# Facilities Master Plan
# Desert Research Institute






Approved by the University and
Community College System of Nevada
Board of Regents
December 2004

The Facilities Master Plan for DRI's Reno and Las Vegas campuses is the culmination of a process that included consideration of our Legislative mandate and purposes, vision and mission, research program trends and growth expectations, as well as design principles reflecting DRI's entrepreneurial, academic, and interactive culture.

The plan achieves an exciting blend of architectural vision combined with a realistic and balanced approach to growth. It provides a framework that will meet DRI's facility needs while creating workplaces conducive to scientific investigation and collaboration across a broad range of disciplines. I am pleased that the plan takes into account the natural features of both settings, energy efficiency and utilization of renewable energy resources, as well as linkages between outdoor and indoor gathering places.

The Reno and Las Vegas plans are the product of a combined effort by DRI's Master Plan Committee, a consulting team consisting of Sasaki Associates and Fehr & Peers, as well as the City of Reno. In addition, many members of DRI's faculty and staff offered their input in open meetings conducted by the Master Plan Committee. I want to personally thank all who made a direct contribution to the development of this long-range master plan.

As DRI moves forward in new research directions and continues to expand, a flexible approach to buildings and landscape is mandatory. This plan provides that approach while respecting natural and cultural site features. When implemented, the master plan will result in a physical infrastructure as visually exciting and dynamic as the scientific research conducted by DRI scientists, staff, and students.

Stephen G. Wells, Ph.D.

President

# Executive Summary

PURPOSE
MASTER PLAN PRINCIPLES
PLAN SUMMARY

The Facilities Master Plan of the Desert Research Institute (DRI) establishes the physical framework for the Reno and Las Vegas campuses and supports DRI's mandate, mission, and vision as it expands its facilities to meet the growing environmental research needs of Nevada, the nation, and the world.

## PURPOSE

The facilities master planning process analyzed existing and projected facilities needs to develop long-range plans for responsible and efficient growth at each campus. The Facilities Master Plan locates new buildings and landscapes where they can positively contribute to the development of both campuses.

## MASTER PLAN PRINCIPLES

The Facilities Master Plan builds upon the following recurring themes and expressed principles developed by the DRI community during the master planning process:

- Foster connections
- Honor campus settings
- Create flexibility
- Embrace efficiency and stewardship
- Enhance access
- Create a campus heart
- Make memorable places

## PLAN SUMMARY

### Reno Campus

DRI's Reno campus plan creates a series of landscape spaces (courtyards and quadrangles) along existing contours linked by exterior and interior pedestrian circulation routes.

*Horizon 1*

***299,000 GSF / 371 parking spaces***

*Horizon 2*

***406,400 GSF / 526 parking spaces***

### Las Vegas Campus

DRI's Las Vegas campus plan creates a continuous landscape space composed of courtyards and plazas that focus pedestrian circulation toward the campus interior and along the Tropicana Wash.

**Horizon 1**

***178,000 GSF / 359 parking spaces***

**Horizon 2**

***230,000 GSF / 472 parking spaces***


**Community Environmental Monitoring Program station**
(left)

**Systems Microbial Ecology Laboratory**
(right)

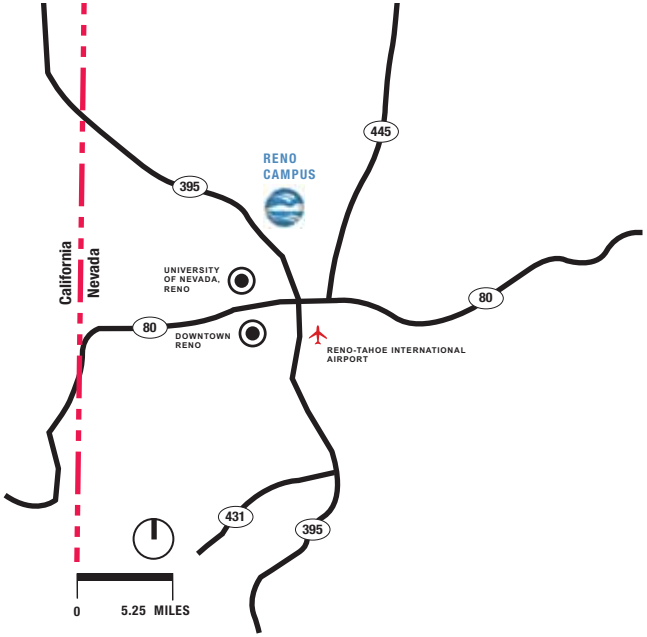
**Energy Laboratory**
(left)

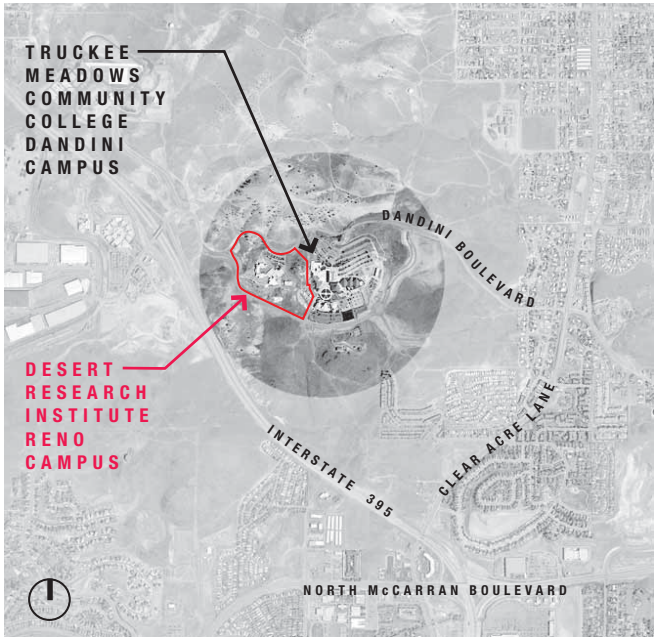
**Ecologically Controlled Enclosed Lysimeter Laboratory**
(right)

# Table of Contents

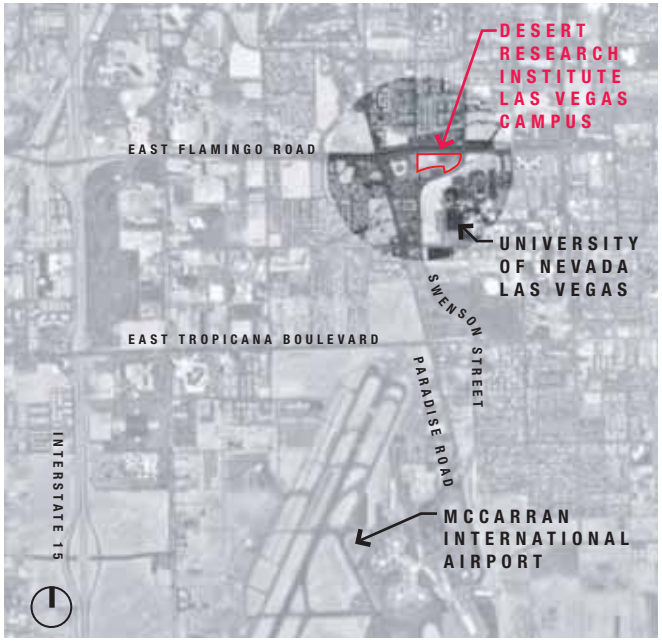

| | | | |
|---|---|---|---|
| | | Executive Summary | Page iii |
| 1 | **Introduction** | Introduction to DRI | 1.1 |
| | | Brief History of DRI | 1.3 |
| | | Trends, Issues, and Opportunities at DRI | 1.6 |
| | | Master Planning Goals, Process, and Principles | 1.7 |
| 2 | **Reno Campus** | Existing Conditions | 2.1 |
| | | The Plan | 2.2 |
| 3 | **Las Vegas Campus** | Existing Conditions | 3.1 |
| | | The Plan | 3.2 |
| 4 | **Next steps** | Actions | 4.1 |
| | | Future Planning Efforts | 4.1 |
| | | Feasibility and Programming Studies | 4.1 |
| 5 | **Contributors** | Master Plan Committee | 5.1 |
| | | Open Meetings | 5.1 |
| | | City of Reno | 5.1 |
| | | Consultant Team | 5.1 |

**Appendix**
*Bound Separately*




**1-1 Location Map - Reno Campus**


**1-2 Location Map - Las Vegas Campus**

# 1 Introduction

**INTRODUCTION TO DRI**
**BRIEF HISTORY OF DRI**
**TRENDS, ISSUES, AND OPPORTUNITIES AT DRI**
**MASTER PLANNING GOALS, PROCESS, AND PRINCIPLES**

The Facilities Master Plan of the Desert Research Institute (DRI), a division of the University and Community College System of Nevada (UCCSN), establishes the physical framework for the Reno and Las Vegas campuses and supports DRI's mandate, mission, and vision as it expands its facilities to meet the growing environmental research needs of Nevada, the nation, and the world.

## INTRODUCTION TO DRI

### Legislative Mandate and Purposes

In 1959, the Nevada Legislature authorized the establishment of DRI:

*To contribute more effectively to the security of the nation and to promote the general welfare of the State of Nevada and its citizens through the development of educational and scientific research, the Board of Regents may establish for educational and scientific research a facility within the System to be known as the Desert Research Institute.*

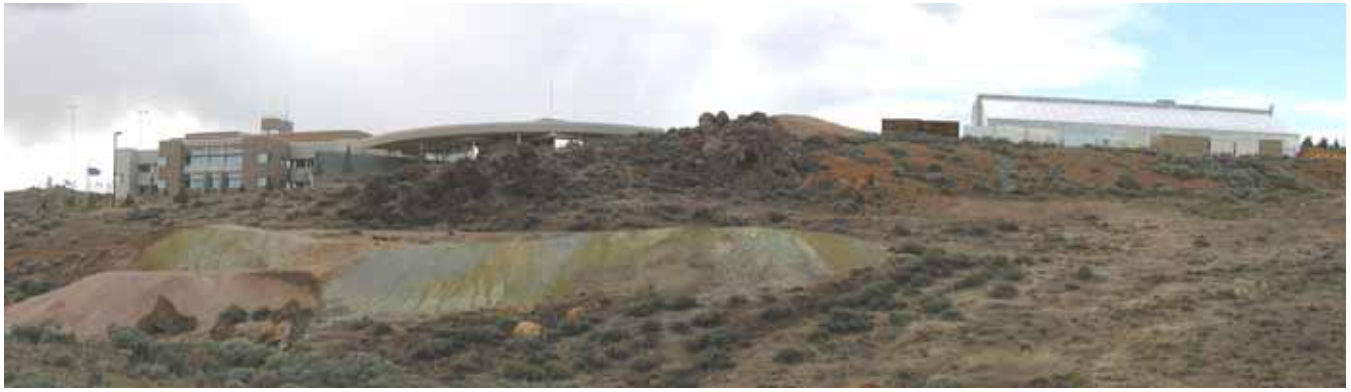
The Nevada Legislature also determined that the primary purposes of DRI are to:

1. *Foster and conduct fundamental scientific, economic, social or educational investigations and applied research for industry, governmental or private agencies or individuals;*
2. *Encourage and foster a desire in students and faculty to conduct research;*
3. *Discover and develop talent for conducting research;*
4. *Acquire and disseminate knowledge related to the projects undertaken; and*
5. *Promote all research within the System generally.*

### Vision

Following adoption of a 10-year plan for DRI in 1999, consensus was achieved on a vision for the future:

*We seek to be the world's scientific leader investigating the effects of natural and human-induced environmental change and advancing environmental technologies aimed at assessing a changing planet. We will achieve this vision by increasing scientific knowledge and understanding of the earth's environment, promoting preservation of diverse ecosystems, advancing responsible resource management, and improving human health and welfare.*



**Reno Campus**

*View from the southeast, looking at the Northern Nevada Science Center (left) and the Dorothy S. Gallagher Great Basin Environmental Research Laboratory (right), with historic mine tailings in the foreground.*

**Mission**

DRI's vision is realized through achievement of its mission:

*We excel in environmental research and the application of technologies to improve people's lives throughout Nevada and the world. We implement this mission by fostering scientific talent for the advancement and integration of terrestrial, hydrologic, atmospheric, and anthropologic sciences. We apply scientific understanding to the effective management of all natural resources while meeting Nevada's needs for economic diversification and science-based educational opportunities.*

**DRI: A Unique Institution**

DRI is characterized by attributes that distinguish it as a unique division of the UCCSN and set it apart in the broader context of national and international environmental research organizations. These attributes include:

- An entrepreneurial, risk-taking, and can-do culture
- Neutrality – no vested interest in research outcomes
- Flexibility that enables a rapid response to opportunity
- No tenure for research faculty leading to a high motivation to excel
- A limited but critical level of state funding and a corresponding need to generate research revenue in an increasingly competitive marketplace
- Scientific leadership in a broad range of research fields
- Fundamental "ownership" of DRI by the faculty
- Wide-ranging interdisciplinary research – from basic to applied studies and from small-scale, short-term projects to large-scale, long-term programs
- Institutional encouragement to pursue new ideas, opportunities, and personal development
- Graduate student education (non-degree granting) coupled with a research-program focus
- Distinctive expertise in terrestrial, hydrologic, and atmospheric understanding of arid and semiarid regions
- Active engagement in designing and developing advanced technologies, methods, and laboratory facilities

Taken as a whole, these attributes give DRI its unique character and are fundamental to long-term success. The sustainability of DRI demonstrates that an independent research institute can be extremely successful when placed outside the culture and environment of a regular university campus but kept within the broader academic culture of inquiry-based research and knowledge transfer.

**Las Vegas Campus**

*Frank H. Rogers Science and Technology Building (left).*

*Southern Nevada Science Center Phase I entry courtyard (right).*

### Character of DRI's Research

Environmental research and the application of technologies to improve people's lives throughout Nevada and the world are steeped in interdisciplinary science and technology. DRI's research profile exemplifies this approach to rapid-response, problem-solving research, and development of advanced technologies. Grounded in broad-based laboratory and field data collection, experimental-platform development, and advanced modeling, DRI's science is characterized by a commonality of unbiased, high-quality, multi-proxy research that is data-rich and inherently interdisciplinary. The distinctive presence of DRI across Nevada allows recognition of, and participation in, local and regional issues that are important to various sectors of the state's population. The heart of DRI's research character, however, is its faculty, who collectively and individually exhibit the flexible, entrepreneurial, can-do attitude that defines who we are and how we approach science.

## BRIEF HISTORY OF DRI

### Research and Organization

From its establishment by the Nevada Legislature in 1959, DRI has grown from a small group of visionary scientists, academic leaders, and entrepreneurs into a unique organization combining the classic academic tradition of high-quality basic research with the productive focus of applied interdisciplinary research. Through its studies to understand environmental processes, DRI has fulfilled its earliest mission – improved management of Nevada's arid land resources. DRI also has proven during the past 45 years to be extremely responsive to the nation's and the world's changing priorities. Its scope has expanded to address matters of national security as well as environmental issues on a global scale. Still, the particular problems and challenges of Nevada remain a high priority.

In DRI's first year of operation, it garnered more than $2.5 million in research support. Its annual research revenue now exceeds $30 million, with significant plans for future growth. From its earliest days, DRI has received only a small portion of its funding from the State of Nevada, relying instead on indirect costs charged to research sponsors to support its activities. This financial model remains in effect today.

