native wildflower seed will be mixed with 6 parts perlite to one part native wildflower seed. This native wildflower seed mix will be broadcast after grasses have been seeded and before native grass, hay mulching, or hydromulching.
- Mulch
 - 1.) All areas to be seeded shall be mulched. Hay mulch shall be used in all locations except when conditions require the use of hydromulch with the permission of the OWNER and the LANDOWNER or LANDOWNER'S REPRESENTATIVE.
 - 2.) Hay Mulch: Use only in remote areas with low human presence and without immediate adjacent development. After seeding has been completed, a rate of 4,000 lbs. of hay per acre, or as directed, shall be applied uniformly, crimped in with a crimper. Anchor hay mulch to the soil by crimping hay into the soil with a crimping disc on appropriate contours 2" to 3" deep at no wider than 8" spacing. Use V-type wheel land packers, scalloped disc packers, or other suitable equipment. No less than 75% of the hay shall remain on the surface after anchoring. The LANDOWNER or LANDOWNER'S REPRESENTATIVE may order the employment of hand-crimping operations on such areas where excessively steep slopes or confined areas would cause unsatisfactory crimping to result by mechanical methods. Start mulching on the windward side of relatively flat areas or on the upper part of steep slopes, uniformly covering the area. Mulch that remains clumped or bunched after application shall be separated and re-spread. The seeded area shall be mulched and crimped within 24 hours after seeding. Areas not mulched and crimped within 24 hours after seeding must be reseeded with the specified seed mix at the landscape contractor's expense prior to mulching and crimping. On steep slopes, drainage ways or other specific areas, which are difficult to mulch and crimp by conventional methods, jute mesh or other blanketing materials may be used when approved by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. These materi-

als properly installed, anchored, and secured as per manufacturer's recommendations. These areas will have seed mixes specifically designed for site conditions.

- 3.) Hydromulch: As required, cellulose fiber mulch shall be added with the proportionate quantities of water and other approved materials in the slurry tank. All ingredients shall be mixed to form a homogenous slurry. Using the color of the mulch as a metering agent, the operator shall spray apply the slurry mixture uniformly over the designated seeded area. Unless otherwise ordered for specific areas, wood cellulose fiber mulch shall be applied at the minimum rate of 1,720 lbs. per acre. Hydraulic mulching shall not be done in the presence of free surface water resulting from rains, melting snow or other causes. Wood fiber mulch shall be "Conwed, Hydromulch 2000" which is manufactured by the Conwed Corporation or approved equal.

– Protection

- 1.) Immediately after seeding, protect seeded areas against traffic or other use by erecting temporary fencing or barricades and providing signage as directed by the LANDOWNER or LANDOWNER'S REPRESENTATIVE. Retill, seed and mulch any areas impacted by traffic as directed by the ENGINEER, OWNER, LANDOWNER or LANDOWNER'S REPRESENTATIVE.

– Clean Up

- 1.) THE CONTRACTOR shall be responsible for clean up of the site, including removal of all wires, ties, bags, etc. Failure to clean the site shall result in withholding of payment.

4.5.3 Wildflower (Forbs) Restoration Specifications and Prescriptions for North Park

a. Why Wildflowers (Forbs)

- Wildflowers are an essential part of most native plant communities, including natural detention ponds like playas and streamside plant communities. Wildflowers are essential to create a more diverse habitat that attracts many more species of wildlife to a site. The following process will help contractors to more successfully establish wildflowers.

b. Site Selection

- Before seeding wildflowers it is essential to assess the condition of the site. The ecological opportunities and constraints of the site must be considered, including soil type, soil moisture, soil nutrients, slope, aspect, light regime, hydrology, topographic features, as well as the existing vegetation. Most wildflowers in the plains of Colorado thrive in full sun or light partial shade. They generally survive best where ecological conditions are not favorable to grasses, including course texture soils with a higher content of sand, gravel, and rocks. Also, wildflowers are more abundant on rocky sites and steep areas with adequate moisture for establishment, which may otherwise be environmentally harsh. Areas that are densely dominated by rhizomatous grasses, or are dominated by diverse and extensive

infestations of perennial weeds and/or annual weeds, are poor candidates for wildflower seeding without intensive manipulation of the site with considerable expenditures of time and money. These conditions can be created on a detention pond site by adding a sand, gravel or rock component to the soil from excess pipe or culvert bedding materials.

c. Design a Seed Mix with Proper Seeding Rates

- Plant palettes should be selected carefully to match the existing site conditions. A restoration ecologist should design an appropriate site specific mix based on the conditions of the site and the goals for the project. Wildflower seeding rates vary from 4-10 lbs per acre for wildflower plantings, to 10-12 lbs per acre for wildflower/grass plantings. Rates should achieve a minimum of 15-20 and a maximum of 60 - 80 live seeds per square foot of forbs. On drier sites, or during dry years, the seeding rate should be 35 -45 live seeds per square foot maximum.

d. Seeding Wildflowers with Grasses

- Wildflowers can be sown alone or with grasses depending on the goals for the restoration site. Wildflowers generally perform best when sown alone because of the competitive nature of grasses. If grasses are desired on the site with forbs, then the following special design modifications should be considered to allow forbs the competitive advantage they need to get established. These are: 1) Grasses and forbs can be separated spatially, with patches of grass only and patches of forbs only. Forbs will perform best in shallow, course, irregular soils, or steep slopes; grasses will perform best in fine textured and deeper soils on flat to moderate slopes. 2) Grasses can be seeded at lower rates (1/3 or less) to make them less competitive. 3) Seed only with bunch grasses because they are less competitive and leave more space for forbs to get established. Good cool season bunch grasses include Green Needlegrass, Indian Ricegrass, Prairie Junegrass, and Slender Wheatgrass. Some of the best warm season bunch grasses include Little Bluestem, Sideoats Grama, and Blue Grama (can form a sod if mowed or grazed extensively). 4) Forbs can be purchased in pots or grown and planted to establish populations.

e. Preparing the Seed

- Cold-moist stratification: (Only necessary if seed is planted in the spring). This is the process where seed is stored in a moist medium, such as Perlite or Vermiculite, generally for 30 to 90 days to break seed dormancy. Mix one part seed with two parts Perlite or Vermiculite, and soak until very moist in a zip lock bag. Pour off additional free water and store in a refrigerator at 34°F to 40°F for 30 to 90 days as specified for the particular species.
- Soaking: Many seeds will germinate best if they have been allowed to imbibe water prior to sowing. Thus soaking seeds, especially those with a hard seed coat may be necessary to improve germination. Some seeds also do best with a hot soak.
- Scarification: This is the process whereby the seed coat is weakened by either mechanical or chemical means.

This process helps to break down the seed coat so that the seed can more easily imbibe the water that is essential to the germination process. Mechanical scarification can be done by placing the seed in an open box and scratching it with medium to coarse grit sandpaper, or for larger seeds by scratching the hard seed coat with a file or knife. Chemical scarification (or acidification) is done with a dilute solution of sulfuric acid. This method helps to reduce chemical inhibitors to germination and it helps to break down resistant seed coats. Generally, the seeds that need chemical scarification are found in fleshy fruits like Solomon's Seal, plums, cherries, or hawthorns. Check with your seed supplier for their recommendations on the treatment of seeds prior to sowing. The key to germination is for moisture to reach the embryo which is in the interior of the seed. Additional germination requirements are good seed/soil contact, warm temperatures (over 55°F for cool season plants and 75°F for warm season plants), and overcoming external or internal dormancy.

f. When to Seed Wildflowers

- Seeding in the fall: Because many wildflowers need a cold-moist stratification for 30 to 90 days to break dormancy, the natural time to seed them is in the fall, also called dormant seeding. Dormant wildflower seeding should occur after the soil temperature has cooled to below 55°F, or generally in late October, November, or early December, before the ground freezes. Dormant seeding of perennial wildflowers is the preferred approach, although there may be some situations where spring seeding is conducted.
- Seeding in the spring: Annuals and species that germinate readily can be seeded in the early spring with great success. The main advantage to seeding in the spring is the opportunity to kill Colorado's many cool season weeds that have germinated in early spring, thus reducing competition for moisture and nutrients.
- The primary objective at a restoration site where a diversity of forbs is desired is to clear the area of existing vegetation, especially non-native species, aggressive perennial sod forming grasses, and noxious weeds.
 - Fall seeding scenario:
 - Chisel or disk the ground in the spring.
 - Allow weeds to germinate and spray with glyphosate (e.g. Roundup) or till weeds to prevent establishment.
 - In the fall before seeding, spray, shallow till, or scarify with a harrow once more to get the ground as clean and weed-free as possible. Glyphosate can be used to kill these early germinating weeds and seeding can occur right after spraying. Or, a pre-emergence application of imazapic (e.g. Plateau) can be used (4 oz active ingredient/acre) to control weeds. Please carefully read and follow label directions on all herbicides prior to their purchase and use.
 - If necessary, add sand, gravel, or rock to the soil in the areas where wildflowers are going to be seeded to increase their competitive advantage.

Wildflower Restoration Calendar - Begin in the fall to access site to seed in the fall of the following year. ©Ark Ecological Services, 303-985-4849

Goal (Project)	Objective	Process	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Restore native wildflowers to North Park	Identify areas that need to have wildflowers restored	Walk the site looking for slopes, rocky areas, or poorly developed soils, areas that don't have deep fine textured soils, or areas that don't have good grass cover												
	Analyze site characteristics and select species to match site.	Use wildflower list to select restoration spp.												
	Mechanically prepare seedbed	Chisel, disc, harrow, or hand prepare seedbed												
	Chemically control annual, biennial, & perennial broadleaf and grass weeds	Spray noxious weeds with herbicide*					One Applic.					One Applic.		
	Gather and purchase enough seed to restore chosen areas	Hand collect native wildflower seed from local sources & dry							Every Month					
	Gather and purchase enough seed to restore chosen areas	Purchase seed from Western Native Seed												
	Prepare seed to be planted	Scarify and soak seed just prior to planting												
	Sow wildflower seed before the ground freezes	Broadcast or lightly drill seed												
	Ensure germination, establishment, and plant vigor if resources are available	Water ¼ inch three times each day for 4 weeks, then ½ inch once a week through mid September				¼" 3 times per day	¼" 3 times per day	¼" 3 times per day	½" once per week	½" once per week	½" once per week			
	Reduce compaction and damage to new seedlings	Restrict access to the area												
	Reduce compaction and damage to new seedlings	Restrict access to the area at the beginning of the next year												
	Reduce weed competition	Spot spray, mow, or hand pull weeds				One Applic.	If needed					One Applic.	If needed	

*If both grass weeds and broadleaf weeds are present in the spring, use either glyphosate (e.g. Roundup), or a combination of glyphosate and imazapic (e.g. Plateau), or a new product called Journey. Use a broadleaf herbicide (e.g. 2,4-D, Curtail) in the spring if only broadleaf weeds are present. In the fall use only glyphosate because you can plant soon after spraying, there is no residual activity like with imazapic. Follow label closely. See Wildflower Restoration Specifications and Prescriptions for HPEC for more details.

g. Seeding Depth

- The depth that wildflower seed is planted is critical to its success. Most wildflower seed should be surface sowed, or very lightly raked in not more than 1/8". Generally, a seed should not be planted deeper than the diameter of the seed. For example, a 1/16" diameter seed should be sown to a 1/16" depth. Seeds sown in sand can be planted at two times that depth, unless otherwise specified by the seed supplier or restoration ecologist. If sown in the fall or early spring, most wildflower seed can be sown on the surface and allow precipitation and freeze/thaw action to incorporate the seed into the soil and to achieve good seed to soil contact.

h. Seed Application

- Wildflower seed is generally small and should be broadcasted either by hand, with an adjustable hand-held broadcast seeder, a drop seeder/spreader, or a rotary seeder/spreader. Seed can also be very lightly drilled to 1/8" or less in sandier or courser soils. Steep areas can also be broadcast seeded and hydromulched at a rate of 1500 to 2300 pounds per acre. If seeding with grasses, wildflowers should always be seeded last, as grasses are seeded deeper than forbs.
- Mix seed with Perillite in a ratio of one part seed to five parts Perillite. Perillite gives the small wildflower seeds more bulk, which acts to spread the seed across the site and, because it is white and stands out against the darker soils, it helps the person seeding to cover all areas with the desired species and at the desired rates. If more even coverage is required, the quantity of seed can be split in half. One half can be seeded in a north-south direction and the remaining half will be seeded perpendicular to the first in an east-west direction. On a smooth seedbed, larger seeded species can be incorporated into the soil by lightly raking it or with a chain harrow. Seed can also be seeded into a roughed seedbed just prior to a fall or spring snowstorm which aids in incorporating the seed into the seedbed. Sowing too deeply can prevent germination or hinder the growth of young seedlings, especially in heavy clayey soils.
- Apply a light weed-free hay or straw mulch at a rate of 2000 to 3000 pounds per acre, covering from 30% to 50% of the ground surface. This helps hold moisture, prevent soil crusting, reduce wind erosion, and absorb excess free nitrogen, which aids in reducing weed competition. This step may be skipped especially if supplemental irrigation is going to be provided.
- Good soil to seed contact is essential for germination to occur. A firm seedbed is also important for good soil to seed contact, and to ensure small seeds don't get buried too deeply. As a general rule of thumb, a foot should not sink more than 1/4" into the soil when walking across the prepared seedbed.

i. Watering

- To increase the success of germination and establishment of wildflower stands, if possible, water the area to keep the seedbed moist for a period of three to six weeks. Once seedlings reach the three-leaf

stage, irrigation frequency can be gradually reduced, but should be longer in duration.

j. Management of Wildflower Stands

- Management of wildflowers includes selectively spraying weeds, mowing, and possibly burning or grazing the stand. Spot spraying broadleaf weeds and spraying early season weeds with a non-residual broadleaf herbicide prior to green up of flowers has proven successful. Undesirable annual and perennial grasses can be controlled with grass specific herbicides such as Poast (Vantage), Fusilade, Ornamec, or Select. These post-emergent herbicides can be applied over wildflowers because they do not affect broadleaf plants. They are best applied on new growth and young plants. Do not use if desirable grasses are present or have been seeded. Also, mowing 2-4 times per year in problem areas can help to reduce the canopy of weeds that shade the slower growing wildflower seedlings below. The number of mowing cycles depends on the weed cover, yearly precipitation, and to a lesser extent, soil type. Once weeds are under control, mowing or burning can be done on a 3-7 year cycle, depending on the extent of cover, growing conditions, plant community health, and seasonal weather conditions. Generally, burning should take place on non-drought years, after plants have reached maturity and may be declining, and where cover is high. Moist plant communities can be burned more frequently (3-5 years), whereas drier communities should be burned less frequently (5-7+ years). Grazing can be used as well but requires more time and may not be appropriate for certain areas or at certain times in the open space.
- Mowing can also be used as an end of the growing season treatment to disperse wildflower seeds. At least two weeks after all of the flowers have faded, and when most of the seeds appear to be mature, the wildflower stand can be mowed if desired. Seeds are mature when they are hard and usually dark in color, often brown, reddish, or black. If the seeds are inspected at various times in the post flower process, one can determine the stages of seed development and recognize which color and hardness indicates a mature seed for a particular species. Once this is determined, the stand can be mowed at a height of 4" to 6" off the ground, high enough not to damage the wildflowers. The process of mowing aids in seed dispersal and reduces the competition of some weeds and some grasses. Additionally, it allows more sunlight to reach the ground, which is often necessary for additional wildflower germination and seedling growth. Mowing also aids in the survival of low-growing wildflowers.

Summary and Conclusion

Well-planned ecological restoration must consider the composition, structure, and function of native ecosystems to create healthy and sustainable landscapes. Wildflowers are essential components of these landscapes and must be considered as a part of each restoration project. Wildflowers enhance diversity, structural complexity, food and shelter for wildlife, beauty, color, fragrance, texture, form, seasonal interest, and educational opportunities. To fulfill the goals of

natural resource conservation and education at North Park, the restoration of wetland, riparian, and prairie communities should include the use of a diverse array of site appropriate, native wildflowers.

4.6. After Care

4.6.1 Weed Management After Seeding and Initial Restoration Activities

- a. For the first two to three years after seeding, the main practice for weed control should be mowing or weed whacking to prevent weed seeds from being produced. Careful spot spraying is also acceptable if over spray reaching the soil surface can generally be limited or avoided. Many herbicides affect seedling grasses and non-target plants and may reduce or inhibit germination of plants. Other herbicides, like Plateau, are selective in their affect on seedlings, young grasses and wildflowers and can be used to help establish many warm season grasses and wildflowers while killing weeds and inhibiting their germination. Always read and follow label directions.
- b. The selectivity of herbicides on target and non-target plants, and seed in the soil seed bank is affected by the type of herbicide and its mode of action, the application rate, the timing of the application, the life stage of the plants, soil moisture conditions, temperature, the surfactant used and rate, and other factors. Pesticide applicators should be well versed in the affects of the herbicide being used and in the environmental conditions in which the herbicide is being used. If in doubt in newly seeded areas, use mechanical controls or cultural practices to the fullest extent possible where practical. Biological controls may also be an option, but generally take a longer time period which may not be acceptable at this stage of the restoration process.
- c. After the initial establishment period, if chemical weed controls are needed in the pond bottoms of wet to wet mesic detention areas, herbicides and surfactants with aquatic labels should be selected. Aquatic approved herbicides often used in wetland areas such as detention ponds include Aquatic 2, 4-D amine, Renovate 3, Rodeo, Habitat, or Garlon 3A, depending on the weeds being targeted.
- d. Even though the herbicides are approved for aquatic use, if possible, most spraying applications should occur during periods of dry weather and dryer conditions to reduce the amount of herbicide that gets into the water itself.
- e. Slide slopes, generally above the high water line, can be sprayed with non-aquatic approved herbicides as per the herbicide label.
- f. Careful attention should be paid to the herbicide being used in high water table areas. Herbicides with the active ingredient of dicamba, often under the trade name of Banvel, or picloram, often under the trade name of Tordon, should not be used in high water table areas or under trees, due to their mobility in the soil.
- g. Cattails will generally come in to all of the created detention ponds through natural dispersal and

establishment. They should be eradicated or suppressed in detention ponds for the first three to five growing seasons to allow less aggressive native plants to get established. Cattails, although they are a native plant, are often so competitive that they become a monoculture if not managed.

- h. Cattail management includes using soils that are free of cattail tubers during construction, hand pulling small plants, wick applications with gloves, spot spraying with backpacks using an aquatic approved glyphosate product like Rodeo. Mid-summer applications work well due to the large leaf surface area to which to apply the herbicide. Hand pulling works well in the spring and in early years of the pond establishment before the cattails have developed an extensive root system.
- i. Reed Canarygrass is another aggressive non-native wetland grass that may go unnoticed, but which should be controlled to achieve a diverse, healthy, and functional detention pond.
- j. Woody plants that spread via rhizomes should be discouraged from establishing in front of and immediately adjacent to inlet and outlet structures. These plants can be controlled using cut stump treatments with a high concentration (generally 25 to 50% active ingredient) of Garlon, Rodeo, or Roundup. Read and follow the label directions.

4.6.2 Stormwater Management

- a. Erosion problems should be quickly fixed using appropriate bioengineering technologies.
- b. Sediment traps should be cleaned out after large storm events, or as the need dictates.

4.7 Monitoring and Assessment

- 4.7.1 Set up photo points, plots, and transects at stratified random locations to determine the frequency and percent cover of desirable plants, weeds, bare ground, leaf litter, and rock. Take photos in four directions, N, E, S, W, or NE, SE, SW, NW, at least twice per year from the photo point.
- 4.7.2 Assess the site at least twice a year to determine the level of success in hydrologic function, aesthetics, screening and buffering, and other site goals and objectives (See landscape functions in Appendix D on Page 104).
- 4.7.3 Assessments should be done during storm events and just after the water has dissipated to determine how the ponds have functioned. Look for erosion and sedimentation sites, determine if inlets and outlets functioned properly, assess how plant materials responded to the event. Determine if the outlet structures' water quality plates need to be cleaned.
- 4.7.4 Assess the success of the establishment of the desired future plant community over a three to five year period. Determine if desired target plants are getting established or just beginning to establish. Where weeds are under control, undesirable bare soil areas could be re-seeded or planted with the rarest appropriate plants suitable to the location. If a fairly healthy native plant community is establishing, be patient to allow wildflowers an opportunity to come in.

- 4.7.5 Use adaptive management to make mid-course corrections to the composition, structure, and functional aspects to the detention ponds. Record these for use in future designs.
- 4.7.6 After 5-7 years, bare areas that are not freshly deposited soil from an erosion and/or sedimentation event, which are greater than 6-9 square feet and need an enhancement of conservative species, should be planted or seeded with rare wildflowers or other missing, under-represented, desirable plants to meet habitat goals. If species have equal coefficients of conservation (See Tables of Wildflower Species in Appendix A, Charts 1A and 1B on Pages 91 through 93), choose showier species near human use areas or species that are known to attract more butterflies, birds, or desirable pollinators in more remote locations.
- 4.7.7 Choose well-rooted, disease-free and weed-free plant materials grown in a reputable nursery.
- 4.7.8 Use adaptive management to continue to tweak the detention pond ecosystems to achieve the habitat goals and objectives.

NATURAL AREA APPENDIX

NAT Appendix A- Plant Materials for Use in Detention Ponds, Drainages and Other Natural Areas

Wild Flower Species List for Detention Ponds, Drainages and Other Natural Areas

The following tables of plant materials represent plants appropriate for land restoration and should also be used in natural areas and detention ponds within North Park. The list depicts appropriate species based on a variety of characteristics that should be considered in preparing planting plans for native areas and detention ponds.

Wild Flower Characteristics Chart 1A

Wildflower List		Life Form	Flower Color	Blooming Season*	Height (inches)	Sun/Shade Tolerance			Soil Type				Soil Moisture			Attracts Butterflies	Attracts Birds	Conservation Coefficient*				
Scientific Name	Common Name					Shade	Partial	Sun	Clay	Loam	Sandy	Gravel	Hydric	Mesic	Xeric							
Upland Species																						
<i>Abronia fragrans</i>	Snowball Sand Verbena	p	white	6-7	4-24			xx						x	xx	xx					5	
<i>Achillea lanulosa</i>	Native Yarrow	p	white	6-8	6-30			xx						x	xx	xx	x				3	
<i>Agoseris glauca</i>	False Dandelion	p	yellow	6-8	6-12			xx						xx	xx	xx					6	
<i>Allium textile</i>	Sand Onion	p	white & red	4-6	8-12		x	xx	xx	xx	xx	x		x	xx	xx					6	
<i>Argemone polyanthemos</i>	Prickly Poppy	p	white	6-7	18-30			xx						x	xx	xx					3	
<i>Artemisia frigida</i>	Fringed Sage	p	green	7-9	6-18		xx	xx	xx	xx	xx	xx		x	xx	xx					3	
<i>Artemisia ludoviciana</i>	Prairie Sage	p	green	7-9	12-30			xx						x	xx	xx					3	
<i>Asclepias speciosa</i>	Showy Milkweed	p	pink	6-7	24-54		x	xx	xx	xx	xx	x		x	xx	x			x		2	
<i>Asclepias pumila</i>	Low Milkweed	p	white	7-10	6-8		x	xx	x	x	x			x	x			x			6	
<i>Aster ericoides</i>	Many-flowered Aster	p	white	8-10	18-24		x	xx	x	x	xx	xx	xx		x	xx	xx				4	
<i>Aster falcatus</i>	Rough White Aster	p	white	8-10	24-48		x	xx	x	x	x	?	?		x	xx	x				6	
<i>Aster hesperius</i>	Western Aster; Violet Aster	p	pink	7-10	36-60		x	xx	xx	xx	xx	x		xx	xx						6	
<i>Aster porteri</i>	Porter's Aster	p	white	7-10	18-24		x	xx	x	x	x	xx	x		xx	xx	x				7	
<i>Astragalus adsurgens</i>	Prairie Milkvetch	p	pink	5-7	6-12			xx							xx	xx					6	
<i>Astragalus agrestis</i>	Field Milkvetch	p	purple	5-8	8-12		xx	xx	x	x	x			xx	xx	x					6	
<i>Astragalus ceramicus</i>	Painted Milkvetch	p	white & purple	5-6	6-12		x	xx				x	x	xx	xx						7	
<i>Astragalus crassicaarpus</i>	Ground Plum	p	pink & white	5-6	1-3			xx							x	xx					7	
<i>Astragalus drummondii</i>	Drummond's Milkvetch	p	white	5-7	12-24		x	xx	x	x	x			x	xx	xx					6	
<i>Astragalus gracilis</i>	Slender Milkvetch	p	pink	5-7	6-28		x	xx	x	x	x			x	xx	xx					5	
<i>Astragalus missouriensis</i>	Missouri Milkvetch	p	purple	5-6	1-6			xx							x	xx	xx				7	
<i>Astragalus mollissimus</i>	Woolly Milkvetch	p	purple	5-6	4-16			xx							x	xx	xx				6	
<i>Astragalus pectinatus</i>	Narrowleaf Milkvetch	p	white	5-6	4-24			xx							x	xx	xx				6	
<i>Astragalus shortianus</i>	Early Purple Milkvetch	p	purple	4-6	3-6			xx							x	xx	xx				6	
<i>Bahia dissecta</i>	Ragleaf Bahia	a	yellow	7-9	12-24			xx	xx	xx	x	x			xx	xx	x				5	
<i>Brickellia eupatorioides</i>	False Boneset	p	white	8-10	12-36			xx						x	xx	x					4	
<i>Callirhoe involucrata</i>	Poppy Mallow; Winecups	p	purple	5-10	2-6			xx	x	x	x				x	xx	xx				9	
<i>Calylophus serrulata</i>	Calylophus	p	yellow	5-9	8-12			xx							x	xx	xx				8	
<i>Calystegia sepium angulata</i>	Hedge Morning Glory	p	white	6-9	10 ft		x	x	x	x	x			x	xx	x					8	
<i>Casilleja integra</i>	Orange Paintbrush	p	orange	6-9	6-12		x	xx	xx	xx	xx	x			x	xx	x				7	
<i>Cleome serrulata</i>	Rocky Mtn. Beeplant	a	pink	6-8	24-36		x	xx	x	xx	xx	x			xx	xx	x				3	
<i>Coreopsis tinctoria</i>	Plains Coreopsis	a	yellow w/red	6-8	18-36		x	xx	xx	xx	x			x	xx	xx					5	
<i>Dalea candida</i>	White Prairie Clover	p	white	6-7	10-24		x	x	xx	xx	xx				x	xx	x				7	
<i>Dalea jamesii</i>	James Prairie Clover	p	yellow & pur	5-6	1-3			x							x	x	x				8	
<i>Dalea purpurea</i>	Purple Prairie Clover	p	purple	6-8	18-30		x	xx	xx	xx	xx	x			x	xx	x				7	
<i>Delphinium virescens</i>	Plains Larkspur	p	white	4-7	24-48			xx	xx	xx	xx	x			x	xx	xx				6	
<i>Echinacea angustifolia</i>	Narrow-leaved Coneflower	p	purple	7-8	14-36			xx	x	xx	xx	xx			xx	xx	xx	xx	x		9	
<i>Eriogonum effusum</i>	Prairie Baby's Breath	p	green	7-9	1014			xx							x	xx	xx				5	
<i>Eriogonum umbellatum</i>	Sulfur Flower	p	yellow	7-8	6-18			xx	x	x	xx				x	xx	xx				5	
<i>Erysimum asperum</i>	Western Wallflower	b	yellow	4-6	12-30		x	xx	x	xx	xx	xx	x		xx	xx	x				6	
<i>Eustoma grandiflora</i>	Tulip Gentian	a/b	blue	6-8	10-18			xx						xx	xx						10	
<i>Gaillardia aristata</i>	Blanket Flower	p	yellow w/red	7-8	12-24		xx	xx	xx	xx	xx	xx	x		xx	xx	x				4	
<i>Gaura coccinea</i>	Scarlet Gaura	p	red & white	5-8	8-18			xx	x	xx	xx	xx	x		xx	xx	x				5	
<i>Gilia pinnatifida</i>	Pinnateleaf Gilia	b	bluish white	6-9	4-20			xx							x	xx	xx				4	
<i>Haplopappus spinulosus</i>	Cutleaf Ironweed	p	yellow	5-9	6-20		x	xx	x	x	x	xx	xx		x	xx	xx				6	
<i>Helianthus petiolaris</i>	Plains Sunflower	a	yellow	6-10	18-36			xx							x	xx	xx				3	
<i>Helianthus pumilus</i>	Little Sunflower; Low Sunfl.	p	yellow	6-7	18-32			xx	x	xx	xx	x			x	xx	xx				4	
<i>Heterotheca villosa</i>	Golden Aster	p	yellow	6-9	6-12			xx	x	x	x										2	
<i>Hymenopappus filifolius</i>	Threadleaf Plainsman	p	yellow	6	12-18			xx	x	x	x				x	xx	xx				6	
<i>Hymenoxys acaulis</i>	Perky Sue; Goldflower	p	yellow	5-7	8-20			xx							x	xx	xx				7	
<i>Ipomoea leptophylla</i>	Bush Morning Glory	p	purple	5-7	18-36			xx							x	xx	xx				7	
<i>Lathyrus eucosomus</i>	Purple Peavine	p	purple	5-7	12-20		x	xx	x	x	x			?	x	x	?				6	
<i>Lesquerella ludoviciana</i>	Bladderpod	p	yellow	5-7	6-12			xx													6	
<i>Liatris punctata</i>	Dotted Gayfeather	p	purple	8-10	12-24			xx	x	xx	xx	x			x	xx	x				6	
<i>Linnium lewesii</i>	Native Blue Flax	p	blue	5-7	12-30			xx	x	xx	xx				xx	xx	x				5	
<i>Lithospermum incisum</i>	Narrowleaf Puccoon	p	yellow	4-6	8-20		x	x	xx	xx	xx	x			x	xx	xx				6	
<i>Lomatium orientale</i>	Salt-and-Pepper	p	white	3-6	2-12			xx							x	xx	xx				5	

Wild Flower Characteristics Chart 1A cont.

