Dr. Stephen Wells, President

DESER T RESEARCH INSTITUTE

Over the past 50 years, the Desert Research Institute has grown from its humble beginnings exploring the environmental impacts of the Nevada Test Site through current day where at any given time we have over 200 research projects spanning every continent on the globe. With the completion of the Dandini Research Park Master Plan, we are on the threshold of yet another growth area for DRI and our mission to improve people’s lives throughout Nevada and the world through our research and partnerships with the private sector.

Greg Lambert, Chairman of the Board of Trustees

DRI RESEARCH PARKS, LTD.

I have been honored to serve as a member of the Board of Trustees of DRI Research Parks, Ltd. for close to 20 years. During this period, the Dandini Research Park, the Desert Research Institute and the surrounding community have seen many positive changes. As a result, all three entities are looking forward to a bright future that offers opportunities for business, intellectual, scientific and cultural advancement. The completion of the Master Plan for the Research Park represents a significant milestone in the history of the Park. It provides a solid foundation for developing this great untapped asset in a manner that will contribute to the future prosperity of the Desert Research Institute, the Park and the local community. It offers a potential for success that can and will be achieved through the cooperative action of everyone involved.
Dr. Cleve McDaniel, President

DRI RESEARCH PARKS, LTD.

As the governing body of the Dandini Research Park, the public-private partnership that embodies DRI Research Parks, Ltd. brings together a diverse group of community leaders to steward this vital asset of the Greater Reno Tahoe community. The success and completion of this Master Plan illustrates commitment and guidance of our trustees and their dedication to our community and the advancement of our mission—partnering with business in the development and commercialization of advanced technology.

Jeff Pickett, Managing Director

DRI RESEARCH PARKS, LTD.

This Master Plan for the Dandini Research Park is the culmination of a strategic process involving stakeholders from a cross-section of both the public and private sector. The guiding mission, vision, goals, and objectives of the Park and the Master Plan provide the commercial growth potential and development flexibility while maintaining design principles reflecting Desert Research Institute’s entrepreneurial, academic and interactive culture. With a world-class amenity that is the Desert Research Institute and partners including the University of Nevada and Truckee Meadows Community College, we as a community have the plan in hand to build a world-class Research Park.
The Research Park lands viewed from the south prior to development (c. 1970s).
Entitlements and Governance

Pursuant to the Act of June 14, 1926, land patents 27-75-0002 and 27-73-0001 were issued by the federal government of the United States to the Board of Regents, University of Nevada (currently known as the Nevada System of Higher Education) for the area now known as the Dandini Research Park. Additional entitlements were made through the passage of the Dandini Research Park Conveyance Act (Public Law 109-69-Sept. 21, 2005, 119 STAT. 2007).

The Dandini Research Park is governed by DRI Research Parks, Ltd (DRIRP), a 501(c) 3 non-profit corporation. The legal members of the corporation are the Board of Regents of the Nevada System of Higher Education (NSHE). The control of the use of the land by DRI Research Parks, Ltd. is entitled through the Land Lease Agreement, dated March 31, 2005, by and between the Nevada System of Higher Education (Lessor) and DRI Research Parks, Ltd. (Lessee), terminating in 2092.

The business, affairs, and property of DRI Research Parks, Ltd. are managed by an appointed Board of Trustees which is composed of business, academic, and community leaders who meet quarterly to advance the mission and operations of the Research Park.

The Board of Trustees is given the explicit right by the NSHE Board of Regents to manage the assets of the Research Park as they deem is in the best interest of the mission and vision.
Concept rendering of the Collaborative Core at full build-out.
Located in the hills overlooking downtown Reno, the Dandini Research Park is a 328 acre site surrounding the Desert Research Institute and Truckee Meadows Community College. The Desert Research Institute is recognized globally for its environmental research and application of technologies to improve people’s lives throughout Nevada and the world. The opportunity for tenants of a research park to share intellectual knowledge, physical resources, and scientific data with such an institution make this location a highly desirable place to work and learn.

The Dandini Research Park Master Plan establishes a framework for future development that enhances support for research-based businesses in the Greater Truckee Meadows region. These research park tenants will serve a complimentary research mission with the Desert Research Institute, University of Nevada Reno, and the workforce development assets of Truckee Meadows Community College. The contemporary facilities in the Park are designed to foster research and development, light manufacturing, social and intellectual interaction, and facilitate collaboration between the business sector DRI, UNR, and TMCC.

The vision for the Research Park is focused around five distinct development zones:

**Collaborative Core:** A pedestrian focused arrangement of buildings close to DRI and TMCC, with a shared-use parking strategy.

**Upper Partnership:** A flexible-use parcel layout capturing dramatic views of the valley.

**Lower Partnership:** A development characterized by flexible uses, sloping terrain, and access to adjacent neighborhood streets.

**High Visibility Sites:** Single tenant sites located along Dandini Boulevard and Raggio Parkway.

**Northeast Flex:** Three independent sites set back from Dandini Boulevard offering the most flexible uses in the Park.

**executive summary**

*Master Plan approved by the DRI Research Parks Ltd.
Board of Trustees–June 2010*
The design goals for the Dandini Research Park are to:

- Facilitate efficient development as an approved overlay to the Dandini Regional Center Plan.
- Provide a tangible representation of the mission and vision of the Park.
- Provide a foundation for funding and development of additional infrastructure.

The Master Plan accomplishes the design goals by using the site’s natural features—the topography, the drainage ways, rock outcrops, and panoramic views—as the framework for development.

THE FRAMEWORK PLAN

The framework for the Master Plan identifies the infrastructure that will guide the development of the Research Park, linking the future building sites to the native environment, the DRI and TMCC campuses, and the larger surrounding open space.

The compact development zones promote the exchange of ideas and intellectual knowledge through the use of shared indoor and outdoor resources, and common area pedestrian plazas that take advantage of the elevated setting by capturing views of downtown Reno and the mountains beyond.

- A full build out scenario for the Park provides 850,000 gross square feet of building space.
- Maximum flexibility within detailed guidelines to ensure imaginative and — massing on hillsides.
- Development of a distinct “collaborative” precinct, reflecting DRI’s research-based mission and presence.
- Providing capacity throughout the Park for collaborative research.
- Opportunities to incorporate advanced technologies into building and site design.
- Incorporating sustainable planning and design principles to reduce energy use, protect the surrounding natural resources, and be a model for sustainable design for the Greater Truckee Meadows region.
- A strategic two-phased approach to capitalize on existing infrastructure and minimize initial capital improvements costs.

THE RATIONALE

In today's knowledge-based global economy, colleges and universities increasingly are catalysts for economic growth. The metropolitan areas surrounding educational hubs are often magnets for entrepreneurial vitality.

Many areas in the United States aspire to dominance in research-based entrepreneurship. While there is broad competition in this growing field, Reno, and the Dandini Research Park, are strongly positioned to be a dominant player with its promotion of entrepreneurial start-ups, advanced technological assets, and a business-friendly environment.

The master planning process analyzed existing physical site conditions, policies, and sustainable design strategies to support the mission and vision of the Research Park and develop long-range plans for a responsible and efficient build-out of the Dandini Research Park.
The Dandini Research Park Master Plan establishes a framework for future development that enhances support for research-based businesses in Reno and the region and ensures the long-term viability of the adjacent Desert Research Institute and Truckee Meadows Community College campus Master Plans. The Research Park Master Plan is the outcome of rigorous analysis of a terrain-challenged site. Five Development zones are identified, building upon the framework established in the Desert Research Institute’s Facilities Master Plan. These five zones – the Collaborative Core, Upper Partnership, Lower Partnership, High Visibility Sites, and Northeast Flex – yield a sustainable, flexible, long-term development strategy for the Dandini Research Park.
| SECTION 1 planning context          | 1 |
| SECTION 2 setting                  | 7 |
| SECTION 3 master plan elements     | 27|
| SECTION 4 implementation           | 53|
| SECTION 5 design guidelines        | 67|
| contributors                        | 84|
| appendix (under separate cover)    |    |
planning context

The planning process for the Dandini Research Park (“Research Park”, “Park”) began with a mission and vision statement adopted by the Board of Trustees of the DRI Research Parks, Ltd. (DRIRP). A physical land use analysis, along with the overall mission and vision statement, guided the design of the Dandini Research Park Master Plan (“Master Plan”).

THIS SECTION INCLUDES:

- Mission and Vision
- Goals and Objectives
- Planning Approach and Process
1.1 Mission and Vision

The Master Plan is intended to provide an environment that responds to the mission and vision of the Research Park.

MISSION

DRI Research Parks, Ltd. provides the leasing of land and research-faculty support for those private businesses, including entrepreneurial start-ups, mid-level, and large companies, that serve a complimentary research mission with the Desert Research Institute (DRI), the University of Nevada, Reno (UNR), and the workforce development assets of Truckee Meadows Community College (TMCC).

This complimentary mission includes research areas in environmental science, renewable energy, engineering, advanced computing and visualization, and life sciences. In doing so, DRI creates a true community of collaboration and mutual benefit by and among DRI, UNR, TMCC and the private sector.

VISION

The Dandini Research Park will be a place of stewardship and sustainability that responds to the site and its unique features. Additionally, the Research Park will:

- Be a premier and primary asset in Northern Nevada for partnering with business in the development and commercialization of advanced technology.

- Provide businesses with the advantage of access to the Nevada System of Higher Education (NSHE) partners' physical and intellectual assets.

- Provide a venue for NSHE faculty to collaborate and consult with the business tenants of the Park. It is also conceivable that accredited employees of the Park tenants may even be able to serve as adjunct faculty.

The primary criteria for partner tenant companies include:

- Laboratories, offices and other facilities for research or for the provision of science and technology-based services or consulting, conducted by or for any individual, organization, or concern, whether public or private.

- Light manufacture or assembly facilities or technology products that:
  - Are clearly related to the on-site research and development activities of the tenant;
  - Draw upon the scientific and technical expertise of the NSHE partners or other Research Park tenants; and/or,
  - Have a high level of scientific or technological impact, for example, scientific or engineering instruments.

- Pilot plants and test or research facilities in which processes planned for use in production elsewhere can be tested.

In the spirit of building a dynamic and inter-connected community at the Research Park, there will be a minority component and flexible assignment of Research Park land for incidental support services and activities that may include housing, lodging, office supplies/services, and food and recreational services.
1.2 Goals and Objectives

The long-term success of the Research Park depends not only on the vision, but also on the ability to create a unique research and business environment that will serve as a hub for information exchange and social/business interaction. The Research Park will foster collaboration among its various businesses and the NHSE partners and connect the intellectual values of all to create a cohesive learning and research environment. The goals and objectives for the Master Plan take into account the dynamics of this unique community asset and address both the potential challenges and opportunities that affect the many stakeholders including future tenants, developers, the Greater Reno Tahoe area, DRI, UNR, TMCC, and the community at large.

The primary goals for this plan are:

- Facilitate efficient development as an approved addition to the Dandini Regional Center Plan.
- Provide a tangible representation of the mission and vision of the Park.
- Provide a foundation for funding and development of additional infrastructure.

Always tethered to the mission and vision, the underlying objectives that guided the planning efforts for the park followed 21st century best practices for Research Park development, including:

- Creating space supporting entrepreneurial development from both the university system (DRI, UNR, TMCC) and community enabling dynamic growth and collaboration.
• Providing future tenants the means to access and interact with the university system by providing access to specialized labs, use of university services and support, and venues to interact with researchers at facilities located in the Park.

