

NEBRASKA INNOVATION CAMPUS MASTER PLAN

UNIVERSITY OF NEBRASKA-LINCOLN
DECEMBER 1, 2009

ACKNOWLEDGEMENTS

This plan was prepared simultaneously with a business development strategy, with the benefit of contributions from the Board of Regents, Governor Heineman, President Milliken, and countless members of the University of Nebraska and City of Lincoln community.

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TABLE OF CONTENTS

1 Master Plan Overview.....	1-3	3 The Master Plan.....	17-29
Introduction.....	2	Organization Concept and Framework Plan	18
Vision.....	2	Organizational Concept.....	18
2 Existing Conditions + Analysis.....	5-16	Framework Plan	18
Site Context.....	6	Program Model	19
Road Network Projected ADT.....	7	Illustrative Plan and Developable Footprints.....	20
Parking	7	Illustrative Plan.....	21
Natural Features Analysis.....	8	Phasing.....	22
Floodplain	8	Cut/Fill Balance	23
Allowable Fill.....	9	Proposed Circulation.....	24
Existing Building Inventory + Analysis.....	10	Proposed Parking.....	24
Existing Facilities.....	10	Proposed Transit	25
Arsenal Building	11	Bicycle and Pedestrian Circulation.....	25
Industrial Arts Building.....	11	Infrastructure	26
4-H Building.....	12	Site Design Guidelines	27
UN-L Campus Research Space Inventory	13	Architecture Design Guidelines	27
Space Inventory and Assessment.....	13	Infrastructure Guidelines.....	27
Program Validation.....	14	Views	28
Infrastructure-Utilities.....	15		

1 | MASTER PLAN OVERVIEW



INTRODUCTION

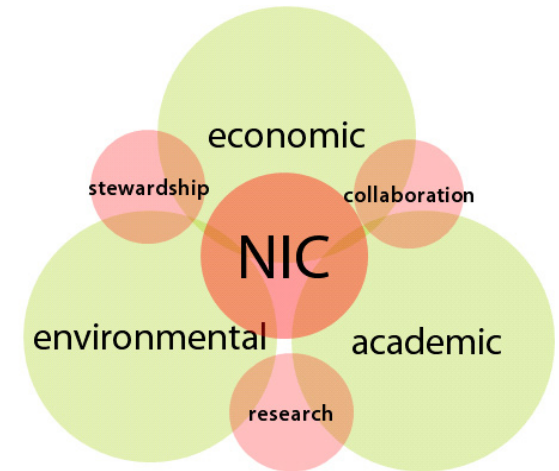
The University of Nebraska-Lincoln (UNL), in partnership with the President's Office, the university's Board of Regents, and a Steering Committee comprised of city, university, and business leaders, directed the development of this master plan and business development strategy for Nebraska Innovation Campus (NIC). Located on the former Nebraska State Fair site in Lincoln, Nebraska, NIC will be a new private-public partnership and research park dedicated to advancing research and its commercialization in order to generate economic growth for Nebraska. The university's goals for NIC are to create a master plan and business development strategy that is:

- Comprehensive.
- Based on existing research strengths, business conditions, and commercialization strategies.
- Driven by best practices for creating strong public/private partnerships, governance, and management.
- Creating key facilities that will have the greatest impact on research and commercialization.
- Competitive, innovative, flexible, and achievable.

VISION

The business development strategy and master plan for NIC lay out a broad vision to attract innovative companies and research in pursuit of addressing state, national, and global concerns. NIC will provide an interdisciplinary research and mixed use environment that will support collaboration among private sector interests, university faculty and researchers, and government research within UNL's core competency programs, particularly in the areas of food, fuel, and water. The governance model of the campus will unite public and private sector interests, while its physical design promotes intellectual engagement, collaboration, and the transfer of scientific knowledge and research into usable products and processes in the marketplace.

The primary vision for NIC is to optimize the sustainability and long-term viability of three factors: economic, academic, and environmental. As a commercial entity, NIC must attract the private sector, build jobs, and be economically sustainable. As part of the University of Nebraska system, NIC must support the mission of the university to create knowledge and advance research. As a place, NIC must embody innovation and sustainability in its physical design.



NIC has the opportunity to be one of the most sustainable research parks in North America. The following set of sustainable master plan principles was established for NIC:

- 1. Adopt environmentally sensitive land use practices.**
 - Minimize impact to Salt Creek floodplain.
 - Capture and treat stormwater where it falls.
 - Create and restore plant and wildlife habitat.
- 2. Plan for innovative, sustainable buildings and landscapes.**
 - Recycle and reuse buildings, materials, and water.
 - Create energy-efficient buildings.
 - Create healthy and native landscapes that minimize maintenance and embody innovation.

3. Ensure a range of transportation options.

- Keep development compact.
- Make transit convenient.
- Make pedestrians and bicyclists a priority.

4. Move toward a net zero energy and carbon neutral campus.

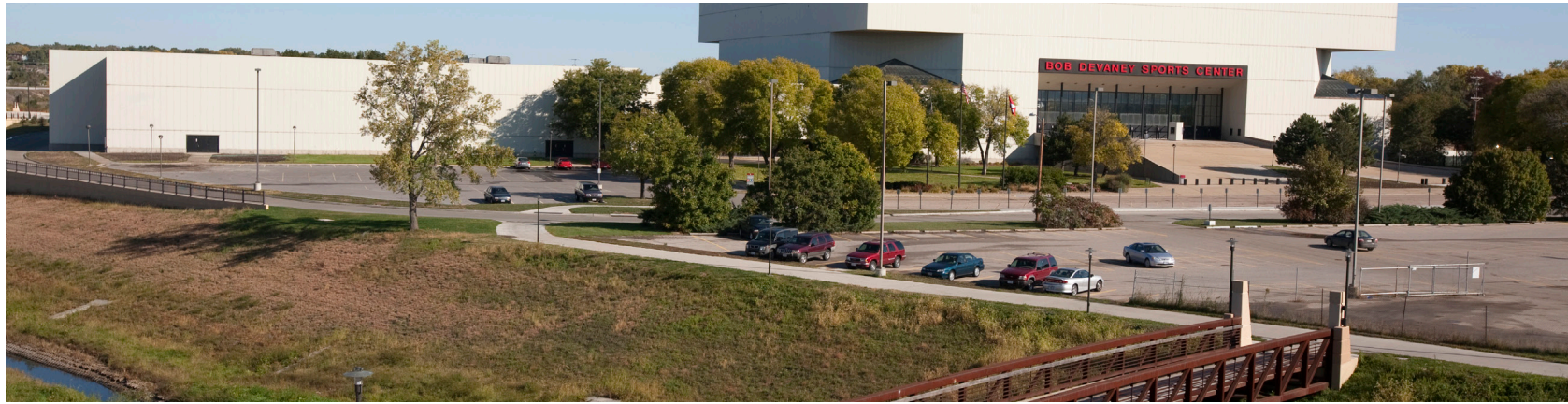
- Innovate with renewable energies on site.
- Capture energy from nearby wastewater effluent.
- Strive to reduce carbon emissions in energy production.

The physical program for NIC includes a mix of land uses for work, living, recreation, and amenities. The program is focused on job creation through university research and private/government research partners, based on successful models of national research parks. The plan is comprised of 1.8 million gross square feet (gsf) of development to be built out over the next 20 to 25 years.

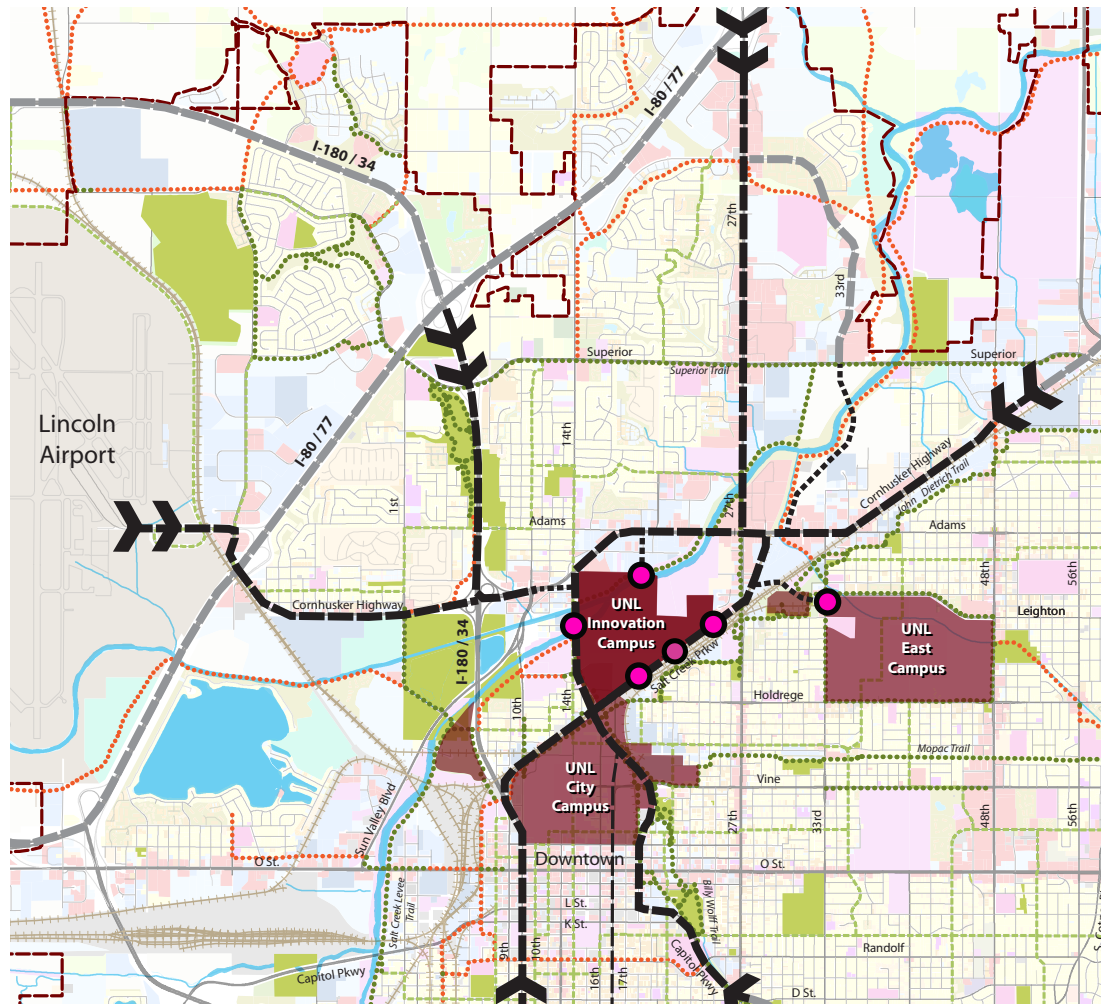
The master planning process was developed in conjunction with a business development strategy team led by the Noddle Companies.