Wildflower List		Life Form	Flower Color	Blooming Season	Height (inches)	Sun/Shade Tolerance			Soil Type						Soil Moisture			Attracts Butterflies	Attracts Birds	Conservation Coefficient*					
Scientific Name	Common Name					Shade	Partial	Sun	Clay	Loam	Loam	Sandy Loam	Sand	Gravel	Hydric	Mesic	Xeric								
Upland Species																									
<i>Lupecosinum montanum</i>	Sand Lily	p	white	4-6	6-8		x	xx		x	x	x									5				
<i>Lupinus argenteus</i>	Silvery Lupine	p	Blue	6-8	12-30		x	xx					xx	xx	xx						5				
<i>Lupinus pusillus</i>	Annual Lupine	a	Blue & white	7-8	4-8			xx					x	xx	xx						7				
<i>Machaeranthera bigelovii</i>	Bigelow's Aster	b/p	purple	8-9	12-24			xx					x	xx	xx						3				
<i>Machaeranthera tancetifolia</i>	Tansy Aster	a/b	purple	5-8	8-15			xx	xx	xx			x	xx	x						3				
<i>Maianthemum amplexicaule</i>	False Solomon's Seal	p	white	4-7	12-24	xx	x					xx	xx								5				
<i>Mertensia lanceolata</i>	Lanceleaf Chimingbells	p	blue	5-6	8-15			x	xx	xx			xx	xx	x						7				
<i>Mentzelia nuda</i>	Plains Evening Star	b/p	white	6-9	24-36			xx					x	xx	xx						5				
<i>Monarda fistulosa</i>	Horsemint	p	purple	6-8	18-36		x	xx				xx	xx	x							6				
<i>Musineon divaricatum</i>	Musineon	p	yellow	4-5	3-8			xx					x	xx	xx	x					6				
<i>Nuttallia sinuata</i>	Yellow Evening Star	b	yellow	7-10	12-24			xx					xx	xx	x					Colorado	S2	Imperilled			
<i>Oenothera albicaulis</i>	White Prairie E. Primrose	a	white	5-6	12-18			xx					x	xx	xx						6				
<i>Oenothera brachycarpa</i>	Y. Stemless E. Primrose	p	yellow	5-7	8-16			xx					x	xx	xx					Present in CO ?					
<i>Oenothera caspitosa</i>	W. Stemless E. Primrose	p	white	5-8	4-6			xx					x	xx	xx						6				
<i>Oenothera coronopifolia</i>	Cutleaf Evening Primrose	p/b	white	5-7	4-10			xx					x	xx	xx						5				
<i>Oenothera latifolia</i>	Plains Evening Primrose	p	white	4-8	4-18			xx					x	xx	xx										
<i>Oligoneuron rigidum</i>	Rigid Goldenrod	p	yellow	8-10	24-36		x	xx					xx	xx	x						7				
<i>Oxytropis lambertii</i>	Lambert's Loco	p	purple	4-6	6-18		x	x					x	xx	xx						7				
<i>Oxytropis sericea</i>	Silky Loco, Rocky Mtn. L.	p	white	4-6	6-18			xx					x	xx	xx						6				
<i>Penstemon albidus</i>	White Penstemon	p	white	5-7	12-16			xx					x	xx	xx						8				
<i>Penstemon angustifolius</i>	Narrow-leaved Penstemon	p	blue	5-6	12-24			xx					x	xx	xx						6				
<i>Penstemon secundifloris</i>	Side Bells Penstemon	p	pink	5-7	8-24			?	x				xx	xx	x						7				
<i>Penstemon virgatus</i>	Tall One-sided Penstemon	p	blue	6-7	18-36			x	x				xx	xx	x						6				
<i>Phacelia heterophylla</i>	Scorpion Weed	b?	white	5-7	12-24			xx					x	xx	xx						5				
<i>Polansia dodecandra</i>	Clammy Weed	a	white	8-9	8-24			xx					x	xx	xx						4				
<i>Psoralea esculenta</i>	Prairie Turnip	p	purple & yell.	5-7	6-12			xx					x	xx	xx						7				
<i>Psoralea lanceolata</i>	Lanceleaf Scurf Pea	p	purple & wh.	5-7	12-24			xx					x	xx	xx						7				
<i>Psoralea teniflora</i>	Scurf Pea	p	blue	5-7	12-24			x	x	?			xx	xx	xx						6				
<i>Ratibida columnifera</i>	Prairie Coneflower	p	yellow	7-10	18-36			xx					xx	xx	x						4				
<i>Scutellaria brittonii</i>	Skullcap	p	blue	5-6	4-8			xx					x	xx	xx										
<i>Silphium laciniatum</i>	Native Compass Plant	p	yellow	7-9	60-100		xx	xx					x	xx	x						9				
<i>Solidago altissima</i>	Tall/Canada Goldenrod	p	yellow	7-9	24-48		x	xx					xx	xx	x						4				
<i>Solidago missouriensis</i>	Smooth Goldenrod	p	yellow	7-9	12-24		x	xx					x	xx	xx	x					6				
<i>Solidago mollis</i>	Soft Goldenrod	p	yellow	7-9	12-18			xx					x	xx	x						6				
<i>Sophora sericea</i>	Silky sophora	p	white	4-6	4-16			xx					x	xx	xx						6				
<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	p	orange	4-8	4-18			xx					x	xx	xx						4				
<i>Stanleya pinnata</i>	Golden Prince's Plume	p	yellow	5-6	24-36			xx					x	xx	xx						7				
<i>Thelesperma filifolium</i>	Green Threadleaf	a/b	yellow	6-9	10-18			xx					x	xx	xx						6				
<i>Thelesperma megapotamicum</i>	Colorado Greenthread	p	yellow	5-7, 8-10	12-36			xx					x	xx	xx						6				
<i>Thermopsis divaricarpa</i>	Golden Banner	p	yellow	5-7	12-24	x	xx	x					xx	xx	x						4				
<i>Thermopsis rhombifolia</i>	Arroyo Golden Banner	p	yellow	5-6	6-16			x	xx	xx				x	x	x									
<i>Townsendia grandiflora</i>	Easter Daisy	p	white	3-7	2-8			xx					x	xx	xx						6				
<i>Tradescantia occidentalis</i>	Spiderwort	b	blue	5-8	10-24			xx					x	xx	xx						5				
<i>Valeriana edulis</i>	Edible Valerain	b	white	6-7	36-60			xx					xx	xx	x						6				
<i>Vicia americana</i>	American Vetch	p	blue	6-7	6-16		x	xx					x	xx	xx	x					5				
Copyright, Ark Ecological Services, Raymond H. Sperger, 303-985-4849																									
Wildflower List																									
Scientific Name	Common Name	Life Form	Flower Color	Blooming Season	Height (inches)	Sun/Shade Tolerance			Soil Type						Soil Moisture			Attracts Butterflies	Attracts Birds	Conservation Coefficient*					
Wetland Species																									
<i>Agalinis tenuifolia var. pariflora</i>	Slenderleaf False Foxglove	p	purple	7-9	8-18			x	xx					x	xx							8	Wyoming	S1	Critically Imperilled
<i>Anemone canadensis</i>	Canada Anemone	p	white	5-7	8-24			xx	xx					xx	xx							7	Wyoming	S2	Imperilled
<i>Asclepias incarnata spp. incarnata</i>	Swamp Milkweed	p	white/pink	7-8	36-72			xx	xx	xx				xx	xx							6	Arizona	S1	Critically Imperilled
<i>Bidens cernua</i>	Nodding Bur Marigold	a	yellow	7-9	24-38			x	xx				xx	xx	x							3			
<i>Bidens frondosa</i>	Common Begger's Ticks	a	yellow	7-9	36-48			x	xx				x	xx	x							3			
<i>Eupatorium maculatum var. bruneri</i>	Spotted Joe Pye Weed	p	light purple	7-9	36-72			xx	xx				x	x								7	Wyoming	S2	Imperilled
<i>Helianthus nuttallii var. nuttallii</i>	Marsh Sunflower	p	yellow	7-8	36-84			xx	xx	xx				x	xx	x						6			
<i>Iris missouriensis</i>	Rocky Mountain Iris	p	blue	5-6	10-118			x	xx				x	xx	x							5			
<i>Lobelia siphilitica</i>	Great Blue Lobelia	p	blue	8-10	12-36			xx	xx	xx				x	xx							8	Wyoming	S1	Critically Imperilled
<i>Lythrum alatum var alatum</i>	Winged Lythrum	p	purple	6-9	12-42			xx	xx				xx	x								8	Wyoming	S1	Critically Imperilled
<i>Mentha arvensis</i>	Field Mint	p	blue	5-6	10-24			xx	xx				xx	x								4			
<i>Sagittaria latifolia var. latifolia</i>	Broadleaf Arrowhead	p	white	7-9	12-24			x	xx	xx			xx	x								7	Wyoming	S1	Critically Imperilled
<i>Verbena hastata var. scabra</i>	Blue Vervain	p	blue	7-8	18-30			x	xx				x	xx								5			
Key																									
p - perennial		x - somewhat adapted																							
b - biennial		xx - highly adapted																							
a - annual		* numbers represent blooming season months																							
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Chart 1B

Wildflower List														Conservation Coefficient*			
Scientific Name	Common Name	Local Abundance	Regional Abundance	NRCS Ecological Site Description							Wet Meadow	Conservation Coefficient*					
				Clayey Plains	Alkaline Plains	Loamy Plains	Sandy Plains	Overflow Sites	Floodplain Forest								
Upland Species																	
<i>Abronia fragrans</i>	Snowball Sand Verbena	UNK	U											5			
<i>Achillea lanulosa</i>	Native Yarrow	UNK	U											3			
<i>Agoseris glauca</i>	False Dandelion	UNK	O											6			
<i>Allium textile</i>	Sand Onion	UNK	U			x								6			
<i>Argemone polyanthemus</i>	Prickly Poppy	UNK	C							x				3			
<i>Artemisia frigida</i>	Fringed Sage	U	A	x		x				x				3			
<i>Artemisia ludoviciana</i>	Prairie Sage	UNK	A					x	x					3			
<i>Asclepias speciosa</i>	Showy Milkweed	U	C							x				2			
<i>Asclepias pumila</i>	Low Milkweed	UNK	U											6			
<i>Aster ericoides</i>	Many-flowered Aster	UNK	C								x			4			
<i>Aster falcatus</i>	Rough White Aster	UNK	C											6			
<i>Aster hesperius</i>	Western Aster; Violet Aster	UNK	O											6			
<i>Aster porteri</i>	Porter's Aster	UNK	U											7			
<i>Astragalus adsurgens</i>	Prairie Milkvetch	UNK	U											6			
<i>Astragalus agrestis</i>	Field Milkvetch	UNK	O											6			
<i>Astragalus ceramicus</i>	Painted Milkvetch	UNK	O											7			
<i>Astragalus crassicaulis</i>	Ground Plum	UNK	U											7			
<i>Astragalus drummondii</i>	Drummond's Milkvetch	UNK	C											6			
<i>Astragalus gracilis</i>	Slender Milkvetch	UNK	O											5			
<i>Astragalus missouriensis</i>	Missouri Milkvetch	UNK	O					x						7			
<i>Astragalus mollissimus</i>	Woolly Milkvetch	UNK	C	x		x	x							6			
<i>Astragalus pectinatus</i>	Narrowleaf Milkvetch	UNK	O											6			
<i>Astragalus shortianus</i>	Early Purple Milkvetch	UNK	O											6			
<i>Bahia dissecta</i>	Ragleaf Bahia	UNK	U	x		x								5			
<i>Brickellia eupatorioides</i>	False Boneset	UNK	U					x			x			4			
<i>Callirhoe involucrata</i>	Poppy Mallow; Winecups	UNK	R											9			
<i>Calyophus serrulata</i>	Calyophus	UNK	O											8			
<i>Calystegia sepium angulata</i>	Hedge Morning Glory	UNK	UNK											8			
<i>Casilleja integra</i>	Orange Paintbrush	UNK	U											7			
<i>Cleome serrulata</i>	Rocky Mtn. Beeplant	UNK	C							x				3			
<i>Coreopsis tinctoria</i>	Plains Coreopsis	UNK	O											5			
<i>Dalea candida</i>	White Prairie Clover	UNK	O											7			
<i>Dalea jamesii</i>	James Prairie Clover	UNK	R											8			
<i>Dalea purpurea</i>	Purple Prairie Clover	UNK	O	x	x	x	x							7			
<i>Delphinium virescens</i>	Plains Larkspur	UNK	R					x						6			
<i>Echinacea angustifolia</i>	Narrow-leaved Coneflower	UNK	R											9			
<i>Eriogonum effusum</i>	Prairie Baby's Breath	UNK	C											5			
<i>Eriogonum umbellatum</i>	Sulfur Flower	UNK	U											5			
<i>Erysimum asperum</i>	Western Wallflower	UNK	U											6	Wyoming	S3	Vulnerable
<i>Eustoma grandiflora</i>	Tulip Gentian	UNK	R											10	Wyoming	S3	Vulnerable
<i>Gaillardia aristata</i>	Blanket Flower	UNK	U											4			
<i>Gaura coccinea</i>	Scarlet Gaura	UNK	C			x								5			
<i>Gilia pinnatifida</i>	Pinnateleaf Gilia	UNK	C											4			
<i>Haplopappus spinulosus</i>	Cutleaf Ironweed	O	O			x				x				6			
<i>Helianthus petiolaris</i>	Plains Sunflower	UNK	C	x							x			3			
<i>Helianthus pumilus</i>	Low Sunflower	UNK	U											4			
<i>Heterotheca villosa</i>	Golden Aster	O	A	x		x								2			
<i>Hymenopappus filifolius</i>	Threadleaf Plainsman	UNK	O											6			
<i>Hymenoxys acaulis</i>	Perky Sue; Goldflower	UNK	R											7			
<i>Ipomoea leptophylla</i>	Bush Morning Glory	UNK	O											7	Wyoming	S2	Imperiled
<i>Lathyrus eucosomus</i>	Purple Peavine	UNK	O											6			
<i>Lesquerella ludoviciana</i>	Bladderpod	UNK	O											6			
<i>Liatis punctata</i>	Dotted Gayfeather	UNK	U	x	x	x	x							6			
<i>Linnium lewesii</i>	Native Blue Flax	UNK	U											5			
<i>Lithospermum incisum</i>	Narrowleaf Puccoon	UNK	O											6			
<i>Lomatium orientale</i>	Salt-and-Pepper	UNK	U											5			

Chart 1B cont.

Wildflower List														Conservation Coefficient*			
Scientific Name	Common Name	Local Abundance	Regional Abundance	NRCS Ecological Site Description							Wet Meadow	Conservation Coefficient*					
				Clayey Plains	Alkaline Plains	Loamy Plains	Sandy Plains	Overflow Sites	Floodplain Forest								
Upland Species																	
<i>Lupecosinum montanum</i>	Sand Lily	UNK	U											5			
<i>Lupinus argenteus</i>	Silvery Lupine	UNK	U											5			
<i>Lupinus pusillus</i>	Annual Lupine	UNK	O											7			
<i>Machaeranthera bigelovii</i>	Bigelow's Aster	UNK	C											3			
<i>Machaeranthera tancetifolia</i>	Tansy Aster	UNK	C											3			
<i>Maianthemum amplexicaule</i>	False Solomon's Seal	UNK	U											5			
<i>Mertensia lanceolata</i>	Lanceleaf Chimningbells	UNK	O											7			
<i>Mentzelia nuda</i>	Plains Evening Star	UNK	C											5			
<i>Monarda fistulosa</i>	Horsemint	UNK	C											6			
<i>Musineon divaricatum</i>	Musineon	UNK	U											6			
<i>Nuttallia sinuata</i>	Yellow Evening Star	UNK	R											7			
<i>Oenothera albicaulis</i>	White Prairie E. Primrose	UNK	U											6			
<i>Oenothera brachycarpa</i>	Y. Stemless E. Primrose	UNK	U											7	Colorado	S2	Imperiled
<i>Oenothera caespitosa</i>	W. Stemless E. Primrose	UNK	U											6			
<i>Oenothera coronopifolia</i>	Cutleaf Evening Primrose	UNK	C			x								5	Present in CO ?		
<i>Oenothera latifolia</i>	Plains Evening Primrose	UNK	?							x				7			
<i>Oigoneuron rigidum</i>	Rigid Goldenrod	UNK	O											7			
<i>Oxytropis lambertii</i>	Lambert's Loco	UNK	U											7			
<i>Oxytropis sericea</i>	Silky Loco, Rocky Mtn. L.	UNK	U	x		x								6			
<i>Penstemon albidus</i>	White Penstemon	UNK	R											8			
<i>Penstemon angustifolius</i>	Narrow-leaved Penstemon	UNK	O			x								6			
<i>Penstemon secundiflorus</i>	Side Bells Penstemon	UNK	O											7			
<i>Penstemon virgatus</i>	Tall One-sided Penstemon	UNK	U											6			
<i>Phacelia hetrophylla</i>	Scorpion Weed	UNK	C											5			
<i>Polansia dodecandra</i>	Clammy Weed	UNK	C											4			
<i>Psoralea esculenta</i>	Prairie Turnip	UNK	O											7			
<i>Psoralea lanceolata</i>	Lanceleaf Scurf Pea	UNK	O											7			
<i>Psoralea teniflora</i>	Scurf Pea	UNK	C	x		x	x	x	x	x				6			
<i>Ratibida columnifera</i>	Prairie Coneflower	UNK	C		x	x	x	x	x	x				4			
<i>Scutellaria brittonii</i>	Skullcap	UNK	R											8			
<i>Silphium laciniatum</i>	Native Compass Plant	UNK	R											9			
<i>Solidago altissima</i>	Tall/Canada Goldenrod	UNK	C											4			
<i>Solidago missouriensis</i>	Smooth Goldenrod	UNK	U							x				6			
<i>Solidago mollis</i>	Soft Goldenrod	UNK	O											6			
<i>Sophora sericea</i>	Silky sophora	UNK	O	x	x	x								6			
<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	UNK	C	x	x	x				x	x			4			
<i>Stanleya pinnata</i>	Golden Prince's Plume	UNK	R			x								7			
<i>Thelesperma filifolium</i>	Green Threadleaf	UNK	O											6			
<i>Thelesperma megapotamicum</i>	Colorado Greenthread	UNK	O											6			
<i>Thermopsis divaricarpa</i>	Golden Banner	UNK	U											4			
<i>Thermopsis rhombifolia</i>	Arroyo Golden Banner	UNK	?											4			
<i>Townsendia grandiflora</i>	Easter Daisy	UNK	O		</												

Shrub and Tree Species List for Detention Ponds, Drainages, and Other Natural Areas

The following tables of plant materials represent plants appropriate for land restoration and should also be used in natural areas and detention ponds within North Park. The list depicts appropriate species based on a variety of characteristics that should be considered in preparing planting plans for native areas and detention ponds.

Chart 2

Common Name	Scientific Name	Growth Form	Height (feet)	Spread (feet)	Color	Bloom Seas	Water Sched.*	Light	Soil Type					Hardiness Zone	
									Clay	Loam	Loam	Loam	Sand		
									Fine	Moderately Fine	Medium	Moderately Course	Course		
Species for Uplands - North and east facing (Zones PS100, PT, R4, and U1)															
Fourwing Saltbush	<i>Atriplex canescens</i>	Medium Shrub	2-6	3-8	Gray foliage, conspicuous fruits	summer	1	sun to partial sh.	x	xx	xx	xx	xx	3	
Rubber Rabbitbrush	<i>Chrysothamnus nauseosus</i>	Medium Shrub	4-6	4-6	silver green with yellow fl.	late su	1	full sun	xx	xx	xx	xx	xx	3-6	
Three-leaved Sumac	<i>Rhus triobata</i>	Medium Shrub	3-6	4-8	Orange berries	summer	1	full sun	x	xx	xx	xx	xx	3-6	
Native Smooth Sumac	<i>Rhus glabra</i>	Medium Shrub	4-7	6-15	white flowers, red berries & fall foliage	spring	1-2	full sun to partial sh.	xx	xx	xx	x	3-9		
Wood's Rose	<i>Rosa woodsii</i>	Medium Shrub	2-6	3-6	pink fl. & red hips	spring	2	sun to partial sh.	xx	xx	xx		2-6		
White Snowberry^	<i>Symphoricarpos alba</i>	Small Shrub	2-4	4-6	white flowers & berries	spring	2	sun to shade	xx	xx	xx		3-6		
Western Snowberry	<i>Symphoricarpos occidentalis</i>	Small Shrub	2-3	4-8	white flowers & berries	spring	2	sun to shade	xx	xx	xx		3-6		
Netleaf Hackberry^	<i>Celtis reticulata</i>	Small Tree	10-15	8-12	inconspicuous flowers	spring	1	full sun to partial sh.	x	xx	xx	xx	4-6		
Species for Uplands - South and west facing (Zones PS100, PT, R4, and U1)															
Fourwing Saltbush	<i>Atriplex canescens</i>	Medium Shrub	2-6	3-8	Gray foliage, conspicuous fruits	summer	1	sun to partial sh.	x	xx	xx	xx	xx	3	
Rubber Rabbitbrush	<i>Chrysothamnus nauseosus</i>	Medium Shrub	4-6	4-6	silver green with yellow fl.	late su	1	full sun	xx	xx	xx	xx	xx	3-6	
Three-leaved Sumac	<i>Rhus triobata</i>	Medium Shrub	3-6	4-8	Orange berries	summer	1	full sun	x	xx	xx	xx	xx	3-6	
Desert False Indigo	<i>Amorpha canescens</i>	Small Shrub	1-2	1-2	gray foliage, pink flowers	summer	1	full sun	?	x	xx	xx	?	5	
Dwarf Rabbitbrush	<i>Chrysothamnus nauseosus</i>	Small Shrub	1-2	1-2	silver green with yellow fl.	late su	1	full sun	xx	xx	xx	xx	xx	3-6	
Winterfat	<i>Krascheninnikovia lanata</i>	Small Shrub	1-3	1-2	Silvery gray foilage, inconspicuous fl.	spring	1	full sun	xx	xx	xx	x	3-5		
Yucca, Spanish Bayonet	<i>Yucca glauca</i>	Small Shrub	2-3	2-3	White flowers	J-J	1	full sun	x	xx	xx	xx	4-8		
Species for Moist, well-drained area (2.5 - 6 feet above high water line or 1 year storm) (Zones PS5, PS100, R4 & U1)															
Saskatoon Serviceberry^	<i>Amelanchier alnifolia</i>	Large Shrub	8-15	8-10	white fl & red berries	spring	2	sun or shade		x	xx	xx		3-5	
Shiny-leaved Hawthorn^	<i>Crataegus erythropoda</i>	Large Shrub	10-20	8-15	white fl & red berries	spring	2-3	sun to partial sh.	x	xx	xx	xx	x	3-5	
Wild Plum	<i>Prunus americana</i>	Large Shrub	12-15	15-20	white fl. & purple plums	spring	2	sun to partial sh.	x	xx	xx	xx	xx	3-8	
Western Chokecherry	<i>Padus virginiana var. melanocarpa</i>	Large Shrub	15-25	15-20	white fl. & purple berries	spring	2	sun or shade	xx	xx	xx	x	3-5		
Western Sand Cherry	<i>Prunus besseyi</i>	Small Shrub	2-3	2-3	white flowers, purple black berries	spring	2-3	full sun to partial sh.	xx	xx	xx	xx	2-6		
Cottonwood Trees	<i>Populus spp.</i>	Large Tree	50-60	50	reddish flowers, gold leaves in fall	spring	2-3	full sun	x	xx	xx	xx	xx	3-9	
Netleaf Hackberry^	<i>Celtis reticulata</i>	Small Tree	10-15	8-12	inconspicuous flowers	spring	1	full sun to partial sh.	x	xx	xx	xx	4-6		
Species for subirrigated area (1 - 3 feet above high water line) (Zones upper PB4, PS2, Lower PS 5 on north side, upper R1, R2, & possible on R)															
Leadplant; False Indigo	<i>Amorpha fruticosa</i>	Medium Shrub	6-12	4-6 ft	purple flowers	summer	2-3	sun to partial sh.	xx	xx	xx	xx	xx	4-9	
Redosier Dogwood	<i>Cornus sericea</i>	Medium Shrub	6-8	6-8	white flowers & berries	sp to su	3	sun or shade	xx	xx	xx	xx	2-7		
Golden Currant	<i>Ribes aureum</i>	Medium Shrub	4-8	4-6	yellow fl., red fruits., red fall foliage	spring	2	full sun to partial sh.	xx	xx	xx	xx	4-6		
American Black Currant	<i>Ribes americanum</i>	Small Shrub	2-4	2-4	yellow fl., red fruits., red fall foliage	spring	3	full sun to partial sh.	?	xx	xx	xx	?	3-6	
Peachleaf Willow	<i>Salix amygdloides</i>	Medium Tree	20-40	40	reddish flowers, gold leaves in fall	spring	2-3	full sun to partial sh.	x	x	xx	xx	xx	4-6	
Species for Wetland area (0 - 2 feet above high water line) (Zones W1, W2, W3, R1, and lower R2)															
Stapleleaf Willow^	<i>Salix eryocephala var. ligulifolia</i>	Large Shrub	8-15	8-15	yellow catkins, red & yellow twigs	spring	3	full sun to partial sh.	xx	xx	xx	xx	xx	3-5	
Whiplash Willow	<i>Salix lasiandra</i>	Large Shrub	15-25	10-15	yellow catkins	spring	3	full sun	xx	xx	xx	xx	xx	3-7	
Sandbar Willow	<i>Salix exigua</i>	Medium Shrub	5-10	5-20	yellow catkins	spring	3	full sun to partial sh.	x	xx	xx	xx	xx	3-9	
Bluestem Willow^	<i>Salix irrorata</i>	Medium Shrub	5-8	4-6	yellow catkins, bluish twigs	spring	3	full sun to partial sh.	x	xx	xx	xx	xx	3-5	

***Shrub and Tree Watering Schedule 1** 1st year Soak every 2 wks
 2nd year Soak every three weeks
 3rd year Soak once a month
 4th year Water during extended dry periods

Watering Schedule 2 1st year Soak every week
 2nd year Soak every two weeks
 3rd year Soak every three to four weeks

Watering Schedule 3 1st year Soak twice a week
 2nd year Soak once a week
 3rd year Soak every two weeks

^ Species on the margins of their range

*ZONES COORDINATE WITH APPENDIX C CHARTS 8A, 8B, 9A, AND 9B ON PAGES 100-103

Wetland and Subirrigated Tallgrass Prairie Species List For Detention Ponds, Drianages, and Other Natural Areas

Chart 3

<u>Community Type/ Common Name</u>	<u>Scientific Name</u>	<u>Wetland Desig.</u>	<u>Water Regime</u>	<u>Density/ Water Depth Preference</u>	<u>Growth Pattern</u>
Species for Open Water (Standing or Slow Moving) (Zone PB1, also possible in parts of Zone PB2 and PB3)					
American Threesquare	<i>Schoenoplectus pungens</i>	obligate	H	1/5 sq ft 0 to 6"	sod
Smallfruit Bulrush	<i>Scirpus microcarpus</i>	obligate	H to H+	0 to 3"	sod
Pale Bulrush	<i>Scirpus pallidus</i>	obligate	H to H+	0 to 3"	sod
Softstem Bulrush	<i>Schoenoplectus tabernaemontan.</i>	obligate	H to H+	0 to 24"	sod
Hardstem Bulrush	<i>Schoenoplectus acutus</i>	obligate	H to H+	0 to 36"	sod
Giant Burreed*	<i>Sparganium eurycarpur.</i>	obligate	H to H+	0 to 12"	sod
Broadleaf Arrowhead	<i>Sagittaria latifolia</i>	obligate	H	6 to 12"	sprout
Flooded Slopes (Zone PS2 and PB4)					
Clustered Field Sedge	<i>Carex praegracilis</i>	facw	H-	1/sq ft to 1/two sq ft periodically floodec	sod
American Threesquare	<i>Schoenoplectus pungens</i>	obligate	H	0 to 6"	sod
Alkali Bulrush	<i>Bolboschoenus maritimus</i>	obligate	H to H+	0 to 6"	sod
Water Sedge	<i>Carex aquatilis</i>	obligate	H to H+	0 to 3"	bunch
Emory Sedge	<i>Carex emoryi</i>	obligate	H	seasonally floodea	sod
Nebraska Sedge	<i>Carex nebrascensis</i>	obligate	H	seasonally floodea	sod
Marsh Milkweed	<i>Asclepias incarnata</i>	obligate	H-	periodically floodec	sprout
Prairie Cordgrass	<i>Spartina pectinata</i>	facw	M+ to H-	seasonally floodea	sod
Flooded Flats (Zones PB2, PB3, W1, W2, and W3)					
Clustered Field Sedge	<i>Carex praegracilis</i>	facw	H-	1/sq ft to 1/two sq ft periodically floodec	sod
Creeping Spikerush	<i>Eleocharis palustris</i>	obligate	H	0 to 3"	sod
American Mannagrass	<i>Glyceria grandis</i>	obligate	H	seasonally floodea	rhizomatous
Prairie Cordgrass	<i>Spartina pectinata</i>	facw	M+ to H-	seasonally floodea	sod
Emory Sedge	<i>Carex emoryi</i>	obligate	H	seasonally floodea	sod
Nebraska Sedge	<i>Carex nebrascensis</i>	obligate	H	seasonally floodea	sod
Nuttall Alkaligrass	<i>Puccinellia nuttalliana</i>	obligate	M+ to H-	seasonally floodea	sprout
Marsh Milkweed	<i>Asclepias incarnata</i>	obligate	H-	periodically floodec	sprout
Marsh Sunflower	<i>Helianthus nuttallii</i>	facw	M+	periodically floodec	sprout
Saturated Slopes (Zones PS2, possible lower PS5, W1, W2, W3, and R1)					
Bottlebrush Sedge	<i>Carex hystericina</i>	obligate	H-	1/sq ft to 1/two sq ft seasonally saturated	sod
Wolly Sedge	<i>Carex lanuginosa</i>	obligate	H-	seasonally floodea	sod
Slender Rush	<i>Juncus tenuis</i>	fac-facw	H	moist to saturated	bunch
Broom Sedge	<i>Carex scoparia</i>	facw	H	seasonally floodea	rhizomatous
Bebb's Sedge	<i>Carex bebbii</i>	obligate	H-	saturated soil	bunch
Colorado Rush	<i>Juncus confusus</i>	facw	H	moist - saturated	sod
Torrey's Rush	<i>Juncus torreyi</i>	facw-facw+	H	saturated soil	sod
Baltic Rush	<i>Juncus arcticus</i>	fac-obl	H- to H	moist - saturated	sod
American Mannagrass	<i>Glyceria grandis</i>	obligate	H	seasonally floodea	rhizomatous
Blue Vervain	<i>Verbena hastata</i>	facw	H-	moist - saturated	bunch
Marsh Sunflower	<i>Helianthus nuttallii</i>	facw	M+	periodically floodec	sprout
Saturated Flats (Zones PB2, PB3, and possibly PB4)					
Slender Rush	<i>Juncus tenuis</i>	fac-facw	H	1/sq ft to 1/two sq ft moist to saturated	bunch
Fox Sedge	<i>Carex vulpinoidea</i>	obligate	H-	seasonally saturated	sod
Colorado Rush	<i>Juncus confusus</i>	facw	H	moist - saturated	sod
Torrey's Rush	<i>Juncus torreyi</i>	facw-facw+	H	saturated soil	sod
Bebb's Sedge	<i>Carex bebbii</i>	obligate	H-	saturated soil	bunch
Blue Vervain	<i>Verbena hastata</i>	facw	H-	moist - saturated	bunch
Rocky Mountain Iris	<i>Iris missouriensis</i>	obl-facw	M+ to H-	saturated	sprout
Marsh Skullcap	<i>Scutellaria galericulata</i>	facw	M+ to H-	moist - saturated	sprout
Agalinus	<i>Agalinus tenuifolia</i>	facw	M+ to H-	moist - saturated	sprout
Field Mint	<i>Mentha arvensis</i>	facw	M+	moist	sprout
Nuttall Alkaligrass	<i>Puccinellia nuttalliana</i>	obligate	M+ to H-	seasonally floodea	sprout
Inland Saltgrass	<i>Distichlis spicata</i>	facw	M+ to X	moist to xeric	rhizomatous
Prairie Cordgrass	<i>Spartina pectinata</i>	facw	M+ to H-	seasonally floodea	sod