In its first 10 years of operation, DRI became a leader in atmospheric physics research but also launched other projects in areas as diverse as hydrology, climatology, geochemistry, biochemistry, solid-state physics, chemistry, behavioral sciences, and archaeology.

In 1961, DRI carved a niche in two areas – weather modification and

**Reno Campus**

*Elizabeth West Stout Conference Center (left).*

*Wind turbines and photovoltaic panels located west of the Northern Nevada Science Center (middle).*

*Dorothy S. Gallagher Great Basin Environmental Research Laboratory (right).*

tracking radioactivity in the groundwater of the U.S. Department of Energy's Nevada Test Site in southern Nevada. These projects addressed immediate needs of the state – water availability and quality – and allowed researchers to conduct the studies required to understand arid land systems, which are so water dependent.

From these beginnings, DRI scientists have extended their research scope to include recharge of groundwater in the Great Basin, interaction of plants and animals in desert environments, solar energy, air quality, life in extreme environments, and paleoclimate. A recent emphasis provides a unique focus on integrated scientific approaches to watershed sustainability; arid land environmental management; and environmental remediation, monitoring, and public health protection.

As DRI has grown and changed, some of its earliest programs have been absorbed or transferred to other parts of the UCCSN. These include the medical school, computing center, and the Fleischmann Planetarium.

DRI became an autonomous division of the University of Nevada System (now called the UCCSN), on equal footing with its two educational campuses, in 1969. Today, DRI employs more than 500 faculty, staff, and students. At any given time, DRI is conducting about 300 scientific research projects, working around the globe. DRI's highly skilled scientists apply their various capabilities to effectively answer multifaceted scientific questions. This collective approach to research has helped make DRI successful in producing research of the highest quality and in competing for research funding that enables the work to continue.

## Master Planning and Development of DRI's Campuses

From its first home on the campus of the University of Nevada to its current multi-campus operations in Reno and Las Vegas, DRI has worked to guide the development of its physical infrastructure through careful planning.

After obtaining the 467-acre Reno site (now known as the Dandini Research Park) through land patents from the U.S. Department of the Interior in 1972, DRI completed its original facilities master plan. This plan established the basic layout that characterizes the Reno campus today and partitioned the land to allow co-development of the Dandini Research Park with Truckee Meadows Community College (TMCC). The original master plan guided design and construction of DRI's George B. Maxey Science Center, the first building on the site, which was completed in 1977 with 42,238 gross square feet

**Las Vegas Campus**

*Entry lobby of the Frank H. Rogers Science and Technology Building.*

(GSF). In addition, DRI maintained major northern Nevada operations in leased space located 10 miles north at the old Stead Air Force Base.

In southern Nevada, DRI, working with Boulder City, planned and developed its first permanent research facility to be located in the Las Vegas region – DRI's Solar Research Building. This 5600 GSF facility, located on a three-acre site in Boulder City, was completed in 1977.

In 1980, DRI obtained an 11.4-acre Las Vegas site when the UCCSN Board of Regents designated the land be used for DRI. A master plan for this campus was commissioned in 1988 and included DRI's 44,280 GSF Southern Nevada Science Center (SNSC) Phase 1, the site's first building project, which was completed in 1992.

DRI's first comprehensive, multi-campus master plan was completed in 1989 when the Las Vegas campus master plan was combined with a major review and update of the Reno campus master plan. This plan detailed the future layout of DRI's facilities and also delineated lands to be used for development of the Dandini Research Park, intended as a leading element in the effort to diversify northern Nevada's economy. DRI's 19,320 GSF Dorothy S. Gallagher Great Basin Environmental Research Laboratory and the first-phase construction of Raggio Parkway followed this plan.

DRI's facilities master plan was revised and updated in 1994 while staying faithful to the 1989 concept. After obtaining funding, DRI constructed the 73,533 GSF Northern Nevada Science Center (NNSC) in 1999, allowing consolidation of DRI's primary Northern Nevada operations on one campus. DRI also completed construction of Raggio Parkway in 1998 under the same project.

In southern Nevada, a bridge over the Tropicana Wash was completed in 1999, consistent with the campus master plan. In 2003, DRI's most recently completed facility – the 66,426 GSF Frank H. Rogers Science and Technology Building – was constructed in Las Vegas. This facility is partially leased (43,110 GSF) to the National Nuclear Security Administration (through the U.S. General Services Administration). The National Nuclear Security Administration houses documents and artifacts on the second floor. The Atomic Testing Museum, managed by the Nevada Test Site Historical Foundation, is located on the first floor. At the end of this 20-year lease, the GSA has the option to renew its lease for an indefinite period of time.

**Reno Campus**

*Rock outcrop adjacent to the NNSC (left), one of the many natural features preserved by the Reno plan.*

*Angela Dandini Garden (right).*

### Other Research Facilities

In addition to the Reno and Las Vegas campuses and the Solar Research Building in Boulder City, DRI operates research facilities at the Reno-Stead Airport in Reno, Nevada and in Steamboat Springs, Colorado. At any given time, multiple project-related field sites also may be in operation.

## TRENDS, ISSUES, AND OPPORTUNITIES AT DRI

### Platform for Growth

The future of interdisciplinary environmental research is both bright and broad. DRI's solid foundation in entrepreneurial, interdisciplinary, rapid-response environmental research places it in an ideal position to take advantage of future research trends. DRI's distinctive ability to focus seemingly disparate disciplines and approaches to science on complex physical, chemical, and biological issues is a great asset.

Communication and flexibility are critical to the success of this interdisciplinary science-based research, application, and technological advancement. DRI's campus design must emphasize and facilitate both the communication and flexibility that are needed to advance the research conducted by DRI faculty. Open, flow-through design and campus connectivity invite the exchange and interaction that are so critical for a strong, interdisciplinary approach. Flexibility, too, should be emphasized in building placement and design that facilitate many potential uses of the same space through time as research foci, faculty expertise and numbers, and scientific breakthroughs change the way science is done. Flexible space, with ample opportunities for communication and chance meetings, provides a catalyst for rapid development of interdisciplinary science and unique applications of breakthrough technologies to environmental and other potential future needs.

### Growth Trends - DRI's Present and Future

DRI's long-term expected tripling of its research revenue both follows and presages its strategies for increasing the number of faculty, diversifying its research portfolio, and increasing both the amount and variety of funding for

**Las Vegas Campus**

*Frank H. Rogers Science and Technology Building garden (left).*

*View along the Tropicana Wash (middle).*

*SNSC Phase I outdoor patio (right).*

research. This long-term expectation is based on past trends – DRI's history of success – as well as potential future research directions, collaborations, and opportunities driving growth. These include an ever-widening variety of interdisciplinary science needs including enhanced modeling and visualization of model results, environmental health, alternative energy systems, science and security, science and environmental policy, and federal land stewardship. New and enhanced partnerships with DRI will help fund many of these new research directions, as well as the critical infrastructure required to allow research to expand. Increasing private-sector collaborations – including enhanced technological developments and movement of technology to the marketplace – also will drive DRI's future growth. Faculty hires in interdisciplinary science will lead to increased interaction and the need for colleagues in new areas of research.

All of this – new faculty, new opportunities, new science, new technologies – requires planning and space to be stable and successful. With increasing diversity comes increasing stability, both in faculty growth and in funding success. This stability is enhanced by faculty interactions within and outside DRI – interactions that will be facilitated by an open, inviting campus with flexible, changeable laboratory space, multi-use office design, space for colleague visitation, and aesthetically-pleasing buildings. In other words, growth in response to additional opportunities, which builds on DRI's expertise and diversifying science portfolio, will lend itself to enhanced reputation, funding, and stability.

## MASTER PLANNING GOALS, PROCESS, AND PRINCIPLES

### Goals

The Facilities Master Plan, with the Institutional Strategic Plan and the Research Park Master Plan, will be used to guide DRI's future growth. The master planning process analyzed existing and projected space needs to develop long-range plans for responsible and efficient growth at each campus. The Facilities Master Plan locates new buildings and landscapes where they can positively contribute to the development of each campus and enhance the sense of place.

The Facilities Master Plan for both campuses identifies horizons that serve to organize implementation into distinct periods of phasing. For Horizon 1, the master plan includes buildings, structures, and landscapes that have been identified in DRI's 10-

**Reno Campus**

*Memorial garden area (left).*

*William Pierson Garden (middle).*

*Northern entry of the George B. Maxey Science Center (right).*

year Capital Needs Projection. This horizon will continue existing patterns of growth, namely by accommodating new facilities with surface parking and small district utility systems. For Horizon 2, the master plan proposes increasingly dense campuses that accommodate growth beyond Horizon 1 with structured parking and district utility systems that serve multiple buildings. The district infrastructure should incorporate sustainable strategies, such as the use of cogeneration plants and the use of renewable energy sources.

Implementation of the master plan at both the Reno and Las Vegas campuses ensures that all parking needs are accommodated as each new building is constructed. Construction scheduling of new buildings optimizes the formation of the significant landscape spaces.

**Process**

Development of the Facilities Master Plan took place during a five-month period through the summer and fall of 2004. The project included four work sessions that were held at either the Reno or Las Vegas campuses. Most of the work sessions were broadcast via video feed or through DRI's Access Grid Node to the other campus to promote participation from faculty, staff and students at both locations. DRI's Master Plan Committee, the DRI community (including faculty, staff, and students), as well as City of Reno Department of Community Development staff participated in the work sessions.

Each work session built upon feedback, comments, and direction provided during the prior sessions. In sequence, the work sessions focused on the following topics:

- Facilities master plan goals, issues, and concepts
- Analysis and preliminary concepts
- Preferred alternatives
- Draft report

The process included an extensive analysis of existing physical conditions at each campus. Also, to extend DRI's outreach, the process included a master plan Web site (www.dri.edu/Admin/facilities/MasterPlan) that provided access to in-progress documents and a means of feedback.

Final products include this Facilities Master Plan and an Appendix, in both hard copy and electronic form. Conference Reports documenting the work sessions are located in the Appendix.

The Facilities Master Plan will be reviewed regularly and updated to reflect changes in DRI's Capital Needs Projection and Strategic Plan.

**Las Vegas Campus**

*Third floor of the Frank H. Rogers Science and Technology Building immediately after construction.*

## Planning Issues and Opportunities

The master planning process seeks to recognize and enhance the character of a campus. At both of DRI primary locations, significant existing features identified during the work sessions helped define the master plan.

Specifically, the work sessions made it clear that views at both campuses had to be respected in the master plan. In addition, at the Reno campus, an important priority was to minimize grading in order to preserve large-scale topographic features. At the Las Vegas campus, the Tropicana Wash presented an unrecognized opportunity to inspire site design and organize growth.

The institutional character of DRI also played an important part in development of the master plan.

Research conducted at DRI is often field-based. Therefore, both campuses require efficient and convenient access to field vehicles for loading and unloading field equipment and samples. The master plan had to preserve existing service areas, provide additional buildings for field operations, and still provide safe and accessible pedestrian circulation throughout the sites.

A similar issue at DRI's Reno campus is the equipment access needs of the centrally-located Dorothy S. Gallagher Great Basin Environmental Research Laboratory. Use of this facility requires providing ample space for a crane, space for field-staging activities, and pedestrian access to the NNSC from the east.

One of the more pressing challenges DRI faces as it continues to grow is providing adequate parking without building large surface parking lots that occupy land that could be better used for laboratories and offices. In order to meet growth expectations, DRI will need to build parking structures at both campuses at some point in the future. DRI, however, does not have the same funding source (i.e., student parking fees) used to support the cost of parking structures as on most university campuses. DRI will need to find non-traditional sources of funding for parking structures in the future.


**Master Planning Work Sessions**

*Multiple DRI work sessions held at the Reno and Las Vegas campuses (with videoconferencing) provided insight and direction in forming the Facilities Master Plan.*

## Master Plan Principles

The Facilities Master Plan builds upon the following recurring themes and expressed principles developed by the DRI community during the work sessions:

### *Foster Connections*

Create spaces that foster scientific collaboration, technological development, and social interaction across organizational units and among faculty, staff, and students. Connect effectively and symbiotically with campus neighbors and the local community.

### *Honor Campus Settings*

Respect and connect to existing natural and cultural features of each campus. Maximize the relationship of each campus to its environment.

### *Create Flexibility*

Create buildings and landscape spaces that reflect the dynamic mission of DRI and are responsive to future needs.

### *Embrace Efficiency and Stewardship*

Embrace stewardship of campus lands with sustainable practices in design, building, and the day-to-day use of each campus, while also employing efficient energy strategies and renewable energy sources. Stewardship also incorporates efficient growth that maximizes funding opportunities to satisfy programmatic needs for new buildings and landscapes.

### *Enhance Access*

Create a safe and effective circulation network for automobiles, field and service vehicles, and pedestrians both within and beyond each campus.

### *Create a Campus Heart*

Foster and support community among faculty, staff, and students.

### *Make Memorable Places*

Create beautiful, enduring campuses that are well built and that exhibit a commitment to innovative design, thereby reflecting the quality of science practiced at DRI.

## 1-3 Program Expectation

*Based on past performance, DRI expects that its research revenue will triple during Horizon 2. Coupled with an increase in the number of faculty, staff, and students, DRI projects its facilities need to increase by a factor of three, from the current program need of 260,000 GSF, to 780,000 GSF, also during Horizon 2.*

*DRI's strategic goal to develop the Reno and Las Vegas campuses into equal-sized entities results in a facilities need for each campus of 390,000 GSF. This goal cannot be realized in Las Vegas without the acquisition of additional land.*

*Parking requirements reflect current parking demands and national standards for research institutions.*

### Definitions

**GSF Gross Square Feet**

*Includes all assignable square feet (ASF) and all other spaces (e.g., space taken by walls, space for storage, restrooms, circulation, and mechanical equipment).*

**ASF Assignable Square Feet**

*ASF is defined as the area measured within the interior walls of a room that can be assigned to a program. It does not include circulation, mechanical, or building service spaces. Converting assignable space to gross square footage usually adds about 50% to the assignable space.*

**Building Program** (GSF, rounded)

| | | 2004 | | Projected | Additional Need |
|---|---|---|---|---|---|
| | | Existing Conditions | Current Program Need | Balanced distribution based on 300% increase in DRI research | |
| **Reno Campus** | DRI | 137,000 | 194,000 | 390,000 | 253,000 |
| | TMCC | 0 | 0 | 35,000 [1] | 35,000 |
| | Other | 0 | 0 | 5,000 [2] | 5,000 |
| | Reno Subtotal | 137,000 | 194,000 | 430,000 | 293,000 |
| **Las Vegas Campus** | DRI | 66,000 | 66,000 | 390,000 | 324,000 |
| | GSA | 35,000 | 35,000 | 35,000 | 0 |
| | Atomic Testing Museum | 8,000 | 8,000 | 18,000 | 10,000 |
| | Las Vegas Subtotal | 109,000 | 109,000 | 443,000 | 334,000 |

**Parking Program** (spaces)

| | | 2004 | | Projected | Additional Need |
|---|---|---|---|---|---|
| | | Existing | Program | Balanced Distribution | |
| **Reno Campus** | DRI | 218 [3] | 252 [4] | 507 [5] | 289 |
| | TMCC | 0 | 0 | 105 [6] | 105 |
| | Other | 0 | 0 | 7 [5] | 7 |
| | Reno Subtotal | 218 | 252 | 619 | 401 |
| **Las Vegas Campus** | DRI | 239 | 86 [4] | 507 [5] | 268 |
| | GSA | 34 | 34 | 34 | 0 |
| | Atomic Testing Museum | 86 [7] | 86 | 194 [8] | 108 |
| | Las Vegas Subtotal | 359 | 206 | 735 | 376 |