2 | EXISTING CONDITIONS + ANALYSIS

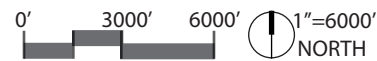


SITE CONTEXT



CONTEXT AND DIRECTIONS OF APPROACH

- Existing Major Directions of Approach
- Future Potential Directions of Approach
- Park and Open Space
- Existing Trails
- On-Street Bike Route
- Future Trails
- Existing and Potential Site Entrances



BACKGROUND INFORMATION

The site for NIC is significant in the context of the city of Lincoln and state of Nebraska. Located on the former grounds of the Nebraska State Fair, the site is adjacent to both the UNL City and East Campuses. It is in the basin of the Salt, Oak, and Antelope Creeks that converge near the northwest corner of the site. The campus has a unique opportunity to build off of the access points that were designed to carry high volumes of traffic for the Nebraska State Fair and UNL athletic events. NIC has significant visibility from several existing adjacent roads in Lincoln, including Antelope Valley Parkway, Salt Creek Roadway, and 27th Street. Traffic volumes from the various directions of approach to the site are equally balanced from all directions. A major entrance to the site occurs at Military Road and Antelope Valley Parkway. Three future entrances, placed ¼ mile apart, are planned along Salt Creek Parkway. A potential entrance from 20th Street was also evaluated.

BICYCLE/PEDESTRIAN NETWORK

There is an extensive pedestrian and bicycle trail network in the city of Lincoln that converges at the new Antelope Valley Project adjacent to NIC. Many of the existing and proposed trails are interconnected through roadway underpasses and bridges, and are supplemented by several

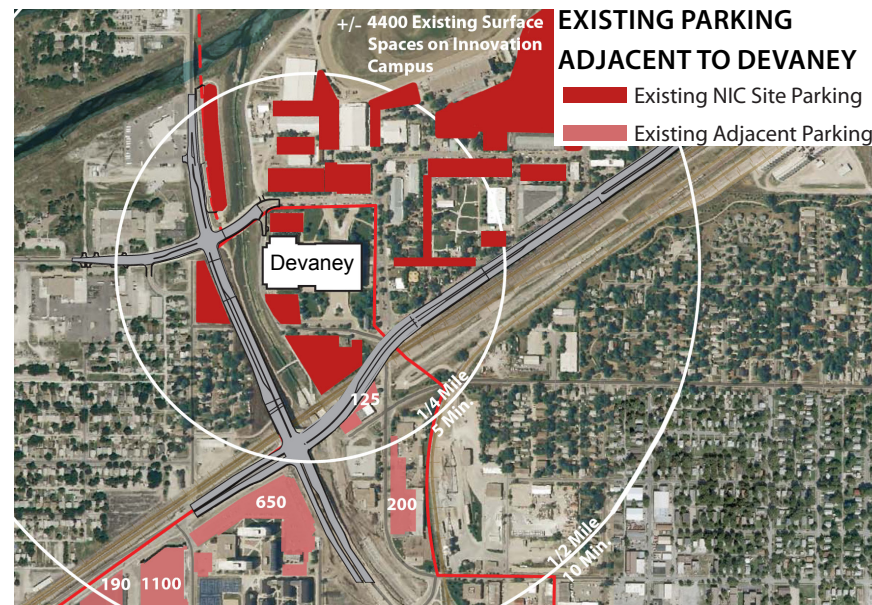
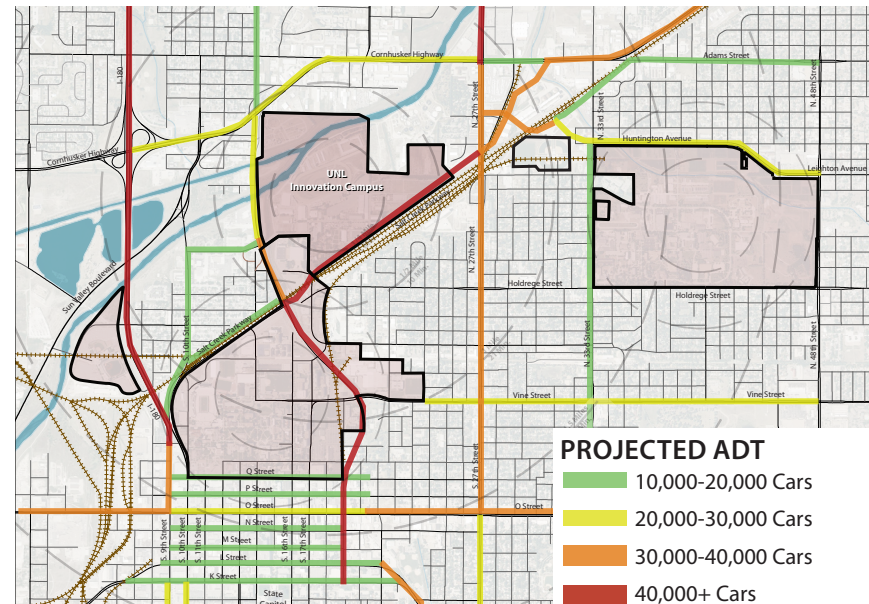
on-street bike lanes to form an alternate mode of transportation and connection to UNL's campuses.

ROAD NETWORK PROJECTED ADT

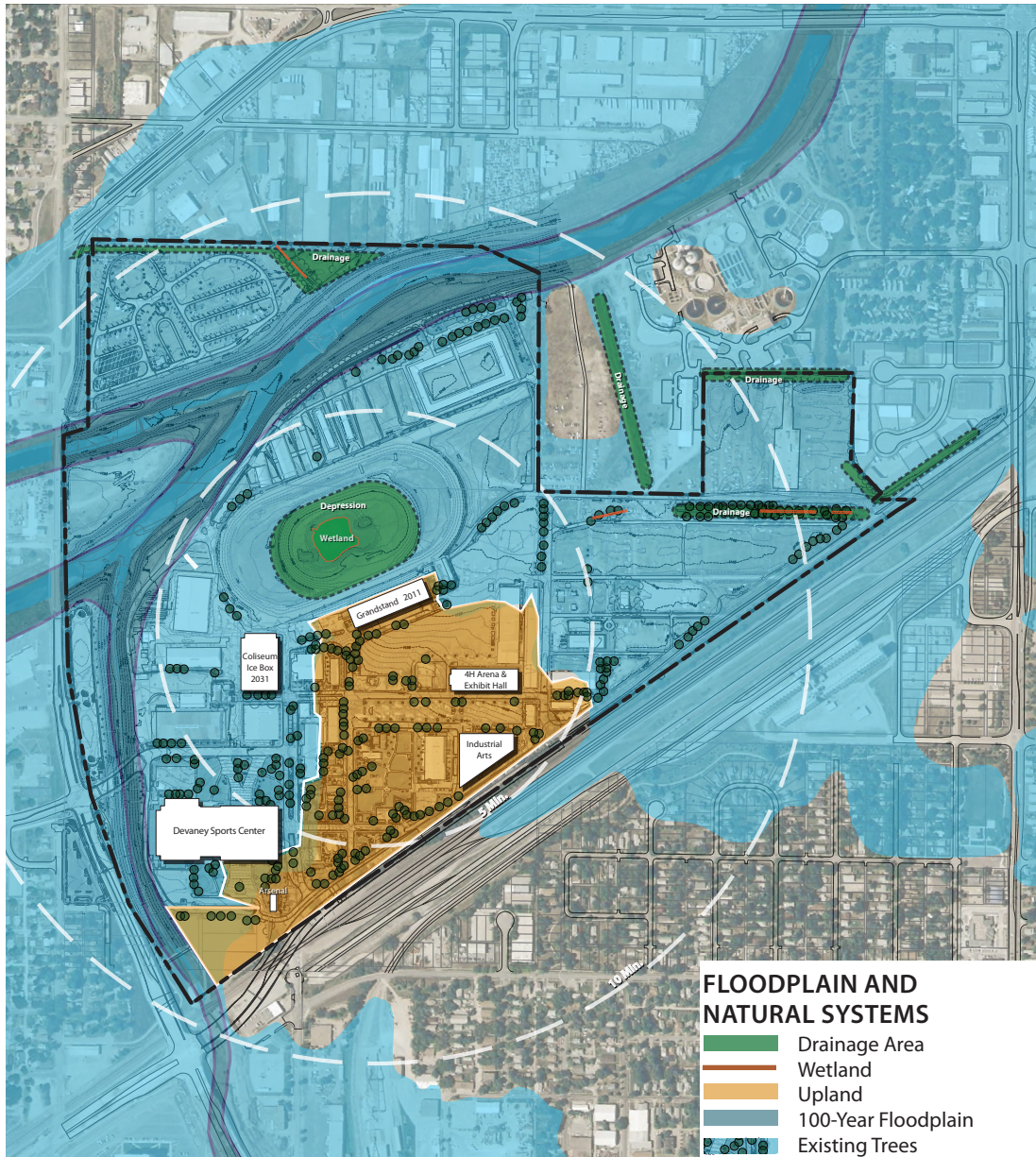
Antelope Valley Parkway and Salt Creek Roadway have two of the largest Average Daily Traffic (ADT) capacities in the city of Lincoln, providing adequate perimeter infrastructure for the build-out of NIC. However, long-term improvements need to be made to the intersection at Antelope Valley Parkway and Cornhusker Highway and the intersection at Salt Creek Roadway and 27th Street. Adjacencies to these major existing roadways highlight the importance to develop NIC as an important connection between City Campus and East Campus. These linkages also provide for connection to the Lincoln Central Business District, Interstate 80, and the Lincoln Airport, which carries over 100,000 passengers annually and is located directly west of the NIC site.