<u>Community Type/ Common Name</u>	<u>Scientific Name</u>	<u>Wetland Desig.</u>	<u>Water Regime</u>	<u>Density/ Water Depth Preference</u>	<u>Growth Pattern</u>
Subirrigated Slopes (Zones upper PS2, PS5, Upper R1, R2, and lower R3)					
Switchgrass	<i>Panicum virgatus</i>	fac-facw	M- to M+	1/sq ft to 1/two sq ft subirrigated	bunch
Yellow Indiangrass	<i>Sorghastrum nutans</i>	fac	M- to M+	subirrigated	bunchy sod
Big Bluestem	<i>Andropogon gerardi.</i>	fac	M to M+	subirrigated	sod
Marsh Sunflower	<i>Helianthus nuttallii</i>	facw	M+	periodically floodea	sprout
Golden Banner	<i>Thermopsis divaricarpa</i>	upland	M	moist	rhizomatous
Prairie Coneflower	<i>Ratibida columnifera</i>	upland	X to X+	dry	sprout
Indian Blanket	<i>Gaillardia aristata</i>	upland	X+ to M	dry to moist	sprout
Subirrigated Flat (Upper R1, R2, and lower R3)					
Prairie Cordgrass	<i>Spartina pectinata</i>	facw	M+ to H-	1/sq ft to 1/two sq ft seasonally floodea	sod
Switchgrass	<i>Panicum virgatus</i>	fac-facw	M- to M+	subirrigated	bunch
Yellow Indiangrass	<i>Sorghastrum nutans</i>	fac	M- to M+	subirrigated	bunchy sod
Big Bluestem	<i>Andropogon gerardi.</i>	fac	M to M+	subirrigated	sod
Great Blue Lobelia	<i>Lobelia siphilitica</i>	obl-facw	M to M+	subirrigated	sprout
Rocky Mountain Iris	<i>Iris missouriensis</i>	obl-facw	M+ to H-	saturated	sprout
Joe Pye Weed	<i>Eupatorium maculatur.</i>	fac	M to M+	subirrigated	sprout
Tulip Gentian*	<i>Eustoma grandiflorum.</i>	fac	M to M+	subirrigated	sprout

obligate - obligate wetland: Estimated 99% probability of occurrence in wetlands.
 facw - facultative wetland: Estimated 67%-99% probability of occurrence in wetlands.
 fac - facultative: Equally occurring in wetlands and non-wetlands (34 - 66% probability).
 upland - not found in wetland soils, but may be found above wetlands in upper subirrigated areas

X- = always xeric M- = periodically dry H- = periodically saturated
 X = xeric M = mesic H = saturated
 X+ = occasionally xeric M+ = moist H+ = standing water

***Colorado Natural Heritage Program State Conservation Ranks**
 S1 -Critically Imperiled Tulip Gentian*
 S2 - Imperiled Giant Burreed
 S3 - Vulnerable Likely Prairie Cordgrass

***ZONES COORDINATE WITH APPENDIX C CHARTS 8A, 8B, 9A AND 9B ON PAGES 100-103**

General List of Grasses and Grasslike Plant Species for Detention Ponds, Drainages and Other Natural Areas

Chart 4

Common Name	Scientific Name	Soil Type						Soil Moisture			Sun/Shade Tolerance			Growing Season	Height (feet)	Growth Form		
		Clay		Loam	Sandy		Hydric	Mesic	Xeric	Shade	Partial	Sun						
		Fine	Moderately Fine	Medium	Loam Moderately Course	Sand Course							Gravel Very Course					
Species for Upland Slopes (Zones PS100, PT, R4, and U1)																		
Little Bluestem	<i>Schizachyrium scoparium</i>	x	x	xx	xx	xx	xx		xx	xx	x			xx	xx	warm	1 to 4	bunchgrass
Side Oats Grama	<i>Bouteloua curtipendula</i>	x	xx	xx	xx	x	x			xx	xx	x		x	xx	warm	1 to 3	bunchy, sod forme
Blue Grama	<i>Bouteloua gracilis</i>	x	xx	xx	xx	x	x		x	xx	xx	xx			xx	warm	0.5 to 2	bunchgr., sod w/ rr
Western Wheatgrass	<i>Pascopyrum smithii</i>	xx	xx	xx	x			x	xx	xx	x			x	xx	cool	1 to 3	sod forming
Green Needlegrass	<i>Nassella viridula</i>	xx	xx	xx	x	x			x	xx	xx	x		x	xx	cool	1.5 to 3.5	bunchgrass
Slender Wheatgrass	<i>Elymus trachycaulus</i>	x	xx	xx	xx				xx	xx	x			x	xx	cool	1.5 to 4	short-lived,bunchg
Buffalograss	<i>Buchloe dactyloides</i>	xx	xx	xx	xx	x	x		x	xx	xx	xx		x	xx	warm	0.2 to 0.5	sod forming
Bottlebrush Squirreltail	<i>Elymus elymoides</i>	x	xx	xx	xx	xx	xx		x	x	xx	xx			xx	cool	1 to 2	short-lived,bunchg
Sand Dropseed	<i>Sporobolus cryptandrus</i>		x	xx	xx	xx	xx			x	xx	xx		x	xx	warm	2 to 3	bunchgrass
Alkali Bluegrass	<i>Poa juncifolia</i>	x	xx	xx	xx	x	x		x	xx	xx	x	x	xx	xx	cool	0.5 to 1.5	bunchgrass
Sun Sedge	<i>Carex inops ssp. heliophila</i>																	
Species for Subirrigated Areas (Zones upper PB4, PS2, Lower PS 5 on north side, upper R1, R2, & possible on R3)																		
Big Bluestem	<i>Andropogon gerardii</i>	x	xx	xx	xx	xx	x		xx	xx	x			x	xx	warm	3 to 6	bunchy, sod forme
Switchgrass	<i>Panicum virgatum</i>	xx	xx	xx	xx	x	x		xx	xx	x				xx	warm	2 to 5	bunchgr., sod w/ rr
Yellow Indiangrass	<i>Sorghastrum nutans</i>	xx	xx	xx	xx	xx	x	x	xx	xx	x	x		xx	xx	warm	3 to 6	bunchy, sod forme
Alkali Sacaton	<i>Sporobolus airoides</i>	x	xx	xx	xx	x			xx	xx	x			x	xx	warm	1 to 3	bunchgrass
Green Needlegrass	<i>Nassella viridula</i>	xx	xx	xx	x	x			x	xx	xx	x		x	xx	cool	1.5 to 3.5	bunchgrass
Western Wheatgrass	<i>Pascopyrum smithii</i>	xx	xx	xx	x			x	xx	xx	x			x	xx	cool	1 to 3	sod forming
Nuttall Alkaligrass	<i>Puccinellia airoides</i>	xx	xx	xx	x	x		x	xx	xx				x	xx	cool	1 to 1.5	bunchgrass
Canada Wildrye	<i>Elymus canadensis</i>	xx	xx	xx	x			x	xx	xx	x		x	xx	xx	cool	2 to 4	short-lived,bunchg
Species for Wetland Areas (Zones PB1, PB2, BP3, PB4, PS2, and on W1, W2, W3, R1 and R2) (seeded)																		
Prairie Cordgrass	<i>Spartina pectinata</i>		xx	xx	xx	x		x	xx	x				xx	xx	warm	3.5 to 7	sod forming
Canada Wildrye	<i>Elymus canadensis</i>	x	xx	xx	xx	x		x	xx	xx	x		x	xx	xx	cool	2 to 4	short-lived,bunchg
Switchgrass	<i>Panicum virgatum</i>	xx	xx	xx	xx	x	x		xx	xx	x				xx	warm	2 to 5	bunchgr., sod w/ rr
Inland Saltgrass	<i>Distichlis spicata</i>	xx	xx	xx	x			xx	xx	x				x	xx	warm	0.5 to 1.5	sod forming
Fowl Bluegrass	<i>Poa palustris</i>		xx	xx	x			x	xx	x			x	xx	xx	cool	1 to 1.5	bunchgrass
Nebraska Sedge	<i>Carex nebrascensis</i>	xx	xx	x				xx	x						xx	cool	1 to 2.5	sod forming
Woolly Sedge	<i>Carex lanuginosa</i>	x	xx	xx	xx			x	xx	x					xx	cool	1 to 3	sod forming
Creeping Spikerush	<i>Eleocharis palustris</i>	xx	xx	x				xx	x						xx	cool	0.5 to 2	sod forming
Torrey's Rush	<i>Juncus torreyi</i>	xx	xx	x				xx	xx	x					xx	cool	1 to 2.5	sod forming
Baltic Rush	<i>Juncus balticus</i>	xx	xx	x				xx	xx	x					xx	cool	0.5 to 2.5	sod forming

*ZONES COORDINATE WITH APPENDIX C CHARTS 8A, 8B, 9A AND 9B ON PAGES 100-103

NAT Appendix B - Zoning and Decision Charts for North Park

North Park Guideline Matrix

This guideline matrix provides a broad context for the appropriateness of various types of ecosystems and their attributes that can be created in North Park. North Park lands are divided up based on habitat patch size and the relationship of one patch to another, narrow and broad peninsulas of habitat, and narrow and broad habitat corridors (Column Headers). As development decisions are made, specific areas can be identified within these eight broader Ecosystem categories. An example of a **Small Patch Ecosystem** might be a neighborhood detention pond surrounded by the apartments and other dwelling units in the neighborhood, whereas a **Large Patch Ecosystem** might be a regional detention facility covering several acres serving several neighborhoods or a larger part of the community. An example of a **Narrow Corridor Ecosystem** could be a small ephemeral stream drainage created to convey stormwater through a neighborhood, whereas a **Broad Corridor** may be needed to serve the larger community. **Peninsulas** of habitat could be **narrow or broad** but do not connect to open lands on one end. Ecosystem attributes on the left side of the spreadsheet represent a continuum of aesthetics from open to dense vegetation, from shortgrass prairies to densely vegetated shrubby woodlands, a continuum of water regimes, and of options to buffer these ecosystems from the influences of the surrounding developed communities. Generally speaking, all of these lands are small when it comes to conserving wildlife habitat, thus limiting conservation to mostly songbirds, butterflies, some amphibians and reptiles, and plants (See Appendix D for Landscape Functions on Page 104).

To use the restoration decision matrix:

1. Determine the appropriate Ecosystem Type and header for the project based on the descriptions above and the attributes to the right in Zoning Chart 5 in consultation with the team environmental consultant or in discussions with North Park DRC Staff.
2. In Zoning Chart 5 to the right, move down the column to find the appropriate planting types, depicted with XX.
3. Go to Appendix B Charts 6A, 6B and 7 on Pages 98 and 99 and Appendix D on Page 104 to evaluate attributes of the ecosystem type to determine if the type meets project goals.
4. Select a desired habitat type.
5. Refer to Appendix B Charts 8A and 8B on Pages 100 and 101 for detention pond zones and specific ecosystems. Refer to Appendix C Charts 9A and 9B on Pages 102 and 103 for stream and channel conveyance zones and specific ecosystems and plant community types.
6. Select the specific plant communities, wildlife and habitat that you want to restore at your project site (i.e. Nebraska sedge, Herbaceous wetland, Tallgrass prairie, Shrubby woodland)
7. Refer to Plant Species listed in Appendix A Charts 1-4 on Pages 91 through 96. Determine the plant species selection from the Charts to use in restoring the site.



Zoning Chart 5

North Park's Conservation Lands

Ecosystem Types & Attributes	Small Patch Ecosystem	String of Small Patches Ecosystem	Large Patch Ecosystem	String of Large Patches Ecosystem	Narrow Peninsula Ecosystem	Broad Peninsula Ecosystem	Narrow Corridor Ecosystem	Broad Corridor Ecosystem
General Aesthetics								
OPEN			X					XX
MIXED	X	X	XX	X	X	X	X	XX
DENSE	XX	XX	XX	XX	XX	XX	XX	XX
Plant Communities								
Shortgrass			X	X				X
Mixed grass	X	X	XX	XX	X	X	X	X
Tall grass prairie	XX	XX	XX	XX	XX	XX	XX	XX
Playa			X	XX		X		X
Herbaceous Wetland	X	X	X	XX	X	X	X	XX
Bulrush Marsh	XX	X	XX	X	XX	XX	XX	XX
Riparian Shrubland	XX	XX	XX	X	XX	XX	XX	X
Upland Shrubland	X	X	X	X	X	X	X	XX
Park-like Woodland	X	X	X	XX	X	X	X	XX
Shrubby Woodland	XX	XX	XX	XX	XX	XX	XX	XX
Water Relations								
No water	X	X	X	X	X			
Temporary Water	XX	XX	XX	XX	XX	XX	XX	XX
Long-term Temporary Water	XX	XX	XX	X	X	X	XX	XX
Permanent Water	XX	XX	XX				XX	XX
Ecosystem Buffer Protection								
Landscape Edge Protection	XX	XX	XX	X	XX	XX	XX	X
Type- Veg. Screening	XX	XX	XX	X	X	X	XX	XX
Type - Fencing/limit access	XX	X	X	XX	X	X	X	X
Light and Noise Protection	XX	XX	XX	XX	XX	XX	XX	XX

XX = Very appropriate and in large amounts

X = somewhat appropriate but in smaller amounts

Zoning Chart 6A - Quality rating of various ecosystems by landscape function focusing on aesthetics, water, and sediment.

	Herbaceous Wetland Wet Meadow and Playas w/ mudflats	Herbaceous Wetland - Bulrush Marsh	Riparian and Upland Shrubland	Park-like Woodland	Shrubby Woodland	Subirrigated Tallgrass Prairie	Short and Mid Grass Prairie
Topographic Position	Low (-0.5' - 2' + above AHW)	Low (-2' -2' + above AHW)	Moderately Low to High (0' - 4' + above AHW)	Moderately Low to Moderate (2' - 6' above AHW)	Moderately Low to Moderate (2' - 6' above AHW)	Moderately Low (1' - 4' + above AHW)	High (4' -8' + above AHW)
Tall Visual Screen	No	No	Limited to 15 feet	Good	Excellent	No	No
Low Visual Screen	Limited to 3 feet	Limited to 5-8 feet	Good	Fair to Good	Good to Excellent	Limited to 5 feet	No
Trail Visual Screen	Fair to Good depending on wetness	Good to Excellent depending on thickness	Good	Fair to Good	Good to Excellent	Fair to Good depending on thickness	No
Viewshed	Excellent	Fair to Excellent	Fair to Good	Fair to Poor	Poor	Excellent to Good	Excellent
Viewshed Framing	Poor	Poor to Fair	Poor to Fair	Excellent to Poor	Excellent to Poor	Poor	Poor
Auditory Screen	No	No	Fair to Good	Fair to Good	Good to Excellent	No	No
Wind Moderator	No	Poor	Fair to Good	Good	Excellent	No	No
Temperature Moderator	No	No	Limited	Good	Good to Excellent	No	No
Water Quality Filter	Good to Excellent	Excellent	Good to Fair	Good to Excellent	Good to Excellent	Fair to Good	Fair
Flood Attenuation	Good to Excellent	Good to Excellent	Good to Fair	Good	Good	Good	Fair to Poor
Erosion Control	Good to Excellent	Good to Excellent	Good to Excellent	Good	Good to Excellent	Good	Fair to Good
Sediment Storage	Good to Excellent	Good to Excellent	Fair to Excellent	Good to Excellent	Good to Excellent	Fair to Good	Fair to Poor

AHW - Average High Waterline

Zoning Chart 6B - Quality rating of various ecosystems by landscape function primarily related to conservation of wildlife.

	Herbaceous Wetland - Wet Meadow and Playas w/ mudflats	Herbaceous Wetland - Bulrush Marsh	Riparian and Upland Shrubland	Park-like Woodland	Shrubby Woodland	Subirrigated Tall- grass Prairie	Short and Mid Grass Prairie
Topographic Position	Low (-0.5' - 2' + above AHW)	Low (-2' -2' + above AHW)	Moderately Low to High (0' - 4' + above AHW)	Moderately Low to Moderate (2' - 6' above AHW)	Moderately Low to Moderate (2' - 6' above AHW)	Moderately Low (1' - 4' + above AHW)	High (4' -8' + above AHW)
Wildlife Movement Corridor	Fair to Good	Poor to Fair	Good	Good	Good to Excellent	Good	Fair to Poor
Stepping Stone	Good	Excellent -existing	Good	Good	Good to Excellent	Good	Fair to Poor
Buffer	Good	Good to Excellent	Good to Excellent	Good to Excellent	Good to Excellent	Fair to Good	Fair to Poor
Wildlife Breeding	Good	Excellent -existing	Fair to Good	Fair to Good	Fair to Good	Good	Fair to Poor
Wildlife Feeding	Good to Excellent	Fair to Good (bulrushes)	Good to Excellent	Good	Good to Excellent	Good	Fair to Good
Wildlife Resting	Good	Fair to Good	Good to Excellent	Good	Good to Excellent	Good	Fair to Good
Migratory Stopover	Good to Excellent	Fair to Good	Good to Excellent	Good	Good to Excellent	Good	Fair

AHW - Average High Waterline

Zoning Chart 7 - Wildlife use by function for various ecosystems.

	Short and Mixed Grass Prairie	Herbaceous Wetland	Subirrigated Tallgrass Prairie	Herbaceous Wetland -Bulrush Marsh	Wetland and Upland Shrub Thicket	Park-like Woodland	Shrubby Woodland
<i>Representation</i>	<i>Fair</i>	<i>Poor to Good</i>	<i>Poor</i>	<i>Excellent</i>	<i>Poor to Fair</i>	<i>Fair to Poor</i>	<i>Poor</i>
<i>Topographic Position</i>	<i>High (4' - 8' + above AHW)</i>	<i>Low (-0.5' - 2' + above AHW)</i>	<i>Moderately Low (1' - 4' + above AHW)</i>	<i>Low (-2' - 2' + above AHW)</i>	<i>Moderately Low to High (0' - 4' + above AHW)</i>	<i>Moderately Low to Moderate (2' - 6' above AHW)</i>	<i>Moderately Low to Moderate (2' - 6' above AHW)</i>
Wildlife Movement Corridor	Small Mammals	Small Mammals	Up to Medium Mammals	Medium to Large Mammals	Medium to Large Mammals	Medium to Large Mammals	Medium to Large Mammals
Stepping Stone	Some grassland Songbirds on migration Butterflies	Waterfowl Many Shorebirds Some Songbirds Many Waders Some waterbirds Many Butterflies	Most Grassland Songbirds Some Raptors Many Butterflies	Some Songbirds Some Raptors Some Waders and Most Rails Few Butterflies	Many Songbirds Some Raptors	Many Raptors Many Songbirds Few Butterflies	Many Raptors Most Songbirds Some Butterflies
Buffer	Fair to Poor	Good	Fair to Good	Good to Excellent	Good to Excellent	Good to Excellent	Good to Excellent
Wildlife Breeding	Limited Waterfowl Limited Songbirds	Waterfowl Shorebirds Some Songbirds	Waterfowl Shorebirds Some Songbirds	Grebes Waterfowl Shorebirds Some Songbirds	Limited Waterfowl Many Songbirds	Limited Waterfowl Many Songbirds Raptors	Limited Waterfowl Many Songbirds Raptors
Wildlife Feeding	Limited Waterfowl Limited Songbirds Many Raptors Some Butterflies	Waterfowl Many Shorebirds Some Songbirds Many Waders Some waterbirds Many Butterflies	Most Grassland Songbirds Some Raptors Many Butterflies	Some Songbirds Some Raptors Some Waders and Most Rails Few Butterflies	Many Songbirds Some Raptors	Many Raptors Many Songbirds Few Butterflies	Many Raptors Most Songbirds Some Butterflies
Wildlife Resting	Limited Waterfowl Limited Songbird Many Raptors Some Butterflies	Waterfowl Many Shorebirds Some Songbirds Many Waders Some waterbirds Many Butterflies	Most Grassland Songbirds Some Raptors Many Butterflies	Some Songbirds Some Raptors Some Waders and Most Rails Few Butterflies	Many Songbirds Some Raptors	Many Raptors Many Songbirds Few Butterflies	Many Raptors Most Songbirds Some Butterflies
Migratory Stopover	Some Grassland Songbirds Some Raptors	Waterfowl Many Shorebirds Some Songbirds Many Waders	Most Grassland Songbirds Some Raptors	Some Songbirds Some Raptors Some Waders and Most Rails	Many Songbirds Some Raptors	Many Raptors Many Songbirds	Many Raptors Most Songbirds

AHW - Average High Waterline

Detention Pond Charts 8A & 8B

These charts show specific types of wetland and riparian ecosystems and their dominant plant communities that can be restored as habitat in detention ponds on North Park lands. These are existing ecosystems that have been described by a plant ecologist from the *Colorado Natural Heritage Field Guide to Wetland and Riparian Plant Associations of Colorado*. In Chart 8A the ecosystem zones in the left hand column correspond to the plan view and cross section drawings (below) of representative areas of a detention pond. The second column describes the relationship between topography and water relations for each zone designation, while the following columns describe the relationship between ecosystem zones, plant designations and communities. In Chart 8B (on page 101) the ecosystem zones in the left hand column correspond to the plan view and cross section drawings (below) of representative areas of a detention pond. This is followed by the individual plant communities and the associated page number in the above mentioned field guide as well as restoration suitability and desirability of each of these plant communities in a particular zone. The table is broken up by major vegetative groups. Within each group the most water loving (wet) communities are on the top left and the most xeric (dry) communities are on the bottom right.

*Additional plants for each community can be found in Appendix A, Charts 1A, 1B, 2, 3, and 4 on Pages 91 through 96.

Chart 8A - Detention Pond Zones with hydrologic characteristics, soil moisture regimes, associated wetland plant designations, as well, as the general plant community that might be restored to pond bottom and pond slopes.

Zone Code	Hydrogeomorphology	Flood Return Interval*	Moisture Regime	Wetland Plant Designation	General Plant Community **
PB1	Pond Bottom Surface Water Frequent	0-0.10	H	obligate	Wetland Marsh
PB2	Pond Bottom Saturated	0.10 - 0.75	H to H-	obligate to facw	Herbaceous Wetland
PB3	Pond Bottom Periodically Saturated	0.75 to 1.0	H-	obligate to facw	Herbaceous Wetland
PB4	Pond Bottom Moist	1.0 to 2.0	M+	facw - fac	Herbaceous Wetland
PS2	Pond Slope up to 2 year flow	1.0 to 2.0	M+ to M	facw - fac	Shrubland or Woodland
PS5	Pond Slope from 2 to 5 year flow	2.0 to 5.0	M to M-	upl - facu	Shrubland, Woodland, or Grassland
PS100	Pond Slope from 5 to 100 year flow	5.0 to 100	M- to X+	upl - facu	Shrubland, Woodland, or Grassland
PT	Pond Top above slope	100+	X+ to X-	upl - facu	Grassland or Upland Shrubland

* Lower part of the range reflects when water will first flood this ecosystem while the upper end reflects when this community will be completely inundated

**Specific plant communities can be found on Page 101 Chart 8B.

Key:

obligate - obligate wetland: Estimated 99% probability of occurrence in wetlands.

facw - facultative wetland: Estimated 67% to 99% provability of occurrence in wetlands.

fac - facultative: Estimated 34% to 66% probability of occurrence in wetlands. Equally occurring in wetlands and non-wetlands.

facu - facultative upland: Estimated 1% - 33% probability of occurrence in wetlands, 67% to 99% probability of occurrence.

upl - upland: Not found in wetland soils, but may be found above wetlands in upper subirrigated areas.

x- = always xeric

x = xeric

x+ = occasionally xeric

M- = periodically dry

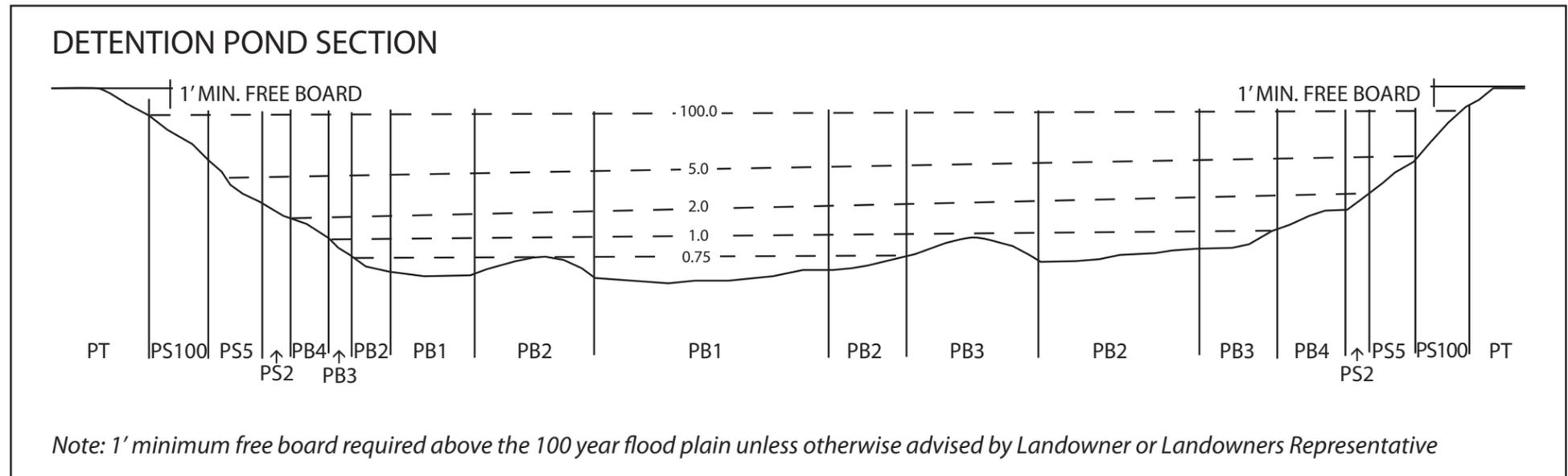
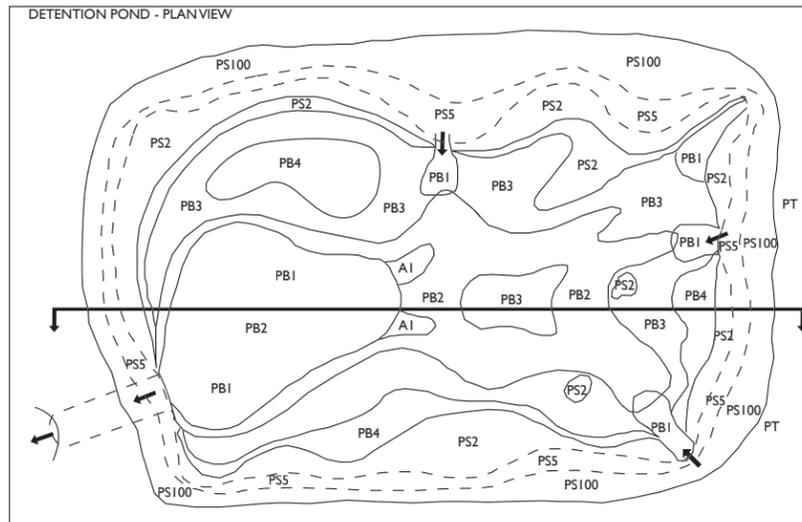
M = mesic

M+ = moist

H- = periodically saturated

H = saturated

H+ = standing water



Note: 1' minimum free board required above the 100 year flood plain unless otherwise advised by Landowner or Landowners Representative

Detention Pond Chart 8B - Detention Pond Ecosystems and Dominant Plant Communities - Existing Colorado Plant Communities that could be restored as habitat in detention ponds and surrounding slopes. * Additional plants for each community can be found in Appendix A Charts 1A, 1B, 2, 3 and 4 on Pages 91 through 96.

Ecosystems	Herbaceous Wetland						Plant Community*						Upland Shrubland		
	Bulrush Marsh 416	Common Spikerush 376	Beggar Ticks 326	Nebraska Sedge 346 G4 S3	Woolly Sedge 350 G3 S3 (montane)	Prairie Chordgrass 426 G3? S3	Sandbar Willow 206	Strapleaf Willow* 222 G2G3 S2S3	River Hawthorn 288 G2Q S2	Chokecherry Plum 298 G4Q S2	Western Snowberry 310	Skunkbrush SBS G2 S2 (riparian)	Saltbush Winterfat SWS	Rabbitbrush RBS	
Field Guide Page**															
Colorado Natural Heritage Program Ranking															
Zone Code	Hydro-geomorphology														
PB1	xx	xx	xx	x											
PB2	xx	xx	xx	xx	xx	x	x	y							
PB3	xx	x	x	xx	xx	xx	xx	x							
PB4	x	y	y	x	xx	xx	xx	xx	x	y	y				
PS2	y			y	x	xx	xx	xx	x	x	x	y	x	x	
PS5					y	x	x	x	xx	xx	xx	xx	x	x	
PS100						y	y	y	x	xx	xx	xx	xx	xx	
PT										x	x	x	xx	xx	
	Wet----->Mesic						Wet Mesic----->Dry Mesic						Dry Mesic----->Dry		

Ecosystems	Park-like Woodland					Shrubby Woodland					Prairie		
	P. Cottonwood PL Willow P. Chordgrass Sedge 160 G1 S1	P. Cottonwood Woolly Sedge 140 G2 S1	Peachleaf Willow 182	P. Cottonwood Switchgrass Little Bluestem 150 G2 S2	P. Cottonwood Western Wheatgrass 152 G2 S2 (in part)	P. Cottonwood Bluestem Willow 126	P. Cottonwood Peachleaf & Sandbar Willow 158 G4G3 S2	P. Cottonwood Chokecherry 154	P. Cottonwood Western Snowberry 168 G2G3 S2	P. Cottonwood Skunkbrush 156	Tallgrass Prairie 322 G2 S1S2	Midgrass Prairie MGP G3G4 S2	Shortgrass Prairie SGP
Field Guide Page**													
Colorado Natural Heritage Program Ranking													
Zone Code	Hydro-geomorphology												
PB1													
PB2	x	x	x			x						y	
PB3	xx	xx	xx	y	y	xx	xx					x	
PB4	xx	xx	xx	xx	xx	xx	xx	y		y		xx	
PS2	x	xx	xx	xx	xx	xx	x	x	xx	xx	x	xx	y
PS5	xx	y	x	xx	xx	x	xx	xx	xx	xx	xx	xx	x
PS100	x		y	xx	xx	y	x	xx	xx	xx	xx	x	xx
PT	y			y	x		y	x	y	x		y	xx
	Wet----->Mesic					Wet Mesic----->Dry Mesic					Wet Mesic----->Dry		

Restoration Suitability and Desirability
xx - highly suitable and desirable
x - suitable and desirable
y - marginal

* Each of these plant communities are found in Colorado and have been described by plant ecologists.
** Field Guide to the Wetland and Riparian Plant Associations of Colorado Colorado Natural Heritage Program, Colorado State University

ADDITIONAL PLANT COMMUNITIES - Most of these additional communities are found in the lower mountains or are found on the west slope, however all of these dominant species are found on the high plain (some are not the best adapted) although this exact plant community may not be found.