• Providing for development of amenities, such as service support, retail and commercial establishments, and potential housing as part of the development strategy.

• Tailoring varied approaches to development by providing flexibility in the guidelines and addressing various potential demands for both single-tenant and multi-tenant facilities.

1.3 Planning Approach and Process

The Dandini Research Park Master Plan is the result of a seven-month long planning process initiated in November 2009. The Master Plan builds on previous planning efforts, incorporating a current evaluation and analysis of the physical site conditions, traffic, infrastructure and sustainable design strategies to support the mission and vision of the Research Park. The process involved a focused planning approach in four phases:

Phase 1 – Surveying and Site Analysis

Phase 2 – Design Alternatives and Conceptual Plan Development

Phase 3 – Master Plan Documentation and Conceptual Rendering

Phase 4 – City of Reno Entitlement Applications and Processing

The planning process was led by the Wood Rodgers consulting team which included Sasaki Associates and Fehr & Peers Transportation Planners under the direction of key DRI and DRIRP staff members. The process included review and input by a broad based Community Development Team (CDT) comprised of individuals representing UNR, DRI, TMCC, Washoe County, the City of Reno, Regional Transportation Commission, Reno Tahoe Airport Authority, NAI Alliance, Panattoni Development, and the DRIRP Board of Trustees. A series of three workshops were held with the CDT, followed by subsequent Board of Trustees meetings to review and discuss the CDT recommendations and provide direction for the design team.
The Dandini Research Park location holds great promise as a significant public-private partnership entity for the greater Reno Tahoe area. The existing characteristics of the Research Park environment offer major opportunities, as well as physical parameters for development, and set the stage for the Research Park's future.

THIS SECTION INCLUDES:

- Context
- History of Dandini Research Park
- Ownership Patterns
- Site Character
- Topography and Natural Features
- Utilities and Easements
- Vehicular Circulation and Public Transportation
- Opportunity Sites
2.1 Context

The Dandini Research Park, consisting of approximately 328 acres, is located within the City of Reno, Nevada, in a convenient location north of Interstate 80 and east of US 395 approximately four miles north of downtown Reno and six miles north of Reno Tahoe International Airport (figure 2.1a). The City of Reno has a population of approximately 218,000 and sits on the east side of the Sierra Nevada. The Reno area is commonly referred to as the Greater Truckee Meadows or Greater Reno Tahoe Region and contains a population of approximately 310,000.

Reno is located within the Great Basin and the Great Basin Desert. The Great Basin is the largest contiguous closed watershed of North America and is noted for its large area, arid conditions, and Basin and Range topography. Given the site’s location and ecological characteristics, careful choices must be made to respect the region’s unique qualities.

Currently, access to the Research Park is provided from US 395 via the Parr Boulevard exit or Clear Acre Lane-Sun Valley Boulevard exit, then along Dandini Boulevard. The Research Park is located within the City of Reno’s Dandini Regional Center Plan, which was established to promote higher intensity of development in identified centers and transit corridors (figure 2.1b). The current zoning designation for the site is MU/DRC (Mixed-Use/Dandini Regional Center Zoning Overlay District).
2.2 History of Dandini Research Park

Beginning in 1968, then Marshal of the University of Nevada, Alessandro Dandini, at his own personal expense, petitioned the Bureau of Land Management (BLM) to entitle the area now known as the Dandini Research Park to what is now known as the Nevada System of Higher Education.

The land was available pursuant to the Recreation and Public Purposes Act of June 14, 1926 and was secured in two separate parcels as:

Patent 27-73-0001 granted on July 17, 1972 for the following described land:

Mount Diablo Meridian, Nevada

T. 20 N., R. 19 E.,
Sec. 25, Lots 1, 2, 3, 4, 5, 11, SW1/4 NE1/4, NW1/4SE1/4;

containing 309.11 acres

Patent 27-75-0012 granted on August 29, 1974 for 158.22 Acres

Mount Diablo Meridian, Nevada

T. 20 N., R. 19 E.,
Sec. 25, Lots 6, 7, SW1/4 NE1/4, NW1/4SE1/4;

containing 158.22 acres

The Research Park lands prior to development (c. 1970s).
On September 8, 1972, the Board of Regents of the University of Nevada System voted to approve the initial land patent and thus formally took possession of the property.

The initial entitlements contained provisions that were both prohibitive of certain for-profit development and retained rights of rescission with the BLM. There were many attempts subsequent to the 1972/74 patents to market and develop the property; however the restrictive entitlement provisions proved to be a significant barrier to development of a research park. During that time, the Research Park current and sole tenant, National Oceanic and Atmospheric Administration, signed a lease on December 1, 1992 for 10 acres, renewable annually through 2052.

Over the next many years, DRI lobbied for modifications of the original land patent. On February 1, 2005 Senator Harry Reid introduced and sponsored S.252 [109th]: Dandini Research Park Conveyance Act, which was also supported by Senator John Ensign and then Representative Jim Gibbons of Nevada. The legislation was designed to remove the prohibitive entitlements of the original patents and pave the way for commercial development of the Research Park. On September 14, 2005, President George W. Bush, signed the bill into law.

Since passage of that legislation, DRI Research Parks has taken active steps in development of the Park through marketing and development initiatives. Commercial representation of the Park is on-going through real estate brokers who work in conjunction with the Managing Director in solicitation for the Park through various initiatives. In May 2007, through a grant funded by the Department of Commerce Economic Development Administration, a feasibility study and subsequent business plan was completed for a technology business incubator in the Research Park.

Completion of this master plan, funded by DRI and the Department of Commerce Economic Development Administration, represents a major milestone in development planning and future marketing of the Research Park.
2.3 Ownership Patterns

The Research Park property (figure 2.3) surrounds the 30 acre DRI and 77 acre TMCC campuses and includes the 10 acre site leased to the National Oceanic and Atmospheric Association (NOAA) Weather Service Forecast Office and 0.9 acre site leased to the Truckee Meadows Water Authority (TMWA). Uses bordering the site include undeveloped, steep land to the north (held as open space by Washoe County); Panorama Village Apartments to the southeast; undeveloped property and single family residences beyond in the Sun Valley community to the east; and undeveloped steep land and US 395 to the west.

2.4 Site Character

The qualities of this high desert environment and dramatic topography give the Research Park a distinct character with unique inherent attributes that define a sense of place. The majority of the terrain is south-facing slopes, offering outstanding views of downtown Reno, Truckee Meadows, Peavine Mountain, and the Sierra Nevada, Carson, and Virginia mountain ranges. With the Research Park surrounding the DRI and TMCC campuses, it is important for the development of the Park to respect and maintain the views and vistas from these existing facilities and open spaces. A significant public open space, the Angela Dandini Garden, exists between the DRI and TMCC campus boundary. Pedestrian connections to the Garden and existing trail network should be considered for the Research Park. The hilly terrain also exposes rock outcrops that can be found throughout the Research Park. Several informal trails and vehicular paths occur on the site, some of which provide maintenance access to existing utility structures.

The site’s landscape falls within the Upper Sonoran life zone of the Reno floristic section. Generally, the site is characterized by desert sagebrush, with some stands of pine trees occurring around elevations 5000 to 5100 feet on the steep slopes north of Dandini Boulevard. Plants found within the Research Park include pinyon, juniper, pine, and sagebrush.
Figure 2.5a | Steep Slopes
2.5 Topography and Natural Features

The topography is perhaps the most dramatic natural feature of the Research Park. The goal is to develop the site with the least impact possible on topography and hydrology, while maximizing the value of usable net acreage. With elevations on the site ranging from 4710 in the southern valley to 5260 around the hilltop north of Dandini Boulevard, this hilly terrain creates large areas of very steep slopes and offers relatively few flat building sites (figure 2.5a). Development, with the exception of primary Park roads, trails, and utilities, should not occur in areas of slopes over 25 percent, while areas with slopes from 10 to 25 percent will require sensitive site grading.

The property meets the City of Reno’s threshold for consideration as a Hillside Development as slopes over 15 percent exist on a minimum of 25 percent of the site. Per the City’s requirements, approximately 154 acres of open space will be required to remain on the property.
The steep and challenging terrain of the Research Park, and the build-out of the TMCC and DRI campuses, has generally created development opportunities on flatter slopes, leaving a majority of the washes and drainage ways on-site minimally impacted. Aside from the roadway grading associated with Dandini Boulevard and Raggio Parkway, which has cut off flows from upstream watersheds, the native flow patterns for the property are largely intact. Previous development efforts have resulted in underground storm water capture and conveyance systems discharged to existing watercourses without detention or retention facilities.

While numerous native watercourses are located within the property, they generally converge on three downstream flow targets (figure 2.5b):

- An incised channel off-site that runs parallel to the US 395 fill slope and drains into an existing 48-inch culvert that crosses under the highway;
- An incised roadside ditch that follows Dandini Boulevard and runs east; and
- Two large watercourses located north of Dandini Boulevard that converge near the eastern property line of the Research Park, where the resultant drainage becomes classified as a Major Drainage Way per the City of Reno code.

The site is situated within the transition zone between the Sierra Nevada geologic province to the west and the Basin and Range province to the east. The basic geology of the site consists of altered intrusive granodiorite surrounded by extensively altered Alta Formation andesite. These andesite and granodiorite rock outcrops present distinguished features that should be integrated with the development of sites and park amenities. The general soil and bedrock characteristics within the Park are poorly drained, expansive materials, with bedrock outcrops. These expansive soils/bedrock present a challenge for building design and will necessitate special considerations associated with foundation systems. Several Quaternary faults trend through the Research Park in a north-south direction. Unless the fault structure itself presents special geotechnical concerns, faults of this age do not require special consideration unless the planned improvements consist of critical structures such as schools or hospitals.

The site offers dramatic views of downtown Reno and distant mountain ranges. While views from the site are a distinguishing feature, protecting natural hillside views from the valley and US 395 should be carefully considered in the location of buildings and parking areas.
Figure 2.5b | Major Drainage Ways, Natural Features, and Views
Figure 2.6 | Existing Utilities and Easements
2.6 Utilities and Easements

While largely undeveloped at this time, the lands of the Research Park completely surround the partially developed campuses of DRI and TMCC. The existing utility infrastructure in support of the DRI and TMCC campuses has been extended around and through portions of the Research Park lands. This existing utility infrastructure development, and utility corridors with associated easements, have created some opportunity for future connections within the Research Park.

A number of major utility lines pass through the site, including those for water, electricity, natural gas, and sanitary sewer (figure 2.6). Several of these existing facilities are transmission level in size, including electric and natural gas, thereby severely restricting any opportunity to relocate them. Other facilities, such as portions of the water system, are distribution level in size and could conceivably be relocated to reclaim potentially developable land.

As the TMCC and DRI campuses have developed over time, and as Raggio Parkway, the cul-de-sac drive, and Spectrum Boulevard have been constructed, the Research Park has pro-acted by placing some facilities within those roadways to serve future development. However, the result of past efforts has left the potential development zones with access to some, but typically not all, facilities necessary for development of the sites.
Figure 2.7a | Existing Circulation
2.7 Vehicular Circulation and Public Transportation

The primary access into the Research Park is along Dandini Boulevard. Raggio Parkway is a loop roadway that connects to Dandini Boulevard west and east of DRI and TMCC's campuses (figure 2.7a). Access to the southernmost portion of the Research Park is potentially available through existing stubbed public streets Scottsdale Road and Sabina Way. Sabina Way connects to Scottsdale Road, which intersects Clear Acre Lane northeast of the US 395/McCarran Boulevard/Clear Acre Lane interchange.