PARKING

The NIC site currently accommodates 4,400 on-site parking spaces for UNL athletic events at the Devaney Sports Center. Additional parking spaces could be available within a 10-minute walk of NIC.



NATURAL FEATURES ANALYSIS



FLOODPLAIN

A challenge of the NIC planning process was the considerable amount of land within the Salt Creek floodplain. Of the 249-acre NIC site, only 48 acres are above the 100-year floodplain, including land currently occupied by the Grandstand, the 4-H Building, and the Industrial Arts Building. While the Antelope Valley Project regained a considerable amount of developable land from the floodplain south of NIC, the project does not ameliorate the impacts of the Salt Creek floodplain on the site.

A detailed *Wetland Delineation Report* was completed as part of the master planning process, locating open drainage areas in varying sites on NIC. Several of these drainage areas are identified as delineated wetland areas, including the drainage ditches on the east side and northern edge of the site, and on the infield of the existing horse track. The total acreage of all wetland areas on site is approximately 1 acre. Potential disruptions to these wetland areas can be mitigated on site.



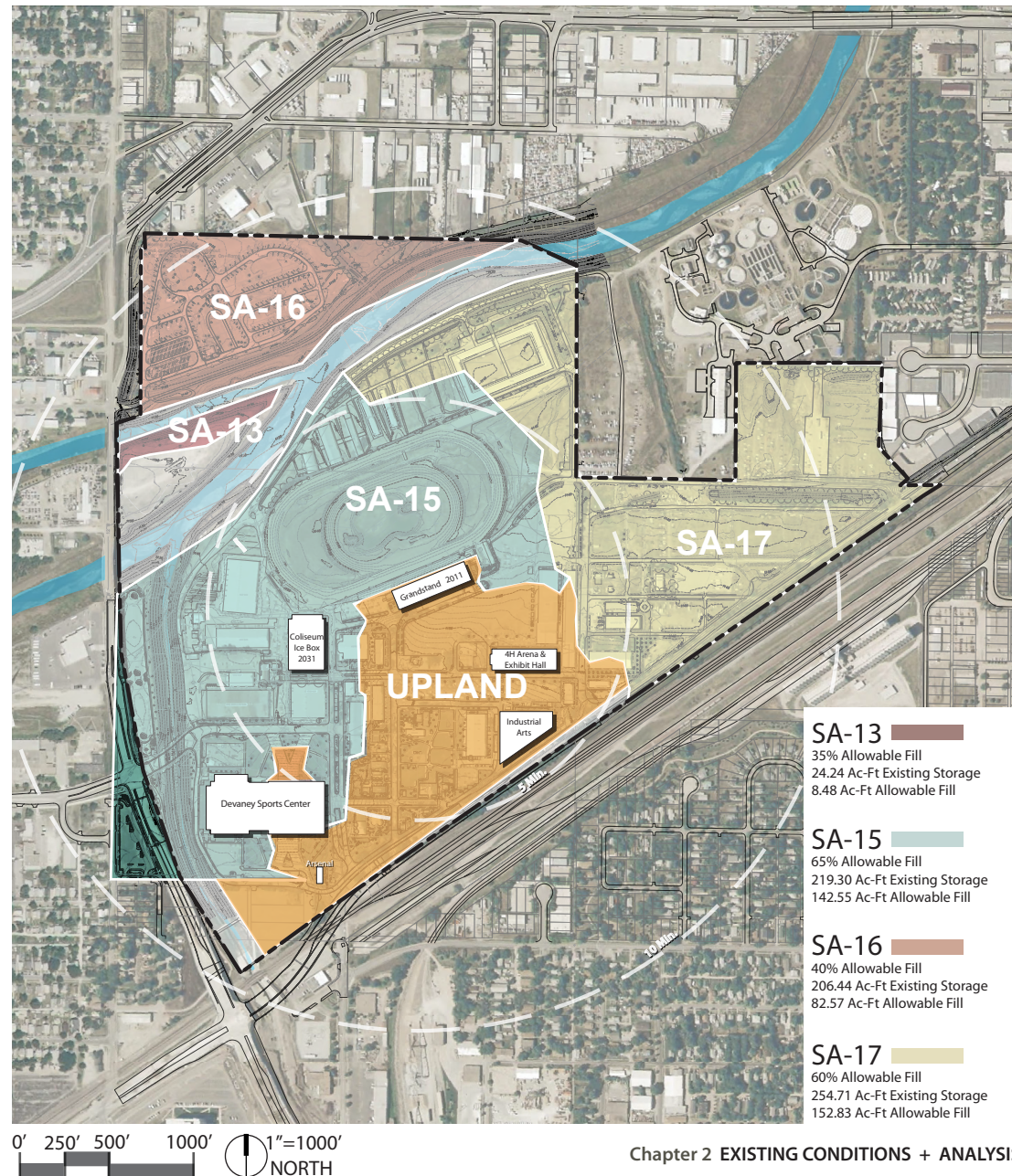
ALLOWABLE FILL

ALLOWABLE FILL

The NIC site is divided into four flood zones: SA-13, SA-15, SA-16, and SA-17. In working with the Lower Platte South Natural Resources District and the U.S. Army Corps of Engineers, the City of Lincoln conducted a study of the flood storage capacity for the Salt Creek floodplain and adopted a flood storage ordinance. The above mentioned regulations stipulate volumetric percentages for allowable fill and allowable flood storage capacities for all zones as shown in the chart to the right. Allowable flood storage capacity has been translated to cubic yards for zones SA-15 and SA-17 as shown in Table 2.1 below. As part of the master plan process, the planning team was asked by the city to consider the potential implications of a plan for NIC that has no net decrease of flood storage capacity for the site.

TABLE 2.1 - ALLOWABLE FLOOD STORAGE CAPACITY

Zone	% Allowable Fill	Ac-Ft	yd ³
SA-15	65%	219.30	353,804
SA-17	60%	254.71	410,932



EXISTING BUILDING INVENTORY + ANALYSIS



EXISTING FACILITIES

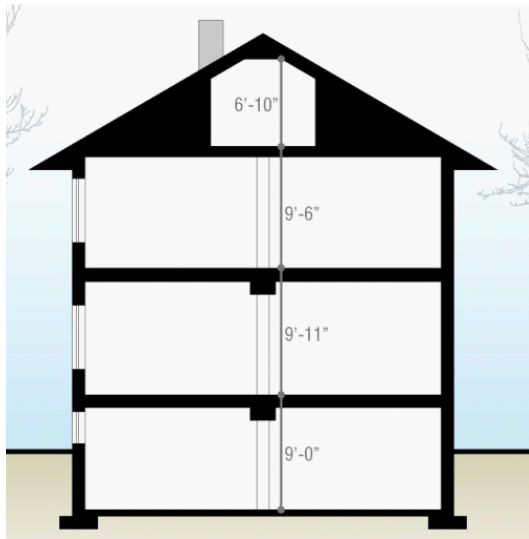
Several structures exist on the site, including athletic facilities at the Devaney Sports Center, the Ice Box, the Arsenal Building, the 4-H Building, and the Industrial Arts Building.

The Devaney Sports Center, currently used for athletics programs and events, is being master planned for expansion and additional parking capacity, and, as of the time of this report, will remain on campus in its current use. The Ice Box is used for hockey events and has a lease commitment through 2031; it is recommended that the structure be replaced in the future to allow for research or related mixed use development.