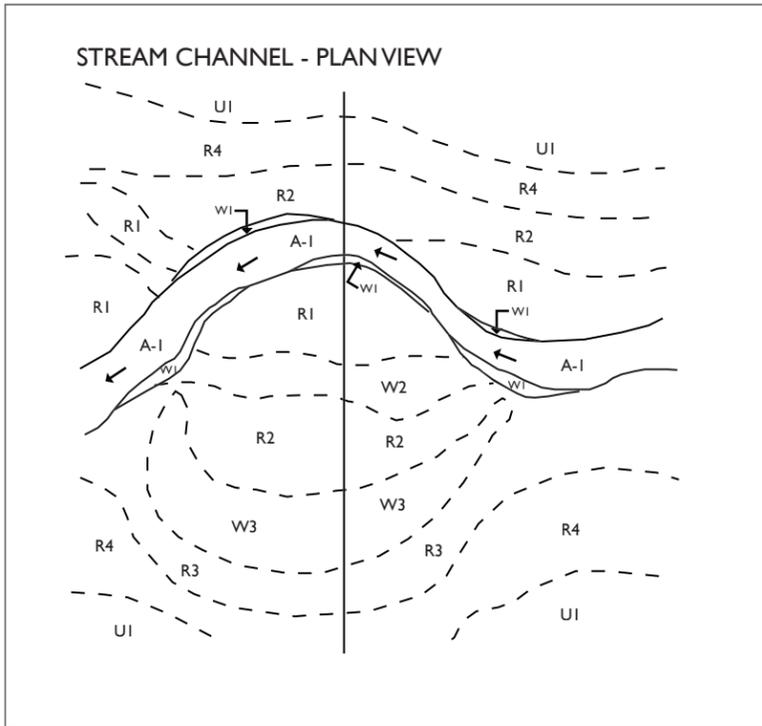
- Other Woodlands** - Plains Cottonwood/ Inland Saltgrass (142), Plains Cottonwood/Slenderwheatgrass (144) GU S2, Cottonwood Alkali Sacaton (162) (G3 S2)
- Other Shrubby Woodlands** - Cottonwood Red Osier Dogwood (114) G4 S3 (in part), Cottonwood River Birch (112), Cottonwood Alder (110),
- Forests** - Box Elder Red Osier Dogwood Forest (100), Box Elder Cottonwood Netleaf Hackberry Forest (102), Box Elder Cottonwood Red Osier Dogwood Forest (104), Box Elder Chokecherry Forest (106)
- Riparian Shrublands** - Sandbar Willow Strapleaf Willow (208)
- Herbaceous Wetlands** - Clustered Field Sedge (352)G3G4 S2, American Mannagrass (389), Mountain Rush (or Baltic Rush) (396), Rice Cutgrass (402), Alkali Muhley (404), Cosmopolitan Bulrush (418) G4 S2, Common Threesquare (420) G3G4 S3, Alkali Sacaton (430), Giant Burreed (G4 S2)

- Colorado Natural Heritage Program Ranking:**
- G1 - Globally Critically Imperiled
 - G2 - Globally Imperiled
 - G3 - Globally Vulnerable to Extinction
 - G4 - Globally Apparently Secure
 - G5 - Demonstrably Widespread, Abundant, and Secure
 - S1 - State Critically Imperiled
 - S2 - State Imperiled
 - S3 - State Vulnerable to Exterpation
 - S4 - State Apparently Secure
 - S5 - Demonstrably Widespread, Abundant, and Secure

Stream Drainage Charts 9A & 9B

These charts depict the specific types of aquatic and riparian stream ecosystems and their dominant plant communities that can be restored as habitat along drainages and floodplains upstream of detention ponds on North Park. These are existing ecosystems that have been described by plant ecologists from the Colorado Natural Heritage Program in a book entitled Field Guide to Wetland and Riparian Plant Associations of Colorado. In Design Chart 9A the ecosystem zones in the left hand column correspond to the plan view and cross section drawings (below) of representative areas of a drainage system. The second column describes the relationship between the topography and water relations for each zone designation, while the remaining columns describe the relationship between ecosystem zones and plant designations and communities. In Chart 9B the ecosystem zones in the left hand column correspond to the plan view and cross section drawings (below) of representative areas of a drainage system. This is followed by the individual plant communities and the associated page number in the above mentioned field guide as well as restoration suitability and desirability of each of these plant communities in a particular zone. The table is broken up by major vegetative groups. Within each group the most water loving (wet) communities are on the top left and the most xeric (dry) communities are on the bottom right.

*Additional plants for each community can be found in the Appendix A, Charts 1A, 1B, 2, 3 and 4 on Pages 91 through 96.



Design Chart 9A - Aquatic and Riparian Stream Drainage Ecosystem Zones with hydrologic characteristics, soil moisture regimes, associated wetland plant designations as well as the general plant community that might be restored to stream drainages and associated floodplains.

Zone Code	Hydrogeomorphology	Flood Return Interval*	Moisture Regime	Wetland Plant Designation	General Plant Community **
A1	Aquatic Main Channel	0-1.5	Aquatic to Wet	obligate	Wetland Marsh
W1	Main Channel Bank Wetland	1.0 - 2.0	Wet to Wet Mesic	obligate to facw	Herbaceous Wetland
W2	Secondary Channel Wetland	1.0 - 2.0	Wet to Mesic	obligate to facw	Herbaceous Wetland
W3	Old Meander Scroll Wetland	1.5 to 2.5	Wet to Mesic	obligate to fac	Herbaceous Wetland
R1	Active Riparian Point Bar	0.5 to 2.0	Wet to Mesic	obligate to fac	Shrubland or Woodland
R2	Middle Riparian Point Bar	2.0 to 5.0	Wet Mesic to Mesic	facw - fac	Shrubland, Woodland, or Grassland
R3	Oldest Riparian	4.0 to 10.0	Mesic	fac to facu	Shrubland, Woodland, or Grassland
R4	Riparian Floodplain Terrace	7.0 to 20.0	Mesic to Mesic Dry	upl - facu	Grassland or Upland Shrubland
U1	Upland Terrace	20.0 to 100.0	Mesic Dry to Dry	upl - facu	

* Lower part of the range reflects when water will first flood this ecosystem while the upper end reflects when this community will be completely inundated

**Specific plant communities can be found on Page 103 - CHART 9B

Key:

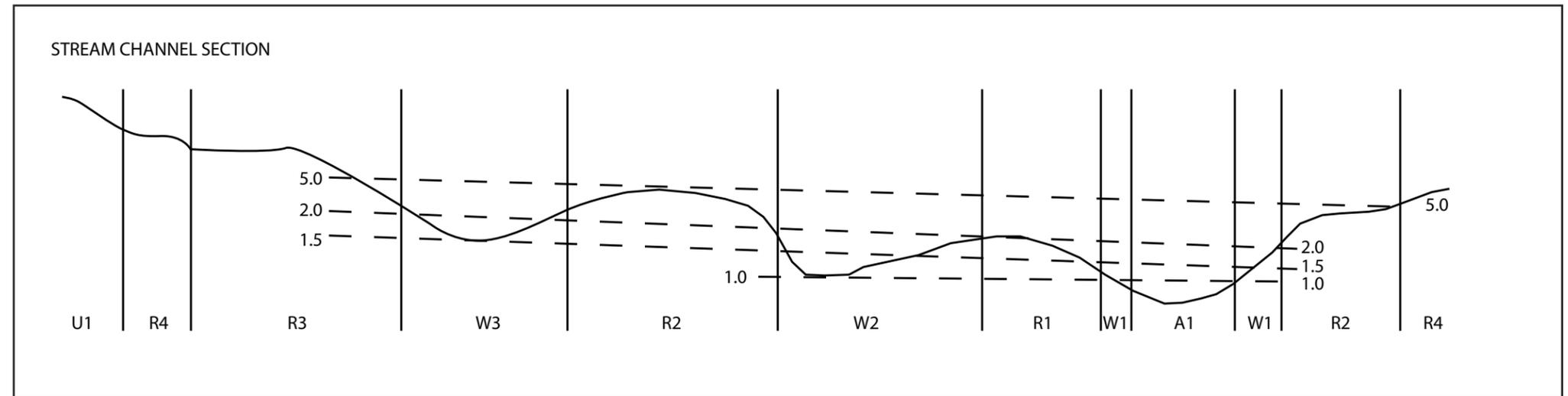
obligate - obligate wetland: Estimated 99% probability of occurrence in wetlands.

facw - facultative wetland: Estimated 67% to 99% probability of occurrence in wetlands.

fac - facultative: Estimated 34% to 66% probability of occurrence in wetlands. Equally occurring in wetlands and non-wetlands.

facu - facultative upland: Estimated 1% - 33% probability of occurrence in wetlands, 67% to 99% probability of occurrence.

upl - upland: Not found in wetland soils, but may be found above wetlands in upper subirrigated areas.



Design Chart 9B - Aquatic and Riparian Stream Drainage Ecosystems and Dominant Plant Communities - Existing Colorado Plant Communities that could be restored as habitat along drainage and floodplains upstream of detention ponds. *Additional plants for each community can be found in Appendix A Charts 1A, 1B, 2, 3 and 4 on Pages 91 through 96.

Ecosystems	Plant Community*														
	Herbaceous Wetland						Riparian Shrubland				Upland Shrubland				
	Bulrush Marsh 416	Nebraska Sedge 346 G4 S3	Woolly Sedge 350 G3 S3 (montane)	Common Spikerush 376	Beggar Ticks 326	Prairie Chordgrass 426 G3? S3	Sandbar Willow 206	Strapleaf Willow 222 G2G3 S2S3	River Hawthorn 288 G2Q S2	Chokecherry Plum 298 G4Q S2	Western Snowberry 310	Skunkbrush G2 S2 (riparian)	Saltbush Winterfat	Rabbitbrush	
Field Guide Page**															
Colorado Natural Heritage Program Ranking															
Zone Code	Hydrogeomorphology														
A-1	Aquatic Main Channel														
W1	Main Channel Bank Wetland														
W2	Secondary Channel Wetland														
W3	Old Meander Scroll Wetland														
R1	Active Riparian Point Bar														
R2	Middle Riparian Point Bar														
R3	Oldest Riparian Point Bar														
R4	Riparian Floodplain Terrace														
U1	Upland Terrace														
	Wet----->						Wet Mesic----->				Dry Mesic----->		Dry Mesic----->Dry		
	Park-like Woodland						Shrubby Woodland				Prairie				
	P. Cottonwood PL Willow P. Chordgrass Sedge 160 G1 S1	P. Cottonwood Woolly Sedge 140 G2 S1	Peachleaf Willow 182	P. Cottonwood Switchgrass Little Bluestem 150 G2 S2	P. Cottonwood Western Wheatgrass 152 G2 S2 (in part)	P. Cottonwood Bluestem Willow 126	P. Cottonwood Peachleaf & Sandbar Willow 158 G4G3 S2	P. Cottonwood Chokecherry 154	P. Cottonwood Western Snowberry 168 G2G3 S2	P. Cottonwood Skunkbrush 156	Tallgrass Prairie 322 G2 S1S2	Midgrass Prairie G3G4 S2	Shortgrass Prairie		
Field Guide Page**															
Colorado Natural Heritage Program Ranking															
Zone Code	Hydrogeomorphology														
A-1	Aquatic Main Channel														
W1	Main Channel Bank Wetland														
W2	Secondary Channel Wetland														
W3	Old Meander Scroll Wetland														
R1	Active Riparian Point Bar														
R2	Middle Riparian Point Bar														
R3	Oldest Riparian Point Bar														
R4	Riparian Floodplain Terrace														
U1	Upland Terrace														
	Wet----->						Mesic Wet Mesic----->				Dry Mesic----->		Wet Mesic----->Dry		

Restoration Suitability and Desirability
 xx - highly suitable and desirable
 x - suitable and desirable
 y - marginal

* Each of these plant communities that are found in Colorado and have been described by plant ecologists.
 ** Field Guide to the Wetland and Riparian Plant Associations of Colorado, Colorado Natural Heritage Program - Colorado State University

ADDITIONAL PLANT COMMUNITIES - Most of these additional communities are found in the lower mountains or are found on the west slope, however all of these dominant species are found on the high plain:
 (some are not the best adapted) although this exact plant community may not be found
Other Woodlands - Plains Cottonwood/ Inland Saltgrass (142), Plains Cottonwood/Slenderwheatgrass (144) GU S2, Cottonwood Alkali Sacaton (162) (G3 S
Other Shrubby Woodlands - Cottonwood Red Osier Dogwood (114) G4 S3 (in part), Cottonwood River Birch (112), Cottonwood Alder (110)
Forests - Box Elder Red Osier Dogwood Forest (100), Box Elder Cottonwood Netleaf Hackberry Forest (102), Box Elder Cottonwood Red Osier Dogwood Forest (104), Box Elder Chokecherry Forest (11
Riparian Shrublands - Sandbar Willow Strapleaf Willow (208)
Herbaceous Wetlands - Clustered Field Sedge (352)G3G4 S2, American Mannagrass (389), Mountain Rush (or Baltic Rush) (396), Rice Cutgrass (402), Alkali Muhley (404), Cosmopolitan Bulrush (418) G4 S2, Common Threesquare (420) G3G4 ; Alkali Sacaton (430), Giant Burreed (G4 S2)

Colorado Natural Heritage Program Ranking
 G1 - Globally Critically Imperiled
 G2 - Globally Imperiled
 G3 - Globally Vulnerable to Extinction
 G4 - Globally Apparently Secure
 G5 - Demonstrably Widespread, Abundant, and Secure
 S1 - State Critically Imperiled
 S2 - State Imperiled
 S3 - State Vulnerable to Exterpation
 S4 - State Apparently Secure
 S5 - Demonstrably Widespread, Abundant, and Secure

NAT Appendix D - Landscape Functions

1. Aesthetic Qualities

- a) Tall Visual Screen – tall vegetation and berms that cannot be seen over or through (at least part of the year) to hide facilities or less visually appealing aspects of the landscape.
- b) Low Visual Screen – low but dense vegetation or berms that can be seen over, but not through, to hide facilities or less visually appealing aspects of the landscape.
- c) Trail Screen – a mixture of dense vegetation of various types and/or berms that help to make the trail appear as a more natural corridor, as well as to provide some or all of the other screening attributes.
- d) Viewshed – areas that provide unobstructed views of large, visually appealing landscape features, such as mountains, lakes, city lights, or even large cottonwood sentinel trees.
- e) Viewshed Framing – vegetation strategically located to frame desirable views, while possibly obstructing the views of undesirable landscape features.
- f) Auditory Screen – a mixture of dense vegetation and/or berms that help to dissipate noise.
- g) Wind Moderator – a mixture of dense vegetation and/or berms that help to dissipate wind.
- h) Temperature Moderator – a mixture of tall and possibly dense vegetation that help to shade the ground and provide a cooler environment for people and wildlife.

2. Water and Sediment Control

- a) Water Quality Filter – usually wetlands or riparian areas that remove nutrients, sediment, debris, and other pollutants from the water column through chemical, physical and biological processes.
- b) Flood Attenuation – areas that have the capacity to temporarily store water during small, moderate, or severe storms increasing the time it takes the water to reach the receiving body of water.
- c) Erosion Control – areas which have the ability to resist and adjust to wave action, shear stress caused by water, rills, gullies and other erosive forces.
- d) Sediment Storage – areas that have the ability to store sediment for a period of time but may release some of that sediment at a later time. These storage areas may also have plant communities that are designed to recover from being buried or that can recruit new plants on bare moist soils (e.g. pioneer plants like cottonwoods).

3. Wildlife and Plant Conservation

- a) Movement Corridor – an area generally linear in nature that tends to facilitate the daily or seasonal movement of wildlife from one location to another, as well as plant dispersal.
- b) Stepping Stone – an area generally isolated from surrounding habitat (a patch in an otherwise unsuitable matrix) that can provide some ability for species to move from one area to another via these islands of habitat. These areas can be especially valuable for birds, butterflies, wide ranging mammals, and can be a refuge for certain plant species.
- c) Buffers – areas that separate human landscape features from important wildlife habitat areas and/or sensitive plant species/communities. These areas reduce disturbance, excessive predation, and other negative edge effects (e.g. lights, noise, trash, pet intrusion).
- d) Wildlife Breeding – a mixture of food, cover, and landscape features in the right juxtaposition that tend to facilitate wildlife breeding by the conservation target species and possibly others.
- e) Wildlife Feeding – a mixture of food, cover and landscape features in the right juxtaposition that tend to facilitate feeding by the conservation target species.

- f) Wildlife Resting – a mixture of cover and landscape features in the right juxtaposition that tend to facilitate loafing areas for conservation target species.
- g) Migratory Stopover – a mixture of food, cover and landscape features in the right juxtaposition that tend to attract conservation target species and possibly others during migration. These areas are primarily used for resting and feeding of birds and butterflies.
- h) Restoration – Restore target ecosystem(s) that would represent a natural ecosystem which is supportable and sustainable in the long term. For North Park this will be native plant communities that would occur from the base of the Rocky Mountains to the eastern edge of the state of Colorado and generally north of Denver. Restoring target ecosystems could include one or a combination of the following:
 1. Restore the original ecosystem at the site.
 2. Restore the ecosystem now best expressed by the flora and fauna of the site, particularly when a globally rare or endangered species is involved.
 3. Restore the rarest or the otherwise highest priority ecosystem that is practical to restore at the site.
 4. Restore a representative variety of the ecosystems at the site. Restore the largest possible example of a given ecosystem on the site.
 5. Restore the highest priority and attainable mix of ecosystems in the quickest and easiest way.

4. Existing or Historically Under Represented Local Ecosystems that Need to be Restored

- a) Herbaceous Wetlands - Playas with mudflats – depressional wetlands (water collection basins) with a variety of emergent herbaceous vegetation usually surrounding areas of temporary shallow water or a temporary pond.
- b) Herbaceous Wetlands - Wet Meadow – often depressional wetlands or fringe wetlands. These areas are densely vegetated and dominated by wetland grasses, sedges, and rushes.
- c) Herbaceous Wetlands - Bulrush Marsh – fringe or depressional wetlands dominated by larger herbaceous vegetation, often very dense. They often surround, or are found on, the margins of deeper water areas.
- d) Shallow water wetland - water less than 18” with submergent vegetation that can easily be accessed by dabbling ducks, waders, and some shorebirds.
- e) Riparian Shrubland – wetland areas or areas with high water tables that are dominated by willow species but may have other wetland and facultative wetland shrubs.
- f) Upland Shrubland – areas dominated by drought tolerant shrubs that are intermingled with grasses and wildflowers.
- g) Park-like Woodland – open woodlands (gallery forest) to a more closed forest dominated by one to three species of cottonwood tree with a few other tree species. These areas often have a grass dominated field layer and generally lack a diverse shrub component.
- h) Shrubby Woodlands – generally a more closed forest with some openings dominated by one to three species of cottonwood tree with a few other tree species. These areas have a diverse shrub component.
- i) Tallgrass Prairie (Subirrigated) – grassland areas with high water tables and a mixture of mostly warm season grasses. These areas are dominated by species taller than waist high and typically have a healthy component of native wildflowers.
- j) Midgrass Prairie – mixtures of warm and cool season grasses of medium stature with a healthy component of native wildflowers.
- k) Shortgrass Prairie – mixtures of warm and cool season grasses of short stature codominated by Blue Grama and Buffalograss with a healthy component of native wildflowers.

LANDSCAPE

<u>LANDSCAPE SECTION</u>	<u>PG.</u>
1.0 LANDSCAPING	108
2.0 LANDSCAPE PERFORMANCE STANDARDS	109
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B R O O M F I E L D



LANDSCAPE

The Landscape section addresses issues primarily related to on-site landscapes and is designed to provide guidance related to building surrounds, parking lots and open areas. Planting designs should complement the immediate setting of the site through the use of native and naturalized plants and incorporate low water use goals.

1.0 LANDSCAPING

1.1 General

- 1.1.1 Create a landscape that is sustainable, attractive, comfortable, and complementary to the natural and man-made environment.
- 1.1.2 Use plant materials that are massed and placed to provide variety and focal points at strategic locations.
- 1.1.3 Where appropriate use large-scale plantings with the intent of replicating thickets of shrubs and broad sweeps of flowers in meadows that occur naturally in the Colorado plains and foothill regions.
- 1.1.4 Plant evergreen trees on uplands, while locating cottonwoods, willows, and other riparian plants in drainages.
- 1.1.5 Locate ornamental trees in groves and as specimens on uplands and side slopes.
- 1.1.6 Use ordered planting patterns to mark community wide architectural elements and special areas, such as at bridge crossings, public areas, and along interior streets within tree lawns, designed to project an organized artful landscape expression.
- 1.1.7 All development shall demonstrate adherence to the following landscape design criteria:
 - a) Restore native bio-diversity that relates to the area's natural systems.
 - b) Design to provide an attractive, comfortable environment for users while minimizing maintenance needs, irrigation water requirements, and the use of herbicides and pesticides.
 - c) Use environmentally friendly "green" materials, where possible.
 - d) Design landscape to create a naturalized appearance. Use plant materials that are indigenous to the Colorado Front Range, where possible (see plant list).
 - e) Use only introduced species in order to achieve design objectives that cannot be achieved with the use of native species (see Plant List).

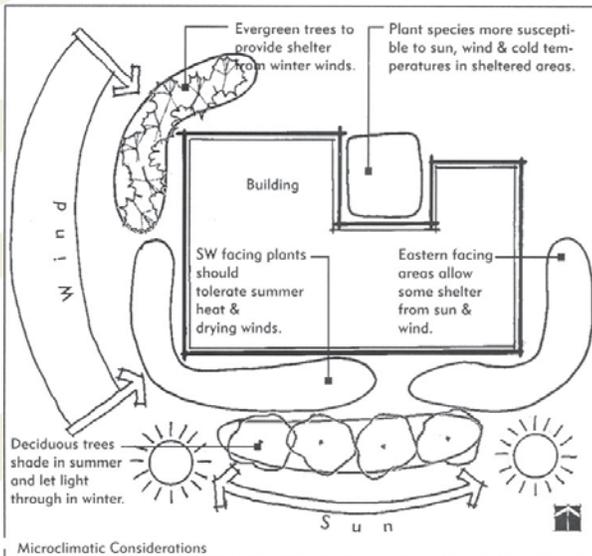
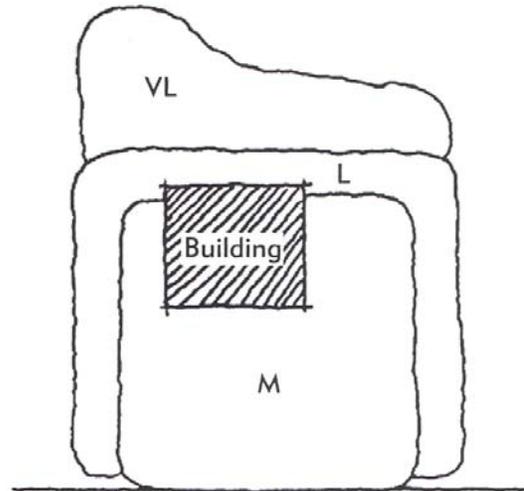


Figure 1a Microclimatic Conditions

- f) Locate plants in microclimate conditions that are appropriate for that species. Only use high water-requiring plants in areas where they will naturally benefit from runoff or available ground water (see fig. 1a).
- g) Avoid relying solely upon an irrigation system to provide water to high water-requiring plants.
- h) Group plant materials of similar water needs and arrange in concentric circles or layers of progressively less water use in order to maximize the efficiency of applied irrigation. (see fig. 2a)
- i) Use plant materials to provide buffering of structures and outdoor formal open space areas from extreme climate.
- j) Use plant materials to soften building architecture.
- k) Coordinate the design of the landscape with site erosion protection, storm drainage, and water quality improvement systems.
- l) Use a minimum three-inch deep mulch to reduce soil moisture loss and moderate soil temperatures.
- m) Improve soil structure by the addition of composted organic material.
- n) Design and manage irrigation systems to achieve peak efficiency.
- o) In landscape adjacent to natural areas – weed barrier and steel edging are strictly discouraged.



VL -Design for very low water use where a parcel abuts an open space in detention areas.

M -Limit moderate water use to heavily used areas, i.e.: employee courtyards, entrances.

L -Design for low water use at site perimeter or low-use areas

Figure 2a Water Use Zones

1.2 Sheridan Parkway

- 1.2.1 **S** Streetscape planting shall comply with City and County of Broomfield Design Criteria and Specifications and approved SDP.

2.0 LANDSCAPE PERFORMANCE STANDARDS

2.1 Irrigation Water Use

- 2.1.1 Public areas and private parcels shall have a specified maximum amount of water that is available for irrigation, based upon the landscape prototype for the type of use and size of parcel.
- 2.1.2 The following table lists the maximum irrigation water use per square foot, per year, based upon gross lot size for each type of land use. Landscape and irrigation system designs shall demonstrate that they will not exceed the water allotment assigned to the specific parcel by submitting a water budget with the landscape plan.

Land Use	Allowable Metered Gallons Per Square Foot of Gross Lot Area Per Year
Business Park	4.5
Commercial	3.5
Residential	5.5
Parks/Irrigated Open Space	12.0
Naturalized Open Space	3.0*

*** Use based on drip irrigation to trees and shrubs. Temporary irrigation for the purposes of seed establishment is allowed for up to three years.**

- 2.1.3 Separate zones for turf, shrubs, perennials, annuals, etc. are required.
- 2.1.4 Separate zones for landscape in easement areas to be maintained by the North Park Master Association or Metropolitan District are required.
- 2.1.5 The amount of irrigation water actually applied shall be the minimum amount necessary to result in plant life of acceptable health and vigor.
- 2.1.6 The irrigation application shall be in accordance with the local historical evapotranspiration (ET) rate curve and modified in response to recent ET rates. Although during periods of extreme ET, the amount of water applied will need to be greater than the historical ET value, at no time shall it exceed the historical ET by more than 30%. ET data is available from an on-site weather station, which will download weather data to the irrigation central control system.
- 2.1.7 Irrigation systems shall be designed to prevent runoff, over-spray, or ponding on sidewalks, streets, paved areas, fences, walls, buildings, or structures.
- 2.1.8 Sidewalks shall not be "overthrown" or receive direct over spray.
- 2.1.9 All Public area irrigation shall be connected to the North Park central control system, which is capable of communicating with all field satellite units as well as assessing and downloading environmental data from on-site weather stations. Communication method shall be in compliance with control system manufacturer's instructions and the current North Park irrigation master plan.
- 2.1.10 All irrigation control systems on individual building sites shall utilize technology compatible with North Park's

central control system and shall connect to it. The site system shall be capable of addressing individual landscape water requirements and appropriate scheduling needs to maximize water conservation potential. Utilize Toro Sentinel Central Controller with flow sensor for each point of connection and two wires back to the controller.

- 2.1.11 Use drip irrigation for plant material whenever possible. Plant material irrigated with overhead spray shall be minimized.
- 2.1.12 Tree and shrub planting in low water or nonirrigated grass areas shall be supplemented with a permanent drip irrigation system or other low water alternative.
- 2.1.13 Design all overhead irrigation to create a uniform water distribution pattern, taking into account wind velocity, slopes, berms, landforms, and tree obstructions. (see fig. 2b)
- 2.1.14 Design laterals to allow for plant zoning according to varying plant water needs, exposure and slopes, mowing heights, turf maintenance practices, topography, building shade, and paving reflection.
- 2.1.15 Avoid any direct or wind blown spray onto any roadways, parking lots, hardscape surfaces, or structures. Wind sensor technology shall be used with the central control system to adjust watering schedules during periods of high winds. Low trajectory nozzles and subsurface irrigation shall be used as necessary.
- 2.1.16 All head spacing shall be adjusted for constant ten MPH wind conditions.
- 2.1.17 Border roadways with pop-up spray heads or low trajectory pop-up rotors to better control potential over spray.
- 2.1.18 Provide pressure regulating control valves on all zones that should be reduced by 20 PSI or more to allow heads/emitters on that zone to operate at the manufacturer's recommended operation pressure. For spray sprinkler laterals, a pressure-compensating device integral to the sprinkler head is acceptable.
- 2.1.19 Laterals shall be designed so that all heads on that zone shall operate within a ten percent pressure differential.

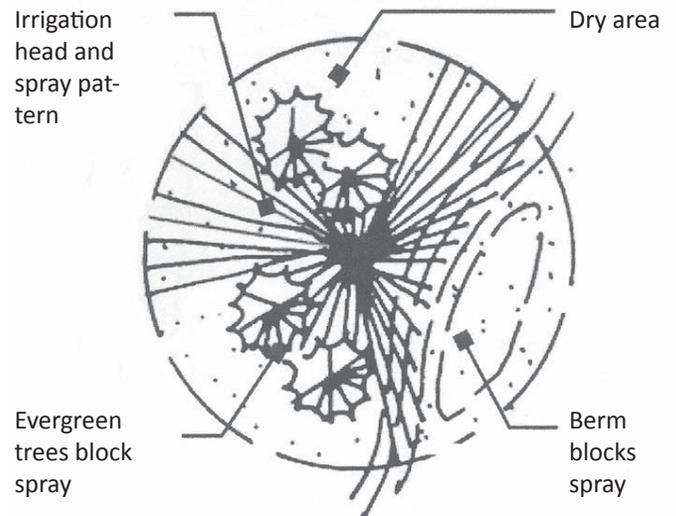


Figure 2b Irrigation Obstructions

2.1.20 Provide sprinkler head check valves where required to prevent low head drainage.

2.2 Installation Period

2.2.1 Install landscaping and irrigation within the first available planting season, or as soon as weather conditions permit.

2.2.2 Complete areas to be landscaped within nine months of the date of occupancy.

2.2.3 A professional landscape architect or landscape designer shall prepare all landscape plans for non-residential uses.

2.3 Existing Topsoil Management

2.3.1 The contractor shall strip top soil off the site at the beginning of a project and pile in windrows not more than 5 feet high. Rows should be seeded with a sterile cover crop to prevent weed seeds contaminating the soil. This process will keep the soil healthy and alive during the construction process and will foster beneficial conditions for installed landscapes.