Dandini Boulevard/Parr Boulevard is a two-lane east-west roadway. Parr Boulevard begins at US 395 and extends west; Dandini Boulevard runs east of US 395. Dandini Boulevard is classified as a City of Reno Minor Arterial Roadway. However, it is classified as a Moderate Access Control (MAC) Arterial in the Regional Transportation Commission of Washoe County (RTC) 2040 Regional Transportation Plan. Dandini Boulevard right-of-way is approximately 60 feet wide with 12-foot wide travel lanes and shoulders varying from 2 to 6-feet. There is a three-legged roundabout on Dandini Boulevard at Spectrum Boulevard.

Raggio Parkway is a four-lane roadway that is currently owned and maintained by DRI. Raggio Parkway is classified as a MAC Arterial and also provides access to DRI and TMCC’s campuses. Currently there are stop signs on Raggio Parkway at Dandini Boulevard. There is a four-legged roundabout on Raggio Parkway at the TMCC campus roadway and a private cul-de-sac drive that provides access to undeveloped property in the Research Park. Previous DRI and TMCC Master Plans have identified intersection improvements at the east and west Dandini Boulevard/Raggio Parkway intersections.

Dandini Boulevard and Raggio Parkway are not designed to any current bicycle route classification standards. However, bicycle routes from these primary roads should be integrated with the Research Park circulation system. All public and private roadways within the Research Park do not have sidewalks.

PUBLIC TRANSPORTATION

RTC Ride is a public transit system that provides bus service on 30 routes serving the Reno and Sparks area. Route 15 serves DRI and TMCC traveling from the RTC transit hub in downtown Reno, along 4th Street, Sutro Street, Wedekind Road, El Rancho Drive, and Dandini Boulevard. Currently there is a transit stop at the TMCC campus. On weekdays, Route 15 offers half-hourly service from 5:45 AM to 5:45 PM and hourly service from 5:45 PM to 10:45 PM. On Saturdays, Route 15 offers hourly service from 5:45 AM to 10:45 PM. Sundays and holiday services are provided hourly from 5:45 AM to 9:45 PM (figure 2.7a).
PLANNED AND PROPOSED CIRCULATION IMPROVEMENTS

The Regional Transportation Commission (RTC) 2040 RTP includes planned regional roadway improvements throughout Washoe County to take place by the years 2018, 2030, and 2040 (figure 2.7b).

Improvements near the project site projected to be complete by 2018 include:

A– Widening Sutro Street from two to four lanes, from Sunvilla Boulevard to North McCarran Boulevard;

B– Constructing a new interchange between the existing North McCarran Boulevard/Clear Acre Lane and Parr Boulevard-Dandini Boulevard interchanges. This interchange alignment has not been evaluated in detail by the RTC.

C– Extending Sutro Street with a new two-lane road to Clear Acre Lane.

D– Widening US 395 to six lanes between North Virginia Street and North McCarran Boulevard.

E– Widening Sun Valley Boulevard from four to six lanes, from 2nd Avenue to the future intersection/interchange with US 395/Pyramid Freeway.

F– Constructing a new four lane West Sun Valley arterial to connect Eagle Canyon and Dandini Boulevard.

G– Constructing a new six-lane freeway to connect Sparks Boulevard and US 395, north of the McCarran Boulevard loop road. Multiple alignments are being analyzed as part of the RTC’s Pyramid Highway Environmental Impact Statement (EIS). The preliminary alignments extend through the Research Park property north of Dandini Boulevard, as well as south of Raggio Parkway. At the time of this report, RTC has put this project on hold.

Improvements near the project site that are expected by 2030 include:

H– Widening Parr Boulevard from two to four lanes, from US 395 to North Virginia Street.
Figure 2.7b | RTC Proposed Improvements
Figure 2.8 | Opportunity Sites
2.8 Opportunity Sites

Given the site's challenging topography, hydrology, access, and surrounding land uses, the land south of Raggio Parkway emerged as the primary development region for the Research Park (figure 2.8). Some smaller, stand-alone sites became evident along Dandini Boulevard with an opportunity for some highly flexible sites in the northeast corner of the Research Park. In all, the challenging site features result in a net usable area of approximately 105 of the 328 available site acres, or 32 percent of the total Park land. The remaining acreage will remain undeveloped with the exception of a pedestrian trail network and roads system throughout the open space.

The analysis of the land yielded a potential off-site development opportunity on the McKenzie parcel, southwest of the Research Park. This site currently lacks any form of access from a major road. The development of the Research Park would need to accommodate access for a potential partnership opportunity to occur.
The Master Plan for the Dandini Research Park is founded on a vision that links the mission and long-term development of the park to a strategy of research-based learning and professional collaboration. The Plan is inspired by the characteristics of the high desert environment with a focus on comprehensive stewardship and sustainability.

**THIS SECTION INCLUDES:**
- Development Strategy
- Development Program
- Site Design
- Landscape Framework
- Integrated Transportation
3.1 Development Strategy

The development strategy for the Research Park is to maximize the use of flatter slopes and existing infrastructure, and to capitalize on premier views over the Truckee Meadows. The site plan is characterized by compact Development zones, respect for the natural topography, the system of valleys and drainage swales, and the visible clustering of rock outcrops. The use of existing infrastructure allows for the incremental development of the Research Park over time while reducing financial obligations early in the development process. The site is organized around five distinct Development zones: the Collaborative Core; Upper Partnership; Lower Partnership; High Visibility Sites; and the Northeast Flex (figure 3.1).

The Upper Partnership, Lower Partnership, High Visibility Sites, and Northeast Flex zone sites offer traditional leased parcel opportunities for the Research Park. The Collaborative Core provides a framework centered on a common open space, taking on characteristics similar to a campus setting. Each zone maximizes the potential from the flatter slopes, thereby minimizing the required grading operations and site disturbance, leaving the character of the hillside terrain intact, and enhancing the sense of place.

The McKenzie parcel located south of the Collaborative Core offers a possible expansion for the Research Park if this land becomes available by the owner or a development collaboration is explored.
3.2 Development Program

The development program for the Research Park includes 850,000 gross square feet (GSF) of space. The program accommodates a broad mix of uses and overall flexibility for tenant types. The program table identifies conceptual building size and parking for each of the five Development zones.

NOTE: Parcels R, S, T, U and W, which have a total building area potential of 110,000 square feet, are located in adjoining areas that will remain undeveloped. Upon further analysis in the future, some or all of these parcels may be more suitable to remain undeveloped depending on potential environmental impacts or cost constraints.

The building program was established for the Park using the following assumptions:

- Building footprints with a minimum of 60 feet in width to accommodate flexible tenant configurations.
- Building footprints and GSF are conceptual and represent preferred locations, orientation, and maximum build-to conditions for each parcel or site.
- Heights of 2 to 3 stories, with some one-story buildings.
- Buildings in the Collaborative Core are intended to be multi-tenant buildings or large corporate entity.
- Parking is planned at 3 spaces per 1,000 GSF maximum unless otherwise indicated.
<table>
<thead>
<tr>
<th>PARCEL</th>
<th>SITE</th>
<th>BUILDING AREA (GSF)</th>
<th>PARKING SPACES (3/1000)*</th>
<th>NO. STORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Core</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Site 1</td>
<td>40,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Site 2</td>
<td>40,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Site 3</td>
<td>40,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Site 4</td>
<td>60,000</td>
<td>180</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Site 5</td>
<td>40,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>Upper Partnership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>40,000</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>60,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>60,000</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>80,000</td>
<td>160</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>120,000</td>
<td>240</td>
<td>3</td>
</tr>
<tr>
<td>Lower Partnership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td>25 units</td>
<td>90</td>
<td>3 (including garage)</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td>30,000</td>
<td>90</td>
<td>2</td>
</tr>
<tr>
<td>J</td>
<td></td>
<td>25,000</td>
<td>75</td>
<td>2</td>
</tr>
<tr>
<td>K</td>
<td></td>
<td>20,000</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td>20,000</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>20,000</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>High Visibility Sites</td>
<td></td>
<td>75,000</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>20,000</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>5,000</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Q</td>
<td></td>
<td>20,000</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td>15,000</td>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>15,000</td>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td>Northeast Flex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td></td>
<td>25,000</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>25,000</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>W</td>
<td></td>
<td>30,000</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>850,000</strong></td>
<td><strong>2190</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Except in Upper Partnership zone where 2/1000 GSF has been used.
3.3 Site Design

The plan organizes the Research Park around the natural setting of the high desert, the topography, and a framework that capitalizes on the outstanding views of the Truckee Meadows (figure 3.3a). The circulation structure consists of existing roads—Dandini Boulevard, Raggio Parkway, and Raggio cul-de-sac drive—and two new roads to serve the northeast and southwest corners of the Research Park. The southern road also serves as a means of secondary egress and emergency access from the upper zones. All development planned for the Research Park has direct access from these five roads. The road layout is designed to allow for incremental phasing of construction.

The primary point of entry to the Park will remain along Dandini Boulevard since both east and west ends provide easy access to US 395. With recommended improvements to the Dandini/Raggio intersections, Raggio Parkway will become the primary access route serving DRI, TMCC, and the Research Park. Due to the disbursement of development throughout the site, Park identification signage should occur at the east and west ends of Dandini Boulevard.

The accommodation of uses in the Research Park will vary by zone, but is intended to be more flexible the greater distance the zone is from the DRI and TMCC core campus. The design intent behind the Collaborative Core, Upper Partnership, and Lower Partnership zones is to arrange the buildings around common open spaces, promoting social and intellectual interaction, foster collaboration, and the exchange of ideas. These outdoor spaces, or rooms, become important adjuncts to the program inside the buildings and in supporting the mission of the Research Park. Buildings have been situated within each zone to work with the natural topography and maximize views to the Truckee Meadows where possible. A pedestrian circulation system consists of sidewalks, paths, and off-road trails connecting these outdoor rooms to each other, to the existing trail system, and the Park's open space. The trail system offers an open space amenity, including scenic vistas, for employees, faculty, staff, students, and visitors.
Figure 3.3a | Site Illustrative
Figure 3.3b | Collaborative Core

Non-Park Building
Research Park Building
Vehicular Paving
Pedestrian Paving

Emergency Access
Trail
Property Line
New Roadway

Future Expansion of DRI Campus
DRI
Pedestrian Bridge
Parcel A
Plaza
Rock Outcrops
Parking Deck
PV Panels

0 50 100 feet

DANDINI RESEARCH PARK master plan
COLLABORATIVE CORE

The Collaborative Core serves as the premier location to foster collaboration with DRI, UNR, and TMCC (figure 3.3b). Located just south of both campuses along Raggio Parkway, the framework for development is similar to a campus model. The buildings are organized around a common open space dedicated for pedestrians with a direct link to DRI and TMCC via a pedestrian walk or future bridge structure. The parking for this development is assembled to the east, with direct access off Raggio Parkway. For the first phase of development, parking can be accommodated by a surface lot. If parking demands require, a parking deck of one-level is planned to accommodate the second phase of development. The parking deck could have a secondary means of access from NOAA’s entry drive.