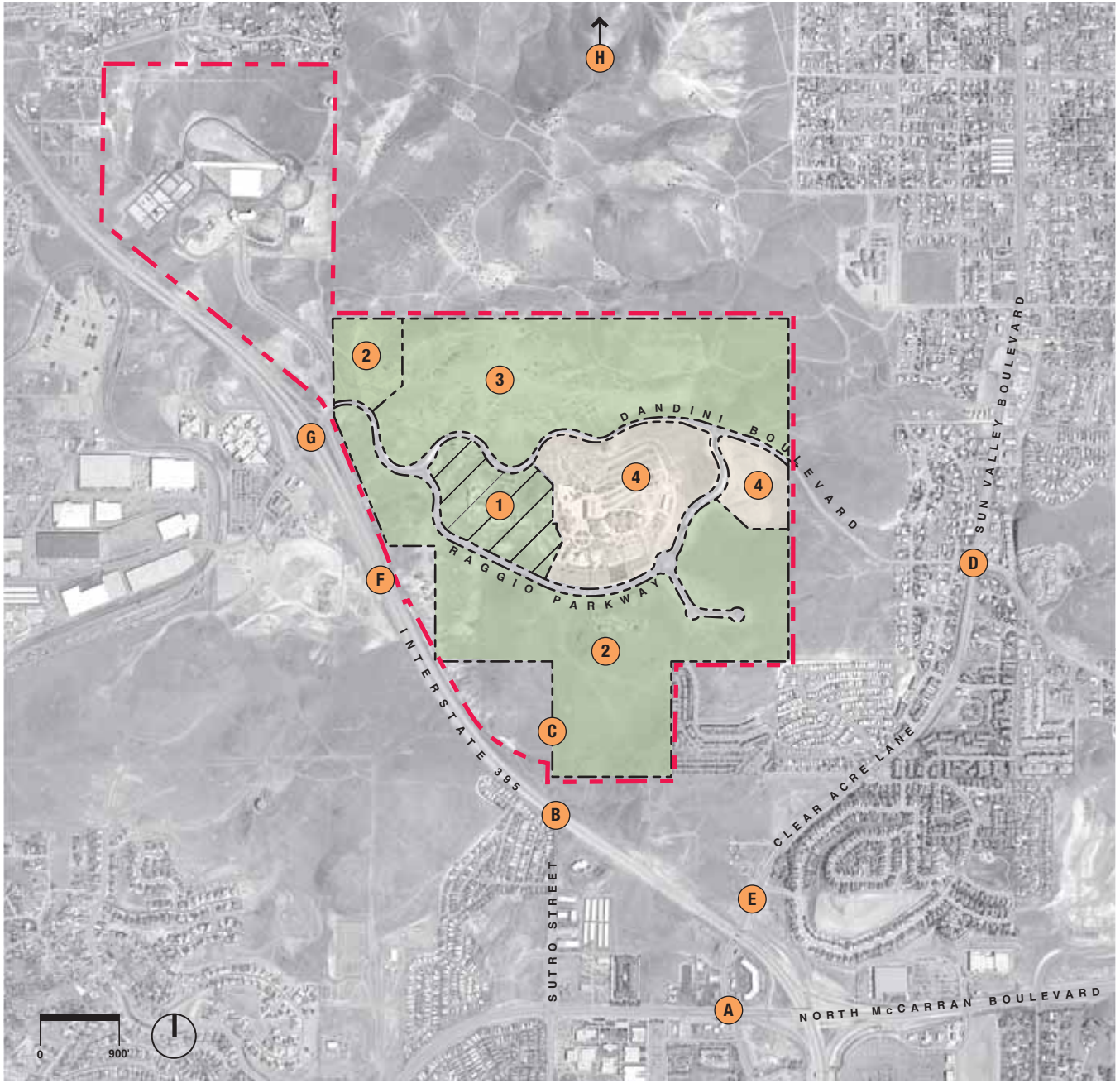
SOURCE:
Desert Research Institute, Sasaki Associates, and Fehr & Peers, 2004

NOTES:
1 Classroom and lab space to be included as part of Multipurpose Center on DRI Reno campus
2 Conference space to be included as part of Multipurpose Center on DRI Reno campus
3 Based on 1.3 spaces/1000 GSF and existing building square footage, only 178 spaces are required
4 Based on 1.3 spaces/1000 GSF and program building square footage
5 Based on 1.3 spaces/1000 GSF
6 TMCC parking spaces to be accommodated at DRI-TMCC Joint-Use Parking Structure on DRI Reno campus
7 Does not include six spaces for buses
8 Based on 10.75 spaces/1000 GSF derived from existing Atomic Testing Museum parking ratio

## 2-1 Planning Context - Reno Campus

*DRI's 44-acre Reno campus **(1)** is part of the Dandini Regional Center that includes the Dandini Research Park **(2)**, open space and future research facilities **(3)**, and the 76-acre TMCC Dandini Campus **(4)**. Proposed transportation improvements in the area include:*

- ***A*** *Constructing a grade-separated intersection at North McCarran Boulevard and Clear Acre Lane.*
- ***B*** *Widening Sutro Street from two to four lanes. Constructing a new interchange at US 395 and Sutro Street.*
- ***C*** *Extending Sutro Street to Sun Valley Boulevard.*
- ***D*** *Widening Clear Acre Lane/ Sun Valley Boulevard from four to six lanes. Improving the intersection at Dandini Boulevard.*
- ***E*** *Improving US 395/Clear Acre Lane interchange.*
- ***F*** *Widening US 395 from four to six lanes and providing a north-bound, truck-climbing lane.*
- ***G*** *Improving Parr Boulevard interchange.*
- ***H*** *Constructing a six-lane ring road expressway.*




*Transportation improvements taken from the 2030 Regional Transportation Plan prepared by the Regional Transportation Commission (RTC).*

# 2 Reno Campus

EXISTING CONDITIONS
THE PLAN

## EXISTING CONDITIONS

### Location and Setting

DRI's Reno campus is located approximately four miles north of downtown Reno and six miles north of Reno-Tahoe International Airport (Figure 1-1). The campus is surrounded by undeveloped land on the north, west, and south; the TMCC Dandini campus is located immediately to the east. A National Oceanic and Atmospheric Administration (NOAA) National Weather Service Forecast Office is located to the southeast across Raggio Parkway. Topography ranges from a campus high point of 5032 feet at the Dandini Garden to a campus low point of 4897 feet along Raggio Parkway. The campus rests on south-facing slopes that provide outstanding views of Reno, Truckee Meadows, Peavine Mountain, and the Sierra Nevada, Carson, and Virginia mountains. The campus is located in the Basin and Range Province and is underlain by locally expansive altered andesite of the Alta Formation. Andesite outcrops are found throughout the site. Colluvial soils consist of clay-rich sands and locally expansive sandy clays (these soils present a significant challenge for building design). Most drainage collects in swales and ravines that predominantly flow southward. Climate in Reno is characterized by hot, dry summers and cold winters during which snow is common. Significant natural and cultural features on the campus include the Angela Dandini Garden, rock outcrops, and abandoned mines.

At the time of this report, DRI has two funded building projects in the design stage: an 8000 GSF addition to the George B. Maxey Science Center and a 4000 GSF Field Operations Facility, to be located north of the NNSC. Construction of these projects is expected to be completed in 2005-2006.

### Transportation and Parking

The Reno campus is bordered on the north by Dandini Boulevard and on the south by Raggio Parkway. Intersection operations analyses indicate that the following intersections in the campus vicinity currently operate poorly with high levels of vehicular delay during the PM peak hour:

- Parr Boulevard-Dandini Boulevard/ US 395 ramp terminal intersections
- Dandini Boulevard/Raggio Parkway West
- Dandini Boulevard/Clear Acre Lane-Sun Valley Boulevard

Parking at the Reno campus can be accessed from both Dandini Boulevard and Raggio Parkway. Currently there are 218 parking spaces located in two surface lots on the campus. Parking demand surveys conducted in May and August 2004 show that approximately 30% of the existing parking supply is

**Reno Campus**

*Large windows at the Elizabeth Stout Conference Center capture views of Reno. A future plaza will replace the temporary building shown on the right side of photograph (left).*

*View of Reno from the campus (right).*

vacant on an average day; therefore, there is adequate parking to serve current campus demand.

Proposed transportation improvements in the vicinity of the Reno campus (taken from the 2030 Regional Transportation Plan prepared by the Washoe Regional Transportation Commission) are shown on Figure 2-1. Recommended transportation improvements developed during the master planning process are shown on Figure 2-10. Funding sources for these improvements have not been identified. The Regional Transportation Commission will use this master plan to help guide the development of future updates to the 2030 Regional Transportation Plan. The "DRI Reno Campus Transportation Report" contained in the Appendix provides a detailed discussion of existing transportation and parking conditions at the Reno campus.

### Restrictions on Land Use

The lands currently occupied by both DRI and TMCC are patented under the Recreation and Public Purposes Act from the United States Government to the UCCSN Board of Regents. The patents place developmental restrictions on the site, the restrictions are outlined in the Recreation and Public Purposes Act. The Recreation and Public Purposes Act is administered by the Bureau of Land Management, which must approve all development on the land. Efforts are currently underway by DRI to reduce these developmental restrictions.

## THE PLAN

DRI's Reno campus plan creates a series of landscape spaces (courtyards and quadrangles) linked by exterior and interior pedestrian circulation routes (Figures 2-2 through 2-9).

The master plan framework and urban design guidelines (Figure 2-17) embody the physical response to the master plan principles. To **foster connections**, a network of open spaces and pedestrian circulation links all buildings. This allows buildings to have **flexibility** to respond to program needs while maintaining campus-wide links. The master plan framework **honors the campus setting** by preserving site features and building from the existing context. **The campus heart** at the NNSC is reinforced by distributing the new building groups to the east and west, maintaining the existing heart as an institutional and social center. The compact layout of the campus will result in an **efficient** campus infrastructure and expand the opportunity for zoning systems for groups of buildings. The urban design guidelines are written to ensure the creation of a cohesive and **memorable** campus.

**Reno Campus**

*View of surrounding hillsides characteristic of campus context.*

Primary pedestrian circulation routes respect existing routes while also linking a series of outdoor and indoor gathering areas, as well as connecting to TMCC. Secondary pedestrian paths connect to existing and proposed building entries (Figure 2-8). Vehicular circulation and parking kept at the campus perimeter further facilitate pedestrian access across the campus (Figure 2-9).

The Reno campus plan creates buildings and landscape spaces along existing topographic contours and respects significant natural and cultural site features (abandoned mine, rock outcrops, Angela Dandini Garden; Figures 2-11, 2-12).

Building and parking locations utilize existing disturbed lands on campus. Building locations, heights, and orientations accommodate programmatic needs while optimizing passive solar heating and cooling as well as daylighting strategies. Building siting and heights mimic the existing topography to maximize building access, accommodate changes in grade, and preserve significant views. Buildings will be two to five stories (Figures 2-11 through 2-13).

The Reno campus plan provides for the creation of districts defined by clusters of similar facilities. Laboratory and field operations are concentrated in the northern half of the campus while informatics and visualization facilities are primarily located in the southern half of the campus.

The urban design guidelines ensure that the whole is greater than the sum of the parts. The guidelines highlight important design benchmarks to ensure responsible and efficient growth and to satisfy the master planning principles developed during the planning process (Figure 2-17).

**Horizon 1**

***299,000 GSF***

***371 parking spaces***

Horizon 1 (Figures 2-14, 2-15) includes buildings, structures, and landscapes that have been identified in DRI's 10-year Capital Needs Projection. Parking demand is satisfied by temporary surface parking lots (using already disturbed land or land identified for future buildings) in order to delay construction of parking structures and decks until Horizon 2.

**Horizon 2**

***406,400 GSF***

***526 parking spaces***

Horizon 2 (Figures 2-14, 2-16) provides the balance of the program needs to achieve the goal of 390,000 GSF for the Reno campus. A parking structure in the southeast corner and a parking deck in the north are required to satisfy parking demand while minimizing impact on the landscape.


**2-2 Illustrative Plan - Build-out of DRI's Reno Campus and TMCC's Dandini Campus**

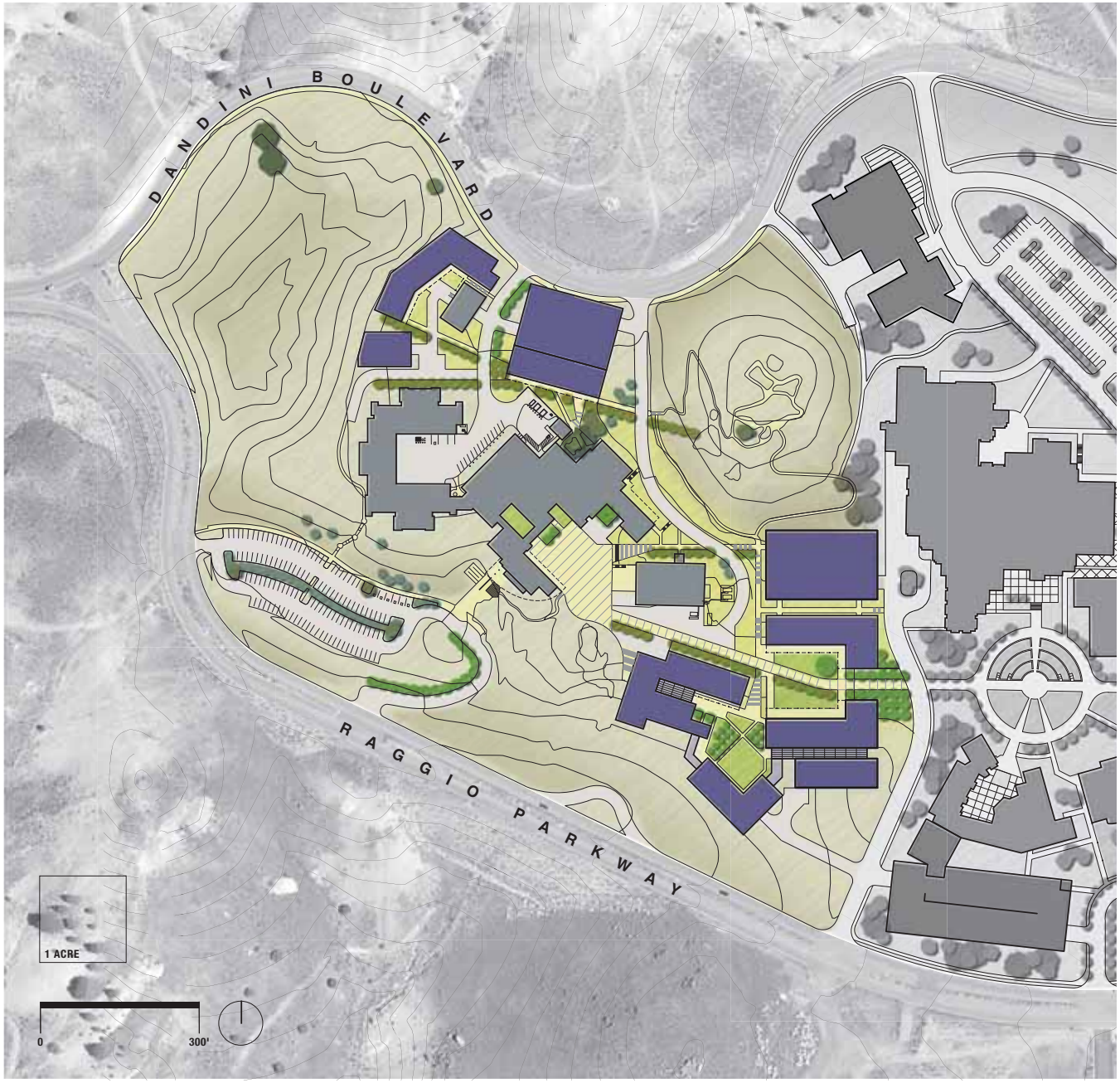
*Together with TMCC's Dandini Campus, DRI's Reno campus creates a focus of education, training, and research.*