2.4 Soil Amendment

2.4.1 Provide soil amendments to improve the permeability, water holding capacity, and nutrient value of the soil.

2.4.2 Soils shall be tested by an approved soil-testing agency to determine appropriate soil amendment needs.

2.4.3 Peat moss shall not be used as a soil amendment.

2.4.4 Soil amendments shall be weed free, low in salt content and formulated to meet soil testing laboratory recommendation.

2.4.5 Soil amendments are not recommended in native seeded areas unless a soil test indicates a specific deficiency in the soil.

2.5 Shrub and Tree Sizes and Placement

2.5.1 **S** Tree and shrub sizes shall comply with the following minimum standards (except on private residential lots and in open land areas where native landscapes are being restored or created, or where specifically approved by the DRC).

Plant Type	Typical Minimum Sizes
Deciduous Shade Trees	2" Caliper
Ornamental Trees	1 1/2" Caliper
Evergreen Trees	6' Height
Shrubs	5 Gallon

2.5.2 Provide streetscape variety and visual interest by providing a wide range of evergreen tree heights within the road ROW or setback area. Space plants per fig.2c.

Trees may be closer than 4' from a walk or curb in orchard style parking lot planting islands, tree grates in urban areas, and in areas where the approved street cross-section includes a 6' tree lawn.

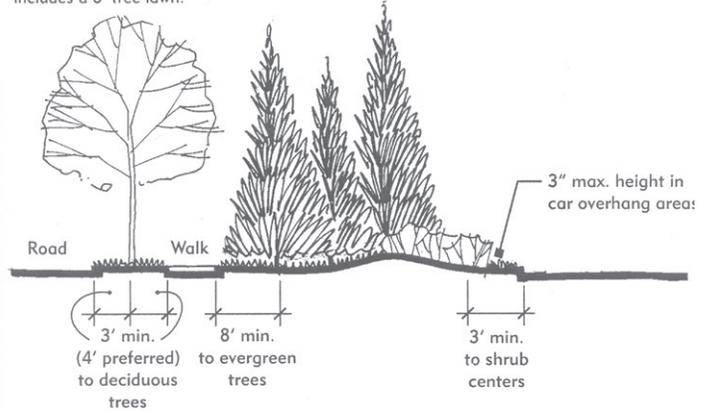


Figure 2c Plant Spacing Criteria

2.5.3 **S** Minimum Plant Sizes - Canopy shade trees shall constitute a minimum 50 percent of all tree plantings, except as otherwise noted.

2.6 Plant Selections

2.6.1 **S** Plant varieties shall be selected from the approved North Park Plant List on Pages 114 through 133 unless specifically approved by the DRC. Prohibited plants listed on Page 134 shall not be used.

3.0 PARKING STRUCTURES

3.1 General

3.1.1 Minimize the impact of stand-alone parking structures with landscaped earth berms and by limiting the overall height of the structure to 45 feet.

3.1.2 Use of plant materials and planter boxes on the exterior facades of stand-alone parking structures to reduce their visual impact is encouraged. (see fig. 3a)

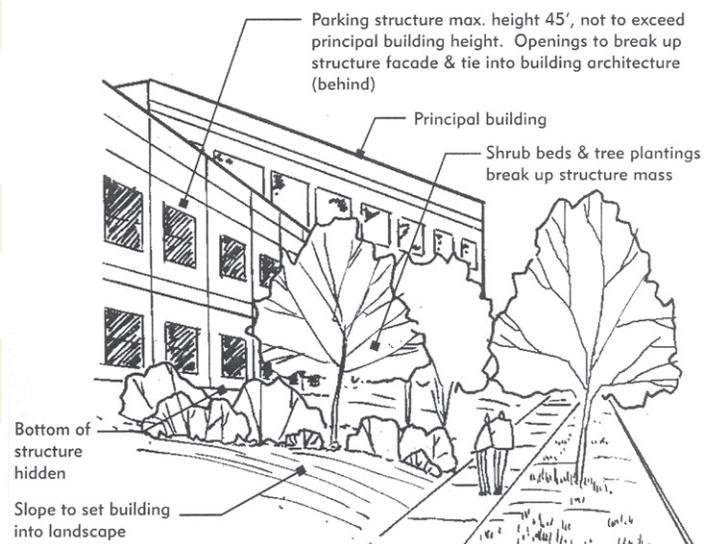


Figure 3a Parking Structure Design

4.0 LANDSCAPE MAINTENANCE

4.1 General

- 4.1.1 Limit the use of pesticides and fertilizers to the minimum required to establish and sustain plant growth.
- 4.1.2 Rely on adequate soil growing medium preparation, aeration, top-dressing with compost, deep and slow watering, variation in species, mulches, and other design and maintenance practices, and less on chemical applications.
- 4.1.3 Minimize the need for mowing by limiting the areas of turf grass is used to landscape areas that receive the most use.
- 4.1.4 Eliminate noxious weeds and hazards per City and County of Broomfield standards.
- 4.1.5 Mow turf grasses to maintain a uniform appearance unless otherwise approved by the DRC (e.g., crop row plantings).
- 4.1.6 Do not mow naturalized grass or meadow areas, except as desired to control weeds or distribute seed heads.
- 4.1.7 Maintain irrigation systems to prevent unnecessary waste of water. Connect irrigation systems, except private residential lots, to the North Park central irrigation control system (See 2.1 Irrigation Water Use).
- 4.1.8 Tree lawns, sidewalks along arterial roadways, and common open space shall be maintained by the North Park Master Association, Metro District, or applicable homeowners association. Maintenance of all other landscape areas shall be the responsibility of the adjacent property owner unless special agreements are made with others.
- 4.1.9 Provide for snow storage and removal on each nonresidential site. Pushing snow into the street or street medians shall not be permitted.

5.0 LANDSCAPE MATERIALS

5.1 Edging, Weed Barriers, and Mulches

- 5.1.1 The preferred bed edging option is a crisp 6' deep trenched edge. Steel edging, minimum four-inches deep, with a non-sharp edge (rolled or protected with plastic strip) or concrete curb edging may be considered only on a case by case basis and must be approved by the DRC.
- 5.1.2 No plastic may be used as a weed control barrier under mulches. When used, weed barriers shall be nonwoven polypropylene that allows water and air to penetrate.
- 5.1.3 Weed barriers are discouraged in conjunction with wood mulch.
- 5.1.4 Provide a three-to-four inch mulch depth to prevent weed growth.
- 5.1.5 Permitted mulch types include the following
 - a) Peastone is preferred material.
 - b) Crushed granite river rock, river cobble (Colors: tan, brown, and slate gray).
 - c) Sandstone quarry tailings.
 - d) Wood mulch (Types: local pine/fir, cedar, and other regionally produced products).
 - e) No white, black, pink, red, green, or other color rock, or dyed wood mulch is permitted.

6.0 BUILDING LANDSCAPING

6.1 General

- 6.1.1 Provide arrangement of plant materials that complement building architecture, accent entries, frame windows, and offer a setting for the height and mass of structures.
- 6.1.2 Mass plant materials to create sheltered outdoor rooms associated with plazas and forecourts. (fig. 6a)

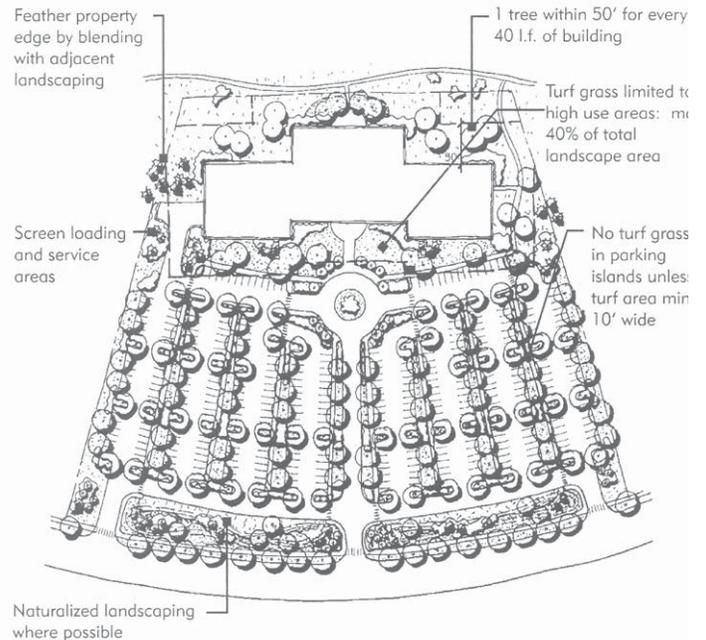


Figure 6a Building Landscape

6.2 Building Landscape

- 6.2.1 Provide five-foot wide planting beds adjacent to building elevations visible from public areas or high use areas a minimum of 50 percent of the length of the wall.

6.3 Environmental Considerations

- 6.3.1 Strategically place landscape materials to buffer structures from winter winds (predominantly north, northwest) allowing solar exposure in the winter, and shade in the summer. (fig. 6b)

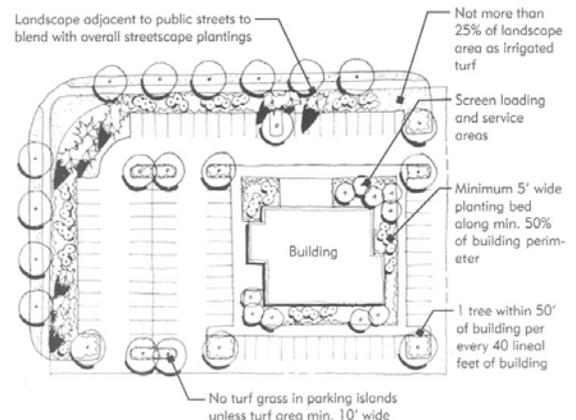


Figure 6b Building Landscape

6.4 Landscape Edges

- 6.4.1 Blend landscape edges of office/employment parcels with adjacent properties and Rights of Way, in conformance with the Landscape Master Plan. Harsh lines at the edges of properties, such as abrupt changes of mulch type, or plant materials placed in obvious lines shall be avoided.
- 6.4.2 Vary landscaping in height and density adjacent to open land areas, so as to avoid a hedge or total screen appearance. Open land areas should appear to flow into the site and blur the property edge.
- 6.4.3 Locate low water use landscape zones on the perimeter of property designed to blend with adjacent off-site open land.
- 6.4.4 Blend on-site perimeter landscape with off-site tree and shrub masses within the public ROW. Grass and ground plane landscape treatments shall also harmonize with the streetscape design, and transition gradually to the internal on-site landscape.

7.0 GRADING AND DRAINAGE

7.1 General

- 7.1.1 Develop grading and drainage designs that minimize runoff and utilize storm drainage systems to meet basic engineering requirements.
- 7.1.2 Improve the quality of storm water before it degrades natural systems.
- 7.1.3 **S** Site drainage shall be compatible with adjacent property drainage and in accordance with the overall master drainage plan for North Park.
- 7.1.4 **S** Storm drainage shall not run on an adjacent property at rates higher than historic rates prior to construction of the project, unless otherwise approved by the DRC and the City and County of Broomfield.
- 7.1.5 Minimize excess runoff from the site and provide positive drainage away from all foundations and buildings.
- 7.1.6 Direct water from parking lots, roof drains and other areas into landscape areas that could benefit from additional water and/or improve the quality of the storm water (see fig 7a).
- 7.1.7 Convey drainage along dedicated streets, private drives and swales along property lines, or in open space corridors. Sheet flow and surface drain where possible. (see fig. 7a)

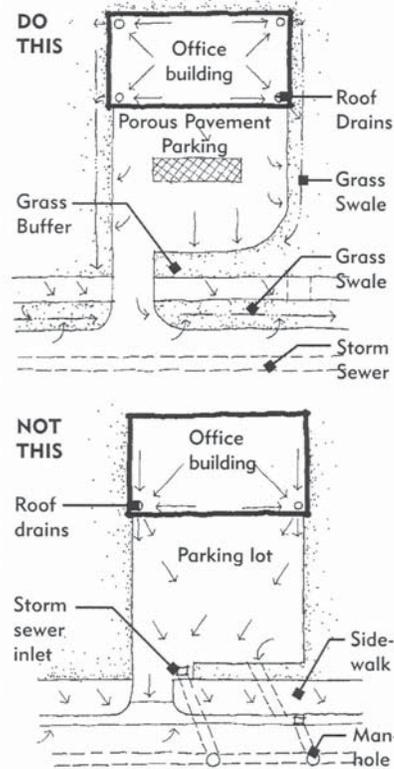


Figure 7a Water Quality Enhancement Examples (Source: Urban Storm Drainage Criteria Manual, vol.3)

- 7.1.8 **S** Grade surface drain systems and detention ponds in irregular shapes, in an aesthetically pleasing character. Vary side slopes. (see fig. 7b) See Natural Area and Detention/Water Quality Section on Pages 71-104 for further requirements.

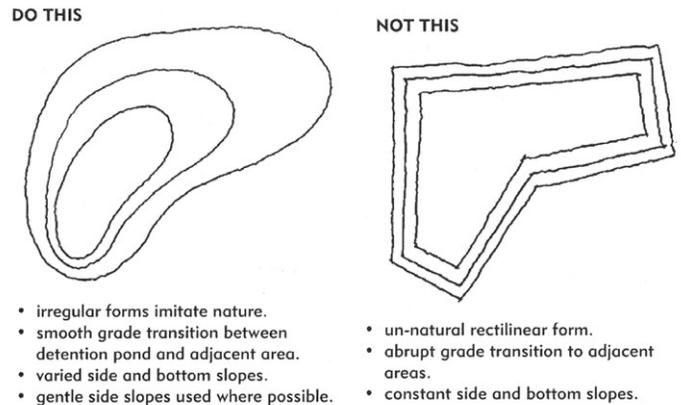


Figure 7b Detention Pond Landforms

- 7.1.9 Place drainage structures that occur in sidewalks and bike paths flush with the surface. Grate patterns shall not have openings greater than 3/8".
- 7.1.10 Surface storm water or irrigation shall not be discharged across sidewalks; and there should be no point discharges into curbs to prevent traffic-impeding surges into the street.
- 7.1.11 Utilize Urban Drainage Best Management Practice as a guide for all storm drainage systems.
- 7.1.12 **S** No plain concrete drainage pans are allowed in landscaped areas. If hardened drainage swales must be used, they shall be designed using embedded cobble stones to complement and enhance the adjacent area rather than detract from its appearance. No hardened surface is preferred in order to decrease run-off, increase infiltration, and improve water quality.
- 7.1.13 Site building to minimize cut & fill.
- 7.1.14 **S** There shall be no grading beyond the limits of each property except as agreed upon by adjacent owners and the DRC.
- 7.1.15 Maximum slopes 3:1. Maximum 4:1 slopes for areas that require mowing.
- 7.1.16 **S** Grade berms in irregular shapes, in an aesthetically pleasing character. Vary side slopes. (see fig. 7c)

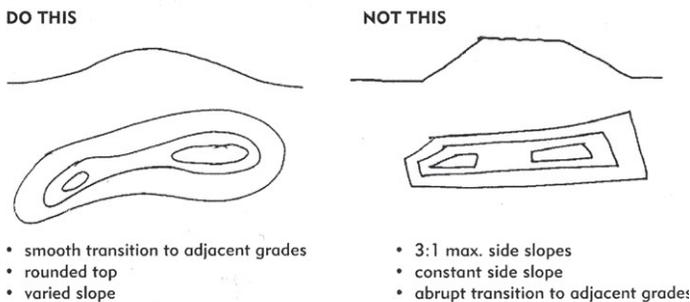


Figure 7c Berm Topography

8.0 EXISTING VEGETATION AND PRESERVATION

8.1 General

- 8.1.1 **S** Grading shall not occur within the buffer zone areas that are determined to have good quality existing natural vegetation as determined by a qualified biologist/ecologist.
- 8.1.2 **S** When development occurs adjacent to natural areas, limits of construction shall be identified and approved by the DRC. A temporary barrier fence shall be installed and maintained for the duration of the construction period.

- 8.1.3 **S** Grading and site design shall protect existing trees to the greatest extent possible. Existing trees that cannot remain shall be moved to another location on-site, moved to another location within North Park, or re-placed in-kind with additional tree plantings according to the North Park PUD.

Tree Removed	Replace With
24" or larger caliper tree	(3) 4" min. caliper trees
12" to 24" caliper tree	(2) 4" min. caliper trees
12" to 24" caliper tree	(1) 4" min. caliper tree
0" to 6" caliper tree	(1) 3" min. caliper tree

- 8.1.4 Vegetation that is an undesirable species as determined by the DRC or the City and County of Broomfield shall not be protected.
- 8.1.5 Vegetation that is seriously diseased or near the end of its lifespan may be removed at the discretion of the DRC.
- 8.1.6 In selected open space areas, dead or diseased trees may be preserved in order to provide wildlife habitat. Trees or branches that pose a safety hazard shall be removed.
- 8.1.7 Existing good quality trees and shrubs within areas that can be developed (excluding floodways and wetland areas) may be used to satisfy the landscaping requirements. All required grading plans shall accurately identify the locations, species, size, condition and proposed disposition of all existing vegetation.
- 8.1.8 Existing trees that will remain and their root systems shall receive adequate water to ensure survival, and shall be protected from damage, soil contamination and compaction with the drip line during construction through the use of barricades or fencing.

9.0 OPEN LANDS

9.1 General

- 9.1.1 Provide open lands as a transition between development parcels and natural areas.
- 9.1.2 Provide open lands as trail corridors, drainage areas, and as relief from the built environment.
- 9.1.3 Plan open land areas with native or regionally adapted plant materials, primarily unirrigated after being established.
- 9.1.4 Trees and shrubs that are not expected to receive enough water through natural precipitation may be irrigated.
- 9.1.5 Temporary irrigation systems for the establishment of grasses will be allowed for up to three (3) years.
- 9.1.6 Coordinate open lands with the design of storm water conveyance and water quality systems.

LANDSCAPE PLANT LIST

BASELINE APPROVED PLANT LIST

The following plant list has been established and approved by the North Park Design Review Committee (DRC) for the Baseline Community. Any substitutions or variances from the following list must be submitted to the DRC for review and approval.

LEGEND

Preferred Species	Do not over water	Abbreviations for Recommended District/Area: UC = Urban Core R = Residential I = Industrial P = Parks A = All districts/areas (excluding natural areas)
Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

* A Native Plant is defined as those native to the Rocky Mountain Inter-Mountain Region.

**A Pollinator is defined as those that provide food and/or reproductive resources for pollinating animals, such as honeybees, native bees, butterflies, moths, beetles, flies and hummingbirds.

SHRUBS

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Abronia fragrans</i>	Snowball Sand Verbena	White	6-7	4-24"	4-24"			R, P
<i>Agave americana</i>	Century Plant	Greenish Yellow	Late Spring, Early Summer	6'-12'	6-10'		+	UC May not be reliably hardy, requires sandy/gritty soil
<i>Alnus incana ssp. tenuifolia</i>	Thinleaf Alder	Purple	Early Spring	15-40'	15-40'			* P Host plant, Spreads - more appropriate for parks, More tree-like; catkins through winter
<i>Amelanchier alnifolia</i>	Saskatoon Serviceberry	White	Mid Spring	4'-15'	6'-8'			* A
<i>Amelanchier canadensis</i>	Shadblow Serviceberry	White	Mid Spring	25'-30'	15'-20'			* A High habitat value for pollinators and birds; Protect from wind
<i>Amelanchier utahensis</i>	Utah Serviceberry	White	Mid Spring, Late Spring	12'	12'			* A High habitat value for pollinators and birds
<i>Amorpha canescens</i>	Lead Plant	Blue, Purple	Late Spring, Early Summer	3'-6'	6'			* A Possible replacement for Russian Sage; host plant
<i>Arctostaphylos uva-ursi</i>	Kinnikinnick	Insignificant	Mid Spring, Late Spring, Early Summer	6"-12"	15'			* R, UC Prefers the winter shade of pines; Requires excellent drainage
<i>Aronia arbutifolia</i>	Red Chokeberry	White	Early Spring, Mid Spring, Late Spring, Early Summer, Mid-Summer	8'	6'			A
<i>Aronia melanocarpa</i>	Black Chokeberry	White	Early Spring, Mid Spring, Late Spring, Early Summer, Mid-Summer	8'	6'			A
<i>Artemisia cana</i>	Silver Sagebrush	Insignificant	Summer, Early Fall	1'-3'	3'		+	* A Silver foliage; Drought tolerant; Water sparingly the 1 st year, and then remove irrigation.
<i>Artemisia filifolia</i>	Sand Sagebrush	Insignificant	Late Summer, Early Fall, Mid Fall, Late Fall, Early Winter	5'	3'		+	* A Silver foliage; Water sparingly the 1 st year, and then remove irrigation.

BASELINE APPROVED PLANT LIST

SHRUBS (Continued)

LEGEND

Preferred Species	Do not over water	Abbreviations for Recommended District/Area: UC = Urban Core R = Residential I = Industrial P = Parks A = All districts/areas (excluding natural areas)
Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Artemisia tridentata</i>	Big Sagebrush	Insignificant	Early Summer	6'-12'	6'-8'			* A Silver foliage; Water sparingly the 1 st year, and then remove irrigation.
<i>Atriplex canescens</i>	Four-winged Saltbush	Insignificant	Early Spring-Late Fall	6'-12'	3-6'			* A Interesting seed pods; Water sparingly the 1 st year, and then remove irrigation.
<i>Buddleja davidii</i>	Butterfly Bush	Insignificant	Early Summer - Early Fall	6'-12'	4'-15'			A; Must be deadheaded to maintain looks; cut back in winter
<i>Caryopteris x clandonensis 'blue mist'</i>	Blue Mist Spirea	Powder Blue	Late Summer - Mid Fall	2'-3'	2'-3'			A; Honeybee forage; will re-seed in irrigated areas; Often cut back in spring
<i>Cercocarpus intricatus</i>	Littleleaf Mountain Mahogany	Insignificant	Early Spring, Mid Spring, Late Winter	6'	5'			* A Bark and seeds provide nice texture; semi-evergreen provides shelter; open habit
<i>Cercocarpus montanus</i>	Mountain Mahogany	Yellow Green	Early Summer	8'	6'			* A Open habit; Appealing, curly seeds
<i>Cercocarpus ledifolius</i>	Curl-leaf Mountain Mahogany	Insignificant	Early-Mid Spring	10'-25'	10'-20'			* A Open habit; Appealing seeds
<i>Chaenomeles japonica</i>	Japanese Quince	Red	Mid Spring	3'	6'			A Flowers appear before foliage.
<i>Chamaebatiaria millefolium</i>	Fernbush	White	Mid-Summer, Late Summer	5'	6'			* UC, I, P Especially attractive to bumblebees; Suitable for conventional landscapes; Semi-evergreen
<i>Chrysothamnus nauseosus</i>	Rubber Rabbitbrush	Yellow	Late Summer	4-6'	4-6'			* A Syn. <i>Ericameria</i> ; extremely high habitat value
<i>Chrysothamnus nauseosus ssp. nauseosus</i>	Dwarf Blue Rabbitbrush	Yellow	Fall	4'	4'			* A Syn. <i>Ericameria</i> ; extremely high habitat value
<i>Chrysothamnus viscidiflorus</i>	Yellow Rabbitbrush	Yellow	Late Summer, Early Fall, Mid Fall	5'	5'			* A Syn. <i>Ericameria</i> ; extremely high habitat value
<i>Cornus alba</i>	Tatarian Dogwood	Yellow Green	Late Spring, Early Summer	8'	6'			A
<i>Cornus alternifolia</i>	Alternate leaf Dogwood	Cream	Late Spring, Early Summer	25'	20'			A
<i>Cornus racemosa</i>	Grey Dogwood	White	Late Spring, Early Summer	15'	15'			A

BASELINE APPROVED PLANT LIST

SHRUBS (Continued)

LEGEND

Preferred Species	Do not over water	Abbreviations for Recommended District/Area: UC = Urban Core R = Residential I = Industrial P = Parks A = All districts/areas (excluding natural areas)
Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Cornus sericea</i>	Redosier / Red Twig Dogwood	White	Spring to Summer	6-8'	6-8'			* A Red stems provide winter interest
<i>Corylopsis glabrescens</i>	Winterhazel	Light Yellow	Early Spring	15'	8'			UC, R
<i>Corylus americana</i>	American Hazelnut	Tan	Early Spring, Mid Spring	15'	13'			UC, R
<i>Cotoneaster adpressus</i>	Creeping Cotoneaster	White	Late Spring, Early Summer	2'	6'			A; Red berries
<i>Cotoneaster apiculatus</i>	Cranberry Cotoneaster	Light Pink	Late Spring, Early Summer	2'	6'			A; Stiff arching branches, red berries
<i>Cotoneaster dammeri</i>	Bearberry Cotoneaster	White	Late Spring	2'	6'			A; Red berries
<i>Cotoneaster hessei</i>	Cotoneaster	Light Red	Late Spring	18"	5'			A; Red berries
<i>Cotoneaster multiflorus</i>	Many-flowered Cotoneaster	White	Early Summer, Mid-Summer	12"	4'			A; Red berries
<i>Crataegus erythropoda</i>	Shiny-leaved Hawthorn	White	Spring	10-20'	8-15'			* A
<i>Crataegus phaenopyrum</i>	Washington Hawthorn	White	Early Summer	20'-25'	20'			A
<i>Ephedra americana</i>	Jointfir	Light Yellow	Late Spring, Early Summer	4'	3'			* A; Semi-evergreen
<i>Ephedra viridis</i>	Mormon Tea	Insignificant	Early Spring	4'-6'	4'-6'			* A
<i>Euonymus alatus</i>	Burning Bush	Insignificant	Late Spring	15'-20'	8'-12'			U; Bright red foliage
<i>Euonymus kiautschovicus</i> 'Manhattan'	Manhattan Euonymus	Insignificant	Mid-Summer	4'-5'	5'-6'			U Evergreen; Spreading habit broadleaf for full shade
<i>Fallugia paradoxa</i>	Apache Plume	White	Late Spring - Early Winter	3'-5'	3'-5'			* A Appealing seed heads; Flowers attract honeybees and native bees
<i>Forestiera neomexicana</i>	New Mexico Privet	Insignificant	Mid Spring - Late Spring	8'-12'	6'-8'			* A
<i>Juniperus horizontalis</i>	Creeping Juniper	N/A	N/A	18"	8'			A; Evergreen
<i>Juniperous x media 'pfitzeriana compacta'</i>	Compact Pfitzer Juniper	N/A	N/A	18"	5'			A; Evergreen; Blue green foliage, irregularly round habit
<i>Juniperus x media 'sea green'</i>	Seagreen Juniper	N/A	N/A	5'-6'	6'-8'			A; Evergreen
<i>Juniperus sabina</i>	Juniper	N/A	N/A	4'-6'	5'-10'			A; Evergreen
<i>Juniperus squamata</i>	Singleseed Juniper	N/A	N/A	16'	3'			R Evergreen; Use in protected areas
<i>Ligustrum vulgare</i>	European Privet	White	Early Summer, Mid-Summer	3'	4'			UC; Use for hedge applications only; Low habitat value
<i>Malus sargentii</i>	Sargent Crabapple	White	Mid Spring, Late Spring	8'	15'			A Benefits birds
<i>Mahonia aquifolium</i>	Compact Oregon Grape Holly	Yellow	Spring	6'	6'			* A Early blooms for pollinators, berries for birds; Foliage interest

BASELINE APPROVED PLANT LIST

LEGEND

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Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

SHRUBS (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Mahonia repens</i>	Creeping Grape Holly	Yellow	Late Spring, Early Summer	1'-2'	3'			* A Early blooms for pollinators, berries for birds; Foliage interest
<i>Perovskia atriplicifolia</i>	Russian Sage	Lavender	Late Summer, Fall	3'-5'	2'-4'		+	A Consider subbing with a native species (i.e. leadplant); honeybee forage only
<i>Philadelphus coronarius</i>	Mock Orange	White	Late Spring, Early Summer	10'	10'			P; Fragrant
<i>Philadelphus lewisii</i>	Mock Orange	White	Late Spring, Early Summer	7'	6'			* A; Fragrant Preferred species of mock orange
<i>Philadelphus microphyllus</i>	Little-leaf Mockorange	White	Late Spring, Early Summer	4'-6'	4'-6'			* A; Fragrant
<i>Physocarpus monogynus</i>	Mountain Ninebark	White	Spring	4'	4'			* A
<i>Physocarpus opulifolius</i>	Ninebark	Light Pink, White	Late Spring, Early Summer	6'	4'			* A
<i>Physocarpus opulifolius 'nanus'</i>	Dwarf Ninebark	White	Late Spring, Early Summer	1'-2'	2'-3'			* A
<i>Picea pungens 'Thume'</i>	Colorado Blue Spruce	N/A	N/A	8'	4'			A; Evergreen; Any cultivars are appropriate
<i>Pinus sylvestris 'Repens'</i>	Creeping Scot's Pine	N/A	N/A	50"	30"			A; Evergreen; Any cultivars are appropriate
<i>Potentilla fruticosa</i>	Potentilla	Yellow	Summer	2'-3'	2'-3'			A; Any cultivars are appropriate
<i>Prunus besseyi</i>	Western Sand Cherry	White	Spring	3'	6'		+	* A Attractive and reliable for many sites; great native bee plant
<i>Prunus maackii</i>	Amur Chokecherry	White	Late Spring	20'-30'	18'-25'			P, I Golden, exfoliating bark
<i>Prunus virginiana melanocarpa</i>	Western Chokecherry	White	Spring	20'	12'			* P Attractive and reliable for many sites; high habitat value for birds and wide range of pollinators; Can spread like crazy
<i>Purshia mexicana</i>	Mexican Cliffrose	Light Yellow	Mid Spring, Late Spring, Early Summer	6'	4'		+	P, R
<i>Purshia tridentata</i>	Antelope Bitterbrush	Yellow	Late Spring, Early Summer	8"	8"			* P, R Scrubland shrub; Plant in well drained area
<i>Pyracantha angustifolia 'gnome'</i>	Gnome Firethorn	White	Late Spring	4'-6'	4'-8'			I, P; Large, persistent orange berries; Wicked thorns
<i>Quercus gambelii</i>	Gambel Oak	Insignificant		8'-20'	6'-12'			* P Host plant; Plant on gravel berm; Must have excellent drainage
<i>Rhamnus smithii</i>	Smith's Buckthorn	Yellow Green	Late Spring, Early Summer	10'	10'			P, R, I

BASELINE APPROVED PLANT LIST

SHRUBS (Continued)

LEGEND

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Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