The buildings, plazas, and open space are designed to be harmonious with the surrounding landscape. Buildings are located to preserve the unique characteristics of this site, especially the various rock outcrops. Building arrangements limit the site impact, capture views, create comfortable, intimate, well-protected outdoor spaces, and optimize building orientation for solar efficiencies. Buildings are intended to be multi-tenant with space for social engagement and shared uses such as café, conferencing, informal gathering and hangout spaces, library or other shared resources.

Pedestrian courtyards link the primary building entries and shared use areas, provide patrons with views and vistas of the Truckee Meadows, and offer comfortable environments sheltered from the sun and wind. Tenants of the Collaborative Core are within a five minute walk of the DRI campus, with a well-defined pedestrian connection across Raggio Parkway. The outdoor spaces are also linked to the Research Park trail system connecting pedestrians to other zones or the undeveloped open space.

The Collaborative Core will focus on tenants with heavy research and development enterprises with a cohesive technology mission including both established firms and entrepreneurial/incubation type operations. Tenants will also be considered based on their need to collaborate with DRI/UNR faculty with close access to laboratory facilities.
Concept rendering of the first phase for the Collaborative Core with DRI and TMCC in the background.
Concept rendering of the Collaborative Core at full build-out.
**UPPER PARTNERSHIP ZONE**

The Upper Partnership zone offers the largest potential build-out in the Research Park. This zone occupies land in the southeast corner of the site with access off the Raggio Parkway roundabout and existing cul-de-sac drive (figure 3.3c). The framework for development provides flexibility with distinct parcels possible while benefiting from close proximity to adjoining tenants. Parking will be accommodated as necessary on each parcel as demand dictates. Phasing of construction can occur with any parcel since each lot is accessed from the existing cul-de-sac drive.

Similar to the Collaborative Core, building arrangements limit the site impact, capture views, and optimize orientation for passive solar strategies. Building entries, landscape features, and common spaces are organized around public squares. The squares are intended to promote social interaction, lunchtime crowds, or company gatherings. Buildings south of the cul-de-sac drive have been pushed away from the road to maximize uninterrupted view opportunities. Buildings may be suitable for single-tenants or a larger corporation sited to define the public squares and create recognizable addresses for tenants.

Outdoor pedestrian spaces are connected with a system of walks, plazas, and courtyards. The Research Park trail system provides an alternative means for accessing the rest of the Research Park, the campuses, and the enjoyment of the open space.

The Upper Partnership zone offers an ideal setting for independent established companies with a light manufacturing component supporting research and development to be part of unique intellectual environment. The physical distance of these tenants from the DRI/TMCC campuses suggest less need for day to day faculty and facility access.
Figure 3.3c | Upper Partnership zone.
LOWER PARTNERSHIP ZONE

The Lower Partnership zone is a new region of the Research Park accessed by a new road off Raggio Parkway and connected initially to Sabina Way to meet secondary access requirements (figure 3.3d). Ultimately this road would connect to RTC’s planned extension of Sutro Street further south beyond the property boundary. The three parcels in the southwest corner may require a shared parking strategy to accommodate their parking demand per the table shown in Section 3.2 Development Program. For these three parcels, building entries, landscape features, and common spaces are organized around a common public courtyard. Development in this zone requires up-front resources to construct the new access road and supporting infrastructure.

Overall, building arrangements limit the site impact, retain easements, utilities, and a drainage way, capture views, and optimize orientation for passive solar strategies. A portion of an existing minor drainage way will have to be piped to accommodate the new road construction.

The Lower Partnership zone provides a range of uses and tenant opportunities including housing. A housing component would be situated along the eastern edge of the property, providing a compatible use to the adjacent apartments. The housing is intended to be a stacked townhouse design with parking at grade under the first floor. The Lower Partnership zone offers an ideal setting for independent established companies with a light manufacturing component supporting research and development to be part of unique intellectual environment. The physical distance of these tenants from the DRI/TMCC campuses suggest less need for day to day faculty and facility access. However, a walk and trail network provides pedestrians with a connection to the uphill zones of the Research Park.
Figure 3.3d | Lower Partnership zone.
Figure 3.3e | High Visibility Sites
HIGH VISIBILITY SITES

The developments for the High Visibility Sites are important in establishing the character of the Research Park. Their locations adjacent to existing roads—Dandini Boulevard, Raggio Parkway, and Spectrum Boulevard—make them visible at the Research Park entries and very accessible from US 395 and, in some cases, the DRI/TMCC campuses (figure 3.3e). The parcels are established primarily for single tenants with a range of uses including collaborative research, commercial, light manufacturing, or support services. The tenant focus is on heavy research and development enterprises with a cohesive technology mission including both established firms and entrepreneurial/incubation type operations with occasional need to collaborate with DRI/UNR faculty.

NORTHEAST FLEX ZONE

The framework for the Northeast Flex zone is based on three independent parcels that respond to the existing topography and slopes (figure 3.3f). The three development sites reside on plateaus that offer ideal building orientations, minimize site disturbance, and provide some views across the Truckee Meadows and developments in the Upper Partnership zone. Development in this zone requires up-front resources to construct a new access road and infrastructure to create a four-way intersection with Dandini Boulevard and Raggio Parkway. The new access road requires two culvert crossings to accommodate the existing minor drainage ways.

These developments could be single or multi-tenant buildings with convenient parking and service access, and easy access to US 395 via Dandini Boulevard and Clear Acre Lane. The location of these developments allows them to offer the most flexibility in terms of uses. The tenant focus is on independent established companies with a light manufacturing component supporting research and development. The Northeast Flex zone could also provide support housing or lodging.

NOTE: Parcels R, S, T, U and W, which have a total building area potential of 110,000 square feet, are located in adjoining areas that will remain undeveloped. Upon further analysis in the future, some or all of these parcels may be more suitable to remain undeveloped depending on potential environmental impacts or cost constraints.
3.4 Landscape Framework

The landscape framework for the Research Park responds to the unique topography and climate of this high desert environment and includes preserved and enhanced natural features that maintain an attractive open space setting for the Research Park while providing recreational amenities (figure 3.4).

The prominent topographic forms, natural rock outcrops, valley drainage swales, and desert sagebrush are the existing landscape features that distinguish this Research Park. Collectively, this ecosystem functions to handle extreme seasonal climatic changes, minimal amounts of rainfall, intermittent snow storms, and varying degree of prevailing winds. The Master Plan’s design concept responds to these natural systems of the site, with buildings and roads sited accordingly.

The framework for the developments within the Research Park builds upon the strength of this high desert typology with a concentration of modest interventions occurring around primary pedestrian spaces – plazas, courtyards, and building entries. The natural desert landscape infiltrates development sites, blurring the boundaries between natural and man-made conditions. The character of the desert setting is carried into pedestrian spaces creating a seamless integration of the building site with the environment.

Buildings and outdoor spaces are arranged to preserve and enhance the dramatic views from the Research Park. Outdoor spaces are also located to create comfortable, intimate, well-protected areas for pedestrians. This includes the integration of overhead shading devices attached to buildings or freestanding in the landscape, climate-responsive canopy trees, wind screens, and furnishings.
Figure 3.4 | Landscape Framework Diagram
Figure 3.5a | Pedestrian and Bicycle Circulation
3.5 Integrated Transportation

A key component to the Master Plan is an integrated approach to transportation intended to promote public health, encourage interaction between Research Park users, and reduce the energy used by single-occupant vehicles. This integrated approach includes a system of pedestrian, bicycle, transit and vehicular routes to provide Research Park users with a variety of transportation options.

PEDESTRIAN AND BICYCLE CIRCULATION

The pedestrian circulation network provides users with a convenient and enjoyable experience for moving through most of the Research Park (figure 3.5a). The goal is to provide walking paths that link the built environment to the natural environment. Additionally, the network provides an alternative to driving within the Park. Designated pedestrian crossings along Raggio Parkway will permit a safe environment for accessing the DRI/TMCC campuses. The pedestrian trails will be open to the public and patrons of the Research Park for recreation purposes.

The existing cul-de-sac drive and the two new roads within the Park are designed with a Class III Bikeway (Bike Route) to link development sites to Dandini Boulevard, Raggio Parkway, Sabina Way, and to the future Sutro Street extension. Per the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, a Signed Shared Roadway (Class III Bikeway) is to identify the roadway as a “Bike Route” to increase motorist awareness that bicycles may be present in the travel lane. Although Dandini Boulevard and Raggio Parkway are not designed to meet any current bicycle route classification, these roads are used for infrequent bicycle access to the hilltop location. The off-road trail system can also be used for bicycle circulation and allows for additional connections between the development zones and campuses.
VEHICULAR CIRCULATION

Primary access to the Research Park from US 395 is via Dandini Boulevard, either from the Dandini/Parr Boulevard or Clear Acre Lane/Sun Valley Boulevard exits. Upon entering the Park, Raggio Parkway will serve as a primary access to the parcels south of the DRI/TMCC campuses. The existing cul-de-sac drive provides vehicular access to all developments in the Upper Partnership zone (figure 3.5b).

Two new roadways within the Research Park provide access to parcels not currently served off Dandini Boulevard or Raggio Parkway. Coming from the west, one new road will intersect Raggio Parkway and establish a connection to Sabina Way (a local street in the adjacent housing development) and to the future Sutro Street extension planned by RTC. This new road serves as the primary access for developments in the Lower Partnership zone. Sabina Way provides secondary access to this region of the Research Park.

The second roadway provides access to the Northeast Flex zone. Due to its length, this roadway is required to be two-lanes, divided with a median, to serve for adequate emergency access. Both new roadways will be collector roadways and will have a capacity of approximately 8,000 daily vehicles.

All driveways and new roadways in the Master Plan allow full-access (right in/out movements; left in/out movements) with the exception of access to Parcel P in the northeast corner of the Dandini Boulevard/Spectrum Boulevard intersection. The access to this site will have one full access driveway on Spectrum Boulevard and a restricted right-in and right-out driveway on Dandini Boulevard.

The existing RTC Ride Route 15 provides an alternative mode of transportation to the Research Park. There is one transit stop on the north side of the TMCC campus near the Red Mountain Building.
PARKING

Parking spaces will generally be provided at an average ratio of 2.5 spaces per 1,000 GSF, to meet the typical market demand (figure 3.5b). The Master Plan concepts depict 3 spaces per 1,000 GSF, except in the Upper Partnership zone where the intended tenant uses might warrant less parking demand. A ratio of 2 spaces per 1,000 GSF was used for the Upper Partnership zone. Where warranted based on actual use and demand, parking ratios may be reduced to not less than 50 percent of the required parking standard for each specified use. Over the long term parking demand should be documented, and if the demand decreases, it will be possible to build less parking than what is shown as a maximum in the Master Plan.

Surface parking lots are conveniently located with access directly from primary or secondary roads and are often terraced to accommodate the site’s change in topography and mitigate the accumulation of storm water runoff from large areas of impervious surface materials. The creation of multiple parking bays at different elevations can reduce the amount of necessary grading and preserve the natural hydrology patterns.

The Collaborative Core, and the southwest parcels in the Lower Partnership zone, uses a unique approach to address parking and minimize vehicle movements in the Research Park. This concept is one of a shared parking strategy: multiple building sites using one or more parking facilities to meet their collective demand.