**LEGEND**

Existing Buildings

Proposed Buildings

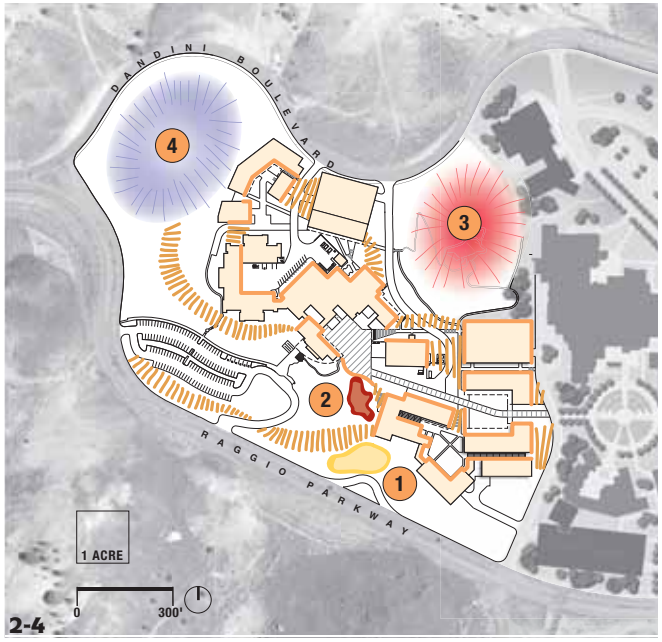
**2-3 Illustrative Plan - Build-out of DRI's Reno Campus**

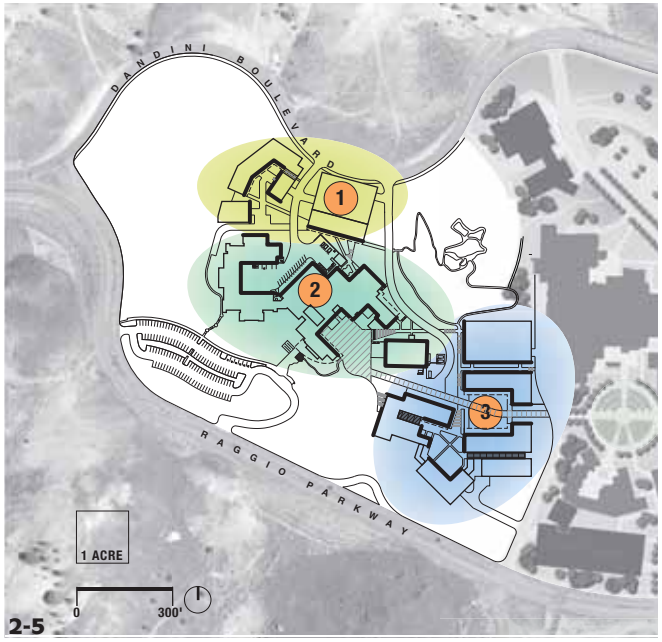


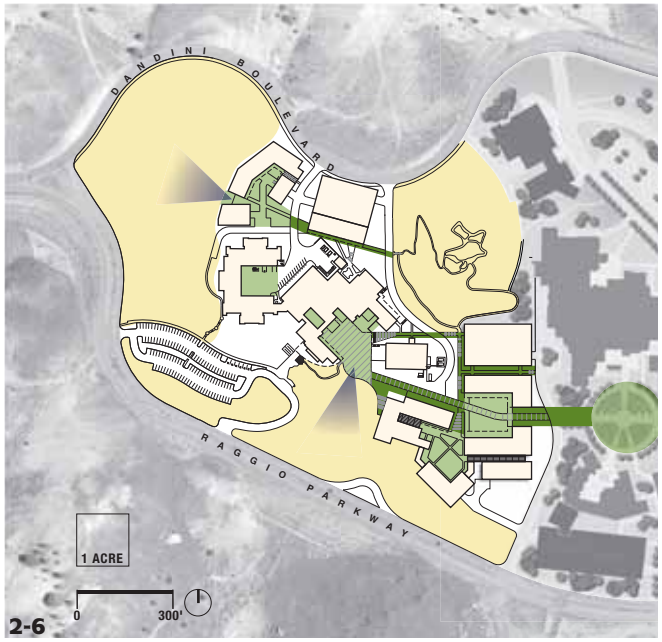

**L E G E N D**

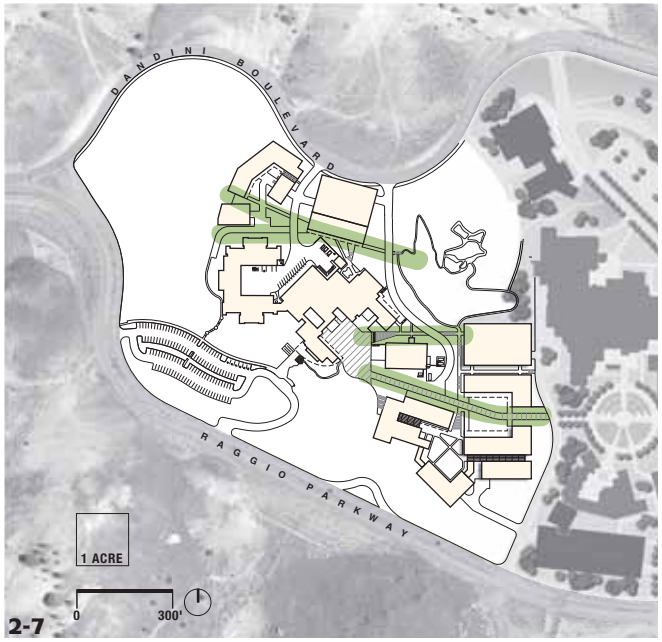
Existing Buildings

Proposed Buildings




### 2-4 Site Framework

*The Facilities Master Plan for DRI's Reno campus honors existing natural and cultural features including abandoned mines **(1)**, prominent rock outcrops **(2)**, the Angela Dandini Garden **(3)**, and a deep dry wash dammed by fill placed for the construction of Raggio Parkway **(4)**. Buildings are located along existing steep slopes, thereby spanning adjacent terraces.*

### 2-5 Campus Zones

*Buildings are sited to create and frame campus zones and open spaces: Field Research and Deployment **(1)**, Core Research **(2)**, and Data Visualization and Technology **(3)**.*

### 2-6 Open Space Framework

*Plazas, courtyards, vista points, and existing natural and cultural features are connected by a network of paths and promenades.*

### 2-7 Landscape Framework

*Tree-lined walks connect significant open spaces while providing needed shade to pedestrians.*

### 2-8 Pedestrian Circulation

*Primary pedestrian circulation routes direct pedestrians to significant open spaces, all DRI buildings, and TMCC. Vehicular circulation is minimized inside the campus to promote pedestrian safety.*

### 2-9 Vehicular Circulation

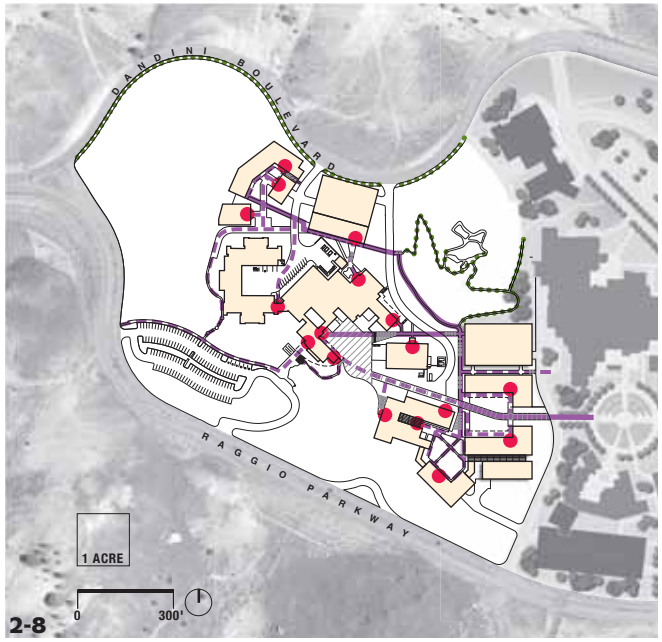
*Primary vehicular circulation and parking are located at the perimeter of the campus for convenient access, while service and emergency vehicles can access the interior of the campus where necessary.*

### 2-10 Recommended Transportation Improvements - Reno Campus

1. *Realign intersections to promote Raggio Parkway as the main vehicular route.*
2. *Reconstruct intersection.*
3. *Potentially install traffic signal.*
4. *Provide bicycle and pedestrian facilities on Dandini Boulevard.*
5. *Widen Dandini Boulevard from two to four lanes between US 395 and west intersection with Raggio Parkway.*
6. *Improve roundabout safety.*
7. *Provide left-turn pockets into campus.*

*NOTE:*

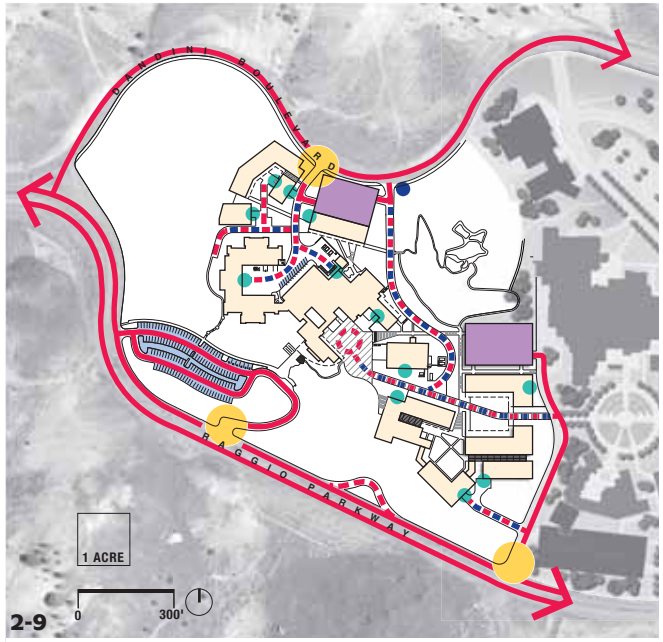
*List is not prioritized.*



2-8

L E G E N D

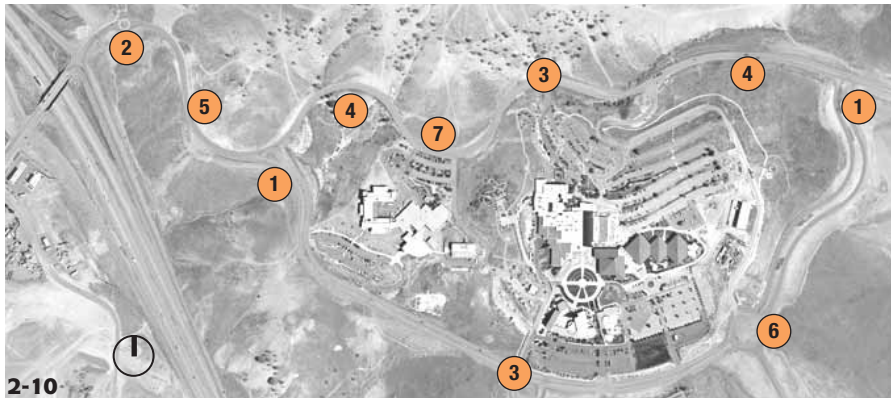
- Pedestrian Building Entry
- Primary Pedestrian Circulation
- Secondary Pedestrian Circulation
- Trail



2-9

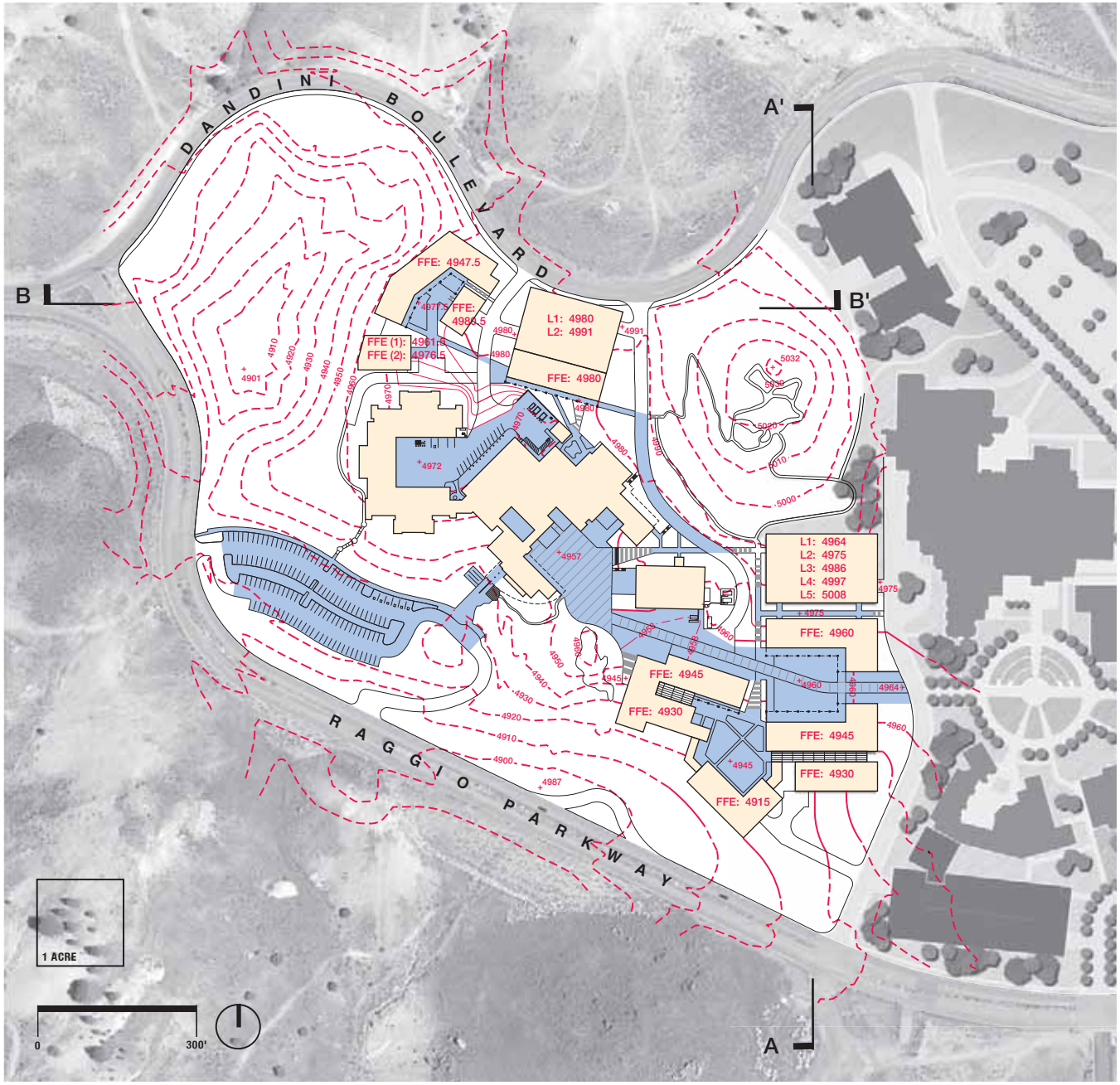
L E G E N D

- Primary Campus Entries
- Public Vehicular Circulation
- Bus stop (CitiFare Route 10)
- Emergency and Service Access
- Emergency Vehicle Only
- Service Access Only
- Parking Structure
- Surface Parking
- Loading Docks/Areas