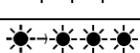
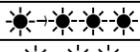
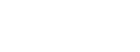
Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Rhus aromatica</i> 'gro-low'	Grow Low Sumac	Insignificant	Late Spring	1'-2'	6'-8'			A Brilliant fall foliage
<i>Rhus glabra</i>	Smooth Sumac	Insignificant	Early Summer	9'-15'	9'-15'			P Brilliant fall foliage
<i>Rhus trilobata</i>	Three-leaf Sumac	Insignificant	Mid Spring, Late Spring	6'	6'			A High habitat value, especially for native bees; Use in masses; Brilliant fall foliage
<i>Ribes alpinum</i>	Alpine Currant	Yellow Green	Mid Spring	6'	6'			A
<i>Ribes americanum</i>	American Black Currant	Yellow	Spring	2-4'	2-4'			P, R
<i>Ribes aureum</i>	Golden Currant	Yellow Orange	Mid Spring, Late Spring	3'-7'	2'-6'			P High habitat value, esp. for migrating hummingbirds and bumblebee queens; Will sucker; Red autumn foliage is amazing
<i>Ribes cereum</i>	Wax Currant	Light Pink	Mid Spring	4'	4'			A
<i>Ribes odoratum</i> 'Crandall'	Clove Currant	Yellow	Mid Spring	5'	10'			P, R Great fall color; Good for birds
<i>Rosa glauca</i>	Redleaf Rose	Pink	Late Spring, Early Summer	8'	5'			P, R, UC Red-purple foliage provides nice contrast
<i>Rosa</i>	All shrub roses, including: Hybrid Rugosa Rose Floribunda Rose Explorer Series	Light Pink	Late Spring, Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	7'	7'			P, R; Low habitat value for pollinators; Provides habitat for birds
<i>Rosa</i> 'Nearly Wild'	Floribunda Rose	Pink	Late Spring, Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	4'	4'			P, R; Low habitat value for pollinators; Provides habitat for birds
<i>Salix irrorata</i>	Bluestem Willow	Insignificant	Spring	12'	8'			P, R, Streetscape
<i>Salix purpurea</i> 'nana'	Dwarf Artic Willow	Insignificant	Spring	3'-5'	3'-5'			P, R, Streetscape
<i>Sambucus ebulus</i>	Dwarf Elderberry	White	Mid-Summer, Late Summer	4'	4'			P May be rangy in small yards; Bird plant
<i>Shepherdia argentea</i>	Buffaloberry	Yellow	Early Spring	8'-12'	8'-12'			P, I Edible fruit; Silver foliage; Provides habitat for birds
<i>Sibiraea laevigata</i>	Siberian Spirea	White	Early Summer	5'	8'			P, R, Streetscape
<i>Spiraea fritschiana</i>	Korean Spirea	White	Early Summer, Mid-Summer	3'	4'			UC, P, Streetscape

BASELINE APPROVED PLANT LIST

SHRUBS (Continued)

LEGEND

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Allowed Species	 Protect from sun and wind	
* Native*	 Moisture Rating (Low Moisture - High Moisture)	
 Pollinator**	 Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
SHRUBS								
<i>Spiraea japonica</i>	Japanese Spiraea	Pink	Late Spring, Early Summer, Mid-Summer	3'	3'			UC, P, Streetscape
<i>Spiraea myrtilloides</i>	Myrtle Spirea	White	Early Summer, Mid-Summer	8'	4'			UC, P, Streetscape
<i>Spiraea prunifolia</i>	Bridal Wreath Spirea	White	Mid Spring, Late Spring	8'	8'			UC, P, Streetscape; Invasive in eastern U.S.
<i>Spiraea trilobata</i>	Three-lobed Spirea	White	Late Spring, Early Summer	4'	4'			UC, P, Streetscape
<i>Symphoricarpos occidentalis</i>	Snowberry	White	Mid-Summer	3'-6'	3'-6'			  P Great plant for birds
<i>Symphoricarpos orbiculatus</i>	Red Coralberry	White, Green	Mid Spring, Early Summer	3'-6'	3'-6'			A
<i>Syringa meyeri 'palibin'</i>	Dwarf Korean lilac	Pale pink	Mid Spring, Late Spring	4-5'	5-7'			 A; Fragrant
<i>Syringa vulgaris</i>	Common Lilac	Purple - White	Late Spring	20'	12'			 P, I, R Susceptible to powdery mildew; Fragrant
<i>Viburnum carlesii</i>	Koreanspice Viburnum	White	Early Spring, Mid Spring	5'	6'			 A; Fragrant
<i>Viburnum dentatum</i>	Southern Arrowwood	White	Late Spring, Early Summer	8'	8'			P, UC; Uniform branching habit
<i>Viburnum lentana</i>	Wayfaringtree	White	Late Spring	10'	8'			P, UC, I
<i>Viburnum lentago</i>	Nannyberry	White	Late Spring	15'	8'			P, UC, I; Upright arching branches
<i>Viburnum trilobum 'Compactum'</i>	American Cranberrybush	White	Mid Spring	5'	5'			P, UC, R; Fruit bearing
<i>Viburnum x burkwoodii</i>	Burkwood Viburnum	White	Mid Spring	8'	8'			P, UC, R
<i>Yucca glauca</i>	Soap Weed	White	Summer	2-3'	2-3'		 → 	   A

BASELINE APPROVED PLANT LIST

PERENNIALS & GRASSES

LEGEND

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Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Achillea lanulosa</i>	Woolly Yarrow	White	Summer	18"	18"			* A; Forage for wide range of small pollinators
<i>Achillea millefolium</i>	Common Yarrow	White	Early Summer, Mid-Summer, Late Summer, Early Fall	2'	3'			A; Can be aggressive; Any cultivar is okay
<i>Adenolinum (linum) lewisii</i>	Blue Flax	Blue	Summer	12"	12"			* A Short-lived, but re-seeds; gives a "wild" or "natural" effect
<i>Agastache cana</i>	Double Bubblemint	Pink	Summer-Fall	3'	2'			* A; High habitat value for long-tongued pollinators
<i>Agastache foeniculum</i>	Anise Hyssop	Blue	Summer-Fall	3'	2'			* A; Especially attractive to bumble bees
<i>Agastache rupestris</i>	Sunset Hyssop	Orange	Late Summer, Fall	1'-2'	1'-1.5'			* A; High habitat value for long-tongued pollinators
<i>Aquilegia caerulea</i>	Rocky Mountain Columbine	Blue, White	Mid to Late Spring	1'-2'	1'-2'			* A; Colorado State flower
<i>Ajuga reptans 'Mahogany'</i>	Bugleweed	Blue	Late Spring, Early Summer	6"	6"			R; Ground cover; Spreads aggressively
<i>Alchemilla mollis</i>	Lady's Mantle	Yellow Green	Early Summer	2'	2'			A; Tidy and attractive in the right setting
<i>Amsonia jonesii</i>	Jones' Bluestar	Light blue	Mid Spring, Late Spring, Early Summer	2'	2'			* A
<i>Anthemis marschalliana</i>	Filigree Daisy	Yellow	Late Spring, Early Summer, Mid-Summer	4"	12"			R; Tidy border plant; Prefer Engelmann Daisy
<i>Aquilegia chrysantha</i>	Golden Columbine	Yellow	Late spring	3'	2'			A; Long blooming
<i>Armeria maritima</i>	Sea Thrift	Pink	Mid Spring, Late Spring, Early Summer	12"	12"			P, R; Tidy border plant
<i>Artemisia frigida</i>	Fringed Sagebrush	Yellow	Summer	2'	2'			* A; Silver foliage
<i>Artemisia ludoviciana</i>	Prairie Sage	Yellow	Summer	40"	36"			* A Silver foliage; Can spread to become groundcover
<i>Artemisia schmidtiana</i>	Wormwood	White	Early Summer	18"	24"			A
<i>Artemisia versicolor 'seafoam'</i>	Seafoam Artemisia	Yellow	Mid-Summer	6"-12"	18"-24"			A; Low water; Grey foliage
<i>Asclepias incarnata</i>	Swamp Milkweed	White/Pink	Summer	36-72"	24"			* A; Superior milkweed choice for landscaping; Monarch host; High habitat value
<i>Asclepias tuberosa</i>	Butterfly Weed	Orange	Summer	12"	12"			* R, P, Streetscape; Monarch host; High habitat value
<i>Aster alpinus 'Goliath'</i>	Goliath Alpine Aster	Light Blue	Mid Spring, Late Spring, Early Summer	12"	18"			A; High habitat value for pollinators and birds

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PERENNIALS & GRASSES (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Aster ascendens</i>	Western Aster	Light Purple	Late Spring, Early Summer, Mid-Summer	24"	24"			* A Syn. Symphyotrichum ascendens; High habitat value for pollinators and birds; Good for buffers
<i>Aster ericoides</i>	Many-flowered Aster	White	Late Summer	18-24"	24"			* A; High habitat value for pollinators and birds
<i>Aster falcatus</i>	Rough White Aster	White	Late Summer	24-48"	24"			* A; High habitat value for pollinators and birds
<i>Aster hesperius</i>	Western Aster; Violet Aster	Pink	Late Summer	36-60"	20"			* A; High habitat value for pollinators and birds
<i>Aster x frikartii 'monch'</i>	Monch Aster	Lavender	Late Summer, Fall	2'-3'	1'-1.5'			A; High habitat value for pollinators and birds
<i>Aster porteri</i>	Porter's Aster	White	Late Summer	18-24"	24"			* A; High habitat value for pollinators and birds
<i>Aubrieta deltoidea</i>	Purple Rockcress	Purple	Mid Spring, Late Spring, Early Summer	6"	12"			R, P
<i>Baptisia australis</i>	Blue Wild Indigo	Blue	Late Spring, Early Summer	4'	3'			A Attractive to bumblebees; Long lived; Shrub like perennial
<i>Bergenia cordifolia</i>	Heartleaf Bergenia	Pink	Late Spring	1'-1.5'	1'-1.5'			A; Large evergreen leaves
<i>Berlandiera lyrata</i>	Chocolate Flower	Yellow	Late Spring, Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	24"	18"			* A; Fragrant
<i>Callirhoe involucrata</i>	Poppy Mallow	Red violet	Summer	6"	18"			* A Easy care; Host for fritillary butterflies; Spreading plant
<i>Calylophus serrulata</i>	Calyophus	Yellow	5-9	8-12"	15"			* A
<i>Campanula cochlearifolia</i>	Earleaf Bellflower	Violet	Late Spring, Early Summer, Mid-Summer	6"	12"			A
<i>Campanula persicifolia</i>	Willow Bell	Blue	Early Summer, Mid-Summer	3'	18"			A
<i>Campanula rotundifolia</i>	Bluebell Bellflower	Light Blue	Early Summer, Mid-Summer, Late Summer, Early Fall	10"	8"			* A
<i>Centranthus ruber</i>	Red Valerian	Pink	Late Spring	3'	2'			P, Streetscape Indestructible, benefits from timely deadheading
<i>Cerastium tomentosum</i>	Snow-in-Summer	White	Early Summer	.5'-1'	.75'-1'			Aggressive; Silver foliage
<i>Cerastostigma plumbaginoides</i>	Plumbago	Blue	Mid-Summer, Late Summer, Early Fall	12"	24"			P, R, Streetscape; Late blooming perennial
<i>Clematis</i>	Clematis	White - Purple	Early Summer, Late Summer, Mid-Summer	6'	Vine			R; Will need support

BASELINE APPROVED PLANT LIST

PERENNIALS & GRASSES (Continued)

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Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

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FORBS								
<i>Convallaria majalis</i>	Lily of the Valley	White	Early Spring	12"	15"			R; Understory plant; Fragrant
<i>Coreopsis verticillata</i>	Coreopsis	Yellow	Summer	1.5'-2'	1.5'-2'			A
<i>Crambe maritima</i>	Curly Leaf Sea Kale	White	Late Spring, Early Summer	6'	4'			P; Use as contrast foliage; Huge plant
<i>Dalea purpurea</i>	Purple Prairie Clover	Rose, Purple	Summer	1'-3'	1'-1.5'			* A
<i>Delosperma cooperi</i>	Hardy Ice Plant	Red purple	Summer, Early Fall	.25'-.5'	1'-2'			A; Semi-evergreen
<i>Dianthus 'Bath's Pink'</i>	Cheddar Pink	Pink	Late Spring	10"	10"			P, R, UC; Semi-evergreen
<i>Digitalis lanata</i>	Grecian Foxglove	Cream	Early Summer, Mid-Summer	24"	18"			A
<i>Digitalis obscura</i>	Sunset Foxglove	Yellow	Late Spring Early Summer	24"	20"			A; Preferred foxglove selection - Plant Select
<i>Echinacea purpurea</i>	Eastern Purple Coneflower	Light Purple	Early Summer, Mid-Summer, Late Summer	3'	2'			P, R High habitat value: Low maintenance; A favorite of rabbits
<i>Echinacea tenesseeensis</i>	Small Tennessee Purple Coneflower	Purple	Early Summer, Mid-Summer, Late Summer	30"	24"			A; High habitat value; Low maintenance; A favorite of rabbits
<i>Engelmannia peristenia</i>	Englemann Daisy	Yellow	Late Spring Early Summer	24"	30"			* A Plant Select; Preferred over Anthemis
<i>Erigeron speciosus</i>	Aspen Daisy	Lavender	Summer	24"	24"			A; May spread aggressively
<i>Eriogonum umbellatum</i>	Sulfur Flower	Yellow	7-8	6-18"	24"			P, R, UC; Semi-evergreen; Persistent seed heads
<i>Euonymus fortunei 'Coloratus'</i>	Purpleleaf Wintercreeper	White	Mid Spring	.5'-.75'	1'-3'			A; Evergreen
<i>Gaillardia aristata</i>	Blanket Flower	Red/ Yellow	Summer, Fall	24"	24"			* A Long blooming period, especially when deadheaded; Tolerates heat
<i>Galium odoratum</i>	Sweet Woodruff	White	Mid to Late Spring	.5'-1'	.75'-1.5'			A; Aggressive spreader
<i>Gaura lindheimeri</i>	Beeblossom	White/Pink	Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	3'	2'			P, R, UC; Excellent long blooming perennial
<i>Geranium cultivars</i>		Pale Pink - Violet	Summer	2'	2'			P, R, UC
<i>Glandularia wrightii</i>		Pink	Early Summer	3"	6"			A; Likes sandy soil
<i>Gutierrezia sarothrae</i>	Snakeweed	Yellow	Late Summer, Early Fall, Mid Fall	3'	3'			* A; Shrub like
<i>Helianthemum grandiflorum ssp. grandiflorum</i>	Rockrose	Yellow	Late Spring, Early Summer	12"	24"			P, R; Attractive all season long

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* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

PERENNIALS & GRASSES (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Helianthus annuus</i>	Annual Sunflower	Yellow	Summer	10'	3'			A; High habitat value; even if not included in design, there should be allowance to keep them in the landscape; included in maintenance guidelines; will re-seed
<i>Helianthus maximiliani</i>	Maximilian sunflower	Yellow	Early Fall	3'-10'	2'-4'			* A
<i>Hemerocallis ssp.</i>	Daylily	Varies	Summer	1'-3'	1'-3'			I, UC, Streetscapes; Low habitat value - restrained use, but great for tough locations
<i>Hesperaloe parviflora</i>	Red Yucca	Pink	Summer	3'	3'			A High habitat value for pollinators, esp. hummingbirds; Habit provides interest
<i>Heuchera pulchella</i>	Sandia Mountain Coral Bells	Pink	Late Spring, Early Summer	6"	12"			P, R, UC; Best used in sheltered contexts, understory
<i>Heuchera sanguinea</i>	Coral Bells	Pink, Red	Late Spring, Early Summer	1'-1.5'	.75'-1'			P, R, UC; Best used in sheltered contexts, understory
<i>Hosta sagae</i>	Hosta	Light Purple	Mid-Summer, Late Summer	3'	3'			A; Workhorse in shady sites; Low habitat value
<i>Hyssopus officinalis</i>	Common Hyssop	Violet	Early Summer, Mid-Summer, Late Summer, Early Fall	10"	10"			A; Agastache spp. are preferred
<i>Iris x germanica</i>	Bearded Iris	Blue-Purple	Late Spring	2'-3'	1'-2'			A
<i>Iris missouriensis</i>	Blue flag Iris	Blue-Purple	Spring	24"				A; Early bloom - nectar and pollen for bees; aquatic shelter
<i>Kniphofia caulescens</i>	Torch Lily	Coral Red, Yellow	Mid-Summer	2'-4'	1'-2'			A
<i>Kniphofia uvaria</i>	Red Hot Poker	Red	Late Spring, Early Summer	24"	24"			P, R, UC; Favorite of hummingbirds, but can be finicky
<i>Lavandula angustifolia</i>	English Lavender	Purple	Late Spring, Early Summer, Mid-Summer	18"	18"			R, UC, Streetscape Fragrant; Superb honeybee forage; May rot out in heavy soils over winter
<i>Leucojum aestivum</i>	Summer Snowflake	White	Early Spring, Mid Spring, Late Spring, Late Winter	2'	1'			R, P; Bulbs in spring
<i>Liatris ligulistylus</i>		Magenta	Mid-Summer, Late Summer	2'	1'			* A; Superb plant for butterfly habitats
<i>Liatris punctata</i>	Dotted Gayfeather	Pink, Purple	Late Summer, Fall	1-3'	1-3'			* A; Superb plant for butterfly habitats; Also good for wildflower seeding in natural areas
<i>Liatris pycnostachya</i>	Prairie Blazing Star	Light Purple	Mid-Summer, Late Summer	5'	18"			A; Superb plant for butterfly habitats

BASELINE APPROVED PLANT LIST

PERENNIALS & GRASSES (Continued)

LEGEND

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Allowed Species	Protect from sun and wind	
* Native*	Moisture Rating (Low Moisture - High Moisture)	
Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Liatris spicata</i>	Prairie Gayfeather	Magenta	Mid-Summer, Late Summer	24"	24"			A; Plant for butterfly habitats; Least preferred Liatris
<i>Linum perenne</i>	Perennial Flax	Light Blue	Early Summer	24"	24"			A; Also see Adenolinum (inum) lewisii
<i>Lonicera spp.</i>	Vining Honeysuckles		Early Summer, Mid-Summer, Late Summer	Vine	Vine			A
<i>Lupinus argenteus</i>	Silvery Lupine	Purple	Summer	2'	2'			A Availability will be an issue, great once established; Host for blues and great forage for larger bees
<i>Lupinus neomexicanus</i>	New Mexico Lupine	Light Blue	Late Spring, Early Summer	24"	24"			A; Availability will be an issue
<i>Lychnis chalcedonica</i>	Maltesecross	Red	Late Spring, Early Summer, Mid-Summer	4'	18"			R; Silver Foliage
<i>Lysimachia nummularia</i>	Creeping Jenny	Yellow	Late Spring, Early Summer	4"	18"			R; May spread aggressively
<i>Machaeranthera bigelovii</i>	Sante Fe Aster	Blue	Fall	1'-3'	1'-2'			A; Will self-seed, short lived
<i>Mirabilis multiflora</i>	Four O'Clock	Red-violet	Summer	3'	4'			A Attractive mounding habit; Attractive to hawk moths and hummingbirds; Requires excellent drainage
<i>Monarda fistulosa</i>	Wild Bergamot	Pink	Summer	36"	24"			A High habitat value when in bloom for bumblebees, hummingbirds and butterflies; Very hardy
<i>Oenothera caespitosa</i>	White Stemless Evening Primrose	White	Early Summer, Mid-Summer, Late Summer	12"	18"			A
<i>Oenothera macrocarpa</i>	Evening Primrose	Yellow	Summer	12"	24"			P, R, Streetscapes; Often called O. missouriensis
<i>Opuntia basilaris</i>	Beavertail Cactus	Red, Pink, Purple	Late Winter, Spring, Early Summer	1'-3'	2'-3'			
<i>Origanum libanoticum</i>	Hopflower Oregano	Lavender	Late Summer, Early Fall	18"	24"			A; Attractive habit even after bloom has stopped
<i>Paeonia suffruticosa</i>	Mountain Peony	White	Mid Spring, Late Spring	5'	5'			P, R: Tree peonies are high maintenance
<i>Paxistima canbyi</i>	Canby's Mountain Lover	White	Mid Spring	12"	12"			A; Plant Select
<i>Penstemon albidus</i>	White Penstemon	White	Mid Spring, Late Spring, Early Summer	12-16"	12"			A; High habitat value for pollinators
<i>Penstemon angustifolius</i>	Narrow-leaved Penstemon	White	Mid Spring, Late Spring, Early Summer	12-24"	12"			A; High habitat value for pollinators

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LEGEND

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Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

PERENNIALS & GRASSES (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Penstemon barbatus</i>	Scarlet Bugler	Red	Summer	36"	18"			* A; High habitat value for pollinators
<i>Penstemon eatonii</i>	Firecracker Beardtongue	Red	Early Summer	24"	18"			* A; High habitat value for pollinators
<i>Penstemon grandiflorus</i>	Large Beardtongue	Red	Summer	36"	12"			* A; High habitat value for pollinators
<i>Penstemon linariodes v coloradoensis</i>	Blue-mat Penstemon	Blue	Late Spring, Early Summer	.5'-1'	.5'-1'			A
<i>Penstemon x mexicalli 'Pike's Peak'</i>	Pike's Peak Penstemon	Purple	Early Summer, Mid-Summer, Late Summer	1'-1.5'	.5'-1'			A
<i>Penstemon x mexicalli 'Red Rocks'</i>	Red Rocks Penstemon	Pink	Early Summer, Mid-Summer, Late Summer	1'-1.5'	.5'-1'			A
<i>Penstemon pinifolius</i>	Pine-leaf Beardtongue	Magenta	Summer	8"	15"			* A; High habitat value for pollinators
<i>Penstemon pseudospectabilis</i>	Desert Beardtongue	Magenta	Late Spring, Early Summer, Mid-Summer, Late Summer	32"	24"			* A; High habitat value for pollinators
<i>Penstemon secundiflorus</i>	One-sided Penstemon	Pink/ Purple	Summer	24"	24"			* A; High habitat value for pollinators
<i>Penstemon strictus</i>	Beardtongue, Rocky Mountain Penstemon	Purple	Late spring	24"	24"			* A; High habitat value for pollinators
<i>Penstemon virens</i>	Greenleaf Penstemon	Blue-Purple	Summer	12"	12"		→	* A; High habitat value for pollinators
<i>Penstemon virgatus</i>	Tall One-Sided Penstemon	Pink	Early Summer	12"	18"		→	* A; High habitat value for pollinators
<i>Phlomis cashmeriana</i>	Cashmere Sage	Light Pink	Early Summer	3'	2'			P, R; Nice texture; Moderate habitat value
<i>Phlomis russeliana</i>	Jerusalem Sage	Light Yellow	Late Spring, Early Summer, Mid-Summer	3'	2'			P, R
<i>Phlox carolina</i>	Thickleaf Phlox	Pink	Mid-Summer, Late Summer, Early Fall, Mid Fall	36"	30"			A
<i>Phlox divaricata</i>	Wild Blue Phlox	Light Pink, Light Blue	Mid Spring, Late Spring	18"	40"			A
<i>Phlox maculata</i>	Wild Sweetwilliam	Magenta	Late Summer, Early Fall, Mid Fall	18"	2'			A
<i>Phlox subulata</i>	Moss Phlox	Magenta, Violet	Mid Spring, Late Spring, Early Summer	6"	18"			A
<i>Polemonium caeruleum</i>	Jacob's Ladder	Yellow	Mid Spring, Late Spring	24"	18"			A

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Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

PERENNIALS & GRASSES (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Primula denticulata</i>	Primrose	Pink, Blue, Purple, White	Early Spring, Mid Spring	6"	12"			A
<i>Pycnanthemum virginianum</i>	Virginia Mountainmint	White	Mid-Summer, Late Summer	24"	36"			P, R
<i>Ratibida columnifera</i>	Prairie Coneflower	Yellow	Summer	18"	12"			A; Very tough plant
<i>Ratibida pinnata</i>	Pinnate Prairie Coneflower	Yellow	Early Summer, Mid-Summer, Late Summer, Early Fall	5'	18"			A
<i>Rudbeckia hirta</i>	Blackeyed Susan	Gold	Summer	3'	1'			P, R, UC, Streetscapes
<i>Rudbeckia maxima</i>	Great Coneflower	Yellow	Early Summer, Mid-Summer	7'	18"			P
<i>Rudbeckia triloba</i>	Brown-Eyed Susan	Yellow	Mid-Summer, Late Summer, Early Fall, Mid Fall	3'	3'			P, R, UC, Streetscapes
<i>Salvia azurea var. grandiflora</i>	Pitcher Sage	Blue	Mid-Summer, Late Summer, Early Fall, Mid Fall	4'	3'			P Hot/ late season forage for many bees, butterflies, hummingbirds
<i>Salvia daghestanica</i>	Dwarf Silver-leaf Sage	Blue	Late Spring, Early Summer	12"	12"			R, UC; Texture on silver foliage
<i>Salvia greggii 'Farman's Red'</i>	Salvia 'Farman's Red'	Red	Spring, Summer, Fall	2'-3'	2'-3'			A; Loves hot weather
<i>Salvia nemerosa 'may night'</i>	Salvia 'May Night'	Dark Blue	Late Spring - Early Summer	1.5'-2'	1'-1.5'			A; Can spread into natural areas; Deadhead
<i>Salvia pachyphylla</i>	Mojave Sage	Purple	Summer	2'-3'	2'-3'			I, R, UC; Low survival rate; Consider bare root planting; Hates organic matter and water
<i>Salvia officinalis</i>	Sage	Light Purple	Early Summer	24"	24"			R, UC; Fragrant foliage
<i>Saponaria ocymoides</i>	Rock Soapwort	Pink	Late Spring, Early Summer	9"	30"			P, R, UC
<i>Sedum 'Autumn Joy'</i>	Autumn Joy Sedum	Pink	Late Summer	1.5'-2'	2'			A; Butterfly host plant
<i>Santolina chamaecyparissus</i>	Gray Santolina	Yellow	Mid-Summer	1.5'-2'	1.5'-2'			A
<i>Sphaeralcea munroana</i>	Tall Globemallow	Pink, Orange	Late Spring, Early Summer	1'-2'	.5'-1'			A
<i>Sphaeralcea coccinea</i>	Globe Mallow	Red, Orange	Spring, Summer, Early Fall	1'-1.5'	1'			A; Wildflower for natural areas

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Pollinator**	Sun Exposure Rating (No Sun - Full Sun)	

PERENNIALS & GRASSES (Continued)

Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
FORBS								
<i>Stanleya pinnata</i>	Princes Plume	Yellow	Spring, Summer, Early Fall	4'-5'	2'-5'		→	* A
<i>Thymus neiceffii</i>	Juniper Leaf Thyme	Magenta	Early Spring, Mid Spring	1"	12"			P, R, UC
<i>Thymus serpyllum</i>	Creeping Thyme	Dark Pink	Early Summer, Mid-Summer	3"	12"			P, R, UC
<i>Thymus vulgaris</i>	Common Thyme	Light Purple	Late Spring, Early Summer, Mid-Summer	12"	12"			P, R, UC
<i>Tradescantia occidentalis</i>	Spiderwort	Purple	Summer	24"	18"			* P, R
<i>Verbena bipinnatifida wrightii</i>	Wild Verbena	Purple	Summer	6"	18"			* A; Not long-lived; Low priority
<i>Veronica austriaca</i>	Broadleaf Speedwell	Blue	Late Spring, Early Summer, Mid-Summer	18"	18"			P, R, UC, Streetscapes
<i>Veronica filiformis</i>	Creeping Speedwell	Light Blue	Early Spring, Mid Spring, Late Spring	3"	18"			P, R, UC, Streetscapes
<i>Veronica liwanensis</i>	Speedwell	Blue	Mid Spring, Late Spring	1"	18"			P, R, UC, Streetscapes
<i>Veronica pectinata</i>	Woolly Speedwell	Blue	Mid Spring	3"	18"			P, R, UC, Streetscapes
<i>Veronica repens</i>	Creeping Speedwell	White, Cream	Mid Spring, Late Spring	2"	18"			P, R, UC, Streetscapes
<i>Veronica spicata</i>	Veronica	Blue	Summer	2'-3'	2'-2.5'			P, R, UC, Streetscapes
<i>Viola corsica</i>	Corsican Violet	Violet, Purple	Mid Spring, Late Spring, Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	6"	8"			P; Self-seeds
<i>Zauschneria latifolia var. arizonica</i>	Hardy Hummingbird Trumpet	Dark Orange	Late Spring, Early Summer, Mid-Summer, Late Summer, Early Fall, Mid Fall	6"	18"			A; Syn. <i>Epilobium canum</i>
<i>Zinnia grandiflora</i>	Plains Zinnia	Yellow	Summer	12"	12"		→	* P
GRASSES								
<i>Bouteloua curtipendula</i>	Side Oats Gramma	Insignificant	Summer	1.5'-2.5'	1.5'-2'			* A
<i>Bouteloua gracilis</i>	Blue Grama	Insignificant	Summer	12"	12'			* A
<i>Bouteloua gracilis 'Blonde Ambition'</i>	Blonde Ambition Blue Grama	Golden	Summer	12"	12"			A; Very attractive in landscape

BASELINE APPROVED PLANT LIST

PERENNIALS & GRASSES (Continued)

LEGEND

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* Native*	Moisture Rating (Low Moisture - High Moisture)	
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Scientific Name	Common Name	Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
GRASSES								
<i>Buchloe dactyloides</i>	Buffalograss	Insignificant	Summer	6"	12"			* A; Turf option
<i>Calamagrostis acutiflora 'Karl Foerster'</i>	Feather Reed Grass	Insignificant	Late Spring, Summer, Fall, Winter	3'-5'	1.5'-2.5'			A; Often cut back in Spring
<i>Festuca glauca 'Elijah Blue'</i>	Blue Fescue	Green Purple	Summer	.75'-1'	.5'-.75'			A
<i>Miscanthus sinensis 'Morning light'</i>	Maiden Grass	Insignificant	Fall, Winter	4'-6'	2.5'-4'			A; Use natives when possible - not for use adjacent to native areas; Aggressive
<i>Miscanthus sinensis 'Purpurascens'</i>	Purple Maiden Grass	Insignificant	Fall, Winter	3'-4'	2'-3'			A; Use natives when possible; Fall color
<i>Muhlenbergia reverchonii</i> Undaunted	Undaunted Ruby Muhly Grass	Pink	Fall	30"	30"			A; Glows pink in the sunlight
<i>Panicum virgatum 'shenandoah'</i>	Red Switch Grass	Insignificant	August, Fall, Winter	3'-4'	3'-4'			A
<i>Orzyopsis hymenoides</i>	Indian Ricegrass	Insignificant	Summer	36"	18"			* A
<i>Panicum virgatum</i>	Switchgrass	Insignificant	Summer	36"	24"			* A; Any cultivar
<i>Schizachyrium scoparium</i>	Little Bluestem	Insignificant	Fall	4'	30"			* A
<i>Sorghastrum avenaceum (nutans)</i>	Indian Grass	Insignificant	Summer	5'	4'			* A
<i>Sporobolus heterolepis</i>	Prairie Dropseed	Insignificant	Summer, Fall	2'-3'	2'-3'			* A