SERVICE AND EMERGENCY CIRCULATION

The development sites in the Research Park are designed to accommodate circulation by emergency vehicles. Some sites offer multiple access points to serve a dual role for emergency and service vehicles. Emergency access lanes are also used as secondary pedestrian walks, providing a means to link parcels around the outside of buildings. Service and loading areas are strategically located away from pedestrian areas and critical view corridors, and hidden from street views (figure 3.5c).

NOTE: The State Public Works Board and the State Fire Marshall will have jurisdiction over permitting for buildings and development in the Dandini Research Park. The State Fire Marshall will likely, defer to Reno Fire with regard to operational issues and design of roadways and access.
Figure 3.5b | Vehicular Circulation and Parking Plan
The Master Plan outlines a near-term and long-term implementation strategy for public and private improvements in the Research Park. It also discusses implementation of utility improvements, a framework for common area fee assessments, and outlines a series of next steps.

THIS SECTION INCLUDES:

- Phasing Strategy
- Roads
- Utilities
- Common Area Fee Assessment
- Next Steps
4.1 Phasing Strategy

A strategic phasing strategy was developed by the consultant team, and confirmed by the Board of Trustees, to provide the Research Park with maximum flexibility and tenant occupancy in the near-term, while minimizing the need for initial capital improvements.

The near-term strategy, or phase 1 (figure 4.1a), suggests development in the Collaborative Core, Upper Partnership zone, and High Visibility Sites. These sites capitalize on the existing roads and infrastructure, maximizing potential build-out with the least amount of capital expenditures. Phase 1 is also divided into a 1a and 1b scenario. Phase 1a reduces infrastructure costs and the initial demand for structured parking in the Collaborative Core. It also promotes development closer to DRI and the sharing of resources. Phase 1b encourages the full build-out of the Collaborative Core with the potential add of a single-level parking deck to accommodate growth. Development in the Upper Partnership zone can occur as tenants demand particular parcels.

Phase 2 is the long-term vision for the Research Park (figure 4.1b) and consists of the Lower Partnership and the Northeast Flex zones. Both areas require greater capital investments for infrastructure improvements and should be considered for outside funding opportunities.
Figure 4.1a | Phase 1: Near Term Strategy showing phase 1a development for the Collaborative Core
4.2 Roads

The following improvements to the existing roadway infrastructure are necessary to improve existing traffic issues and accommodate new traffic generated by the Research Park (figure 4.2a):

A– Install traffic signals at the Dandini Boulevard/US 395 Northbound and Southbound ramp terminal intersections.

B– Install a raised median on Dandini Boulevard from the Dandini Boulevard/Spectrum Boulevard intersection to east of the Parcel P driveway to prohibit left turn movements.

C– Realign the Dandini Blvd/Raggio Pkwy (west) intersection to make eastbound Dandini Blvd and northbound Raggio Pkwy the primary road. Westbound Dandini Boulevard west of this intersection would need to be widened to accommodate two lanes (a through lane and a merge lane).

D– Median modifications at Raggio Parkway to accommodate full movements for new access points at the Collaborative Core.

E– Remove bulb out at elbow on existing cul-de-sac drive to accommodate future parcel access entry drive.

F– Obtain an access easement off Spectrum Boulevard for Parcel N.

Optional improvements include:

G– Modify roundabout at Dandini/Spectrum.

H– Realign the Dandini Boulevard/Raggio Parkway (east) intersection to promote Raggio Parkway as the main through route.
Figure 4.2a | Proposed Road Improvements

A Required Improvement
B Optional Improvement

N 0 200 400 feet
A new roadway to the Northeast Flex zone (figure 4.2b) will be a divided roadway with two 20-foot lanes and a 10-foot median. The new roadway to the Lower Partnership zone (figure 4.2c) will feature two 20-foot travel lanes, with exclusive turn lanes at the intersection with Raggio Parkway. The roadway will have a sidewalk on the east side of the roadway and the 20-foot travel lanes provide width to be a “share-the-road” facility with bicyclists. Standard sections have been modified to respect hillside conditions. Parking is not needed and will not be provided.

### 4.3 Utilities

#### COLLABORATIVE CORE

Due to its proximity to Raggio Parkway and infrastructure supporting the DRI/TMCC campuses and UNR annexes, the Collaborative Core can largely be served with existing facilities.

- An existing 8-inch private sanitary sewer runs north and south adjacent to the development area, providing an opportunity for direct gravity connection. This existing main serves both TMCC and DRI, and due to flat sections just below the NOAA site, may have limited capacity to serve future development. The downstream sewer system, owned and operated by the City of Reno, has limited capacity in Clear Acre Lane where an existing 10-inch main passes below the US 395 interchange.

- The existing storm drain system within Raggio Parkway adjacent to the site collects runoff from the road and conveys flows to the drainage just west of the Collaborative Core. A new storm drain collection system, comprised of infiltration swales, drop inlets, pipes and either an above or below grade detention basin is required for development, with an ultimate discharge point proposed at the natural drainage just south of the site.

- Truckee Meadows Water Authority (TMWA) owns and operates an existing 8-inch public water main than runs north to south adjacent to the site. System pressures in the pipe
are greater than 150 psi and will require a pressure regulating station for service to the buildings. Approval for a radial feed to the buildings is unlikely from Washoe County Health Department, which most likely necessitates the need for a second regulation station near the Upper Partnership zone with an intertie between stations.

- NV Energy currently serves the NOAA Building and a portion of the TMCC and DRI campuses via an underground 200 amp three phase circuit located within Raggio Parkway. This circuit is proposed to provide service to the site with an underground infrastructure extension.
- NV Energy owns a 4-inch steel natural gas main in a common trench with water that can be tapped for service to the buildings.

**UPPER PARTNERSHIP ZONE**

The existing cul-de-sac which the Upper Partnership zone surrounds, has some existing facilities which can serve future development, however, main extensions will be necessary.

- The nearest available sewer is an 8-inch public main located with Scottsdale Drive, just south and downhill from the project site. This existing main serves the adjacent multi-family residential projects to the south, and has limited capacity where it connects to an existing 10-inch main in Clear Acre Lane at the US 395 interchange.
- An existing storm drain line which captures runoff from the cul-de-sac and surrounding lands runs within the roadway and has an outlet near the end of the cul-de-sac. The outlet pipe will need to be re-routed with development to discharge beyond the development areas. New storm drain collection systems, comprised of infiltration swales, drop inlets, pipes and either an above or below grade detention basin is required for development, or combination of parcel developments. Parcels E and F are proposed to drain to the natural drainage to the southwest, while Parcels B, C and D are proposed to drain to the natural drainage to the northeast.
- TMWA has mains along the cul-de-sac for both the gravity zone below the Sun Valley tank (located adjacent to NOAA), and the pressure zone upstream of the existing booster station located near the elbow. As pressures in the area are greater than 150 psi, a pressure regulating station is required for service to the buildings. Approval for a radial feed to the buildings is unlikely from Washoe County Health Department, which most likely necessitates the need for a second regulation station near the Collaborative Core with an intertie between stations.
- NV Energy operates an underground 200 amp three phase electrical circuit that runs parallel to the cul-de-sac from the knuckle to the roundabout at Raggio Parkway. This circuit could be extended further east to provide service to Parcels C and D, and direct connections are available with limited infrastructure requirements for Parcels B, E and F.
- The nearest available natural gas main is located at the terminus of Scottsdale Road, south of the project site and down the hill. This 4-inch polyethylene main can be extended to the project site, and depending upon phasing and system loads, may be required to be looped to the west to interconnect with the existing 4-inch steel main.

**LOWER PARTNERSHIP ZONE**

Existing utilities are available in limited capacity to the Lower Partnership zone, with main extensions and reconfigurations necessary for development.

- An existing 8-inch private sewer main serving the DRI/TMCC campuses traverses the site, where it joins a City of Reno 10-inch public main at the southeast corner of the property. This main has limited capacity due to flat sections just off-site and to the east, and due to topographic constraints, a majority of the existing main has invert elevations higher than the proposed development sites. Parcels G, J, K, L and M will require a lift station for connection, and development of Parcel G and H may require limited rerouting of the existing main to realign the pipe away from the proposed development sites. The downstream sewer system, owned and operated by the City of Reno, has limited capacity in Clear Acre Lane where an existing 10-inch main passes below the US 395 interchange.
• The fill zones required for the roadway will necessitate the piping of a portion of the existing minor drainage way in the area with a reinforced concrete box culvert or similar. Parcels G, H and M will require individual storm drain collection systems while Parcels J, K and L could utilize a common collection system. All parcels are proposed to utilize the natural drainage as the ultimate outlet, once runoff is captured in low impact infiltration swales, curb inlets and detained on-site to match pre-development levels.

• TMWA has an existing 8-inch gravity main, fed by the existing gravity zone within the DRI and TMCC campuses and associated 250,000 gallon tank that traverses the site. TMWA also has an existing 8-inch main located at the terminus of Sabina Way, fed by the existing Scottsdale booster pump station that can provide service to the Lower Partnership zone. Primary service for domestic flows would be accomplished with a main extension from the existing Sabina Way main, with a looped interconnection with pressure regulating station to the tank main from the upper zone due to provide fire flows and storage.

• NV Energy operates an existing three phase overhead line that traverses the site and terminates at the existing TMWA pressure regulating station near the proposed cul-de-sac. This circuit, as well as an underground 200 amp three phase circuit located in Scottsdale Road to the east, provides an opportunity for electric service.

• NV Energy has an existing 4-inch steel gas main in a joint trench with water that can be tapped for main extensions to the development areas.

HIGH VISIBILITY SITES

Existing utilities located along Dandini Boulevard, Raggio Parkway and Spectrum Boulevard put some facilities within close proximity to the five High Visibility Sites. Extensions and upgrades to some existing infrastructure will be necessary.

• An existing 8-inch public sewer main, owned by the City of Reno is currently constructed within Spectrum Boulevard and can provide service to Parcels N and P. Parcel N can gravity feed to the existing main, while Parcel P will require a lift station due to the
elevation difference. Parcels Q, R and S are not immediately adjacent to sanitary sewer, and would require private main or service extensions through the respective campuses for DRI and TMCC. The downstream sewer system, owned and operated by the City of Reno, has limited capacity in Clear Acre Lane where an existing 10-inch main passes below the US 395 interchange.

- Only Parcel P has existing storm drain infrastructure in place, which collects runoff from two drainages to the north, and discharges them on the south side of Dandini Boulevard, just downstream of the roundabout. Depending on final site design, this existing storm drain network may require relocation to avoid encroachment from the building. On site capture, conveyance and detention of runoff increases will be required.

- Parcels R and S will impact existing drainages and will require culverts and underground piping systems to convey off-site run-on flows in their historic drainage patterns. All parcels are proposed to utilize natural drainages as the ultimate outlets, once runoff is captured in low impact infiltration swales, curb inlets and detained on-site to match pre-development levels.

- Parcels N and P can be served directly from TMWA’s 8-inch water main located within Spectrum Boulevard, which is part of the North Virginia pump system. Direct connection to this main is possible, with both domestic service and fire flows and storage available. Parcel Q is located across from the Great Basin Soils Sample and Records Library which is served with a radial 8-inch water main off the TMCC/DRI pressure zone. Further extension of the existing radial main may be possible, but would require approval from the Washoe County Health Department, and possibly a pressure reducing station at the building. Parcel R is in close proximity to the existing TMCC/DRI pressure zone main located just south of Dandini. A radial main or service extension from this main is possible, but would require approval from the Washoe County Health Department, and possibly a pressure reducing station at the building. Parcel S is not immediately adjacent to an existing water main. Service would most likely come from a radial main extension from a tap off the existing 12-inch line running from the DRI/TMCC tank to the campuses.