2-10

*Note:*
*These frameworks support DRI - TMCC Integration*

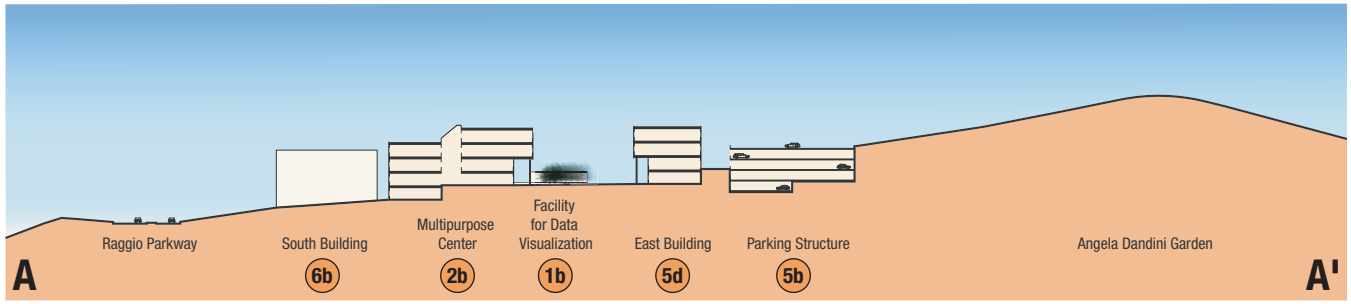


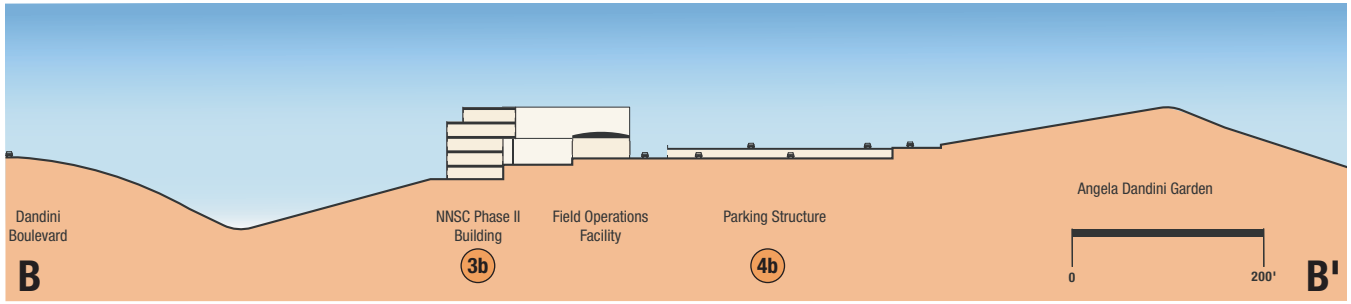

**2-11 Conceptual Grading**

*The Facilities Master Plan for DRI's Reno campus takes advantage of existing topography in order to avoid significant cuts and fills. Buildings are sited to bridge steep slopes, while paths and walks follow existing contours.*

**2-12 Illustrative Sections**

*The Facilities Master Plan for DRI's Reno campus preserves significant topographic features and optimizes views. Parking facilities are partially buried, thereby minimizing their presence on the campus.*




**2-13 Aerial Perspective**

*Viewed from a vantage point southeast of the campus, the build-out condition of the Reno campus supports the programmatic goal of 390,000 GSF.*

| HORIZON 1 | | BUILDING PROGRAM | | PARKING PROGRAM | | | | |
|---|---|---|---|---|---|---|---|---|
| Implementation Steps | | GSF | Floors | Cumulative Parking Demand [1] | Levels | Spaces Added/ Removed | Parking Supply [2] | Delta in Parking Inventory |
| | Existing | 149,000 [3] | | 189 [4] | | | 207 | 18 |
| 1a | Surface parking (temporary) | | | | | 44 | 251 | 62 |
| 1b | Facility for Data Visualization | 40,000 | 2/3 | 241 | | | | 10 |
| 1c | Plaza | | | | | | | 10 |
| 2a | Surface parking (temporary) | | | | | 48 | 299 | 58 |
| 2b | Multipurpose Center | 35,000 [5] | 4 | 287 | | | | 13 |
| 2c | Courtyard | | | | | | | 13 |
| 2d | Courtyard (southern portion) | | | | | | | 13 |
| 3a | Surface parking (temporary) | | | | | 72 | 371 | 85 |
| 3b | NNSC Phase II | 65,000 | 5 | 371 | | | | 0 |
| 3c | Field Operations Facility Phase II | 10,000 | 1/3 | 371 | | | 371 | 0 |
| 3d | Courtyard | | | | | | | 0 |
| | **Horizon 1 Total** | **299,000 GSF** | | | | | **371 Spaces** | |

| HORIZON 2 | | BUILDING PROGRAM | | PARKING PROGRAM | | | | |
|---|---|---|---|---|---|---|---|---|
| Implementation Steps | | GSF | Floors | Cumulative Parking Demand [1] | Levels | Spaces Added/ Removed | Parking Supply [2] | Delta in Parking Inventory |
| | Horizon 1 Subtotal | 299,000 | | 371 | | | 371 | 0 |
| 4a [6] | Demo exisiting surface parking | | | | | (87) | 284 | (87) |
| 4b | Structured Parking Deck | | | | 2 | 136 | 420 | 49 |
| 4c | North Building | 33,700 | 4 | 415 | | | | 5 |
| 5a [7] | Demo surface parking - 2a | | | | | (72) | 348 | (67) |
| 5b | Structured parking - Joint-use | | | | 4.5 | 270 [8] | 618 | 203 |
| 5c | Demo surface parking - 1a | | | | | (44) | 574 | 159 |
| 5d | East Building | 36,300 | 4 | 462 | | | | 112 |
| 5e | Courtyard (northern portion) | | | | | | | 112 |
| 6a | Demo surface parking - 2b | | | | | (48) | 526 | 64 |
| 6b | South Building | 37,400 | 4 | 511 | | | | 15 |
| | **Horizon 2 Total** | **107,400 GSF** | | | | | **526 Spaces** | |
| | **Horizons 1 and 2 Total** | **406,400 GSF** | | | | | **526 Spaces** | |

SOURCE:
Desert Research Institute, Sasaki Associates, and Fehr & Peers, 2004

NOTES:
1 Based on 1.3 spaces/1000 GSF (Source: Fehr & Peers, 2004)
2 Based on 1.0 space/320 SF for structured parking, 9'x18' stalls for surface/deck parking
3 Includes Field Operations Facility and Maxey Addition
4 Assumes that Field Operations Facility does not generate additional parking demand
5 75,000 GSF (Total Structure) = 35,000 GSF (DRI) + 35,000 GSF (TMCC) + 5,000 GSF (Other)
6 This step requires utilization of temporary off-site or satellite parking facilities during construction of the Structured Parking in Phase 4b
7 This step requires utilization of temporary off-site or satellite parking facilities during construction of the Deck Parking in Phase 5b
8 382 spaces (Total for Parking Structure) = 270 spaces (DRI) + 105 spaces (TMCC) + 7 spaces (Other)

## 2-14 Implementation Program - Reno Campus

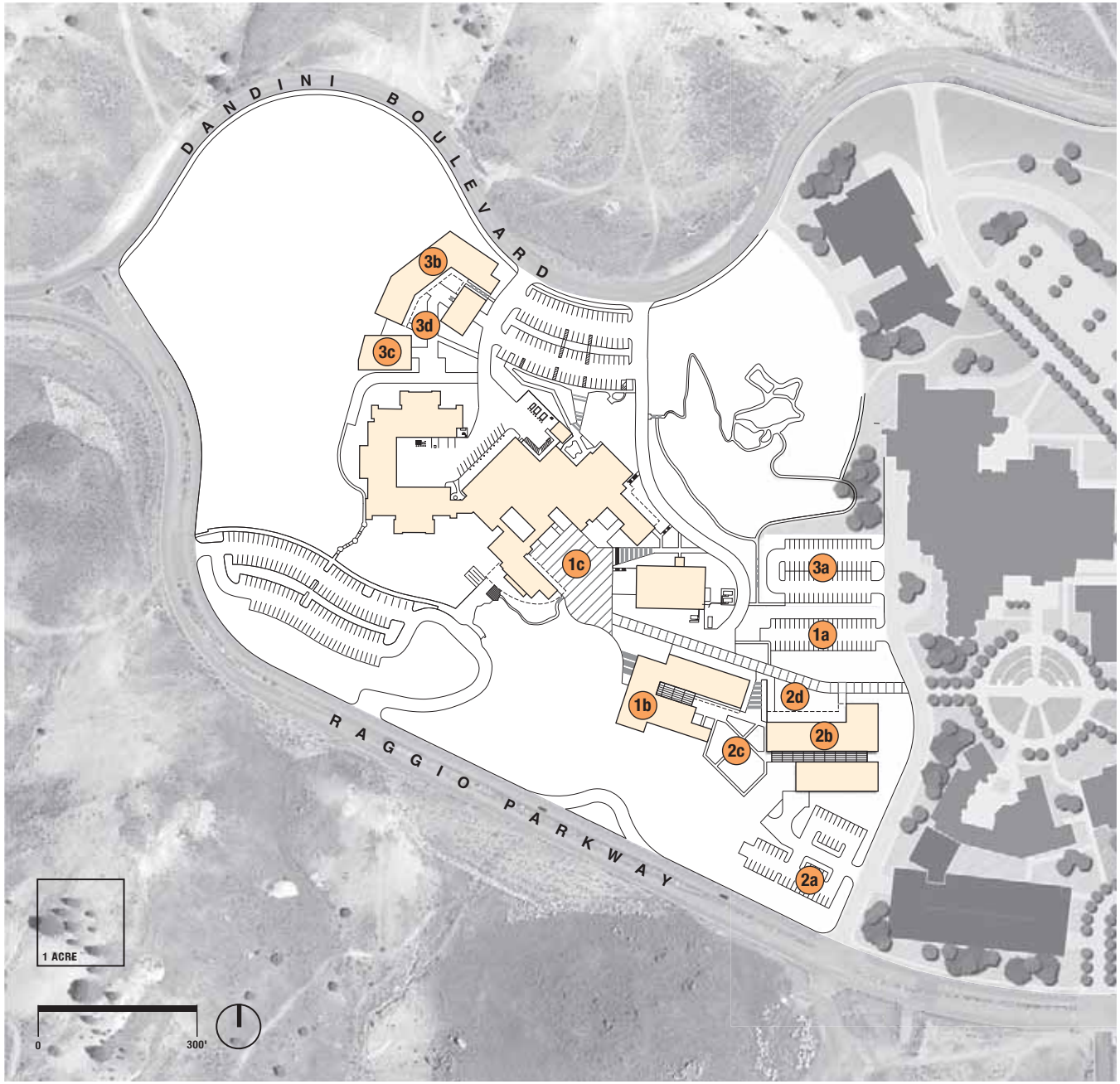
*The implementation program illustrates the construction sequence proposed to achieve the programmatic goal of 390,000 GSF at the Reno campus.*

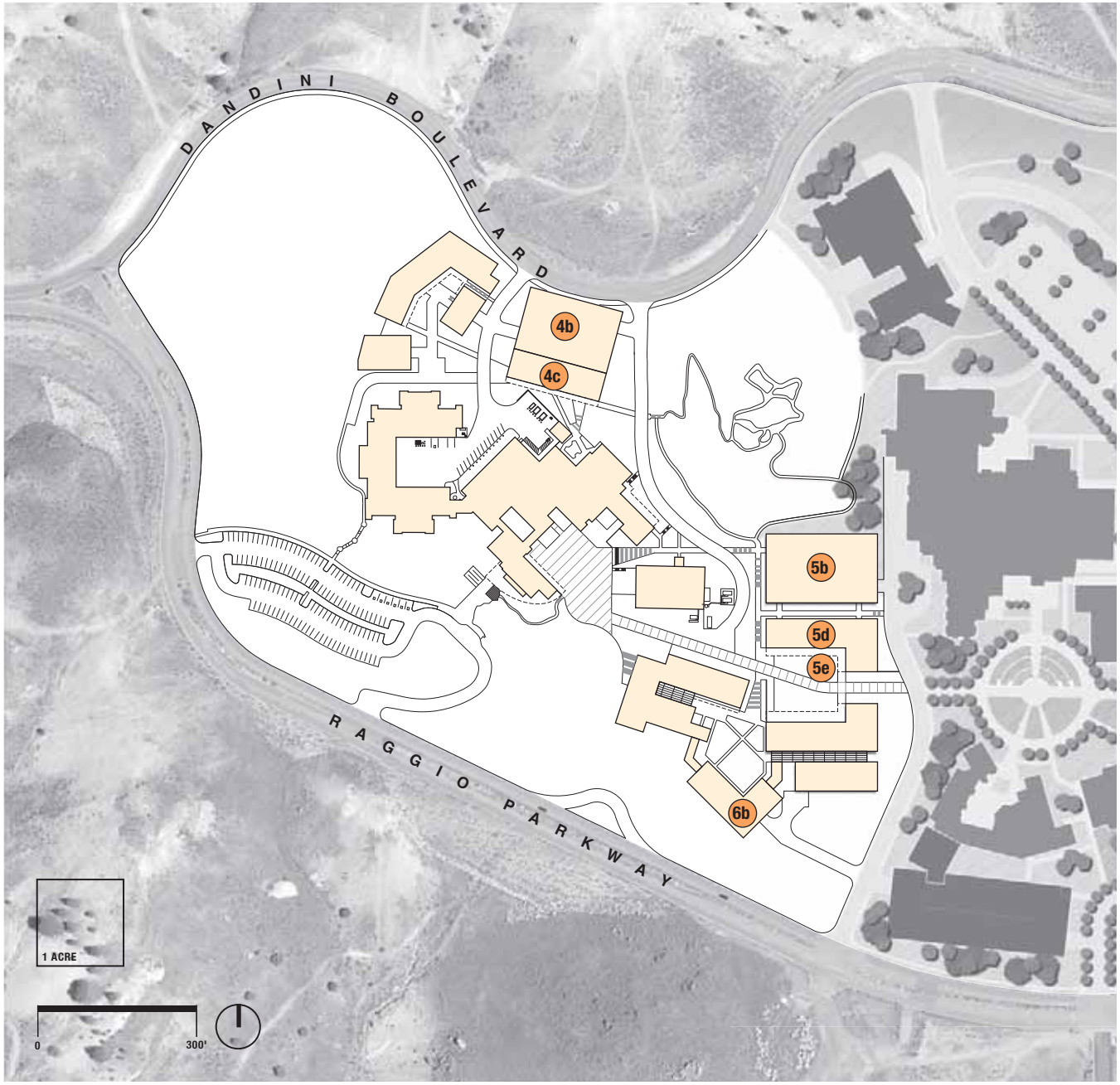
*Horizon 1 accommodates building projects currently under consideration by DRI. Horizon 2 must begin with the construction of a parking structure to accommodate the growth in number of employees associated with construction of future buildings.*