BASELINE APPROVED PLANT LIST

TREES

LEGEND

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Scientific Name	Common Name	Type			Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
		Ornamental	Coniferous	Deciduous							
TREES											
<i>Acer grandidentatum</i>	Big-Tooth Maple			x	Yellow Green	Late Spring	10'-30'	20'-30'			P, I, UC
<i>Acer platanoides</i>	Norway Maple			x	Yellow Green	Early Spring	50'	50'			I, P; Potential to be invasive
<i>Acer rubrum</i>	Red Maple			x	Red	Early Spring, Mid Spring	70'	50'			A
<i>Acer tataricum 'Hot Wings'</i>	Hot Wings Maple	x			Light Green	Mid Spring	20'	20'			A; Showy seeds, compact size
<i>Acer x freemanii 'Autumn Blaze'</i>	Autumn Blaze maple			x	N/A	N/A	35'	25'			A; Fall color, hardy
<i>Aesculus glabra</i>	Ohio Buckeye			x	Light Yellow	Late Spring, Early Summer	40'	40'			P, R; Fragrant flowers; Fall color; Has been invasive in other states
<i>Aesculus hippocastanum</i>	European Horse Chestnut			x	Light Pink	Late Spring	75'	65'			A; Has been invasive in other states
<i>Amelanchier x grandiflora 'Autumn Brilliance'</i>	Autumn Brilliance Serviceberry			x	White	Mid Spring	15'-25'	15'-25'			A
<i>Carpinus betulus 'Fastigiata'</i>	European Hornbeam			x	Yellow Green	Early Spring	30'-40'	20'-30'			A
<i>Celtis occidentalis</i>	Common Hackberry Western			x	Green	Mid Spring, Late Spring	60'	50'			I, P (in small groupings); Attractive when large, high bird habitat value and butterfly host
<i>Cercis canadensis</i>	Redbud	x		x	Pink	Early Spring, Mid Spring	30'	30'			P; Understory tree; Needs protection; Small scale ornamental; Early nectar source
<i>Cercis 'Hearts of Gold'</i>	Eastern Redbud	x		x	Light Red	Early Spring, Mid Spring	25'	25'			P; Understory tree; Needs protection; Small scale ornamental; Early nectar source
<i>Cupressus arizonica</i>	Arizona Cypress		x		Insignificant	Spring	30'-40'	15'-25'			A
<i>Crataegus crus-galli 'Inermis'</i>	'Inermis' Cockspur Hawthorn			x	White	Late Spring, Early Summer	25'	20'			P, R, UC; High habitat value, early blooms and fall berries
<i>Crataegus x mordenensis 'Toba'</i>	Toba Hawthorn			x	Pink	Mid Spring, Late Spring	25'	20'			A; High habitat value, early blooms and fall berries
<i>Gleditsia triacanthos f. inermis 'Imperial'</i>	Imperial Honeylocust			x	Yellow Green	Early Spring, Mid Spring	50'	40'			I, P, Streetscapes; High priority; Not messy; Light shade; Tough
<i>Gleditsia triacanthos f. inermis 'Skyline'</i>	Skyline Honeylocust			x	Yellow Green	Early Spring, Mid Spring	35-45'	25-35'			I, P, Streetscapes
<i>Gymnocladus dioica</i>	Kentucky Coffee Tree	x		x	Greenish White	Late Spring, Early Summer	60'-80'	40'-55'			A

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TREES (Continued)

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		Ornamental	Coniferous	Deciduous							
TREES											
<i>Juniperus chinensis</i>	Chinese Juniper		x		N/A	N/A	20'	6'			A; Staple plantings throughout; Provides shelter; Resilient
<i>Juniperus scopulorum</i>	Rocky Mountain Juniper		x		N/A	N/A	30'	12'			* A; Staple plantings throughout; Provides shelter; Resilient
<i>Juniperus virginiana 'cupressifolio'</i>	Hillspire Juniper			x	N/A	N/A	15'-30'	5'-15'			A
<i>Koelreuteria paniculata</i>	Golden Rain Tree	x		x	Yellow	Early Summer, Mid-Summer	30'	30'			P, Streetscapes; Tolerant of alkalinity
<i>Magnolia stellata</i>	Star Magnolia	x		x	White	Early Spring	20'	15'			A; A novelty in protected spot; Blooms are often damaged by frost
<i>Malus 'Adams' or other cultivars</i>	Flowering Crabapple	x		x	Pink	Mid Spring	20'	15'			P, R, Streetscape; Honeybee forage; Spring interest
<i>Malus floribunda</i>	Japanese Crabapple	x		x	Light Pink	Early Spring, Mid Spring, Late Spring	20'	30'			A; Fragrant flowers
<i>Phellodendron amurense</i>	Amur Cork Tree			x	Yellow Green	Late Summer, Early Fall	20'	30'			A; Habitat value for birds, butterflies; Is invasive in NE US
<i>Picea abies</i>	Norway Spruce		x		N/A	N/A	60'	30'			A; Shelter; Attracts birds; Invasive in northern US
<i>Picea engelmannii</i>	Engelmann Spruce		x		N/A	N/A	100'	15'			* (to high elevations) A; Shelter; Winter interest
<i>Picea glauca</i>	White Spruce		x		N/A	N/A	60'	20'			A
<i>Picea pungens</i>	Colorado Spruce		x		N/A	N/A	60'	20'			* (to high elevations) A; High habitat value; Easily available
<i>Pinus flexilis 'Vanderwolf's pyramid'</i>	Limberpine			x	N/A	N/A	20'-30'	10'-15'			* (to high elevations) A
<i>Pinus heldreichii</i>	Bosnian Pine		x		N/A	N/A	70'	40'			A; Shelter; Winter interest
<i>Pinus edulis</i>	Pinion Pine			x	Yellow	Spring	20'-30'	10'-20'			* A; Will die from over watering; Keep out of Kentucky Bluegrass
<i>Pinus nigra</i>	Austrian pine			x	N/A	N/A	40'-60'	10'-40'			A
<i>Pinus ponderosa</i>	Ponderosa Pine			x	N/A	N/A	60'-125'	25'-30'			* A; Keep out of Kentucky Bluegrass
<i>Populus x acuminata</i>	Lanceleaf Cottonwood				Green, Brown	Spring	40'-60'	30'-40'			* P, I; Spreads aggressively
<i>Populus angustifolia</i>	Narrowleaf Cottonwood				White	Spring	30'-50'	20'-30'			P, I; Spreads aggressively
<i>Populus sargentii</i>	Plains Cottonwood				Yellow	Late Winter, Early Spring	60'-80'	50'-60'			* A
<i>Prunus cerasifera</i>	Cherry Plum	x		x	Light Pink	Early Spring, Mid Spring	25'	20'			A; Early bloomer; Fruit for birds

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TREES (Continued)

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		Ornamental	Coniferous	Deciduous							
TREES											
<i>Prunus maackii</i>	Manchurian Cherry	x		x	White	Mid Spring, Late Spring	30'	25'			A; Early bloomer; Fruit for birds
<i>Prunus padus</i>	Bird Cherry	x		x	White	Mid Spring, Late Spring	30'	30'			A; Early bloomer; Fruit for birds
<i>Prunus sargentii</i>	Sargent Cherry	x		x	Pink	Mid Spring	25'	15'			A; Especially hardy, slightly later blooming
<i>Prunus virginiana 'Shubert'</i>	Canada Red Chokecherry	x		x	White	Spring	30'	25'			A; Dark foliage provides nice contrast
<i>Ptelea trifoliata</i>	Common Hoptree			x	Light Green	Early Summer	20'	20'			P, R, Streetscapes; Not easy to find
<i>Pyrus salicifolia 'Pendula'</i>	Willowleaf Pear	x		x	White	Mid Spring	25'	15'			A; Tolerant of clay and may drought-tolerant once established
<i>Pyrus ussuriensis</i>	Chinese Pear	x		x	White	Mid Spring	40'	40'			A
<i>Quercus alba</i>	White Oak			x	N/A	N/A	70'	50'			A
<i>Quercus bicolor</i>	Swamp White Oak			x	Yellow Green	Mid Spring	60'	60'			A
<i>Quercus rubra</i>	Northern Red Oak			x	Yellow Green	Late Spring	80'	75'			A
<i>Quercus imbricaria</i>	Shingle Oak			x	Yellow Green	Mid Spring	70'	60'			A
<i>Quercus macrocarpa</i>	Bur Oak			x	Yellow Green	Mid Spring	80'	80'			A
<i>Quercus muehlenbergii</i>	Chinkapin Oak			x	Yellow Green	Mid Spring	50'	50'			A
<i>Quercus palustris</i>	Pin Oak			x	Yellow Green	Mid Spring	70'	60'			A
<i>Quercus robur</i>	English Oak			x	Yellow Green	Mid Spring	60'	40'			A
<i>Quercus robur 'Fastigiata' SKYROCKET</i>	Fastigate English Oak			x	Yellow Green	Mid Spring, Late Spring	60'	20'			A
<i>Quercus rubra</i>	Red Oak			x	Yellow Green	Late Spring	60'	60'			A
<i>Quercus shumardii</i>	Shumard Oak			x	Yellow Green	Mid Spring	50'	40'			A
<i>Sophora japonica</i>	Japanese Pagoda Tree	x		x	Cream	Mid-Summer, Late Summer	50'	45'			A
<i>Styphnolobium japonicum</i>	Pagoda Tree	x		x	White	Mid-Summer, Late Summer	75'	75'			A
<i>Syringa pekinensis 'Morton'</i>	Peking Lilac	x		x	White	Early Summer	20'	15'			A
<i>Syringa reticulata</i>	Japanese Tree Lilac	x		x	Cream	Late Spring Early Summer	25'	20'			A; High value ornamental providing fragrance in late spring
<i>Tilia americana</i>	American Basswood			x	Light Yellow	Early Summer	50'	40'			P, Streetscapes; Reliable summer honeybee forage; Fragrant; Nice pyramidal habit
<i>Tilia amurensis</i>	Linden			x	Light Yellow	Late Spring	75'	50'			A; Adapts to many soils; Good urban tree; Fragrant
<i>Tilia cordata</i>	Littleleaf Linden			x	Light Yellow	Early Summer	40'	35'			A; Fragrant

BASELINE APPROVED PLANT LIST

TREES (Continued)

LEGEND

Preferred Species	 Do not over water	Abbreviations for Recommended District/Area: UC = Urban Core R = Residential I = Industrial P = Parks A = All districts/areas (excluding natural areas)
Allowed Species	 Protect from sun and wind	
* Native*	 Moisture Rating (Low Moisture - High Moisture)	
 Pollinator**	 Sun Exposure Rating (No Sun - Full Sun)	

Scientific Name	Common Name	Type			Flower Color	Blooming Season	Height	Spread	Sun/Shade Tolerance	Moisture Needs	Notes
		Ornamental	Coniferous	Deciduous							
TREES											
<i>Tilia tomentosa</i>	Silver Linden			x	Yellow Green	Late Spring, Early Summer	60'	45'	  	 	 A, Fragrant
<i>Tilia x flavescens 'Glenleven'</i>	Glenleven Linden			x	Yellow Green	Late Spring, Early Summer	75'	50'	     	  	 A, Fragrant
<i>Ulmus 'Frontier'</i>	Frontier Elm			x	Insignificant	Mid Fall	35'	25'	  	 	A
<i>Ulmus 'Heritage'</i>	Heritage elm				Insignificant		40'	30'	  	 	A
<i>Ulmus 'Morton' Accolade</i>	Accolade Elm			x	Insignificant	Early Spring, Mid Spring	70'	40'	  	 	A

BASELINE DO NOT PLANT LIST

SPECIES NOT TO BE PLANTED IN BASELINE

Scientific Name	Common Name	Notes
TREES		
<i>Acer palmatum</i>	Japanese Maple	This is very hard to grow
<i>Acer saccharum</i>	Sugar Maple	Chlorosis
<i>Acer tataricum</i>	Tatarian maple	Chlorosis, "Hot Wings" is allowed
<i>Acer triflorum</i>	Three-flowered Maple	
<i>Betula x plettkei 'Golden Treasure'</i>	Dwarf Birch	
<i>Cornus kousa</i>	Chinese Dogwood	Borderline hardy
<i>Cornus mas</i>	Cornelian Cherry Dogwood	Borderline hardy
<i>Juniperus virginiana</i>	Eastern Red Cedar	Invasive
<i>Pinus aristata</i>	Bristlecone Pine	Novelty; maintenance picky
<i>Pinus contorta</i>	Lodgepole Pine	Novelty; maintenance picky
<i>Populus tremuloides</i>	Quaking Aspen	
<i>Prunus sibirica</i>	Siberian Apricot	Do not recommend - fruit
<i>Prunus ssp.</i>	Plum	Do not recommend - fruit
<i>Robinia pseudoacacia</i>	Black Locust	Suckers, thorny, borer damage
<i>Thuja occidentalis</i>	Arborvitae	
<i>Ulmus americana</i>	American Elm	
<i>Ulmus parvifolia</i>	Chinese Elm	Probably not hardy
<i>Zelkova serrata</i>	Japanese Zelkova	
<i>Zelkova serrata 'Green Vase'</i>	Green Vase Zelkova	
<i>Zelkova serrata 'Musashino'</i>	Musahino Zelkova	
<i>Zelkova serrata 'Village Green'</i>	Japanese Zelkova	
SHRUBS		
<i>Buddleja alternifolia</i>	Fountain Butterflybush	Invasive potential
<i>Buxus 'Green Gem'</i>	Green Gem Boxwood	Sun and windburn
<i>Erica carnea</i>	Winter Heath	Will not survive
<i>Genista tinctoria</i>	Dyer's Broom	Possible invasive
<i>Genista tinctoria 'Royal Gold'</i>	'Royal Gold' Broom	
FORBS		
<i>Aegopodium podagraria</i>	Bishop's Goutweed	Do not recommend; invasive potential
<i>Aquilegia alpina</i>	Alpine Columbine	Will not survive
<i>Astragalus adsurgens</i>	Prairie Milkvetch	
<i>Astragalus agrestis</i>	Field Milkvetch	
<i>Astragalus ceramicus</i>	Painted Milkvetch	
<i>Astragalus crassicaulis</i>	Ground Plum	
<i>Astragalus gracilis</i>	Slender Milkvetch	
<i>Astragalus missouriensis</i>	Missouri Milkvetch	
<i>Astragalus mollissimus</i>	Wooly Milkvetch	
<i>Astragalus mollissimus</i>	Wooly Milkvetch	

SPECIES NOT TO BE PLANTED IN BASELINE (Continued)

Scientific Name	Common Name	Notes
FORBS		
<i>Astragalus pectinatus</i>	Narrowleaf Milkvetch	
<i>Chamaemelum nobile</i>	Roman Chamomile	
<i>Dicentra eximia</i>	Bleeding Heart	Won't thrive in this climate
<i>Epimedium x rubrum</i>	Bishop's Hat	Won't thrive in this climate
<i>Euphorbia polychroma</i>	Cushion Spurge	Other nonnative spurge can be invasive
<i>Gypsophila paniculata</i>	Baby's Breath	Invasive
<i>Gypsophila repens</i>	Creeping Baby's Breath	
<i>Lavandula</i>	Lavender	French and Spanish spp. not hardy
<i>Leucanthemum x superbum</i>	Shasta Daisy	Potentially invasive
<i>Lupinus pusillus</i>	Annual Lupine	Concern about invasive
<i>Nepeta cataria</i>	Catnip	Weed, Catnip escapes frequently into natural areas and has become a weed.
<i>Parthenium integrifolium</i>	Wild Quinine	
<i>Persicaria polymorpha</i>	Knotweed	Invasive potential, 3 species of knotweed listed on CO noxious weed list - this one is not
<i>Persicaria virginiana</i>	Jumpseed	Invasive potential
GRASSES (NOT TO BE USED IN SEED MIXES)		
<i>Agropyron desertorum, A cristatum</i>	Crested Wheatgrass	
<i>Agropyron intermedium</i>	Intermediate Wheatgrass	
<i>Agropyron repens (Elytrigia repens or Elymus repens)</i>	Quackgrass	
<i>Agrostis stolonifera, A.alba, A. gigantea, A. palustris</i>	Creeping Bentgrass	
<i>Alopecurus pratensis</i>	Meadow Foxtail	
<i>Bromopsis inermis (Bromus inermis)</i>	Smooth Brome or Hungarian Brome Grass	
<i>Dactylis glomerata</i>	Orchardgrass	
<i>Festuca arundinacea (Lolium arundinaceum)</i>	Tall Fescue (adjacent to wetlands)	
<i>Festuca ovina var. ovina</i>	Hard Fescue or Sheep Fescue	
<i>Festuca pratensis</i>	Meadow Fescue	
<i>Phalaris arundinacea (Phalarioides arundinacea)</i>	Reed Canary Grass	
<i>Phleum pratense</i>	Timothy	
<i>Poa compressa</i>	Canada Bluegrass	
<i>Poa pratensis</i>	Kentucky Bluegrass (adjacent to wetlands)	
<i>Saccharum (erianthus) ravennae</i>	Hardy Pampas Grass	

BASELINE SEEDING, MULCHING AND SOIL PREPARATION SPECIFICATIONS

1.0 SOIL PREPERATION

1.1 Soil Amendments

A. Fertilizer

Phosphorous fertilizer is typically deficient in Colorado soils. Because phosphorous is a promoter of root growth it is extremely beneficial to new seedlings. Phosphorous is also immobile in clay soils, so it needs to be applied previous to tillage work so it will be incorporated into the root zone.

All areas shall be fertilized with 18-46-0 at 150 lbs/acre or an equivalent fertilizer that will provide no less than 27 lbs/acre of nitrogen and 69 lbs/acre of phosphorous. Empty fertilizer bags or weight ticket shall remain available for inspection.

B. Compost

All irrigated turf grass areas shall receive compost at the rate of 3 cubic yards per 1000 sq ft. Native grass areas shall receive compost at 2 cubic yards per 1000 sq ft. Weight tickets shall be available for inspection.

The compost shall be Biocomp Class 1 compost from A-1 Organics, or approved equivalent.

In wetland or moist meadow areas no compost will be required. The goal here is to keep nutrients out of the wetland areas to discourage rampant growth of cattails.

1.2 Tillage

Tillage is one of the most important steps that is often overlooked. All areas shall be thoroughly tilled to a depth of 6 - 8 inches after the soil amendments have been applied. This can be accomplished with rototilling machinery, or in larger areas, agricultural machinery such as chisel plows and/or discs. After tillage is complete, no dark areas resulting from the compost application shall be observed.

1.3 Fine Grading

After tillage is complete all areas shall be fine graded.

Grading for turf areas will require more detail than native areas. Turf areas shall be smooth, even and 1" below adjacent sidewalks and curbs.

The grade for native areas can be left somewhat rougher or less detailed, because these areas will be managed with a larger class of machinery, i.e. tractors and brush hog type rotary mowers.

2.0 SEED MIXES

2.1 Seed Selection Process

Seed mix selection must be reviewed and approved by DRC Member and High Plain Environmental Center Executive Director Jim Tolstrup.

There are three steps in the seed selection review process:

- 1) During the design phases
- 2) The seed mix bags must be signed off on by Jim Tolstrup before spreading the seed.
- 3) At the time of compliance inspection

2.2 Turf Seeding

A. Tall Fescue Turf Areas

These areas shall be seeded with Sharp Bros Seed Dura Turf Lawn Mix, or equivalent at the rate of 8 lbs/1000 sq ft:

Turf type tall fescue	80%
Kentucky bluegrass, turf quality	10%
Ryegrass, turf quality	10%

B. Kentucky Bluegrass Turf Areas

These areas shall be seeded with Sharp Bros Seed Premium Lawn Mix, or equivalent, at 3 lbs/1000 sq ft.

2.3 Native Grass Seeding

A. Native Grass Turf Areas - "Enhanced" short native grass that can be left un-mowed adjacent to formal landscaped areas

These areas shall be seeded with the following mix seeded at 2 lbs. PLS/1000 sq. ft. or 86 lbs./acre.

Buffalo grass, Cody or Bowie	40%
Blue grama, Alma or Bad River	20%
Sideoats grama, Vaughn or El Reno	20%
Slender Wheatgrass	20%

B. Upland Native Areas - for open space areas

	<u>Lbs. PLS/acre</u>	<u>Seed Box Designation</u>
Slender wheatgrass	3	smooth
Western wheatgrass, Rosana	3	smooth
Green needle grass, Lodorm	1	smooth
Canada wildrye, Mandan	1	smooth
Beardless wildrye, Shoshone	.5	smooth
Annual rye	2	smooth
Blue grama, Bad River	.5	fluffy
Sideoats grama, Vaughn	1.5	fluffy
Little bluestem, Camper	1.5	fluffy
Yellow Indiangrass	1	fluffy
Tomahawk or Neb 54		
Big bluestem, Pawnee	1	fluffy
Switchgrass, Blackwell	.5	fine
Alkali sacaton	.25	fine
Total	16.75 pounds pure live seed per acre	

C. Wetland or Wet Meadow Areas - for wet pond bottoms

These areas shall be seeded with High Plains Wet Meadow Mix by Western Native Seed or equivalent at the rate of 10 lbs./acre. In addition to the wetlands mix above add the following tall warm season grasses:

	<u>Lbs. PLS/acre</u>
Big Bluestem, Kaw or Pawnee	5
Yellow Indian grass, Tomahawk or Neb 54	4
Switchgrass, Blackwell	1

These added to the Wet Meadow mix totals 20 pounds/acre.

These areas will likely be broadcast seeded and not suitable to drill seeding because of their size and/or they may be wet. To facilitate broadcasting the seed more evenly, rice hulls should be added to bulk up the mix.

2.4 Erosion Control or Overlot Areas - for temporary soil stabilization

These areas shall be drill seeded with the following mix:

BASELINE

Lbs PLS/acre

Slender wheatgrass	5
Western wheatgrass, Rosana	3
Canada wildrye, Mandan	3

Total 11 pounds Pure Live Seed/acre

3.0 SEED APPLICATION

3.1 Seed Drill

Native seeding must be completed with a native grass drill that has 3 seed boxes that are capable of metering and applying fine seed, fluffy seed and smooth seed. These three types of seed are designated on the seed mixes. Examples are smooth seed - wheatgrasses, fluffy seed - yellow Indian grass, and fine seed - alkali sacaton.

For the turf grasses or other mixes, small areas can be hand broadcast or a billion drill or other appropriate drill should be used.

3.2 Seed Tags

Native seed mixes must be ordered so that fluffy seed, fine seed and smooth seed are bagged separately and can be placed in the appropriate seed box for application. Tags for all mixes including the native seed, must be provided for inspection prior to any seed being planted.

4.0 MULCH

4.1 Hydromulch

Native seed areas and turf grass areas shall be mulched with virgin woodfiber hydromulch with steam separated fibers. Recycled paper hydromulch or ground wood chip hydromulch are not acceptable. The rate of application shall be 2500 lbs/acre.

4.2 Straw Mulch

Overlot areas or temporary erosion control seeding shall be mulched with weed free certified straw at a rate of 2 tons/acre, crimped 3 - 4 inches into the soil surface.

5.0 SITE CLEANUP

Hydromulch overspray must be cleaned off all sidewalks, fences, light poles switch cabinets and landscape material. When straw mulching is complete all twine or bale wrap material must be picked up and removed.

LIGHTING

LIGHTING SECTION

PG.

1.0 LIGHTING PHILOSOPHY

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2.0 EXTERIOR LIGHTING DESIGN

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B R O O M F I E L D



LIGHTING

North Park promotes one simple idea regarding lighting: only light what you need, when you need it. Some light at night is necessary for safety and recreation but all lighting must comply with Dark Sky criteria. By directing light only where it needs to go, development will not pollute the night sky, trespass on neighboring property, needlessly disrupt ecosystems nor waste energy. The lighting section addresses light fixture types and light levels for buildings, pedestrian areas and vehicular areas.

1.0 LIGHTING PHILOSOPHY

Lighting provides a welcome dusk and nighttime atmosphere where entrances, destination points, and features are highlighted. Forecourts, plazas, and village greens are inviting, and traveled sidewalks and pedestrian promenades are lighted to provide guidance.

These Guidelines and Standards help North Park establish environmentally sensitive lighting that limits trespass and light pollution. Specifically, these Guidelines address the basic objectives of site lighting:

- Safety and Security
- Identity and Image
- Nighttime Visibility and Function
- Environmental Sensitive Lighting

1.1 Safety and Security

1.1.1 Provide safety lighting to illuminate potentially hazardous conditions such as vehicle/pedestrian intersections, crosswalks, stairs, and ramps.

1.2 Identity and Image

1.2.1 Select luminaires to reinforce a project's identity. Luminaire selections should not only be based upon photometric performance, but also on the aesthetic character or image desired for North Park.

1.3 Nighttime Visibility and Function (Lighting Quality not Quantity)

1.3.1 Use light fixtures with discretion based upon lighting quality as opposed to quantity.

1.3.3 Control luminaire brightness. If a light source is very bright, everything else in the immediate surrounding area will appear relatively dark, making it harder to detect object details. Consistent uniformity of lighting provides the best visual quality versus hot spots of brightness.

1.3.4 Provide fully shielded luminaires to prevent glare caused by uncontrolled light emitted from wall pack fixtures or floodlights.

1.3.5 Provide white light sources such as metal halide, fluorescent, LED and inductive lamps, designed to maximize reaction time and color recognition under low light levels. High pressure sodium and mercury vapor lighting is prohibited.

1.4 Environmentally Sensitive Lighting

1.4.1 Minimize light trespass and light pollution. The Illuminating Engineering Society of North America (IESNA) recommended practice RP-33-99 "Lighting for Exterior Environments" shall be used as criteria to limit light pollution and light trespass.

1.4.2 Refer to the North Park PUD for specific lighting policy and criteria information associated with the City and County of Broomfield requirements.

1.4.3 Minimize light trespass through the careful selection, location, proper aiming, and shielding of light fixtures.

1.4.4 Avoid high wattage luminaires with poor visual shielding that create uncontrolled light pollution. Excessive light levels with high amounts of reflected light shall not be permitted.

1.4.5 Use low wattage, shielded luminaires that are properly located and aimed.

1.4.6 **S**"Dark Sky" practices shall be adhered to. Lighting techniques that "uplight" buildings or landscape and shine light into the sky shall not be permitted.

1.4.7 Utilize photocell and timers to control switching of site lighting.

2.0 EXTERIOR LIGHTING DESIGN

The key to quality exterior lighting is to place light only where it is needed, without causing glare. By not wasting light, smaller lamp wattages can be used to achieve superior effects. The most important result is improved visibility. Another by-product is reduced energy usage and improved maintenance. Design criteria includes basics such as lighting levels (illuminance), uniformity, and brightness balance (luminance), as well as recommendations for reducing glare, light trespass, and light pollution. **S**Note that for all point by point illuminance plans prepared for projects at North Park, a Light Loss Factor (LLF) of 1.0 must be used.

2.1 Open Land and Natural Areas

2.1.1 Avoid lighting Open Land and Natural Areas to preserve the natural environment and minimize light pollution.

2.2 Roadway Lighting

2.2.1 Provide low glare lighting at conflict zones.

2.2.2 Lighting along Sheridan Parkway shall be per the City and County of Broomfield criteria.

2.2.2 **S** Provide pedestrian lighting or roadway lights at each pedestrian crosswalk, roadway intersection, and parking lot entry, based upon the following standards:

- Pedestrian Crossing Lights: Two light poles, maximum, or install pavement mounted pedestrian lights that are activated when pedestrians cross the road, warning motorists to stop.

2.2.3 Provide vehicular-oriented roadway lighting, based upon the following criteria:

- Roadway Pole Height: 20 - 30 feet, depending on the roadway width and adjacent land use type.
- White Light Source: Metal Halide.
- Maximum Initial Lumens per Luminaire: 12,000 lumens (20 foot high poles); 22,000 lumens (30 foot high poles).
- Luminaires Per Pole: Two, maximum.
- Maintained Average Horizontal Surface Illumination in Roadway: 1.5 foot-candles.
- Maintained Average Vertical Surface Illumination in Roadway: 1.5 foot-candles.
- Maintained Average Horizontal Surface Illumination at Intersection: 2.4 foot-candles.
- Maintained Average Vertical Surface Illumination at Intersection: 1.8 foot-candles.

2.2.4 **S** Use only fully shielded luminaires that direct light downwards (IESNA full cut-off designated fixtures).

2.2.5 Do not locate canopy trees within forty feet of a street-light on an arterial or collector roadway.

2.3 Parking Lot (Field) Lighting

- 2.3.1 Parking lot lighting shall be per the North Park PUD. See fig. 2a for further criteria.
- 2.3.3 Locate light fixtures within medians or on concrete pedestals. Concrete pedestals shall have a smooth top, one-inch chamfer, and coated with CDOT Class V structural coating. Pedestals shall be plain concrete color – no safety yellow, white or other color is permitted.

2.4 Pedestrian Walkway and Path Lighting

- 2.4.1 **S** Pedestrian Walkway and Path Lighting shall be per the North Park PUD.

2.5 Feature and Landscape Lighting

- 2.5.1 Use fixtures to light only selected landscape features, walls, or objects.
- 2.5.2 Use down lighting to illuminate elements to be featured to the maximum extent possible. Directional lighting may be approved by the DRC on a case by case basis if the directional light is directed toward a building wall or other feature. Vertical orientation is only allowed under roof, canopy, eave, or other similar element.
- 2.5.3 **S** Use adjustable shielded luminaires to provide an even, warm wash of light across featured stone retaining wall surfaces.
- 2.5.4 **S** Conceal lighting sources from public view.
- 2.5.5 Mount and install luminaires to be completely protected from lawn mowers, weed eaters, and snow blowers.
- 2.5.6 Equip luminaires with internal louvers and shields to control glare and prevent excess spill lighting.
- 2.5.7 Use luminaires with high quality optics.
- 2.5.8 Provide Feature and Landscape Lighting, based upon the following standards:
 - White Light Source: Metal Halide or compact fluorescent.
 - Maximum Initial Lumens per Luminaire: 2,400 lumens.

2.6 Non-Residential Area Lighting

- 2.6.1 **S** Light storefront facades and sign bands with lighting fixtures located on buildings, oriented downwards.
- 2.6.2 **S** Provide internal controls to turn off storefront façade and sign bands one hour after closing. Only a minimum security light level shall remain after store closing.
- 2.6.3 **S** Use shielded motion sensor lighting for loading docks, designed to illuminate only when trucks or pedestrians appear.
- 2.6.4 **S** Orient all building mounted security lighting downwards, completely shielded (IESNA full cut-off designated fixtures). Unshielded wall pack light shall not be permitted.
- 2.6.5 **S** Design outdoor canopies associated with drive-up windows and service stations to sensitively integrate luminaires. All luminaires shall be fully recessed with flat lenses. Dropped, sagging, or protruding lenses shall not be permitted.

	Minimum horizontal illuminance	Maximum Uniformity Ration (max to min.)	Maximum average illuminance	Maximum vertical illuminance
Paths, plazas, walkways **	0.1	20:1	0.5	0.1
Bicycle parking areas	0.1	20:1	0.5	0.1
Commercial parking areas	0.5	10:1	2 foot-candles	0.2 foot-candles
Industrial, office parking areas	0.2	10:1	1 foot-candles	0.1 foot-candles
Residential parking areas	0.1	20:1	0.5 foot-candles	NA
Parking areas-schools	0.1	20:1	0.5 foot-candles	NA
Notes: * Lighting criteria is adapted from the IESNA, 8th Edition, Lighting Handbook. ** Excludes recreational trails and paths that are not typically used at night.				