- NV Energy has an existing underground 200 amp three phase system located within Spectrum Boulevard immediately adjacent to Parcels N and P that can be connected to for service. An existing three phase overhead circuit following Dandini would be utilized for Parcels R and S. Parcel Q is located just south of an existing three phase underground drop near the intersection of Dandini Boulevard and Raggio Parkway that could be extended to provide service to the development site.

- NV Energy has an existing 4-inch polyethylene gas main located within Spectrum Boulevard that allows for direct connection and services to Parcels N and P. Parcels Q, R and S are in close proximity, but are not adjacent to existing gas mains. Both parcels require service extensions to existing mains located within the DRI and TMCC campuses.

NORTHEAST FLEX ZONE

Surrounded by undeveloped land and opposite of yet to be developed portions of the TMCC campus, there are limited facilities currently available for service to the Northeast Flex Zone.

- An existing 8-inch dry line sewer located within Raggio Parkway and stubbed out at Dandini Boulevard was constructed with the intent of serving future development on the TMCC campus, and development north of Dandini. The main is proposed to be extended east along Dandini Boulevard where it would connect to an existing 8-inch public sewer located at Leonesio Drive, approximately 2,800 feet to the east. This existing main, owned and operated by the Sun Valley General Improvement District, then connects to a City of Sparks 18-inch interceptor located just east of Sun Valley Boulevard. Parcels T and U could connect to the dry line and sewer extension within Dandini via gravity flow, but Parcel W would require a lift station to pump flows to the Dandini Main due to a deep sag in the vertical profile of the proposed roadway.

- The fill zones required for the roadway will necessitate the piping of portions of two existing natural drainage ways in the area with a reinforced concrete box culvert or similar. All parcels are proposed to utilize the adjacent natural drainages as the ultimate outlet, once runoff is captured in low impact infiltration swales, curb inlets and detained on-site to match pre-development levels.
The closest available TMWA water mains for connection are the 12-inch tank main just west of Parcel S and the existing 12-inch main near the roundabout on Raggio Parkway near the Upper Partnership zone. Due to this great distance, the possibility of a radial feed from either location without system looping along Dandini Boulevard and Raggio Parkway is unlikely. The existing Sun Valley tank, and DRI/TMCC booster station provide adequate capacity and service pressures to serve Parcels T, U and W with appropriate main extensions without the need for further pumping.

TMWA has expressed interest in placing a 1.2 million gallon tank near Parcel T at elevation 4844 as part of their 2018 Capital Improvements Program. Further discussion and planning will be necessary including final locations, screening and visual impacts consideration, and potential loss of building area for Parcel T.

The Sun Valley General Improvement District owns and operates a tank fed gravity system located just north of the Park’s property line within Washoe County controlled property. Connection to this system to serve Parcel W, or a combination of parcels within the Northeast Flex zone may be an option but would require de-annexation from TMWA’s service territory.

An existing three phase overhead circuit following Dandini Boulevard, owned and operated by NV Energy, is the nearest available electrical service. This existing overhead line could be tapped and a three phase drop could be installed to then extend underground infrastructure along the proposed roadway.

The nearest available natural gas source is NV Energy’s 4-inch steel main located within TMCC’s campus near the existing facilities building, approximately 1,500 feet away from the beginning of the proposed roadway.
4.4 Common Area Fee Assessment

The Research Park development concept is founded upon a goal of sustainability and preservation of open space. All tenants and facilities within the land patents will be required to contribute fees for the management, maintenance, and future improvements of common areas and associated amenities. The management and authority of Research Park assessment funds will be by the Board of Trustees. Assessment funds will pay for the costs of approved common area improvements, including pedestrian trails and trail signage, Park identification signage, common area landscape maintenance, Park road maintenance, and the maintenance of all shared facilities.

4.5 Next Steps

A number of additional planning and design studies will assist in implementing the Master Plan concepts and recommendations. The studies will examine in greater depth issues identified in the plan, or will refine the initial Master Plan strategies. The recommended additional studies, or next steps, include:

NEAR HORIZON

- **Common Area Fee Assessment** – The Board of Trustees should consult with outside professionals with expertise in establishing fee assessments, appropriate reserve funding mechanisms, and the long-term management of the Research Park grounds and common area facilities.

- **Technical Sanitary Sewer Study** – The Master Plan has identified potential capacity limitations downstream of the project site and within the City of Reno’s existing public sewer infrastructure. These potential limitations warrant further technical analysis including flow monitoring, detailed survey and exploration of existing infrastructure and coordination with the City of Reno to understand the impacts and opportunities resulting from planned improvements under the City’s Capital Improvement Plan (CIP).

- **Technical Domestic Water Study** – The Truckee Meadows Water Authority Level One Discovery prepared for the Master Plan has identified and outlined some of the needed water infrastructure improvements necessary for development on-site. A Level II Discovery and technical analysis should be conducted to further analyze the hydraulic models, and to better predict needed pressure zone improvements to serve development on-site.

- **Endangered Species Assessment** – During the planning process, concern has been raised over the possible existence of Endangered Species present north of Dandini Boulevard. Further study is warranted, including a biological resources and habitat assessment for threatened and endangered species in accordance with industry accepted standards.

- **Wetlands** – The Dandini Research Park may potentially have jurisdictional Waters of the United States (WOUS) including wetlands on site. Based on a preliminary review of the National Wetland Inventory Map there are no previously mapped wetland resources within the site. It is recommended to conduct an Inventory of Waters of the U.S. including wetlands for all undeveloped portions of the project site, and to submit the Inventory of Waters of the U.S. including wetlands to the US Army Corps of Engineers for review and verification. This request will result in a jurisdictional determination for any potentially jurisdictional waters within the site.

LONGER TERM

- **Topographic Survey** – The topographic survey currently available for the project is a compilation of a number of prior aerial surveys that lacks the detailed information necessary for design. Prior to design, it will be necessary to conduct a detailed survey, or surveys for the proposed development areas of interest in order to support construction document development.

- **Geotechnical Investigation** – Prior to design, it will be necessary to conduct site specific geotechnical investigations to provide the detailed design information and construction practice recommendations necessary for development.
The success of the Dandini Research Park depends, in part, on the quality of the built environment. The Design Guidelines help ensure the implementation of a high-quality, unified Research Park. Responding to the cultural and environmental context, these guidelines address site planning, buildings, and landscape elements for all public and private improvements in the Research Park.

Adherence to these Design Guidelines is under the purview of the DRI Research Parks Board of Trustees. The Board, and/or a designated Design Review sub-committee, will be charged with the initial review and approval of design aspects of development plans and compliance.

THIS SECTION INCLUDES:

- Urban Design Principles
- Site Planning
- Building Guidance
- Landscape Guidance
Figure 5.1 | Urban Design Principles
5.1 Urban Design Principles

A set of urban design principles has guided the development concept for the Research Park and provides a framework for prospective designers, builders, and developers (figure 5.1). These principles include:

- Respect and maintain the site’s natural and cultural features.
- Reflect the topography through building massing.
- Develop sites and building designs to maximize energy efficiency and human comfort.
- Connect indoor and outdoor common areas.
- Create pedestrian-focused environments to facilitate interaction and a better sense of place.
- Create an open space network to connect Research Park developments and existing campuses.
5.2 Site Planning

Site planning addresses the relationship of site-specific improvements to important contextual elements of the landscape, such as views or topography. Guidelines relating to site planning, used in conjunction with guidelines for buildings and landscape components, provide the overall direction and approach for site-specific enhancements in the Research Park.

The Site Planning section is organized as follows:

- Views
- Grading and Slope Treatment
- Storm Water Treatment
- Drainage Ways
- Circulation Systems
- Parking
- Service and Loading Areas
- Utilities
**VIEWS**

Views to and from the Research Park are important elements in this hilltop setting. The downtown Reno and mountain views are a highly-regarded characteristic of the Research Park and should be considered critical in the composition of building location, massing, and pedestrian outdoor spaces.

*Design Intent:*
- Uphill and down valley views shall be respected in the organization and integration of design components.
- Existing view sheds from DRI and TMCC shall be respected.
- A site-specific spatial analysis should be conducted to determine sensitive views from off-site locations and the DRI/TMCC campuses.

**GRADING AND SLOPE TREATMENT**

Topography is perhaps the most dramatic feature of the Research Park. Developing the site with the least impact possible on topography and hydrology is a primary goal. The overall grading concept creates compact development envelopes for each Development zone, minimizing grading impact and the limits of disturbance. Since much of the Research Park land is south-facing slopes with visible exposure from US 395, the treatment of grading operations on slopes needs to be carefully considered.

*Design Intent:*
- Site grading shall incorporate techniques and standards from the City of Reno Low Impact Development Handbook adopted August 2007 or as amended.
- New building sites should be graded such that they appear to emerge from the slope. Minimize creation of flat areas on slopes greater than 25 percent.
- Cut and fill shall be balanced, to the extent possible, within each development zone.
- Finished grades of building pads should blend with the surrounding existing grades to minimize building exposure and grading operations.
- Proposed changes in existing landforms shall blend with existing undisturbed features. Continuous expanses of landforms shall be created to look natural as opposed to contrived or man-made.
- Transition at top and toe of graded slopes shall be rounded to blend with the natural terrain. Abrupt, squared off transitions are not permitted. Provide varying gradients with slopes ranging from 2:1 to 5:1 where possible.
- Where used, architectural or structured berms (i.e. retaining walls, sculptural land forms, etc.) shall be an integral part of the architectural and landscape theme, including consideration of color. Darker colors are preferred except where native materials are used.
- Cut slope angles shall be determined in relationship to the type of materials of which they are composed. Cuts on slopes greater than 25 percent shall be retained with stacked rock or retaining walls.
- Exposed cut slopes greater than 30 feet in height shall be terraced. Terrace faces shall not exceed a maximum height of 30 feet. Terrace widths shall range from five to ten feet to allow for the introduction of vegetation for erosion control.
- Fill slopes steeper than 3:1 shall be protected with an erosion control netting, blanket, or functional equivalent. Netting or blankets shall only be used in conjunction with organic mulch such as straw or wood fiber.
- All disturbed areas that will not be plazas or plaza landscapes shall be planted with native grasses, shrubs, or forbs to provide a transition to undisturbed portions of the site. Temporary irrigation shall be provided as necessary. Reseeding techniques shall be used in accordance with the most recent edition of *Handbook of Best Management Practices* by the State of Nevada Division of Environmental Protection Bureau of Water Quality Planning.
Properly designed bio-swales capture and filter storm water.

Native stone and vegetation promote on-site recharge.
STORM WATER TREATMENT

A goal of the Master Plan is to create a diffused system of natural drainage to reduce the downstream effects on the drainage collection points. Low Impact Development (LID) storm water management techniques are recommended in lieu of traditional development methods, which channel runoff through man-made structures into a municipal system of discharge storm water into drainage ways. LID is defined as methods of development dedicated to protecting the environment and water resources through site design techniques that replicate pre-existing hydrologic site conditions.