*Additional growth at the Reno campus beyond the current goal of 390,000 GSF must be balanced with plans for the Dandini Research Park and TMCC.*

**2-15 Implementation Steps - Reno Campus**
**Horizon 1**

- ***1a*** *Surface Parking (temporary)*
- ***1b*** *Facility for Data Visualization*
- ***1c*** *Plaza*
- ***2a*** *Surface Parking (temporary)*
- ***2b*** *Multipurpose Center*
- ***2c*** *Courtyard*
- ***2d*** *Courtyard (southern portion)*
- ***3a*** *Surface Parking (temporary)*
- ***3b*** *NNSC Phase II*
- ***3c*** *Field Operations Facility Phase II*
- ***3d*** *Courtyard*






**2-16 Implementation Steps - Reno Campus**
**Horizon 2**

- ***4b*** *Structured Parking Deck*
- ***4c*** *North Building*
- ***5b*** *Structured Parking*
- ***5d*** *East Building*
- ***5e*** *Courtyard (northern portion)*
- ***6b*** *South Building*

## 2-17 Urban Design Guidelines

*Maintain **natural and cultural features.***

*Create an **open space network** to connect campus buildings.*

***Reflect topography** through building massing.*

***Connect terraces** via buildings to maximize accessibility.*

***Optimize solar orientation and wind protection** through building orientation.*

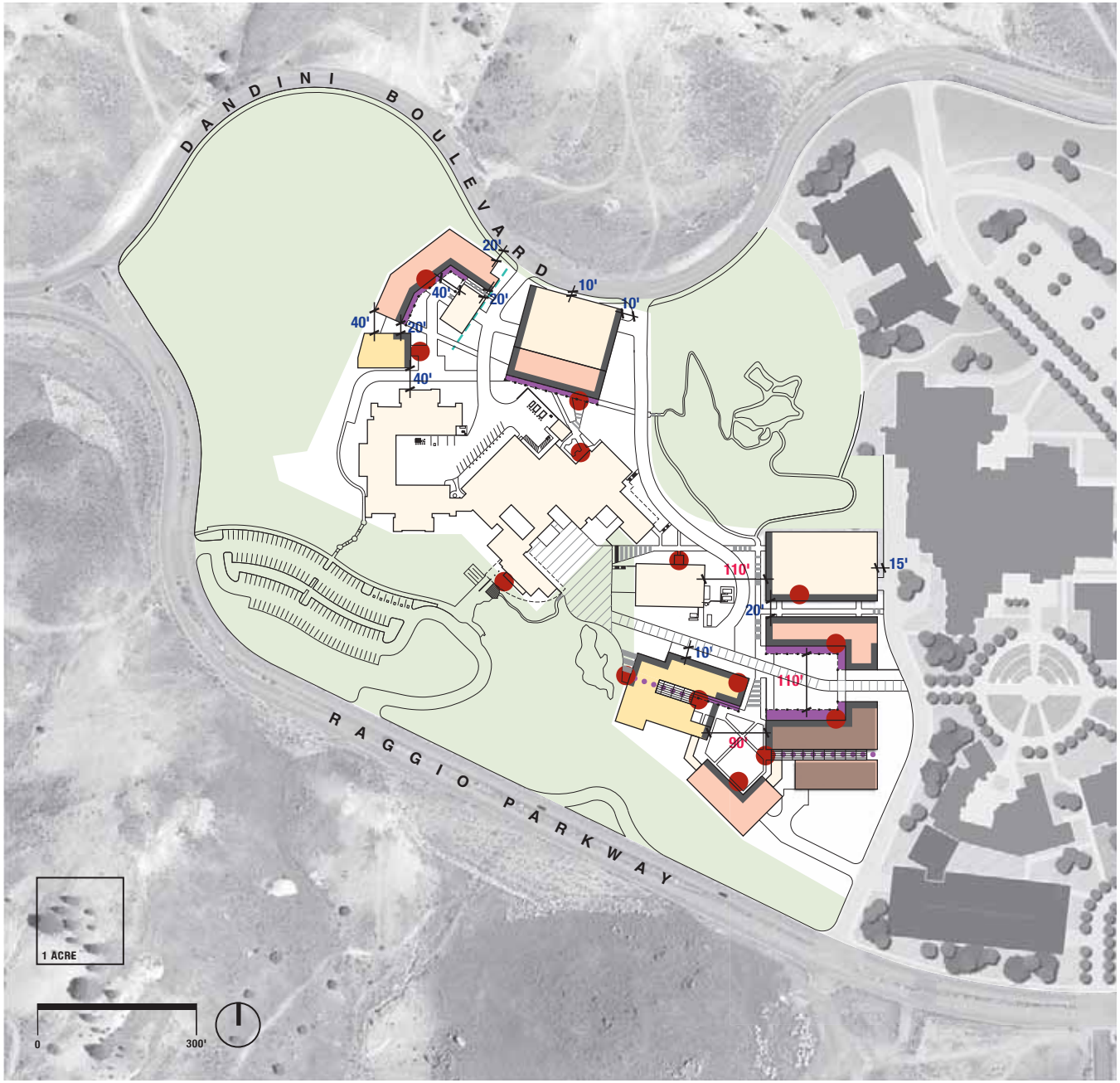
*Utilize **durable building materials** (e.g., brick, stone, concrete, wood, and steel) in a manner **consistent with their natural characteristics.***

***Blend building materials** with the landscape.*

*Maximize **drought-tolerant plant material.***

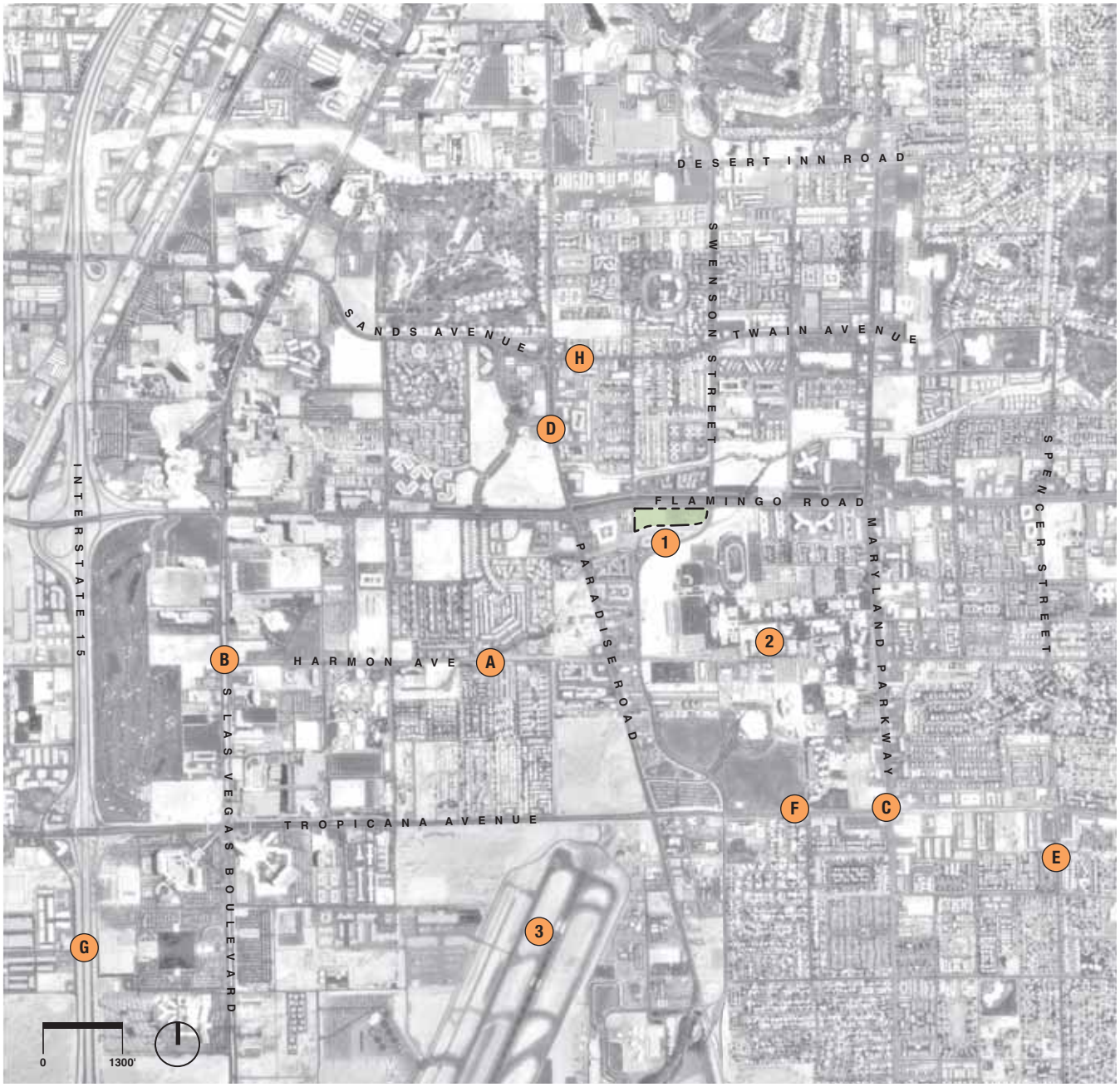
***Maximize energy and resource efficiency** in building and landscape design as well as construction.*

*Develop campus as an **example of sustainable design and planning.***




**L E G E N D**

- No-Build Zone
- Build-to Line
- Building Setback
- 20' Minimum Distance
- 20' Maximum Distance
- 1-3 Story Building
- 4-5 Story Building
- Primary Building Entry
- Covered Walk or Arcade
- Through-Building Connector




*Transportation improvements taken from the 2004-2025 Regional Transportation Plan prepared by the Regional Transportation Commission (RTC).*

## 3-1 Planning Context - Las Vegas Campus

*DRI's 11.4-acre Las Vegas campus **(1)** is centrally located adjacent to the University of Nevada, Las Vegas campus **(2)** and McCarran International Airport **(3)**. Proposed transportation improvements in the area include:*

- ***A*** *Widening Harmon Avenue to six lanes between South Las Vegas Boulevard and Swenson Street.*
- ***B*** *Constructing an above-grade pedestrian crossing at Harmon and South Las Vegas Boulevard.*
- ***C*** *Constructing bus turnouts at Maryland Parkway and East Tropicana Avenue to improve traffic flow.*
- ***D*** *Widening Paradise Road to six lanes between Tropicana Avenue and East Desert Inn Road.*
- ***E*** *Widening Spencer Street to four lanes between East Russell Road and East Flamingo Road.*
- ***F*** *Widening Tropicana Avenue to eight lanes between Swenson Street and Maryland Parkway.*
- ***G*** *Widening Interstate 15 to eight lanes between Tropicana Avenue and St. Rose Parkway.*
- ***H*** *Widening East Twain Avenue to six lanes between Fashion Show Lane and Maryland Parkway.*

# 3 Las Vegas Campus

EXISTING CONDITIONS
THE PLAN

## EXISTING CONDITIONS

### Location and Setting

DRI's Las Vegas campus is located approximately one mile east of the Las Vegas Strip, three miles north of McCarran International Airport, and immediately northwest of the University of Nevada, Las Vegas (UNLV; Figure 1-2). The campus is surrounded by a variety of land uses: a strip shopping center is located across East Flamingo Road to the north; a Clark County Fire Department facility is located to the west; a hospice facility is located across Tropicana Wash to the south; and the UNLV Gaming Institute is located across Swenson Street to the east. There are significant views overlooking Las Vegas to the north, south, and west from the third floor of the Frank H. Rogers Science and Technology Building. The site is underlain by alluvial deposits of the Las Vegas Valley, which is part of the Basin and Range Province. The Tropicana Wash, which provides the only topographic relief on a relatively flat site, is located along the southern edge of the campus. Climate in Las Vegas is characterized by hot, dry summers and cool winters.

### Transportation and Parking

The Las Vegas campus is bordered on the north by East Flamingo Road and on the east by Swenson Street. The key roadways in the campus vicinity include Flamingo Road, Swenson Street, Maryland Parkway, Paradise Road, and Tropicana Avenue. Based on current average daily traffic volumes, these roadways have adequate capacity.

The Las Vegas campus currently has one surface parking lot containing 359 parking spaces that serve DRI, GSA, and visitors to the Atomic Testing Museum (located in the Frank H. Rogers Science and Technology Building). The surface lot can be accessed from three driveway locations: two on East Flamingo Road and one on Swenson Street. Parking demand surveys conducted in September 2004 show that approximately 75% of the existing parking supply is vacant on an average day; therefore, there is adequate parking to serve current (and immediate future) campus parking demand.

Proposed transportation improvements in the vicinity of the Las Vegas campus (taken from the 2004-2025 Regional Transportation Plan prepared by the Regional Transportation Commission of Southern Nevada) are shown on Figure 3-1. The "DRI Las Vegas Campus Transportation Report" contained in the Appendix provides a detailed discussion of existing transportation and parking conditions at the Las Vegas campus.

**Las Vegas Campus**
*View of entry court and drought-tolerant planting at the SNSC Phase I building.*

## THE PLAN

DRI's Las Vegas campus plan (Figures 3-2 through 3-7) creates a continuous landscape space composed of courtyards and plazas that focus pedestrian circulation away from East Flamingo Road toward the campus interior between the buildings and along the Tropicana Wash. The presence of Tropicana Wash led to the development of the "regulating curve," which is used to organize growth on the campus.

The master plan framework and urban design guidelines embody the physical response to the master plan principles. The open spaces along the regulating curve serve to unify the campus and **foster connections** between buildings and the **campus setting** by linking to the Tropicana Wash while also framing the street edge with buildings. The plan unifies the buildings in a site-responsive composition creating a **memorable** campus with a strong sense of place for DRI.

The plan highlights primary and secondary pedestrian routes through campus that link a series of outdoor and indoor gathering areas (Figure 3-6). Primary pedestrian paths serve as collector routes that enable people to easily navigate around campus with secondary paths serving building entries. Primary vehicular circulation routes utilize existing campus entry points (Figures 3-7).

Building locations, heights, and orientations accommodate programmatic needs while optimizing passive solar heating and cooling as well as daylighting strategies. Building siting and heights preserve significant views. Buildings will be two to five stories (Figure 3-8, 3-9).

The urban design guidelines ensure that the whole is greater than the sum of the parts. The guidelines highlight important design benchmarks to ensure responsible and efficient growth and to satisfy the master planning principles developed during the planning process (Figure 3-13).

DRI's Las Vegas campus plan recognizes expansion goals of the Atomic Testing Museum but finds the display of large artifacts on site to be inconsistent with DRI's mission, public identity, and design principles.

**Las Vegas Campus**

*Views of the Frank H. Rogers Science and Technology Building from East Flamingo Road (left) and the entry drive (right).*

**Horizon 1**

***178,000 GSF***

***359 parking spaces***

Horizon 1 (Figures 3-10, 3-11) accommodates a Phase III building at the eastern end of the campus without requiring the construction of additional parking facilities.