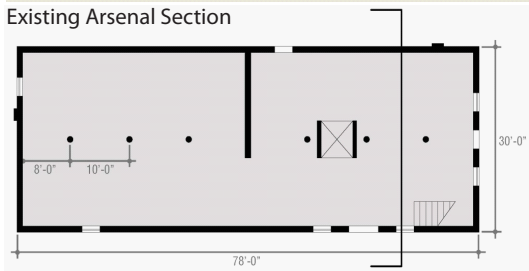
The map area highlighted in red depicts land leased by the Horseman's Association through September 30, 2012 per an agreement with the university.

Three buildings were reviewed for their existing condition, current code, and systems deficiencies, and evaluated for potential reuse for NIC campus programs. A detailed *Existing Building Evaluations Report* on these facilities was developed by SmithGroup/JJR and submitted to the university in June of 2009.





Existing Arsenal Section



Existing Arsenal Plan

ARSENAL BUILDING

CONDITION

The Arsenal Building, constructed in 1913, is a 4,800-gsf rectangular 2-story brick building that sits on the south border of the site and does not restrain the development necessary to make NIC successful. The building is listed on the National Register of Historic Places and is being used as a museum to display the history of the

Nebraska National Guard. In the short term, the building may be able to serve its current purpose. The building is generally in fair to poor condition but has limited reuse potential without substantial renovation. The exterior brick, windows, and doors are in poor condition, and the roof is beyond its expected life. The building is heated by a small forced-air ducted heating, ventilating, and air-conditioning (HVAC) system that lacks humidity control for artifacts. Mechanical, electrical, and plumbing (MEP) systems do not meet code. Toilets, stairs, and lack of an elevator do not meet Americans with Disabilities Act (ADA) requirements. There is no fire protection (FP) system.

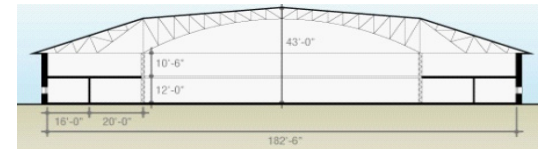
ARSENAL POTENTIAL REUSE CONSIDERED

- Requires repair to building, MEP systems, and improvements of code deficiencies.
- Reuse potential is limited by column spacing.
- In the short term, the building should be retained as current museum use or converted to office use once the Nebraska National Guard can make other arrangements to display its collections.

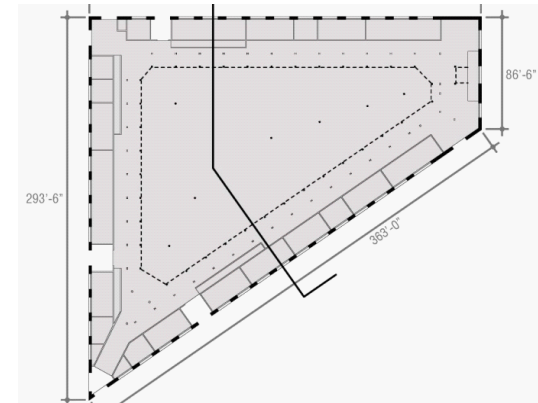
INDUSTRIAL ARTS BUILDING

CONDITION

The Industrial Arts Building, constructed in 1913, is a 2-story brick building of approximately 90,000 gsf with a mezzanine level and a high bay



Existing Industrial Arts Section



Existing Industrial Arts Plan

open space in the center. It is located adjacent to Salt Creek Roadway. The unique steel structure similar to a late 19th century European train station is its best asset; historical photos indicate a skylight that originally wrapped the roof perimeter at the mezzanine edge. Although the facility enjoyed a rich heritage of agricultural exhibits, the building has been condemned by local authorities due to poor condition, and no occupancy has been allowed in the recent past. There is no HVAC system, minimum electrical service, no elevator, and no central FP system. The MEP systems are inadequate for renovation and in need of complete replacement. The roof system has failed in some sections and needs

replacement. Exterior brick walls show various cracks; doors and exterior windows are in poor condition and need replacement. Mezzanine decks do not meet code. There is a program need for common scientific support space and future demonstration area requiring high bay space. A conceptual plan was developed for the Industrial Arts Building to evaluate its potential for this reuse, including a greenhouse/conservatory and additional incubator/accelerator lab suites. At 90,000 gsf, the existing building greatly exceeds the requirement for high bay demonstration space and conservatory or plant sciences greenhouse space. New floors and internal structural support would need to be added to the building for additional research space to make the program more feasible for materials science engineering programs. The initial cost estimate to renovate the Industrial Arts Building for this use is somewhat higher than new construction costs. In addition, the building's strategic site location would require an early renovation and reuse in the first phase of development to assure that it would not detract from development or be a security concern to the campus. Based on all of the above factors, and program priorities for biosciences to complement a new Agricultural Research Service facility, renovation and reuse of the Industrial Arts Building was not deemed very feasible.

INDUSTRIAL ARTS BUILDING POTENTIAL REUSE CONSIDERED

- Requires extensive exterior and façade repairs and restoration including doors, windows, roof deck, and roof.
- Requires new interior second floor, and accessible stairs, ramps, and toilets.
- Requires new efficient MEP/FP systems.
- Reuse potential considered for high bay demonstration space, conservatory, and greenhouse areas.

4-H BUILDING

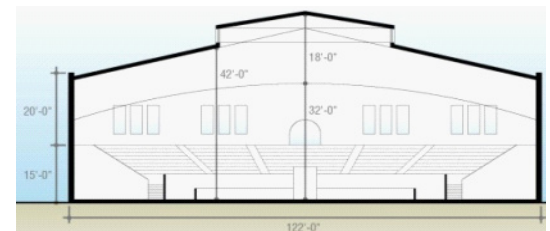
CONDITION

The 4-H Building, constructed in 1931, is a rectangular 2-story brick building with a sloped roof. It is roughly in the center of the NIC site. The facility is composed of two areas: a 2-story arena space to the east and two floors to the west totaling 68,000 gsf. The exterior brick masonry walls are in fair condition with need for minor repairs. Doors and windows are metal framed and need replacement to meet energy criteria. The tiered grandstand of the arena is constructed of cast-in-place concrete and engaged with exterior supporting columns; demolition of concrete grandstands would be relatively costly. Natural light is abundant due to exterior windows and roof monitor skylights. There are large circulation fans but no heating and cooling or FP systems. The electrical and lighting

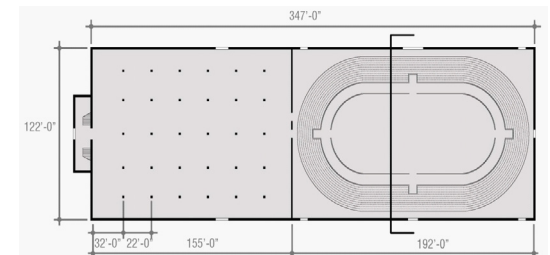
systems need to be upgraded. Toilets need to conform to new occupancy and accessibility requirements. This facility has a rich heritage for events and is still used to show exhibits with a special fire marshal waiver.

4-H POTENTIAL REUSE CONSIDERED

- Historic details and original building features require restoration and repair.
- Deferred maintenance issues require attention.
- MEP systems require replacement.
- Potential reuse strategies include commons and conferencing uses due to its central location, additional conversion of the arena for use as seminar spaces, and single-story areas for exhibit, retail, suites, and offices.