Design Intent:

- Pervious materials should be used to reduce sheet flow runoff.
- Detention areas, either surface or subsurface, shall be constructed within each Development zone. Surface facilities shall be designed to prevent altering the natural drainage characteristics of each watershed.
- Subsurface enclosed basins can allow for greater flexibility in the design of the site and have minimal visual surface impacts. These systems also help in reducing the contaminants found in surface runoff, thereby increasing the quality of the downstream discharge.

DRAINAGE WAYS

In conjunction with the characteristic terrain on the site, the network of washes and drainage ways on-site define native flow patterns for the property that are largely intact and undisturbed. The one off-site Major Drainage Way located in the northeast region of the site, will remain undisturbed in undeveloped open space. Minor drainage ways may be modified, relocated, or piped where necessary to accommodate roadways, trails and buildings.

Design Intent:

- Where minor drainage ways are disturbed, they shall be enhanced and re-vegetated consistent with existing on site materials. Channel bottoms shall be designed to equal or improve the native drainage vegetation.
- Culvert headwalls shall be enhanced with rock veneer or other approved similar treatment to mimic the surrounding environment.
- Any roadway crossing of or disturbance to a drainage way shall require a Storm Water Pollution Prevention Plan per the State of Nevada, Nevada Division of Environmental Protection, Bureau of Water Pollution Control.
CIRCULATION SYSTEMS

The Master Plan illustrates the general pattern of proposed roads, walks, and trails for the Research Park. The color palette of materials for pedestrian circulation systems within the Research Park shall complement the natural colors of the high desert landscape, except where noted.

Design Intent:

- Public and private roadways shall be designed to meet the State Public Works Board standards.
- Sidewalks, crosswalks, and curb ramps shall comply with the City of Reno, State of Nevada, and Federal American with Disabilities Act (ADA) codes and standards.
- Crosswalks and curb ramps should be located at each corner intersection to provide safe, accessible crossings of streets.
- All pedestrian walks shall be a minimum of 6 feet in width. All walks shall be constructed of natural grey or colored concrete.
- Pedestrian trails shall be compacted native soil with widths ranging from 4 to 6 feet. Trails shall follow the existing terrain and stay within previously disturbed areas, to the extent possible, to minimize soil disturbance and erosion. Where extreme elevation differences needs to be addressed, switch-backs shall be used to prevent long runs of vertical change.

PARKING

Parking requirements for the anticipated uses in the Research Park will vary based on user types (see Parking Table). Where possible, shared parking facilities should be considered to mitigate the impacts of large paved surfaces, reduce heat island effect, and minimize the use of resources.

Parking Table

<table>
<thead>
<tr>
<th>General Use</th>
<th>Parking Requirement (maximum)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed-use</td>
<td>3 per 1,000 GSF</td>
</tr>
<tr>
<td>R&amp;D/Light Manufacturing</td>
<td>2.5 per 1,000 GSF</td>
</tr>
<tr>
<td>Light Manufacturing</td>
<td>2 per 1,000 GSF</td>
</tr>
<tr>
<td>Residential</td>
<td>2 per unit</td>
</tr>
</tbody>
</table>

* NOTE: Parking requirements may be reduced if justified by actual demand, however shall not be less than 50 percent of the required parking standard for each specified use.

Design Intent:

- Parking areas should be located to accommodate topography, views, and pedestrian safety.
- Parking should be located away from street frontages, where appropriate, but are allowed in the front, side, or rear of buildings. Where parking is located along street frontages, a 20 foot landscape area shall be maintained including a 3 foot high (minimum) berm to mitigate views directly into the parking lots.
- Parking should be terraced into the terrain, with bio-retention swales between terraces, to reduce grading operations, storm water runoff, and unnecessary use of impervious materials.
- Bioretention swales shall be designed using the appropriate native materials suitable for the conditions.
- The use of impervious materials is allowed for parking areas due to the existing soil conditions; however, curbs should be used sparingly to promote storm water discharge into bio-retention swales.
The use of alternative overhead shading devices, such as photovoltaic arrays, is encouraged to mitigate heat-island effect from impervious parking surfaces.

Parking decks or structures, if required, shall be integrated with the topography to reduce the visual effect. Materials, color, and finish shall complement the adjacent buildings.

SERVICE AND LOADING AREAS

Service and loading areas are needed for loading docks and large building utilities as a functional requirement of building programs. They may also contain waste and recycling dumpsters, which should be consolidated and screened to improve building appearance and functional access.

Design Intent:

- Enclosures for service areas shall be integrated with adjacent buildings and be constructed with finishes similar to the construction materials of the buildings.
- Large utilities or waste/recycling containers shall be accommodated within the building. If not possible, components shall be clustered and screened from building entries, courtyards, and primary pedestrian paths.
- External enclosures shall be integrated with the surrounding environment using appropriate materials, finishes, and lighting.
- Service and loading areas should be located away from street frontages, where appropriate, but are allowed in the front, side, or rear of buildings. Where parking is located along street frontages, a 20 foot landscape area shall be maintained including a 3 foot high (minimum) berm to mitigate views directly into the parking lots.

UTILITIES

Due to the topography, the landscape character, and the potential variety of tenants in the Research Park, each parcel is unique and requires significant coordination of building and site utilities. Utilities include both subsurface and above grade elements for consideration and coordination. Above grade utilities include electrical transformers, backflow preventors, fire standpipes, gas docks, emergency generators, and other large elements. These typically require maintenance access and clearances.

Design Intent:

- Subsurface utilities should be consolidated under roads, walks, and plazas, where possible, to minimize impacts on the landscape.
- Surface hatches, utility covers, and ventilation and access elements should be located within paved areas.
- Above grade elements shall be integrated into the site or building design to minimize their impact on the landscape.
- Large above grade utilities shall be located away from building entries, courtyards, and primary pedestrian paths.
- External enclosures shall be used to screen above grade utilities if no other choices exist. These shall be integrated with the surrounding environment by using appropriate scale, materials, and finishes.
- Landscape and engineering disciplines should coordinate drawings to prevent visible utilities in view corridors and other undesirable locations.
- New electric lines shall be installed underground.
- Existing overhead electric lines 25kV distribution level and lower shall be placed underground unless otherwise approved by the regulatory agency.
5.3 Building Guidance

Building guidance for public and private developments helps establish a unified character for the Research Park and enhances the campus quality for pedestrians. The following building guidance is intended to assist future designers, developers, and the State Public Works Board. Given the Research Park’s location within the high desert environment, energy performance of the buildings is important. The guidelines will help ensure that each incremental development will consistently contribute to the Research Park’s character and campus-like quality.

The Building Guidance section is organized as follows:

- Building Orientation and Shading
- Building Setbacks
- Height and Massing
- Façade Articulation
- Building Base and Entrances
- Building Materials
- Architectural Façade Lighting
BUILDING ORIENTATION AND SHADING

A focus on proper building orientation and façade design will greatly impact the building’s energy demand through efficient day-lighting and reduction of conditioning requirements of the structure. Due to the local weather characteristics and seasonally influenced sun course, each potential building orientation is subject to different levels of heat gain. A majority of the buildings in the Research Park Master Plan have been organized along the best orientation–long façades facing north and south–given the site development opportunity and parcel location.

Design Intent:

- North and North-East orientations: These façades are ideal for diffuse day-lighting. Since there is virtually no solar heat gain from that orientation, there is no particular shading device necessary, and the size of windows can be very large.
- East orientation: There is a fairly consistent level of heat gain all year long. It is an advantage in winter since it will heat the building from the earliest hours of the day, and it will be less harmful than other orientations in the summertime because it is the coolest time of the day.
- South-East orientation: There are significant heat gains all year long. Efficient external vertical shading should be used to control building thermal comfort, and/or deeply recessed windows or vertical fins.
- South orientation: This is an excellent orientation as it combines intense heat gain in the winter and lesser amounts the rest of the year because of the variation of the sun angle. Furthermore, it is extremely easy to protect the building façade from summer sun through horizontal exterior sun shading or recessed windows.
- West and South-West orientations: There is intense solar exposure all year long, especially in the summer months. As the intensity of heat occurs at a later time in the day, the amount of windows on that façade should be minimized. Façades facing west are also optimal for higher building mass as the heat is absorbed during the warmest times of the day and released during the night.
- External shading is required on all façades where solar heat gain is a concern.

BUILDING SETBACKS

Building setbacks ensure a consistent relationship between buildings and their street frontage, and adjacent developments. The location of building sites within each parcel may vary depending on intended uses, views, and Development zone intentions.

Design Intent:

- Building setbacks shall be measured from the property line, right-of-way, or parcel boundary.
- Minimum setbacks shall be as follows: Front yard–20 feet/Side yard–5 feet/Rear yard–5 feet.
- Setbacks should provide for landscaping, particularly along building walls that are inactive and/or without windows and entries.
HEIGHT AND MASSING

The height and massing of buildings play an important role in creating comfortable pedestrian spaces, relationships to the environment, and adjacent developments.

Design Intent:

- Building heights shall not exceed 45 feet or a maximum of 3 stories.
- Building heights shall not impede existing viewsheds from DRI and TMCC.
- Building massing should be designed as simple rectangular shapes that appear more like an aggregation of smaller blocks rather than a large, single mass.
- Building entrances and publicly-used areas should be highlighted in the composition, but its proportions should be appropriate to the building’s use and scale.
- Building edges and corners should be thoughtfully articulated when they act as visual focal points for key view corridors.
- Building configurations should create outdoor pedestrian spaces sheltered from the sun and wind.
- Where appropriate, buildings should utilize existing hillsides to reduce effective visual bulk.
- The slopes on the site should be used to the advantage of the building plan allowing for stepped floor plans, natural day-lighting, and access to views.

FAÇADE ARTICULATION

Buildings with treatments that offer visual interest help enhance the character of the Research Park and the pedestrian experience. Buildings provide visual interest when they have varied cornice lines, rhythmic vertical and horizontal elements, and interplay with shade and shadow.

Design Intent:

- Façade composition and articulation should be restrained and balanced.
- The façade should be at a human scale and all buildings should incorporate horizontal divisions within the façade to highlight a delineated base where it meets the ground, a middle encompassing the bulk of the façade, and a top where the building façade terminates.
- All sides of the building shall include articulation, materials and design characteristics consistent with the front façade unless the public’s view from the street is blocked by intervening buildings or topography.
- The vertical structure of the building should be expressed in the façade.
- Openings, such as windows, should be regularly arranged along the façade and aligned on a vertical axis. Windows should be arranged to express interior program, entries, and interior circulation systems. The use of strip or ribbon windows should be limited.
- Ground floor public/social space should introduce a higher level of transparency to the façade.
- Window shading should respond to the orientation of the building. Appropriate exterior shading is highly recommended for all orientations (except for North and North-East) and tinted or reflective glass is discouraged.
BUILDING BASE AND ENTRANCES

Within the façade articulation, the building base and entrances provide the greatest connection to the pedestrian realm and play an important role in framing outdoor space.

**Design Intent:**
- Active and public uses should populate the ground floor of buildings.
- The ground floor of buildings should be located at the same level as the adjacent outdoor pedestrian plazas and courtyards to emphasize the physical and visual connection between interior and exterior program.
- Building entries shall be located adjacent to outdoor common areas and defined by canopies or roof/façade articulation.
- Building entrances should create fluid connections between interior rooms and exterior spaces and incorporate a higher level of transparency to the building.