**Horizon 2**

***230,000 GSF***

***472 parking spaces***

Horizon 2 (Figures 3-10, 3-12) maximizes site development based on potential parking supply and desired campus density. A parking structure at the northwest corner satisfies the parking demand generated by three additional buildings. Completion of Horizon 2 buildings will fall short of the programmatic goal of 390,000 GSF for the Las Vegas campus. Acquisition of additional land will be necessary to achieve balance between DRI's campuses in northern and southern Nevada.


**3-2 Illustrative Plan - Build-out of DRI's Las Vegas Campus**

**LEGEND**

Existing Buildings

Proposed Buildings

**3-3 Aerial Perspective**

*Viewed from a vantage point northeast of the campus, the build-out condition provides a strongly identifiable entry off East Flamingo Road. A clear sequence of outdoor spaces leads pedestrians through the campus.*

### 3-4 Campus Framework

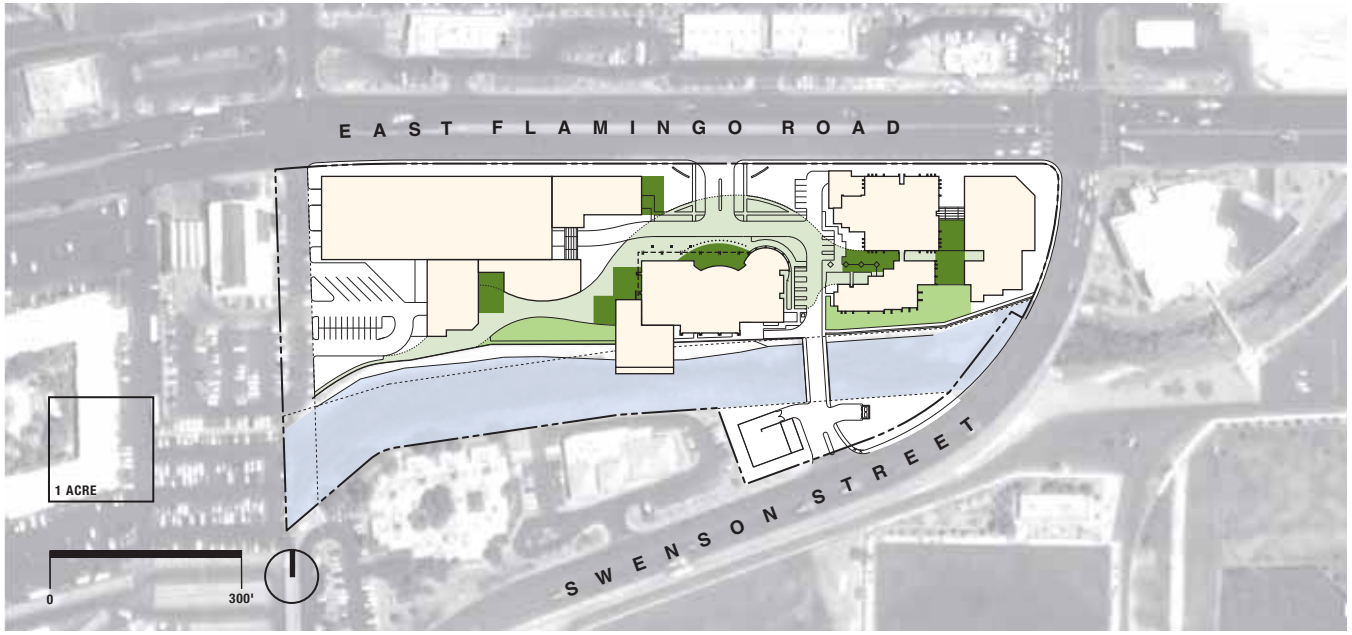
*A central connective space, defined by material transitions and building edges, serves to create a cohesive campus. The focus of the campus is redirected away from East Flamingo Road toward Tropicana Wash.*


L E G E N D

- Connective Space
- Space-Defining Building Edge
- Tropicana Wash

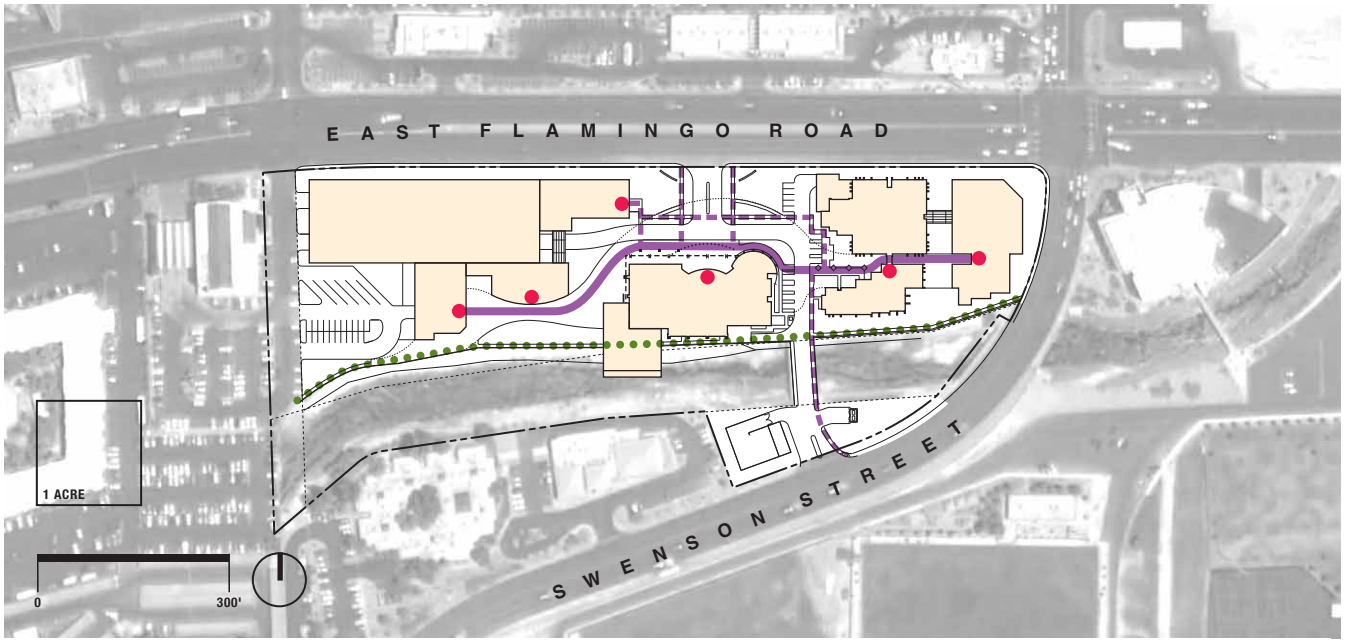
### 3-5 Open Space Framework

*A variety of open spaces are accessed by the central connective space. These open spaces provide locations where DRI faculty, staff, and students can gather as well as spaces where the public can learn about ongoing DRI research.*




L E G E N D

- Gathering Space
- Ethnobotanical Garden
- Connective Space
- Tropicana Wash

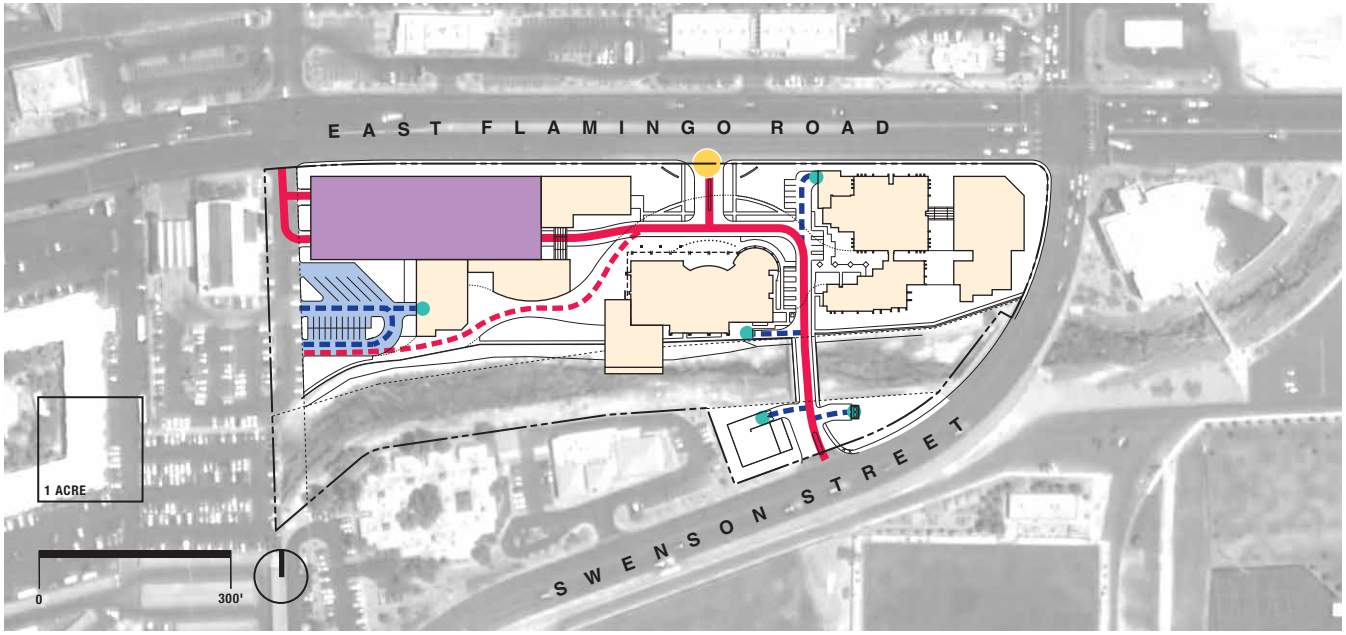



### 3-6 Pedestrian Circulation

*Primary pedestrian circulation is directed through the central connective space from which pedestrians can conveniently access building entries.*

L E G E N D

- Pedestrian Building Entry
- Primary Pedestrian Circulation
- Secondary Pedestrian Circulation
- Trail



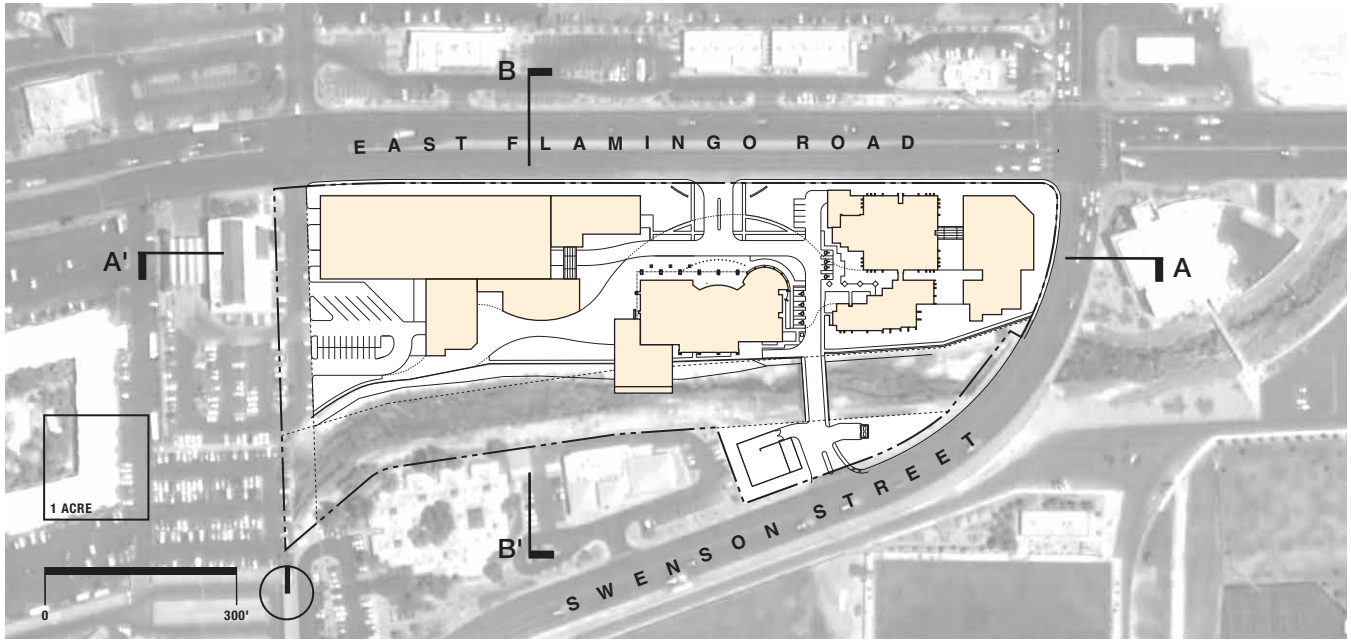

### 3-7 Vehicular Circulation

*Primary vehicular circulation routes utilize existing campus entry points. New parking facilities are located at the west end of the site, conveniently accessible from East Flamingo Road. Parking spaces for passenger buses transporting Atomic Testing Museum guests and for DRI field vehicles are provided in the southwest corner.*

L E G E N D

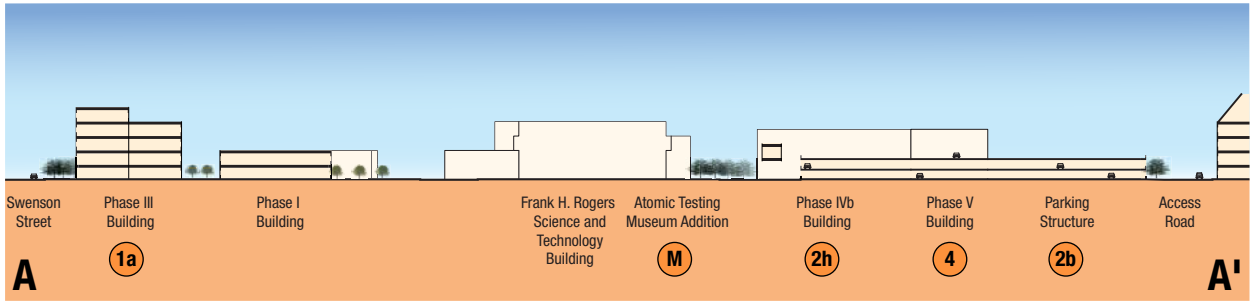
- Primary Campus Entry
- Public Vehicular Circulation
- Emergency and Service Access
- Emergency Vehicle Only
- Service Access Only
- Parking Structure
- Surface Parking
- Loading Docks/Areas