Existing 4-H Section



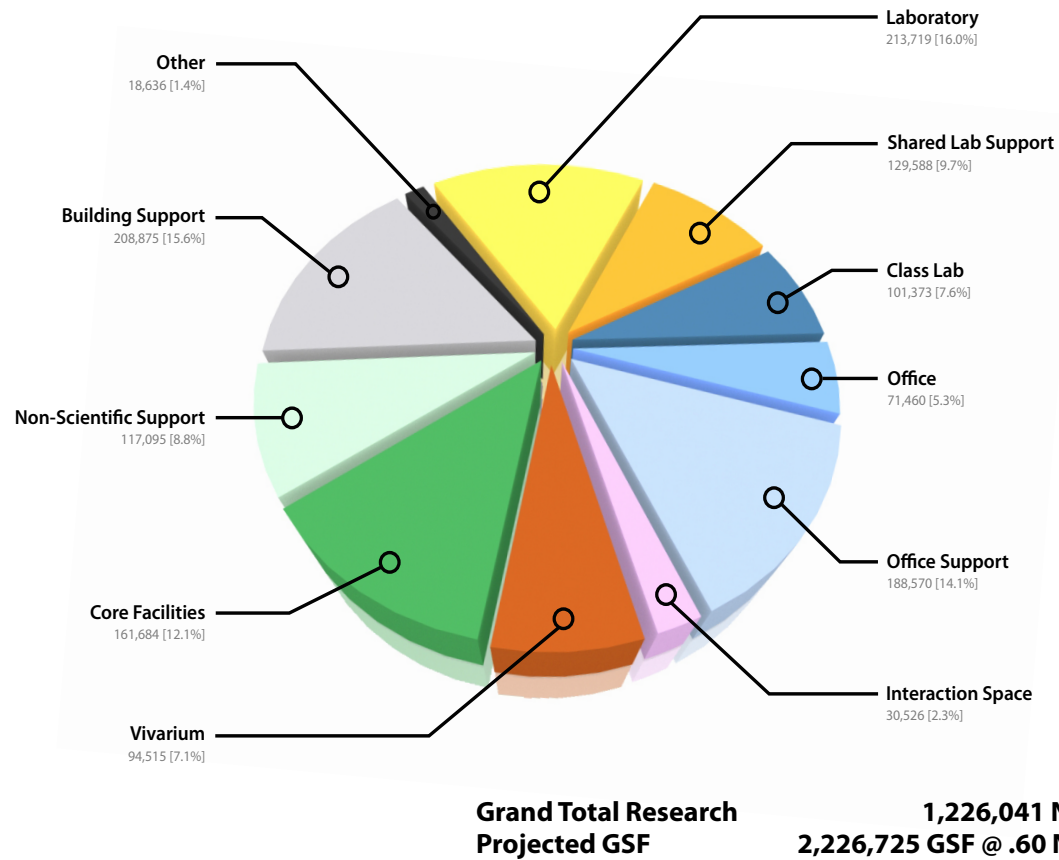
Existing 4-H Plan

UNL CAMPUSES RESEARCH SPACE INVENTORY

SPACE INVENTORY AND ASSESSMENT

The planning team evaluated the UNL space inventory database assignments for both the City Campus and East Campus research facilities. Overall, the total inventory of space assigned to research programs is 1,226,041 net square feet (nsf), which translates to a total of 2,226,725 gsf of equivalent facilities. The space assigned to research programs for office, laboratory, class labs, and support space totals 53 percent, and the remaining 47 percent is shared core facilities, and collaboration and building support space. It is important to note that spaces for seminar, conferencing, and interaction are a critical component of collaboration between faculty and students and a necessary part of science.

Most of the facilities are organized by departmental allocation. A representative set of UNL facilities were benchmarked for comparative allocation of space to research faculty principal investigators (PI) and overall



	UNL Beadle	UNL Morrison	UNL Brace Lab	UNL Ferguson	UNL Behlen	UNL Hamilton	UNL Manter	Group Weighted
Net SF/PI	2,144	2,388	4,407	1,428	1,638	3,969	2,791	2,735 NSF
Gross SF/PI	4,249	4,402	6,929	1,925	2,458	6,045	4,039	4,157 GSF
Net SF/FTE	309	176	249	475	249	407	461	350 NSF
Gross SF/FTE	611	324	373	640	373	620	667	533 GSF

faculty principal investigators (PI) and overall occupancy densities of full time equivalent (FTE) individuals.

Forum meetings were held with faculty groups including representatives from various programs and centers of excellence to evaluate existing space performance and potential program uses for NIC. Although the university has several core research strengths, it was deemed that programs seeking a more interdisciplinary research focus between departments were primary candidates for relocation to NIC.

The Beadle Center is an example of a successful interdisciplinary research building for shared programs in biochemistry, biotechnology, and plant sciences and was deemed an appropriate potential model for interdisciplinary research at NIC. This facility, at 161,260 gsf, could be further improved if planned for more open, flexible development with increased collaboration space and greater access to daylighting in the laboratories.

PROGRAM VALIDATION

The planning team proceeded to work with the Steering Committee to validate a program model for NIC. Space allocation was benchmarked against comparative peer university research facilities for research space and the percentage of space devoted to specific uses. These space program models were then tested for a number of footprints for bench top lab, office, lab support, high bay lab, and core support space configurations.

As part of the development of the Framework Plan, these space comparisons were translated into a set of planning guidelines for academic research facilities.

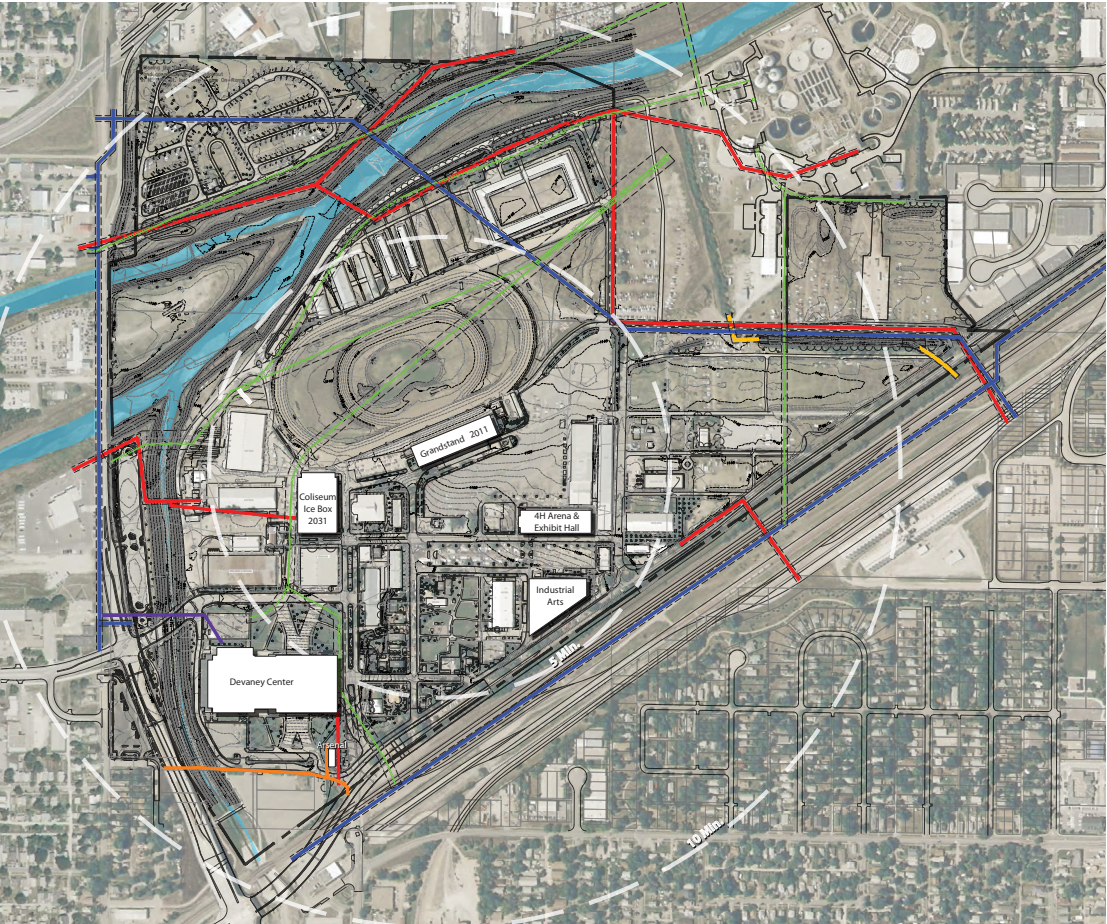
NIC Academic Research Guidelines

- 2700 NSF/PI**
- 4400 GSF/PI**
- .60 N/G Building Efficiency**
- 550 GSF/FTE**

	Biosciences Labs	Engineering Labs
Laboratory	25% to 30%	35% to 45%
Lab Support	25% to 30%	15% to 20%
Research Office	15% to 20%	20% to 25%
Total Dedicated	65% to 80%	70% to 90%
Interaction	4% to 6%	5% to 10%
Vivarium	4% to 6%	
Core Facilities	7% to 10%	0% to 7%
Non-Scientific Support	2% to 8%	2% to 8%
Building Support	2% to 3%	2% to 3%
Other	1% to 2%	1% to 2%
Total Shared	20% to 35%	10% to 30%

	UNL Wt. AVG	UCSF Genentech	U Michigan Life Sciences	LSU Cancer Center	Louisville Biosciences	Texas Tech Biomedical	U Arizona T-Gen	U Illinois Life Sciences	Mich State Biophysical
Net SF/PI	2,735	4,031	3,996	1,734	1,663	3,000	4,763	2,362	1,849
Gross SF/PI	4,157	7,244	6,589	2,873	2,828	5,023	7,681	4,552	3,710
Net SF/FTE	350	225	428	192	240	289	256	197	783
Gross SF/FTE	533	405	655	307	407	484	541	379	379

INFRASTRUCTURE-UTILITIES



LEGEND

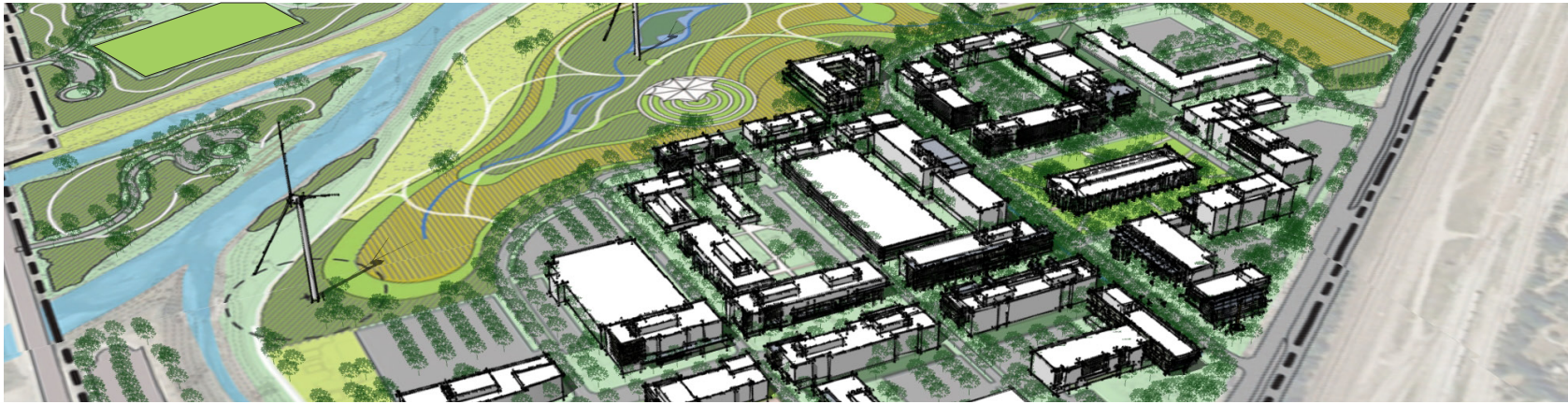
- Storm Sewer
- Sanitary Sewer
- Water Main
- Steam
- Electrical Duct Bank

Existing on-site utilities, including storm and sanitary sewer, water, electrical, communications, and gas, were located and analyzed for this site. Public utility service location, size, capacity, and easement requirements were determined.