Figure 2a - Parking Lot Lighting Criteria

- 2.6.6 **S** Floodlighting and up lighting will not be permitted. Lamps over 2,400 lumens shall not be permitted.
- 2.6.7 **S** Avoid vertical lamps over 5,000 lumens. Vertical lamps under 5,000 lumens shall be fully shielded from all viewing angles.
- 2.6.9 **S** Use current IESNA recommended practices including “Lighting for Exterior Environments” RP-33-99 and Parking.

2.7 Retail Pedestrian Center Lighting

- 2.7.2 Illuminate paths, architectural features, key signage, and interest points to draw attention to these elements.
- 2.7.3 Light key signage at decision points to aid in navigation.
- 2.7.4 Integrate concealed or fully shielded lighting in benches and low seating walls.
- 2.7.5 Provide Retail Pedestrian Center Lighting, based upon the following standards:

Pedestrian Lighting

- Pedestrian Pole Height: 10 - 12 feet preferred, 14 feet maximum.
- Luminaires per Pole: Two, maximum.
- Location: Among pedestrian promenades and at key locations within plazas and courtyards.
- White Light Source: Metal Halide, Compact Fluorescent.
- Maximum Initial Lumens per Luminaire: Pedestrian Lighting - 4,800 lumens.

Signage Lighting

- Location: Mounted at the top of the sign, oriented downward or integrated into the sign design. Internally illuminated individual sign letters or backlit halo shall be permitted. Major Feature Lighting
- White Light Source: Low glare Compact Fluorescent, Adjustable Shielded Floodlights, or PAR Metal Halide Lamps (35-watt).
- Maximum Initial Lumens per Luminaire: 2,400 lumens.

Building Architectural Feature Lighting

- White Light Source: Compact Fluorescent or PAR Metal Halide Lamps (35-watt).
- Maximum Initial Lumens per Luminaire: 2,400 lumens.
- Downlights only.

Building Entry Lighting

- Type: Wall Sconces or Pendants.
- White Light Source: Compact Fluorescent.
- Maximum Initial Lumens per Luminaire: 2,400 lumens.
- Downlights only.

Bench and Low Seat Wall Lighting

- White Light Source: Compact Fluorescent, Fiber Optics, or LED Strip Lighting.
- Maximum Initial Lumens per Luminaire: 1,800 lumens.

Wall Sconces

- Location: On walls that define the perimeter of pedestrian gathering areas.
- White Light Source: Compact Fluorescent.
- Maximum Initial Lumens per Luminaire: 1,800lumens.
- Downlights only.

Stone Wall and Column Lighting

- White Light Source: Compact Fluorescent,
- Adjustable Shield Floodlights, or PAR Metal Halide Lamps (35-watt).
- Maximum Initial Lumens per Luminaire: 2,400 lumens.
- Downlights only.

2.8 Office/Employment Area Lighting

2.8.1 Provide Business Park Lighting, based upon the following standards:

- Pole Height: 14 - 16 feet.
- Location: At each parcel entrance, arranged so the light fixtures appear to create a gateway, producing a strong sense of arrival.
- White Light Source: Metal Halide, Compact Fluorescent.
- Maximum Initial Lumens per Luminaire: 4,800 lumens.

2.8.2 **S** Building up lighting and wall wash lighting shall not be permitted.

2.9 Residential Lighting

2.9.1 Provide Residential Lighting, based upon the following standards:

Multi-Family Street-Side Parking Space Lighting

- Fixture Type: Post-top full-cutoff pedestrian luminaires.
- Pole Height: 10 feet.
- Location: Along internal streets.

- White Light Source: 70-watt Metal Halide recommended.
- Maximum Initial Lumens per Luminaire: 4,800 lumens.

Garage-Mounted Lighting

- Fixture Type: Motion sensor lanterns.
- Location: Attached to the garage facade.
- White Light Source: Compact Fluorescent lamps.
- Maximum Initial Lumens per Luminaire: 925 lumens.

2.9.2 Locate luminaires no higher than 16 feet above grade when City street trees are planted adjacent to light poles. Coordination with the City and County of Broomfield is required.

2.9.3 Provide electronic ballasts rated a minimum start temperature of -5 degrees or lower for all compact florescent lamps.

2.10 Holiday and Temporary Lighting

During the winter holiday season, holiday lighting may be used. The intent for holiday lighting is a tasteful display using traditional lighting techniques such as strings of Christmas lights. Any lighting that is temporary in nature by means of cord and plug connection and/or not installed by the National Electric Code is defined as Holiday and Temporary Lighting. Refer to Master Association Covenants for residential holiday restrictions.

2.10.1 Use low wattage string lights, LED preferred.

2.10.2 **S** Prohibit dynamic displays such as “chasers.”

2.10.3 **S** Prohibit searchlights or other lights designed to attract attention.

2.10.4 Install and energize holiday lighting only from November 1 through January 31.

2.10.5 The North Park DRC on a yearly basis shall consider and approve other lighting techniques.

2.11 Lighting Controls

2.11.1 Determine lighting control zones and methods for pedestrian and parking lot lighting in order to determine if areas can be turned off during extremely low activity levels.

2.11.2 Turn off art, feature, architectural, and other non-essential lighting during low activity periods.

2.11.3 Activate non-metal halide parking lot lighting during low activity periods with motion sensors or time clocks.

2.11.4 Activate low use area, non-metal halide pedestrian lighting during low activity periods with motion sensors or time clocks.

SIGNAGE

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BROOMFIELD



SIGNAGE

Signs and environmental graphics serve a number of critical functions including way finding, branding, identification and communicating information. North Park intends to promote signage that effectively serves these functions in a tasteful manner without cluttering the landscape. Signs will reinforce the North Park brand as well as campus/center and building identities. The signage section provides guidelines for both temporary and permanent signs at the community and individual project level

1.0 PURPOSE

These sign guidelines are intended to create a strong image and reduce visual clutter, while allowing for signs that inform residents and visitors of the various amenities, services, and products within the North Park planned community.

2.0 APPLICABILITY

This Sign Guidelines Section applies to all signs within the North Park planned community, unless covered by a separate Planned Sign Program that is established as a part of a specific project. All significant projects are encouraged to develop a Planned Sign Program. Planned Sign Programs in concert with The North Park Planned Sign Program which controls community and temporary signs, supersede the City and County of Broomfield Sign Code, and shall be enforced by both the North Park Design Review Committee (DRC) and the City of Broomfield. The definitions as contained within Chapter 17.04 of the Broomfield Municipal Code, are considered a part of these General Signage Design Guidelines and are not repeated within this document. A letter indicating approval by the North Park DRC shall be required as part of the application to the City and County of Broomfield for a sign permit.

3.0 REGULATIONS APPLICABLE TO ALL SIGNS

3.1 Site Distance Triangle

3.1.1 **S** All signs located within the sight distance triangle, as defined by the City and County of Broomfield, shall either be of pole construction (regulatory signs only) or ground mounted.

3.1.2 Limit pole diameter to twelve (12) inches, maximum.

3.1.3 Locate pole signs a minimum of seven (7) feet above finished grade (as measured to the bottom of the sign).

3.1.4 Limit ground mounted signs to a maximum height of 24 inches above finished grade.

3.2 Off-Premise Signs

3.2.1 **S** Prohibit off-premise signs, except as specifically allowed in planned sign programs.

4.0 PROHIBITED SIGNS

4.1 **S** Prohibit the following signs, except as specifically approved by the DRC:

- Animated, Changeable Copy, Exposed Light Bulb, Flashing Signs or, Exposed LED Signs
- Roof Signs
- Portable Signs, including signed vehicles
- Hand-lettered Signs
- Paper or Cardboard Signs (attached to or temporarily placed within windows of buildings and/or affixed to the exterior or interior of doors, handbills, and hand-held signs)
- Signs in the Public Right-of-Way (R.O.W.)
- Internally illuminated awnings
- No "Sale" or "Special Announcement" signs
- Inflatable features
- Cabinet Signs (Internally illuminated plastic face) with the exception of convenience stores as described in this Section

- Signs on benches, trash receptacles, vending machines or other site furniture
- Neon or flexible LED signs, or light strings as part architectural elements
- Signs held by people, animals, or people in costume
- Plastic Signs (formed plastic or injection molded)
- Trademark and copyright symbols and abbreviations
- Other Signs as identified in the Master or Community Association Covenants
- Signs on Umbrellas
- Search Lights

5.0 CONSTRUCTION, INSTALLATION, AND MAINTENANCE REQUIREMENTS

5.1 **S** Prohibit exposed conduit, raceways, ballast boxes, or transformers.

5.2 **S** Prohibit labels on exposed surfaces, except those required by ordinances. Where necessary, labels shall be placed in inconspicuous locations.

5.3 Insure that all metal surfaces are uniform and free from dents, warps, and other defects. Painted surfaces shall be free of particles, drips, and runs. Use only durable paints specifically intended for outdoor use.

5.4 Flush mount exposed screws, rivets, or other fastening devices and finish so as to be unnoticeable.

5.5 Limit individual letter depth. Depth of individual dimensional letters shall not exceed one-quarter of the letter height to a maximum of 6 inches deep. No letter is required to be less than four inches deep if internally illuminated. Text that has capital and lowercase letters shall use the capital letter height to determine the maximum depth of all letters.

5.6 All sign applicants shall provide assurance that the sign will be adequately maintained. All signs will be kept neatly finished and repaired, including all fasteners and supports. A North Park Master Association or City of Broomfield representative may inspect and have authority to order painting, repair, alterations or removal of a sign that constitutes a hazard to safety, health, or public welfare by reason of inadequate maintenance, dilapidation, or obsolescence.

5.7 Any sign which is associated with a business that is no longer being conducted, shall have the sign face altered so that the message is no longer visible to the public within 45 days of the cessation of such business.

5.8 The substrate for a sign which has been removed shall be repaired to eliminate any evidence that the sign (patches, paint, etc.) was previously in this location.

6.0 SIGN AREA MEASUREMENT

6.1 Provide proper sign area measurement. Specific sign areas for North Park Development Identity Signs are defined in the North Park Planned Sign Program. All other sign areas on freestanding and building-mounted wall signs shall be measured per the City of Broomfield Sign Code, unless an approved Planned Sign Program is in place.

6.2 Measure individual letter and logo signs that are mounted on

a landscape wall by the outline of the letters and logo, as if it were a building-mounted wall sign.

7.0 TOTAL ALLOWABLE SIGN AREA

7.1 Total allowable sign area shall be measured per the City and County of Broomfield Sign Code, unless an approved Planned Sign Program is in place.

8.0 FREESTANDING SIGNS - GENERAL REGULATIONS

8.1 Style

8.1.1 Provide a solid base for all freestanding signs. Pole signs shall not be permitted.

8.2 Number of Signs

8.2.1 One (1) Freestanding Identity Monument or Sign per street frontage, maximum of two (2) signs per premise.

8.2.2 Project Identity Monument or Signs count as one (1) Freestanding Identity Sign for the premise on which it is located, but do not count towards the total allowable sign area for that premise.

8.3 Height

8.3.1 **S** Height shall be per the City of Broomfield Sign Code except the maximum height allowed is fifteen (15) feet for all uses other than convenience stores. Maximum height for all Convenience Store associated Freestanding Signs shall be eight (8) feet. (see fig. 8a)

8.3.2 **S** The height of a sign is measured per the City and County of Broomfield Sign Code.

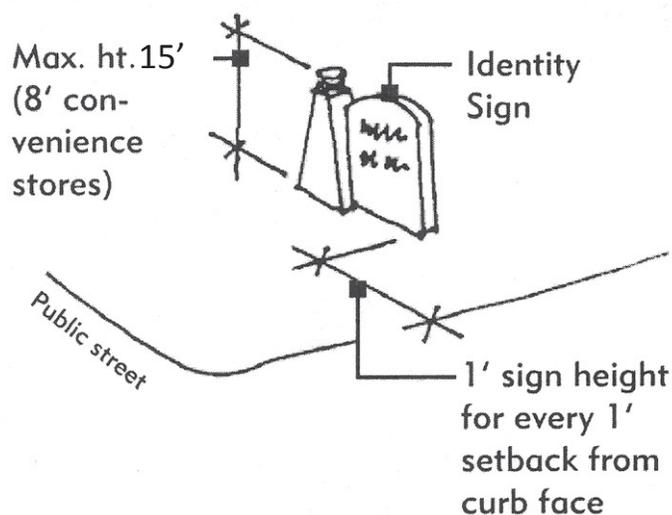


Figure 8a Maximum Sign Height

8.4 Setbacks

8.4.1 **S** Freestanding Identity Signs shall be setback per the City and County of Broomfield Sign Code.

8.5 Maximum Sign Area

8.5.1 **S** Freestanding Identity Signs shall contain a maximum sign area per the City and County of Broomfield Sign Code.

8.6 Number of Items of Information

8.6.1 Sign shall not contain more than four items of information, not including an address.

8.6.2 Directional arrows shall not be included on Identity Signs.

8.7 Changeable Copy and Electronic Messages

8.7.1 **S** Signs with changeable copy or electronic messages shall not be permitted, except for those displaying time and temperature, or price associated with fuel.

8.8 Separation Between Signs

8.8.1 Provide a minimum separation of 75 feet between any two freestanding identity signs.

8.9 I-25 Regulations

8.9.1 Only premises with more than 500 feet of frontage along I-25 ROW shall be permitted a maximum of one (1) Freestanding Sign oriented to I-25, unless otherwise regulated by a project planned sign program.

9.0 FREESTANDING IDENTITY MONUMENTS AND SIGNS

9.1 Illumination

9.1.1 **S** Freestanding Identity Monuments and Signs shall be internally illuminated with only the text lighted, or directly externally illuminated by a fully shielded source.

9.1.2 **S** Plastic cabinet signs shall not be permitted.

9.1.3 **S** All light sources shall be shielded to prevent glare and uplighting into the sky.

9.2 Landscaping

9.2.1 **S** Freestanding Identity Monuments and Signs shall be located entirely within a landscaped area.

9.2.2 A minimum of four square feet of landscaping shall be provided for every one (1) square foot of sign face. Turf does not count towards this requirement.

9.2.3 Only one (1) face of the sign shall be counted, unless the sign face is perpendicular to the street, then two (2) faces shall be counted.

9.2.4 The portion of the sign located on the ground plane (foot print) shall not be counted as landscape area.

9.2.5 The landscape area shall be designed to have 75 percent of the area covered by live plant material within three years of installation.

9.2.6 Landscaping shall be installed within six months of installation of the sign.

9.3 Freestanding Private Development Identity Monuments and Signs for Non-Residential Projects.

All freestanding private development identity signs shall comply with the following guidelines, unless specifically approved by the North Park DRC.

9.3.1 For cohesive projects of greater than twenty (20) acres in land area, one (1) Freestanding Landmark Project Identity Monument that identifies the name of the overall project, without specific tenants, may be placed at the primary vehicular entrance to the site or other location approved by the DRC. The design of these signs should be a derivation of the other freestanding signs used at North Park subject to DRC approval.

9.3.2 Additional freestanding landmark project identity monuments may be placed at additional entries if approved by the DRC.

Commercial/Retail Signs

9.3.3 Freestanding signs (Commercial/Retail Tenant Signs) for the identification of multiple tenants may be considered by the DRC for retail/ commercial projects.

9.3.4 All Commercial/Retail Tenant Signs shall be designed to be a variation of the other freestanding signs used at North Park, subject to DRC approval.

9.3.5 Single tenant freestanding Commercial/Retail Tenant Signs are discouraged. Where necessary, provide a smaller version of a sign that is sympathetic to the intent of other signs in the project, subject to DRC approval.

Business, Office, and Industrial Park Monument Signs

9.3.6 Business/Office/Industrial Park Monument Signs are designed to identify a single tenant, or project name as opposed to multiple tenants.

9.3.9 Each parcel is allowed one (1) Tenant Sign, unless otherwise approved by the DRC.

Residential Identity Signs

9.3.10 Residential Identity Signs are designed to identify individual residential developments

9.3.11 Residential Identity Signs may vary in size and design per the size of the property and DRC discretion.

9.3.12 Each parcel is allowed one (1) Residential Identity Sign, unless otherwise approved by the DRC.

Mixed-Use District Center Signs

9.4.13 Mixed-Use District Center Signs are designed to identify the special district centers

9.4.14 Mixed-Use District Center Signs may vary in size and design per the size of the property and DRC discretion.

10.0 FREESTANDING DIRECTIONAL SIGNS

(Note: On larger projects, the applicant may be required to provide the following signs. In many cases, these will be provided by the Master Developer and maintained by the Master Association).

10.1 North Park Community Directional Signs – General

10.1.1 **S** Community Directional Signs throughout North Park shall be in compliance with the North Park Planned Sign Program.

10.2 Project Directional Signs

Project Pedestrian Directional Signs

10.2.1 Project Pedestrian Directional Signs are intended to inform pedestrians about destinations within a project and designed to complement the overall signage theme of that project .

10.2.2 Project Pedestrian Directional Signs shall be reviewed on a case-by-case basis and shall be included in the total allowable sign area.

Project Vehicular Directional Signs

10.2.3 Project Vehicular Directional Sign shall not exceed twenty (20) square feet in size and are included in the total allowable sign area.

10.2.4 Other signs that provide direction to destinations within a project are also allowed, and will be reviewed and approved by the DRC on a case-by-case basis.

10.2.5 Vehicular Project Directional Signs shall harmonize with the overall signage design theme created for that project (fig. 10b on the next page).

11.0 BUILDING-MOUNTED IDENTITY SIGNS

11.1 Size

11.1.1 **S** Maximum sign area for all combined building mounted signs shall be per the City of Broomfield Sign Code or as approved as part of a specific Planned Sign Program.

11.2 Materials - Option 1 - Individual Channel Letters, Internally Illuminated

11.2.1 Unless otherwise approved by the DRC, individual channel letters and logo marks shall be formed of bronze-colored, welded aluminum including returns (.036 minimum on sides and .080 minimum on backs) with no exposed mounting hardware, wiring or ballast.

11.2.2 Letter and logo faces shall be a minimum one eighth inch thick acrylic (non-yellowing material).

11.2.3 Color on Building Mounted Identity Signs shall be uniform, unless specifically reviewed and approved by the DRC.

11.2.4 Letters shall be internally illuminated.

11.2.5 The symbol for registered trademarks may not be included on signs.

11.3 Materials - Option 2 - Halo Lit Letters

11.3.1 Individual metal letters and logo marks shall be dark, light, or patina-colored with concealed halo illumination.

11.4 Materials - Option 3 - Push-Through Cabinets

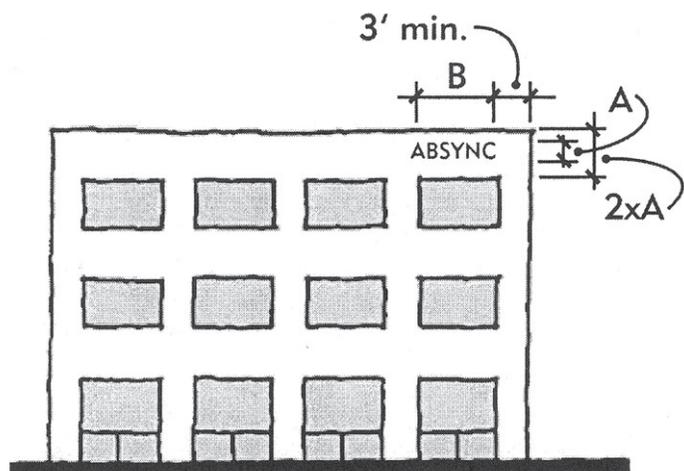
11.4.1 Individual letters shall be a uniform color, cutout from an opaque fascia panel and backlit.

11.5 Materials - Option 4 - Flat-Cut Out (F.C.O.), Externally Illuminated

11.5.1 Flat-Cut Out (F.C.O.) letters and/or logo mark. F.C.O. letters shall have a minimum depth of 1" and pegged off the surface of the building a minimum of 3/4". Directly illuminate with decorative fixtures, fully shielded from glare and protected from shining light into the sky.

12.0 BUILDING-MOUNTED PRIMARY IDENTIFICATION SIGN - OFFICE BUILDING OR OTHER SINGLE-USE, MULTI-STORY BUILDING

- 12.1 Only one (1) Primary Identification Sign that names the building or major tenant shall be permitted, located between the highest floor and top of the building parapet or in a location appropriate to the building architecture and as approved by the DRC.
- 12.2 Products or service descriptions shall not be permitted.
- 12.3 The height of the area on which the sign appears shall not be less than twice the height of the sign (fig. 12a).



$$(A \times B) \leq 5\% \text{ of building face area}$$

Figure 12a

Building Height (Stories)	Maximum Letter Height	Maximum Symbol Height
1	1'-6"	2'-0"
2	2'-0"	2'-6"
3	2'-6"	3'-0"
4	3'-0"	3'-6"
5	3'-6"	4'-0"

- 12.4 Primary Identification Sign area shall not exceed five percent of the building elevation on which it is located.
- 12.5 A minimum distance of three feet shall be maintained between the end of the sign and building corner (fig. 12a).
- 12.6 Determine maximum letter/symbol height and maximum sign area, based upon the formula in fig. 12a.
- 12.7 All signs on a building shall be one consistent design type (example: reverse pan channel, face illuminated, non-illuminated, etc), material, and color unless specifically approved by the DRC.

13.0 SINGLE STORY BUILDINGS (RETAIL, RESTAURANT, CUSTOMER SERVICE, OFFICE, LIGHT INDUSTRIAL)

- 13.1 For buildings with multiple occupants, provide a sign containment area (sign band) between eight and 26 feet above the finished floor as an integral part of the building architecture.
- 13.2 Products or service descriptions shall not be permitted.
- 13.3 The height of the area on which the sign appears shall not be less than twice the height of the sign.
- 13.4 One (1) main or front entrance sign shall be allowed for each individual tenant.
- 13.5 Signs shall not be located any closer than 24 feet on-center, unless otherwise reviewed and approved by the DRC.

14.0 SECONDARY SIGNS ON MIXED-USE MULTI-STORY BUILDINGS (OFFICE, RESEARCH AND DEVELOPMENT, FLEX WAREHOUSE)

- 14.1 In addition to Primary Identification Signs, additional signs may be permitted if Retail, Restaurant, or Customer Service uses are contained within the building, subject to DRC review and approval.
- 14.2 Secondary Signs shall be placed between the first and second floors.
- 14.3 Maximum letter height shall not exceed 18 inches.
- 14.4 Primary Office Buildings shall be limited to one (1) ground floor Secondary Sign per building elevation, with a maximum of three signs per building. Consideration shall be given for a maximum of two Secondary Signs per building elevation, in situations where two major entrances occur on a building elevation.
- 14.5 The distance between Secondary Signs shall not be less than one-third of the building frontage on which the signs are located.
- 14.6 Buildings that have the entire ground floor devoted to Retail, Restaurant, or Customer Service uses shall follow the regulations contained in 13.0 Single Story Buildings.
- 14.7 All signs on a building shall be one consistent design type (example: reverse pan channel, face illuminated, non-illuminated, etc), material, and color unless specifically approved by the DRC.

15.0 FUEL/CONVENIENCE STORE CANOPY SIGNS

- 15.1 **S** Signs on canopies associated with fuel/convenience stores shall be limited to one (1) corporate sign or logo mark associated with the principal use per canopy face.
- 15.2 Signs and logos shall have a vertical dimension of no greater than 75 percent of the vertical dimension of the canopy face, and shall not exceed a maximum sign area of 12 square feet.

16.0 AWNINGS

- 16.1 Signs on awnings are allowed only as specifically approved by the DRC and shall not exceed eight (8) square feet in size and shall be applied to the building allowable sign area.
- 16.2 **S** Awnings shall not be internally illuminated.

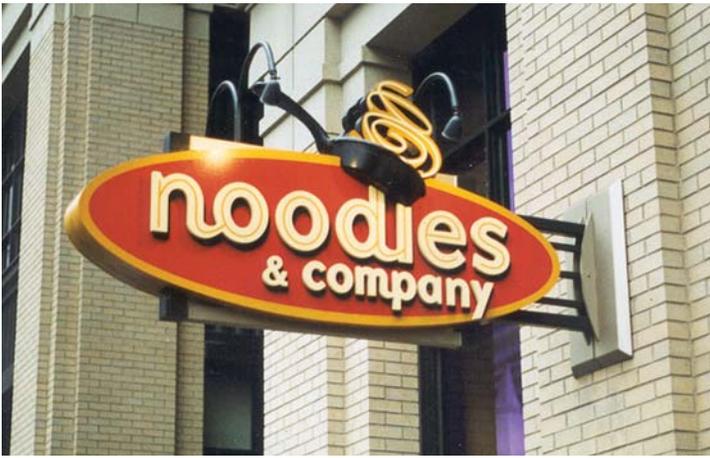


Figure 17a

17.0 PROJECTING SIGNS - RETAIL OR MAIN STREET SETTING

17.1 Individual tenants in a retail or main street setting, may provide one (1) wall or canopy mounted projecting (blade) sign. Tenants located on ends of buildings may have two blade signs, one (1) per façade. Blade signs shall not exceed 15 square feet per face and must be located no less than 24 feet apart. Blade sign area shall be applied to the building total allowable sign area. Blade signs shall be mounted to provide a minimum of eight feet of clearance from the ground to bottom edge of the sign when located over a public or private sidewalk. (fig. 17a). Blade signs shall include 3-dimensional characteristics such as raised letters and logos. Blade signs with only vinyl graphics and logos are not permitted.

18.0 BANNERS

18.1 Banners may be permitted, subject to DRC review and approval, on an individual case-by-case basis, based upon the following requirements:

- 18.1.1 Retail uses may be allowed one (1) banner per building, not-to-exceed seven calendar days announcing grand opening of that particular location.
- 18.1.2 Office, Light Industrial, and Commercial uses shall be permitted a one (1) week Special Event Banner announcing open house/grand openings.
- 18.1.3 Additional restrictions or exceptions may be contained in the Covenants for special developments.

19.0 WINDOW SIGNS

19.1 **S** Window Signs shall be permitted, based upon the following requirements:

- 19.1.1 Painted Window Signs shall not be permitted.
- 19.1.2 Each business shall be allowed one (1) neon "OPEN" sign. No other neon window signs shall be permitted.
- 19.1.3 Signs, decals, or decorations shall not be installed in doorways, windows, or other areas visible from public view, except as allowed in retail stores as regulated by the North Park Master Association.
- 19.1.4 Real Estate Window Signs intended to identify leasable or retail office space shall be permitted. (fig. 20a).

- 19.1.5 Real Estate Window Sign message text shall be Swiss 721 or Ariel, or as otherwise approved by the DRC.
- 19.1.6 North Park Logo Background shall be machine cut 3M vinyl – get NP color.
- 19.1.7 Real Estate Window Sign message text shall be machine cut 3M vinyl Brown or Black.
- 19.1.8 The Real Estate Window Sign message panel shall be composed of 4 millimeter thick Cream or Ivory Coloplast or like material.

20.0 TEMPORARY SIGNS

20.1 Real Estate/Project Identification Signs

- 20.1.1 **S** Temporary Real Estate/Project Signs shall be designed in accordance with the North Park Planned Sign Program in Section 16 of the North Park PUD.
- 20.1.2 Temporary Project Information (construction and real estate) Signs shall be permitted in nonresidential areas only.
- 20.1.3 Temporary Project Information (construction and real estate) Signs shall be used where land or leaseable space is available and to identify project and future development prior to and during construction. These signs shall be placed in a location on the property and of a design reviewed and approved by the DRC.
- 20.1.4 Color of message and text for Temporary Signs may vary and may have individual graphics as approved by the DRC.
- 20.1.5 The sign fabricator shall provide the required subgrade foundation to ensure that the sign will withstand wind loads.

20.2 Seasonal Signs

- 20.2.1 Seasonal Temporary Commercial/Retail Tenant Building Mounted Signage is allowed for temporary or seasonal uses up to a period of six months. Materials and construction will be reviewed by the North Park DRC on an individual basis.

21.0 BUILDING ENTRY INFORMATION SIGNS

21.1 Building Entry Window Signs - General

- 21.1.1 Each business shall be permitted to post information including building or occupant names, hours of operation, emergency information, delivery hours, and other required notices, adjacent to the main exterior entrance on a wall or glass side-light adjacent to the entrance door.

21.2 Building Entry Window Signs

- 21.2.1 Building Entry Window Signs are allowed only on glass side-lights adjacent to entrance door or directly on the door.
- 21.2.2 Glass side-light letters shall be die-cut vinyl, silk-screened, or gold/silver leaf.
- 21.2.3 Maximum letter height shall be one-inch for basic information.
- 21.2.4 Maximum letter height for building names or occupants may be three-inches.

- 21.2.5 Logo marks shall be a maximum height of three (3) inches.
- 21.2.6 All type shall fit within a maximum two-foot by-two-foot area.
- 21.2.7 Type style shall be consistent with other building signs.
- 21.2.8 Text and logos must be reverse cut vinyls and applied to the interior side of glass.

21.3 Building Entry Wall Mounted Signs

- 21.3.1 Wall mounted signs shall be applied to a panel that is compatible with surrounding wall treatments.
- 21.3.2 Panel area shall not exceed four square feet.
- 21.3.3 Decals, credit card information, or hand painted signs shall not be permitted unless reviewed and approved by the DRC.

21.4 Building Entry Service Entrance Signs

- 21.4.1 Buildings that provide service entrances shall be permitted an additional sign on or adjacent to each delivery door.
- 21.4.2 Information area shall not exceed two (2) square feet and may include tenant name and suite number.
- 21.4.3 Sign design shall be consistent with all exterior doors of the building and approved by the DRC.

22.0 FLAGS AND PENNANTS

22.1 Flags and Pennants - General

- 22.1.1 Flagpoles are not permitted, except when associated with a public facility, or as specifically approved by the DRC.
- 22.1.2 Flags that project a maximum of four feet from the building face, shall be permitted on retail, entertainment, service, or commercial buildings only when associated with an approved special district sign program.
- 22.1.3 All flag and pennant faces shall count as part of the Total Allowable Sign Area (See Section 7.0 for additional info).
- 22.1.4 Flags may not exceed a dimension of 4' x 6'.
- 22.1.5 Flag illumination is only allowed by luminaires that illuminate the flag from above.

23.0 MENU BOARDS

- 23.1 A maximum of two Menu Boards shall be permitted per premise.
- 23.2 Maximum Menu Board height is six feet.
- 23.3 Maximum Menu Board area is 25 square feet.
- 23.4 Freestanding Menu Board area shall be included in the Total Allowable Sign Area for the premise (See Section 7.0 for additional info).
- 23.5 Wall Mounted Menu Board area (25 square feet) is allowed in addition to other wall mounted signs, but is included in overall allowable sign area for the premise.