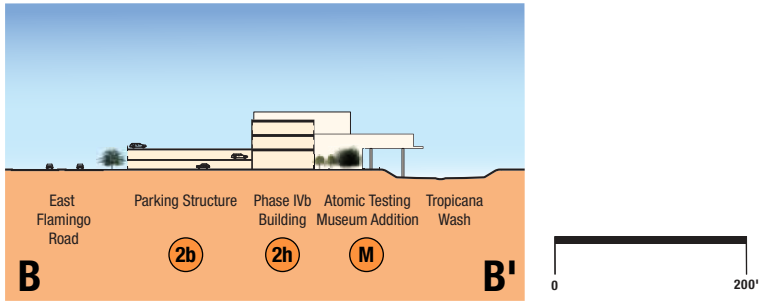
### 3-8 Section Locations




### 3-9 Illustrative Sections

*DRI's Las Vegas campus plan preserves significant views to the north, south, and west. Building massing is maximized at the east and west ends and minimized at the center in order to honor existing building massing and to create a comfortable campus.*



| HORIZON 1 | | BUILDING PROGRAM | | PARKING PROGRAM | | | | |
|---|---|---|---|---|---|---|---|---|
| Implementation Steps | | GSF | Floors | Cumulative [1] Parking Demand | Levels | Spaces Added/ Removed | Parking [2] Supply | Delta in Parking Inventory |
| | Existing | 110,000 [3] | | 229 [4] | | | 359 [5] | 130 |
| 1a | Phase III Building | 68,000 | 4.5 | 317 | | | | 42 |
| 1b | Courtyard | | | | | | | 42 |
| | Horizon 1 Total | 178,000 GSF | | | | | 359 Spaces | |

| HORIZON 2 | | BUILDING PROGRAM | | PARKING PROGRAM | | | | |
|---|---|---|---|---|---|---|---|---|
| Implementation Steps | | GSF | Floors | Cumulative [1] Parking Demand | Levels | Spaces Added/ Removed | Parking [2] Supply | Delta in Parking Inventory |
| | Horizon 1 Subtotal | 178,000 | | 317 | | | 359 | 42 |
| 2a [6] | Demo surface parking | [7] | | | | (164) [8] | 195 | (122) |
| 2b | Structured parking | [9] | | | 3 | 438 [10] | 633 | 316 |
| 2c | Demo surface parking | | | | | (37) | 596 | 279 |
| 2d | Phase IVa Building | 16,000 | 2 | 338 | | | | 258 |
| 2e | Demo surface parking | | | | | (21) | 575 | 237 |
| 2f | Entry Landscape | | | | | 5 | 580 | 242 |
| 2g | Demo surface parking | | | | | (53) | 527 | 189 |
| 2h | Phase IVb Building | 21,000 | 3 | 366 | | | | 162 |
| 2i | West Plaza | | | | | | | 162 |
| 3a | Demo surface parking | | | | | (76) | 451 | 86 |
| 3b | Surface parking | | | | | 21 | 472 | 107 |
| 4 | Phase V Building | 15,000 | 3 | 385 [11] | | | | 87 |
| | Horizon 2 Total | 52,000 GSF | | | | | 472 Spaces | |

| | | |
|---|---|---|
| Horizons 1 and 2 Total | 230,000 GSF | 472 Spaces |

SOURCE:
Desert Research Institute, Sasaki Associates, and Fehr & Peers, 2004

NOTES:

1 Based on 1.3 spaces/1000 GSF (Source: Fehr & Peers, 2004), unless noted otherwise
2 Based on 1.0 space/320 SF for structured parking, 9'x18' stalls for surface parking
3 Includes approximately 43,000 GSF leased to GSA
4 Based on 1.3 spaces/1000 GSF (DRI and GSA) plus 86 spaces (Atomic Testing Museum)
5 359 total spaces = 217 spaces (DRI) + 86 spaces (Atomic Testing Museum) + 56 spaces (GSA); does not include existing bus parking
6 This step requires utilization of temporary off-site or satellite parking facilities during construction of the Structured Parking in Phase 2b Building half of the Parking Structure, while delaying building the other half, reduces the Parking Inventory deficit approximately 50%.
7 Includes demo of existing bus parking
8 Includes 86 spaces removed for Atomic Testing Museum
9 Includes temporary relocation of bus parking
10 438 spaces (Total for Parking Structure) = 296 spaces (DRI) + 56 spaces (GSA) + 86 spaces (Atomic Testing Museum)
11 Does not include possible increased demand from 10,000 GSF addition to the Atomic Testing Museum

## 3-10 Implementation Program-Las Vegas Campus

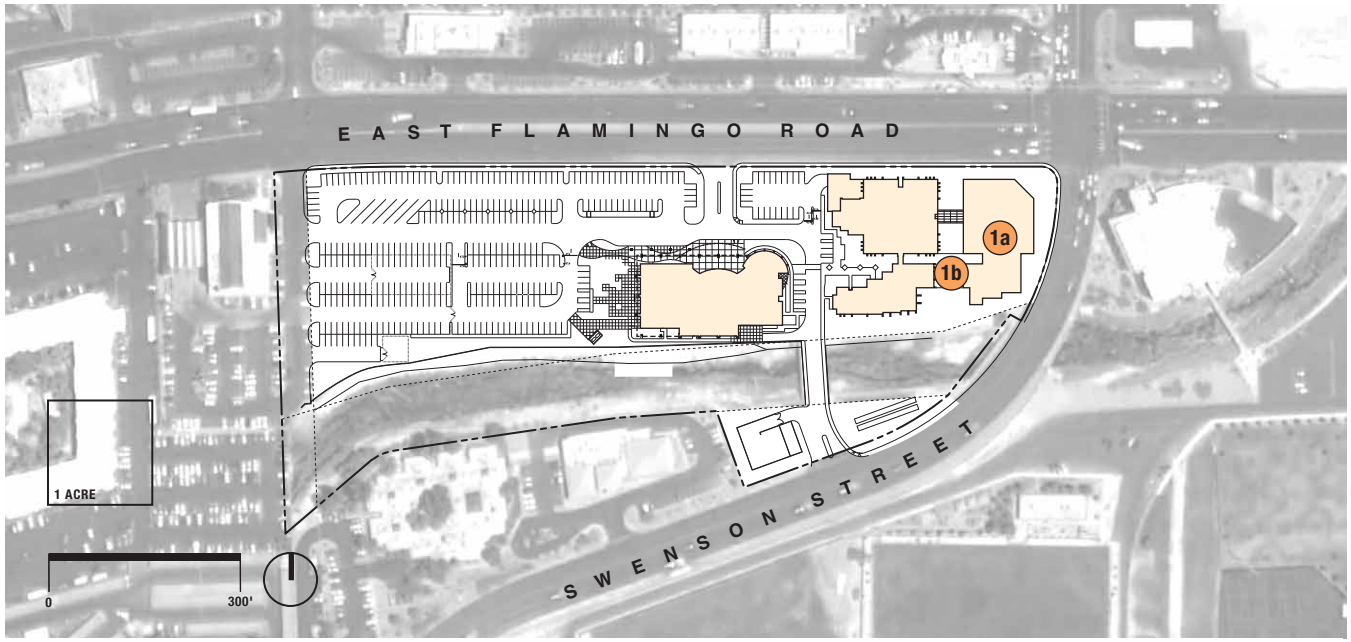
*The implementation program illustrates the construction sequence planned to maximize growth at the Las Vegas campus while providing an attractive and pedestrian-oriented community. Any future growth proposed beyond the capacity of the Las Vegas campus must be accommodated by an additional southern Nevada site.*

*Horizon 1 incorporates the planned Phase III building without requiring additional parking facilities. Horizon 2 must begin with the construction of a parking structure to accommodate the growth in the number of employees associated with construction of future buildings.*

**3-11 Implementation Steps - Las Vegas Campus Horizon 1**

***1a*** *Phase III Building*

***1b*** *Courtyard*




**3-12 Implementation Steps - Las Vegas Campus Horizon 2**

***2b*** *Structured Parking*

***2d*** *Phase IVa Building*

***2f*** *Entry Landscape*

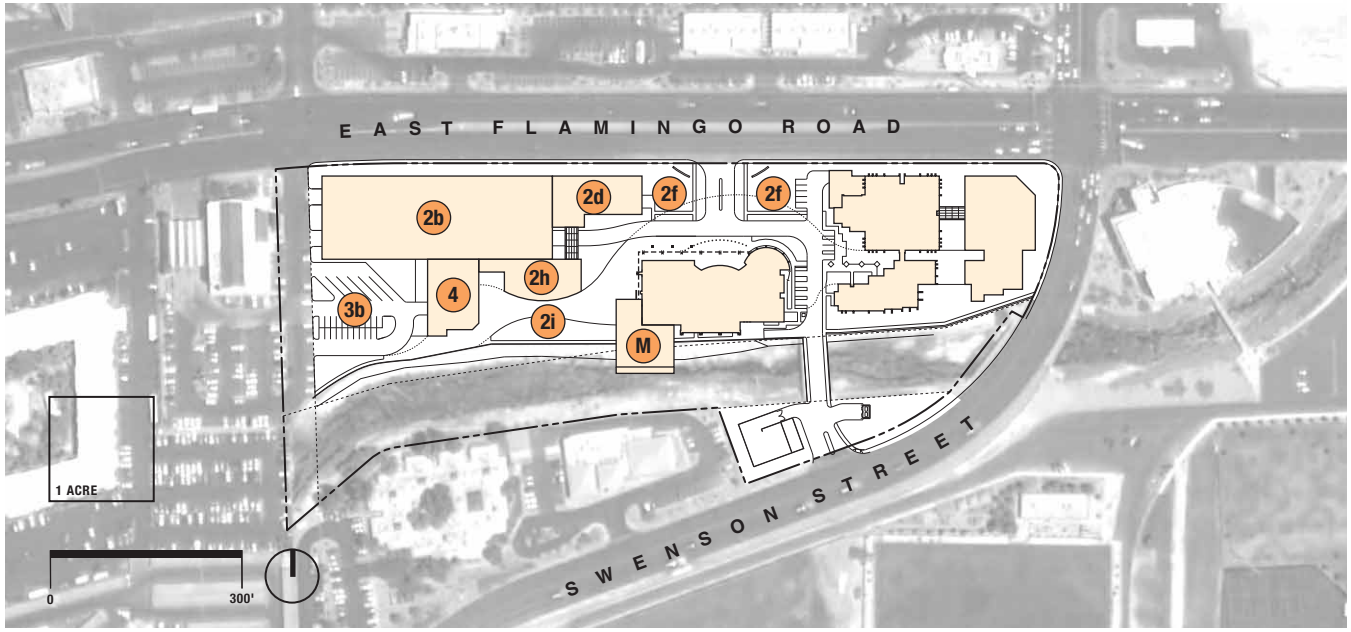
***2h*** *Phase IVb Building*

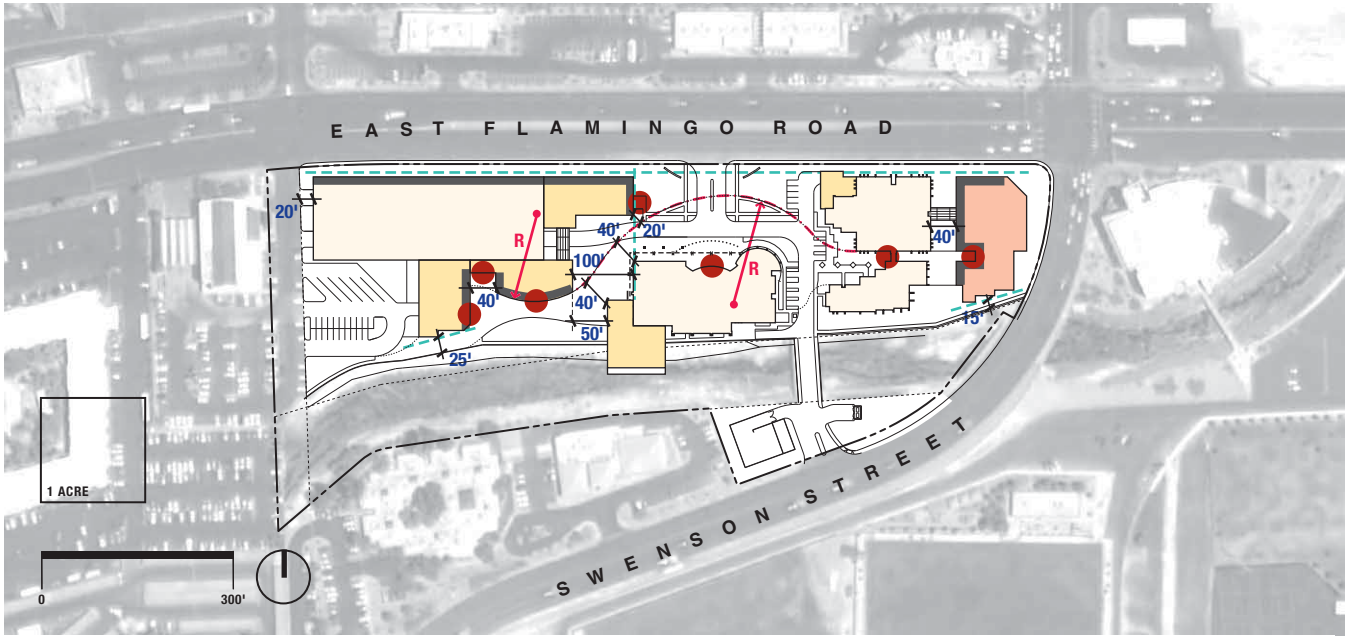
***2i*** *West Plaza*

***3b*** *Surface Parking*

***4*** *Phase V Building*

***M*** *Atomic Testing Museum Addition*






### 3-13 Urban Design Guidelines

***Reinforce street*** *edge.*

*Create a* ***distinctive open space*** *connecting all buildings.*

*Utilize* ***durable building materials*** *(e.g., brick, stone, concrete, wood, and steel) in a manner* ***consistent with their natural characteristics.***

***Provide building materials*** *that harmonize and enhance existing materials.*

***Observe and articulate regulating curve*** *in detailed design of site and buildings as a guide for edges and material changes.*

*Maximize* ***drought-tolerant plant material.***

***Maximize energy and resource efficiency*** *in building and landscape design as well as construction.*

*Develop campus as an* ***example of sustainable design and planning.***

**L E G E N D**

- Build-to Line
- Building Setback
- Regulating Curve
- 20' Minimum Distance
- 1-3 Story Building
- 4-5 Story Building
- Primary Building Entry

# 4 Next Steps

ACTIONS
FUTURE PLANNING EFFORTS
FEASIBILITY AND PROGRAMMING STUDIES

## ACTIONS

DRI will implement its Facilities Master Plan in a manner consistent with the design principles described in this report and beginning with the following actions:

- Completing the George B. Maxey Science Center addition and the new Field Operations Facility
- Securing funding for the Facility for Data Visualization and initiating construction
- Investigating the acquisition of additional land in Las Vegas for expansion of office and laboratory space

## FUTURE PLANNING EFFORTS

Preparation of the following studies will further guide efficient and successful implementation of the master plan:

- Infrastructure Plan: This plan will develop a long-range infrastructure strategy that accommodates growth at each campus while optimizing campus operating systems. The plan also will address the principle of efficiency and stewardship at a campus-wide level, ensuring the success of building-level efficiency and sustainable performance.
- Landscape Master Plan: A Landscape Master Plan will define specific open-space concepts and develop palettes and campus design guidelines for lighting, pavement, plants and trees, signage, and other landscape elements.
- Dandini Research Park Master Plan: This master plan will provide principles and a development framework that is in harmony with the DRI Facilities Master Plan and respect the landscape outside of the Reno campus.
- District Plans: These plans will develop guidelines specific to the building and open-space clusters, taking into account building program, nodes of activity, sustainable building guidelines, and architectural character.

Both the DRI Reno campus and the TMCC Dandini Campus are a part of the Dandini Regional Center, one of nine such centers planned by the City of Reno. The Facilities Master Plan will be used to develop a Regional Center Plan intended to promote higher density development in support of regional transit.

## FEASIBILITY AND PROGRAMMING STUDIES

Once the above-listed planning efforts have been completed, DRI should conduct programming and feasibility studies for new buildings. These studies will develop targeted goals and budgets compatible with the master plan.

**4-1 DRI - TMCC Campuses, Summer of 1999**

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