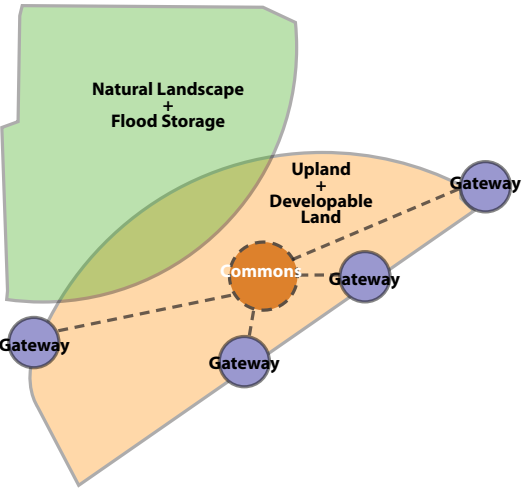
Due to the central location within Lincoln and the proximity to the wastewater treatment facility, several public utility mains are located through this site. These include several large diameter sanitary sewer lines, a water line, and overhead electric distribution lines. These existing utilities will pose design constraints to the site as development occurs.



3 | THE MASTER PLAN



ORGANIZATIONAL CONCEPT AND FRAMEWORK PLAN



ORGANIZATIONAL CONCEPT

The concept for the NIC plan builds upon the existing conditions analysis of the site by creating a development hub that centers on the 4-H Building and existing upland as a central commons with access from four major site gateways. In keeping with the Lower Platte South Natural Resources District and U.S. Army Corps of Engineers guidelines, the remainder of the site adjacent to Salt Creek will be used as a regional and state-of-the-art naturalized open space that increases the net flood storage capacity of the entire site.

FRAMEWORK PLAN

The NIC Framework Plan is intended as a flexible tool that will guide future

development. It depicts the placement of human-built elements such as building locations, roads, parking areas, and open space, and the relationships between these elements on the land. The Framework Plan establishes key planning concepts such as campus organization, general building massing, primary frontage streets, and scale of development. It does not represent specific building footprints or final architectural or landscape design. As such, it can be adaptable to the specific needs of individual tenants and users as the campus builds out. The fundamental function of the Framework Plan is to represent the planning principles in a flexible plan to guide and manage development of the campus, as political, economic, administrative, and program variables may change.

PROGRAM MODEL

A program model was developed for NIC to include public and private research uses; research support functions; and residential, recreation, and campus amenities based on emerging trends in other successful research parks. The primary program includes interdisciplinary research, office space for the university and the private sector, and shared uses such as conferencing and amenities that foster a collaborative environment for

TABLE 3.1 - PROGRAM TEST MODEL (Full Build-Out)

	GSF	FTE
University Research	400,000	570
<i>*Interdisciplinary Research 1</i>		
<i>Interdisciplinary Research 2</i>		
<i>Interdisciplinary Research 3</i>		
<i>Interdisciplinary Research 4</i>		
<i>-with Commercialization</i>		
Private/Government Partners	727,000	1,645
<i>*USDA/ARS</i>		
<i>Private Multi-Tenant Lab 1</i>		
<i>Private Company Lab 1</i>		
<i>Private Multi-Tenant Lab 2</i>		
<i>Private Company Lab 2</i>		
Commons	275,500	400
<i>*4-H Reuse, Cafe, Conferencing,</i>		
<i>Plus Accelerator-Incubator</i>		
<i>*Hospitality</i>		
<i>Retail/Service</i>		
Core Support	135,000	220
<i>*Demonstration Center</i>		
<i>Incubator</i>		
<i>*Core Lab/Analytical Equipment</i>		
Residential	262,500	
<i>Multi-Family Workforce/Grad</i>		
<i>(250 Units)</i>		
Total Development	1,800,000	2,835
<i>*Denotes Phase 1 Program</i>		

science and business development. The model anticipates approximately 1.8 million square feet of development and facilities averaging 3 stories for university and private/government sector development, organized around a common core of support facilities.

Research themes that are most likely to be developed include the following:

- Agriculture Biotechnology, Life Sciences, Food and Nutrition
- Computer Sciences and Bioinformatics
- Materials Sciences and Nanotechnology
- Water Resources
- Clean Energy Technology
- Transportation

Research programs will be interspersed with residential, hospitality, and mixed use opportunities, creating a 24-7 environment.



Bioscience Open Lab



Materials Science High Bay

ILLUSTRATIVE PLAN AND DEVELOPABLE FOOTPRINTS



TABLE 3.2 - DEVELOPMENT POTENTIAL

	Ground Floor SF	Total FL	GSF
Research			
R1	46,600	1.5	70,000
R2	36,500	3	109,500
R3	20,000	4	80,000
R4	23,500	3	70,500
R5	11,000	3	33,000
R6	30,000	3	90,000
R7	30,000	3	90,000
R8	23,500	3	70,500
R9	30,000	3	90,000
R10	30,000	3	90,000
R11	30,000	3	90,000
R12A	30,000	3	90,000
R12B	25,000	1	25,000
R13	30,000	3	90,000
R14	30,000	3	90,000
R15	30,000	3	90,000
R16	20,000	1.5	30,000
R17	16,500	1.5	24,750
R18	10,000	2	20,000
R19	12,500	2	25,000
R20	20,000	4	80,000
R21	33,000	3	100,000
Sub-Total			1,545,250
Mixed Use			
M1	12,500	2	25,000
M2	12,500	2	25,000
M3	17,500	4	80,000
M4	20,000	3	60,000
M5	20,000	3	60,000
M6	25,000	1	25,000
Sub-Total			275,000
Hospitality			
H1	20,000	4	80,000
Commons			
C1 (4-H)			68,000
C2	10,000	1	10,000
Sub-Total			78,000
Total Development Shown			1,978,250



NIC Illustrative Aerial Perspective



NIC Golf Course Alternative



Native Plantings, University Research Park, Madison, WI

ILLUSTRATIVE PLAN

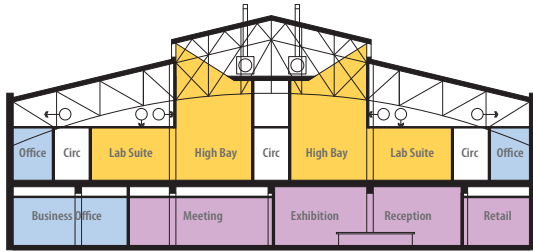
The Illustrative Plan on the facing page represents an ideal campus configuration at full build-out in the long term. Foundationally, this tool is intended to communicate design principles and illustrate the character of development intended by the design guidelines. It is important to note that the Illustrative Plan and accompanying perspectives are not intended to be interpreted verbatim, but to suggest the scale, design vocabulary, and landscape pattern proposed for NIC. The Illustrative Plan represents the function of terrain and natural character, and development of human-scaled environments. The deliberate open spaces and fabric of the plan are pertinent reminders of the campus as a place of learning and intellectual exchange. Taken collectively, the Framework Plan, Illustrative Plan, and design guidelines are intended to aid in short-, mid-, and long-term decision-making.

A naturalized and research environment within the floodplain of Salt Creek will complement the more urban environment of NIC. This functional landscape will serve as a regional park for the university and city of Lincoln, and will be utilized for energy production, stormwater management, outdoor research, and recreation. Trails, overlooks, and learning spaces are envisioned for this area, providing a place for researchers to recreate and community members to gather. Specific alternative

programmatic concepts for the open space also include a potential outdoor amphitheater, and a relocated throws area for the Nebraska Track and Field team. Alternatively, a 3-hole golf course could be considered as an opportunity to serve employees of NIC and community members, while also providing research and job opportunities for the university's turf research and golf management programs, demonstrating sustainable design and management techniques.

The specific building zones within the urban environment are coded by primary use in Table 3.2 and laid out using typical dimensions for each use type. The structure of the plan builds upon an urban environment grid of typical 400' x 400' blocks that allow for the largest flexibility for future development by university research or single and multiple private development partners.