BUILDING MATERIALS

Building materials contribute to the overall character and quality of the Research Park. The composition of materials should be complementary and compatible with the site and its surroundings.

**Design Intent:**
- Material selection and color shall consider the façade orientation, exposure, adjacent buildings, and desirable solar advantages to benefit the overall energy performance of the building.
- Light colored materials should be used to complement the earth tones of the desert. Light colored materials also absorb less heat and could be strategically used to enhance the energy performance of the building.
- Locally manufactured or quarried materials should be considered to reduce the environmental impacts of transporting materials over long distances.
- Pre-fabricated metal buildings are not allowed in the Research Park.

ARCHITECTURAL FAÇADE LIGHTING

Lighting can play a dynamic role in highlighting distinct features of a building, identifying entries, while minimizing the glare into the night skies.

**Design Intent:**
- Accent lighting, if used, should be appropriately scaled for the composition of the façade and focused down toward the ground to reduce light pollution and preserve the dark skies in the Research Park.
- Exterior light fixtures should be made of high quality, durable materials suitable for this environment, such as brushed stainless steel, aluminum, or factory applied UV resistant finishes.
- All lighting should incorporate high-performance fixtures, such as light-emitting diodes (LED), metal halide or compact fluorescent to reduce energy consumption.
5.4 Landscape Guidance

The landscape design guidance for the Research Park’s open spaces and streets helps establish a unified character and a high quality visual and functional amenity for the site. The natural character of the site includes sparse vegetation, intriguing rock outcrops, and broad views of the Truckee Meadows valley. The design of outdoor spaces, material selection, and plant groupings should respond to these unique characteristics.

The Landscape Guidance section is organized as follows:

- Pedestrian Plazas
- Pedestrian Barriers
- Furnishings and Lighting
- Planting and Irrigation
- Signage
**PEDESTRIAN PLAZAS**

Pedestrian plazas should be accessible to the campus community and provide opportunities for public/semi-public gatherings. These areas should consist of paving, planting, seating, and open gathering areas with adequate sun/shade requirements, based on use, orientation, location, and views.

**Design Intent:**

- Plazas should be located away from parking areas and along primary pedestrian pathways and between buildings.
- Plazas shall incorporate shade either through free-standing structures or from building elements.
- Opportunities for seating should accommodate both individuals and groups.
- The natural landforms should be integral to the design of outdoor spaces, especially for screening plazas from parking or service areas.
- Plazas shall incorporate native rock boulders for seating, accent, or in defining the edges and natural terrain of the site.
- Infrastructure for special events, including water, power, and data, shall be designed into the layout of select plazas.
- Plazas shall be constructed of high quality, durable materials suitable for the high desert climate and intended uses. Concrete or stone pavers should be considered in distinct public areas to accentuate gathering, building entries, or special patterns within the paving field.

**PEDESTRIAN BARRIERS**

Pedestrian barriers direct pedestrians to preferred circulation routes and define landscape spaces. Traffic controls typically restrict vehicular circulation to roads, walks, and service areas. The family of barrier and control elements includes walls, fences and railings, rock boulders, and bollards.

**Design Intent:**

- Walls should be incorporated in the landscape to retain slopes, create raised planters, or separate outdoor spaces. Walls can also be used to integrate outdoor seating. Walls should be constructed of stone, stone veneer, formed concrete or concrete masonry units (CMU).
- Fences should be tall enough to screen unwanted views, but not overscaled if located adjacent to a pedestrian environment.
- The use of security fences should be minimized and allowed only under special circumstances where required by a specific tenant.
- Fence materials should be compatible with adjacent building material, colors, and textures.
- Railings should be made of high quality, durable materials suitable for the high desert environment, such as brushed stainless steel or aluminum. Materials requiring painting should be discouraged to minimize maintenance and variation in the overall Research Park composition. Railings shall comply with all applicable codes and standards.
- Removable and lockable bollards shall be used to limit vehicular access to select roads, walks, and plazas.
• Bollards should be made of high quality, durable materials suitable for the high desert environment, such as brushed stainless steel or aluminum. Materials requiring painting should be discouraged to minimize maintenance and variation in the overall Research Park composition.

• Rock boulders shall be used as pedestrian barriers and direct circulation away from unwanted areas. Boulders should be placed in groups to mimic the natural outcrops found on the site.

FURNISHINGS AND LIGHTING

The relationship of landscape furnishings to buildings, plazas, walks, and natural environment is important to the character of the designed landscapes. All the elements, in combination, reinforce the design, provide identity, and create a sense of place. The family of furnishings for the Research Park consists of benches, tables and chairs, waste and recycling containers, bike racks, picnic tables, and shade structures.

Landscape light standards play an important role in providing pedestrian safety and defining the pedestrian experience throughout the Park. Safe, well-light pathways and plazas between buildings within Development zones are desirable.

Design Intent:

• Furnishings, except those intended to be movable tables and chairs, should be permanently mounted to paving surfaces.

• Furnishings shall comply with all applicable codes and standards.

• All site lighting shall be ‘dark sky’ friendly and avoid light pollution.

• Street and parking lot lighting shall be of a similar family in style. Quantity of fixtures shall be minimized but provide adequate safety and not be visually intrusive. Parking lot standards shall be a maximum 25 feet in height.

• Pedestrian pathway or plaza lights shall be adequately spaced to provide a safe, comfortable nighttime environment, but not visually intrusive. Pedestrian pole lights shall be a maximum 12 feet in height.

• Bollards with integral lights should be considered as an alternative to taller pole standards where views are important or light spill into adjacent buildings is undesirable.

• Light fixtures should be made of high quality, durable materials suitable for this environment, such as brushed stainless steel, aluminum, or factory applied UV resistant finishes.

• All lighting should incorporate high-performance fixtures, such as light-emitting diodes (LED), metal halide or compact fluorescent to reduce energy consumption.

PLANTING AND IRRIGATION

Cohesiveness to the natural surroundings, and compatibility with the character and habitat of the site should be carefully considered during the selection and design of the plant materials. According to Sunset’s Western Garden Book, the Research Park is located in climate zone 2B, which consists of long, warm summers and chilly winters. This location is exposed to west / northwest winds that, when gusting can make for a fairly inhospitable pedestrian setting and challenging for non-native plant material to thrive. Horticultural soil tests should be performed in the design phase of projects to insure proper selection of plant material and that adequate soil preparation is achieved for successful plant growth.
Design Intent:
• All disturbed areas outside of buildings and parking areas shall be landscaped.
• Where possible, existing vegetation should be maintained and integrated with the project design.
• Nevada natives, or adapted, species shall be used that tolerate the high desert climate, including heat, snow, wind, and local soil conditions.
• Plants should be selected that are drought-tolerant to help reduce water demands.
• Plants should be selected that can be maintained in their natural forms to reduce required trimming, green waste, and energy use.
• Trees, shrubs, grasses, and forbs should be selected to enhance the pedestrian experience, create shade in plaza areas, and supplement the wildlife habitat that exists throughout the Research Park.
• When adjacent to pedestrian paths, plant materials shall be appropriately scaled to minimize hiding areas or pockets.
• Turf shall not be used anywhere in projects.
• Plant material should be selected based on the ability to survive on only annual rainfall. The addition of any irrigation system should be limited to pedestrian plaza areas, and should consist of a drip-type system, fully automated and equipped with moisture sensors, rain gauges, and automatic shut-offs. The use of on-site reclaimed water, or the ability to integrate into a non-potable system in the future, should be considered for irrigation purposes.
• Final development plans should conform to the recommendations of the most recent edition of the *International Code Council Urban-Wildland Interface Code* with regard to creation of defensible space envelopes and fuel modification measures to reduce the threat of wildfires and provide a transition between developed areas and open space.

SIGNAGE
The Dandini Research Park Master Plan considers public and private signage as a unifying element for the whole of the Park’s land. Due to the variations in arrival opportunities, and multiple Park drives, the purpose of the sign program is to provide efficient, effective communication and wayfinding. The family of signs for the Research Park consists of Park identification signs, private business identification, and trail identification signs.

Design Intent:
• Signs, except the trail identification markers, shall be constructed of concrete with embossed letters, similar to that of the existing DRI’s campus signage. Letters and logo should occur on both sides of sign.
• Signs shall be appropriately scaled to be visible from passing viewers.
• Signs should be appropriately located and grouped with native rock boulders to appear as though it is emerging from the soil. Sign location should be thoughtfully designed with the landscape plan so plant material and rock boulders resemble the natural environment.
• Each parcel shall have one sign only, except those sites with multiple access or two frontages, where two signs shall be allowed.
• Ground mounted, non-directional up-lights and neon fixtures shall not be allowed for any Park signage.
• Trail identification signs shall be constructed of weathered steel, with visually contrasting letters, mounted on a metal post imbedded into the ground with an adequate footing. Trail signage in the Park should be coordinated with the adjacent open space sign vernacular, vocabulary, and materials.
TRUSTEES:

Chuck Alvey—Chief Executive Officer
Economic Development Authority of Western Nevada

Robert C. Anderson, Esq.—Partner
Holland & Hart LLP

David Funk—President
Nevada Security Bank

Dr. Marsha Read—Interim Vice President Research
University of Nevada, Reno

Dr. Mike Reed—Retired Vice Chancellor for Finance
Dean of University of Nevada, Reno College of Business

Doug Roberts—Senior Vice President
Panattoni Development

Peter Ross—Assistant Vice President
Campus Planning, Desert Research Institute

Dr. Maria Sheehan—President
Truckee Meadows Community College

Par Tolles—President
Dermody Properties

Dr. Stephen Wells—President
Desert Research Institute
COMMUNITY DEVELOPMENT TEAM

Chairman: Peter Ross—Assistant Vice President Campus Planning
Desert Research Institute

Co-Chairman: Jeff Picket—Managing Director
DRI Research Parks

Dave Decker—Assistant Research Professor
Desert Research Institute, Division of Hydrologic Science

Adrian Freund, FAICP—Director of Community Development
Washoe County

Claudia Hanson, AICP—Deputy Director Planning
City of Reno

Kent Hoekman—Research Professor
Desert Research Institute, Division of Atmospheric Science

Tina Iftiger—Director of Economic Development
Reno Tahoe Airport Authority

Doug Maloy, P.E.—Project Manager
Regional Transportation Commission

Dr. Cleve McDaniel—Senior Vice President Finance and Administration
Desert Research Institute

Ken McGwire—Associate Research Professor
Division of Earth & Ecosystems, Desert Research Institute

Dan Oster—Vice President
Industrial Properties Group, NAI Alliance

Dr. Marsha Read—Interim Vice President Research
University of Nevada, Reno

Doug Roberts—Sr. Vice President
Panattoni Development

Dolores Sanford—Vice President Administration/Finance
Truckee Meadows Community College

Aaron West-Guillen—Land Specialist
NAI Alliance

CONSULTANT TEAM

Wood Rodgers

Mark Cendagorta, P.E.—Principal
Andy Durling, AICP—Associate
Melissa Lindell, AICP—Principal

Sasaki Associates

Janne Corneil, AIA, AICP—Principal
Jianxiang Huang, AICP
Jim Jacobs, ASLA—Principal
Manuel Lam
Pontus Lindberg, AICP
Jesse Markman, ASLA—Associate
Nitza Thien

Fehr & Peers

Loren Chilson, P.E.—Associate
Katy Cole, P.E.