Research building zones are shown at 100 feet wide, which could be wider or narrower depending on the specific lab configuration. Table 3.2 identifies each building zone, defines the base footprint in gsf for each, and provides an idea for the number of floors and subsequent total gsf. This table is provided as a guide for potential development and intended density and building height. The actual gsf per building will vary depending on the number of floors, configuration of the base floor, existence of a lower level, and whether penthouse space is provided or not.



4-H Innovation Commons Proposed Section

Due to a program-identified need for common shared space to augment collaboration and interaction, it is recommended that the 4-H Building be restored to create a 4-H Innovation Commons that provides seminar, conference, exhibit, retail, and start-up program space, and acts as the campus nucleus for activity and shared

amenities. The first floor arena area can be subdivided to accommodate several large seminar rooms from 85 to 550 seats; the first floor of the west wing can house conference rooms, retail shops, a café, business office, and exhibit space. The second floor can be developed as a research incubator with lab/office suites.



4-H Innovation Commons Proposed Plan

PHASING

Phasing is an extremely important consideration in developing a master plan for a private-public research park. According to the Association of University Research Parks (AURP), research parks can take 25 or more years to reach full build-out. Development of a credible and marketable Phase 1 is necessary to establish an early critical mass and attract further investment. Establishing the first research cluster concentrated around the 4-H Innovation Commons will enhance the collaboration between the university, government research, and potential private partners.



Exterior View of the 4-H Innovation Commons

The university is currently in negotiations with the USDA to develop an Agricultural Research Service (ARS) facility of approximately 70,000 gsf. It is important that this first building is sited directly adjacent to a redeveloped 4-H Innovation Commons to create an initial synergy and sense of place at the core of

NIC. The proposed location for the ARS facility is positioned so that site work and preliminary construction can occur while still accommodating the Horseman's lease agreement to occupy the racetrack and barns until the year 2011.

Additional Phase 1 buildings include a proposed UNL research facility that will partner with the USDA in agricultural research, renovation of the 4-H Building, a second research facility that may accommodate high bay lab/demonstration uses, and a hospitality site for approximately 135 beds adjacent to the conference facility at the 4-H Innovation Commons. Three new entrance roads, streetscape improvements, surface parking lots, and associated landscape improvements bring the total acreage of Phase 1 to 37.5 acres.

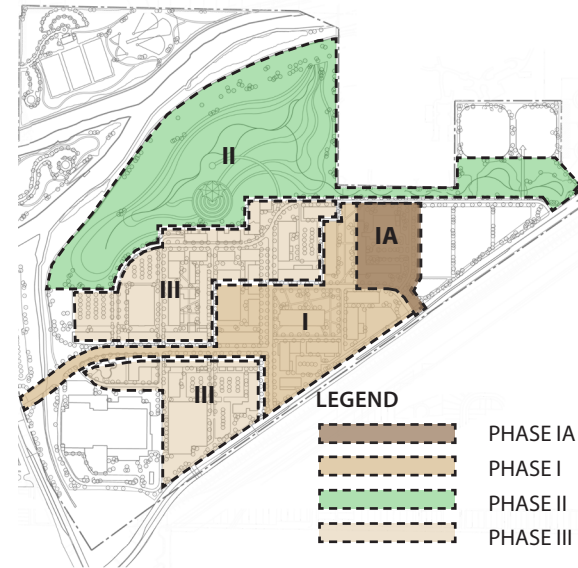
CUT/FILL BALANCE

Building a dense NIC on the existing upland and utilizing the area adjacent to Salt Creek for flood storage have allowed the planning team to minimize fill areas within the 100-year floodplain and balance cut and fill on site. The NIC conceptual grading plan accommodates the full build-out of the program and results in an increase in the combined flood storage capacity of SA-15 and SA-17 as a contiguous land area on the site south of Salt Creek.

PHASING



Phase 1 Illustrative Plan



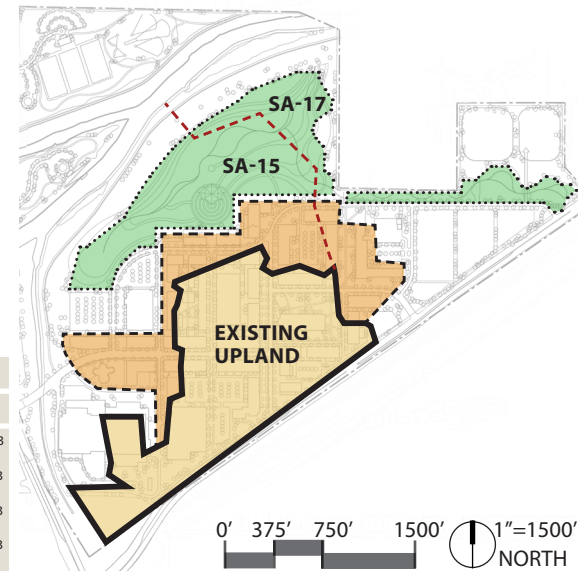
CUT/FILL BALANCE

ENTIRE SITE CUT AND FILL

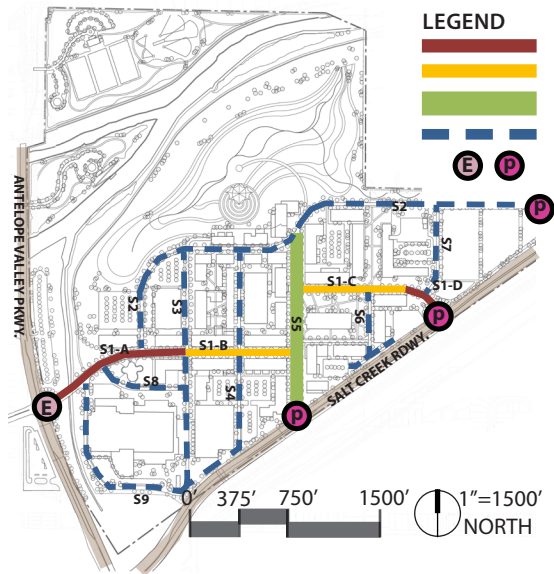
	Existing Upland	48 Acres
	Cut	585,086 yd ³
	Net Cut (-35% Poor Soil)	380,306 yd³
	Fill	260,922 yd ³
	Net Fill = 1.4 x Fill (compaction)	365,291 yd³

TABLE 3.3 - PROPOSED FLOOD STORAGE

	SA-15	SA-17	Combined
Min. Required	123,832 yd ³	164,373 yd ³	288,205 yd ³
Existing	353,804 yd ³	410,932 yd ³	764,736 yd ³
Proposed	217,877 yd ³	557,319 yd ³	775,196 yd ³
Net Change	(135,927 yd ³)	146,387 yd ³	10,460 yd ³



PROPOSED CIRCULATION



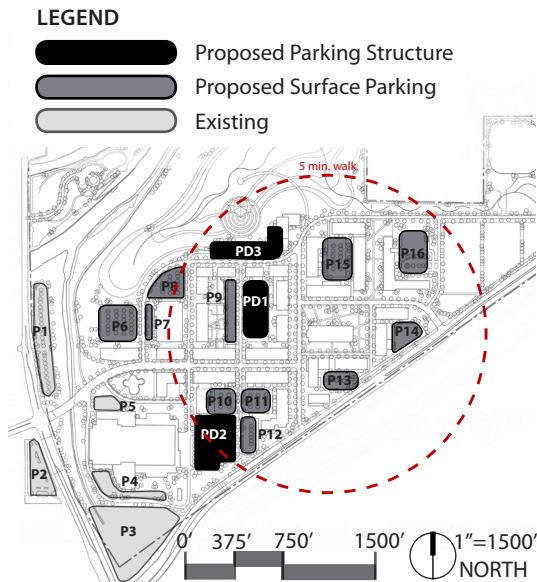
Name	Right-of-Way	# of Lanes	
S1-A, S1-D	Entry	90'	4
S1-B, S1-C	Main St.	90'	3
S5	Innovation Ave.	120'	3
S2-S8	Secondary St.	67'	2

Existing and Proposed Signalized Entries

PROPOSED CIRCULATION

Four gateways are envisioned for NIC. An existing 4-lane entry at Military Avenue and Antelope Valley Parkway will remain in place but will be realigned in front of the Devaney Sports Center to bring the NIC Main Street on axis with the 4-H Innovation Commons. Three new full entries are proposed along Salt Creek Rowway, spaced ¼ mile apart, in accordance with City of Lincoln traffic engineering design guidelines. Entry S1-D, forming the east entrance to Main Street, is designed as a 4-lane entry, providing a key image entry for Phase 1 development. The entry at S5 will showcase the stormwater management techniques on campus through an offset median that highlights naturalized landscape features to the streetscape. All other roadways on campus are designed as 2-lane roads, with occasional opportunities for on-street parking. Traffic signals will be required at all entries, but the remainder of roads within NIC will be regulated by stop signs.

PROPOSED PARKING



PROPOSED PARKING

Seven hundred and fifty dedicated parking spaces are needed on campus for the USDA,

proposed hospitality, and future mixed use buildings. Assuming a parking requirement of 80 percent of the number of FTE employees on campus, 2,640-2,755 shared parking spaces will be needed to serve the build-out illustrated in the master plan. There are 5,150 parking spaces planned for NIC, which includes 4,400 shared spaces for athletic events. This parking strategy is accomplished through the development of two parking decks and dispersed on-street and surface lots. As a sustainability-driven and innovative campus, parking should only be built

TABLE 3.4 - PARKING OPPORTUNITIES

Name	Type	# of Floors	# of Spaces
P1	Ex. Surface	1	280
P2	Ex. Surface	1	150
P3	Ex. Surface	1	375
P4	Ex. Surface	1	120
P5	Ex. Surface	1	80
P6	Prop. Surface	1	260
P7	Prop. Surface	1	50
P8	Prop. Surface	1	150
P9	Prop. Surface	1	90
P10	Prop. Surface	1	105
P11	Prop. Surface	1	130
P12	Prop. Surface	1	105
P13	Prop. Surface	1	85
P14	Prop. Surface	1	125
P15	Prop. Surface	1	130
P16	Prop. Surface	1	150
P17	On-Street	1	140
PD1	Proposed Deck	4	800
PD2	Proposed Deck	5	1,625
PD3	Proposed Deck	1	200
Total			5,150

if needed, and strategies to reduce the parking footprint on campus, including bike, transit, and car pooling, are recommended as high priorities.

PROPOSED TRANSIT

The university presently runs a transit loop, operated by Star-Tran, that connects City Campus and East Campus. However, this loop operates on a limited schedule with a 30-minute headway and is underutilized. In order to connect NIC to the City and East Campuses, it is recommended that the university develop a new transit route that will link all three campuses, utilizing Antelope Valley Parkway to access City Campus and the 27th Street bridge overpass to access East Campus. The new route will traverse East and West Main Streets within NIC, with three stops spaced at a 2- to 3-minute walk apart. It is recommended that the university and ICDC work with the City of Lincoln to extend city bus routes into NIC to reduce the use of single-occupant vehicles arriving on campus.

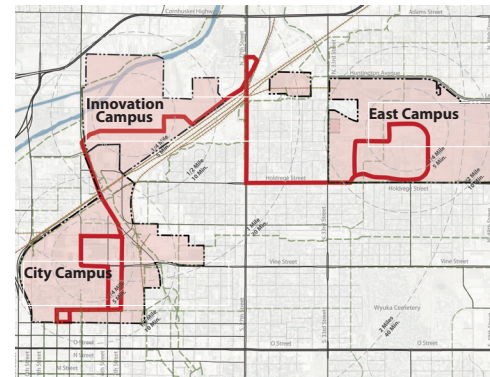
BICYCLE AND PEDESTRIAN CIRCULATION

The transit system on NIC will be integrated with an interconnected bicycle and pedestrian circulation system that includes sidewalks, on-street bike lanes, off-street trails, and shared streets to provide alternate means for circulation.



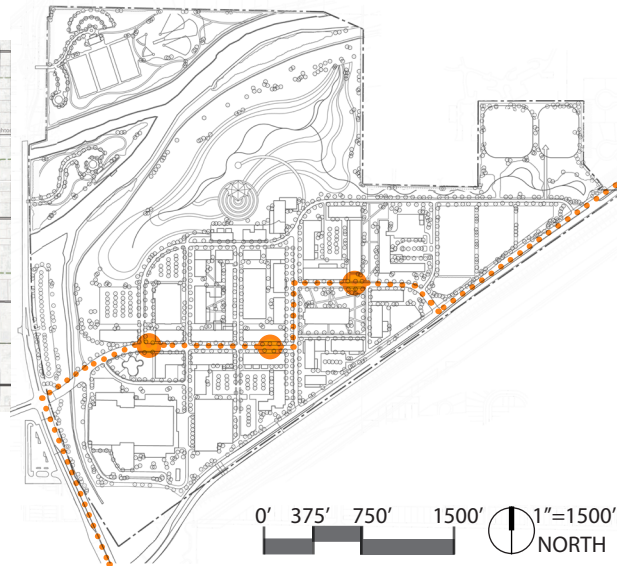
PROPOSED TRANSIT

REGIONAL TRANSIT DIAGRAM



SITE TRANSIT

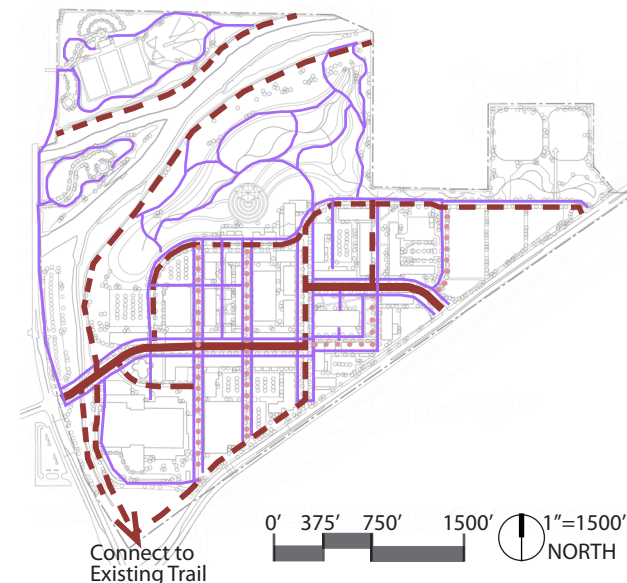
- ● ● Proposed Transit Route
- Proposed Transit Stop



BICYCLE AND PEDESTRIAN CIRCULATION

BICYCLE AND PEDESTRIAN CIRCULATION

- On-Street Bike Lane
- - - Off-Street Multi-Purpose Trail
- ● ● Shared Streets
- Pedestrian Routes



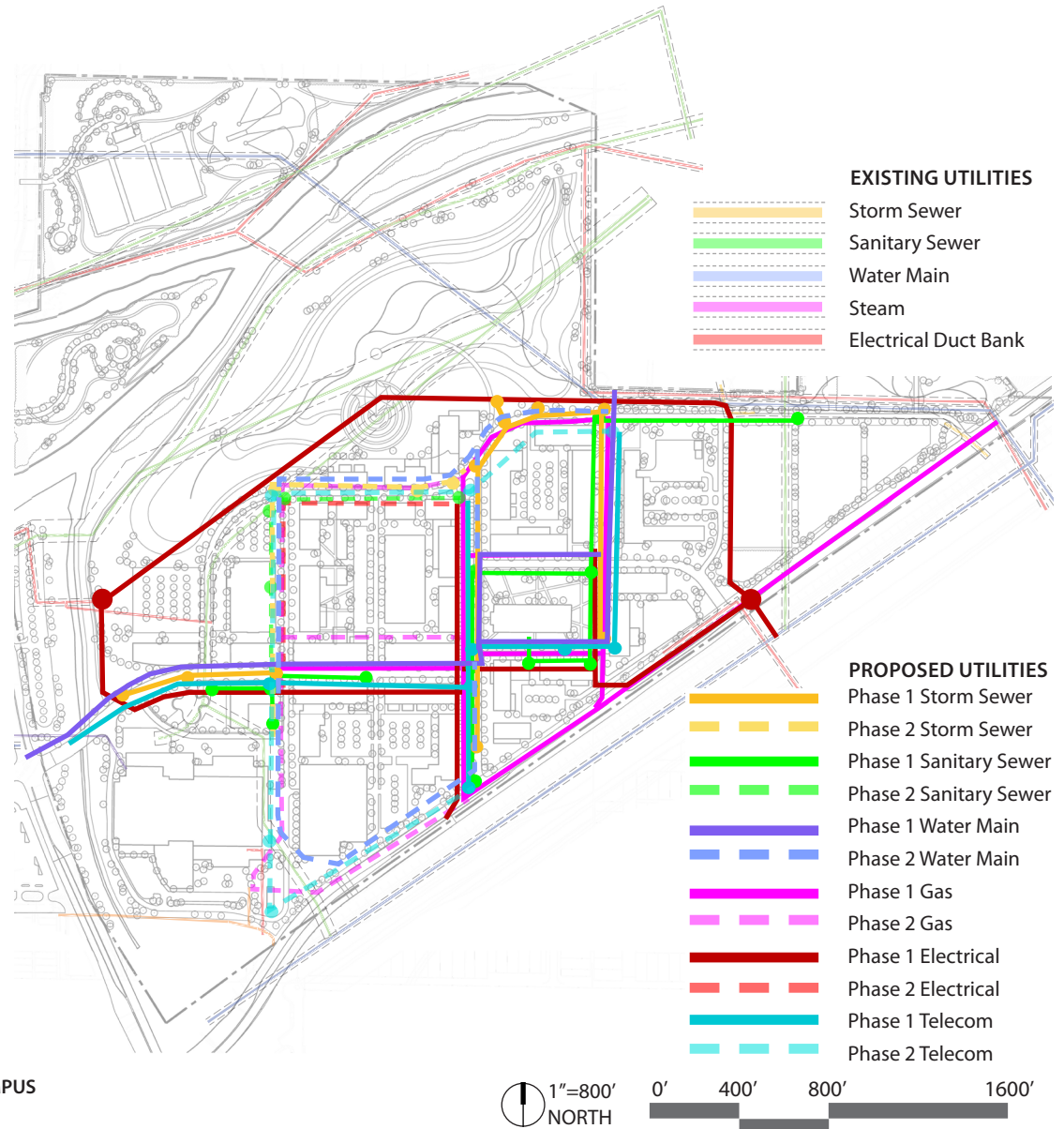
INFRASTRUCTURE

Proposed infrastructure routes were developed through interaction with local utility companies, extensive research of local design criteria, and solutions providing maximum benefit to the campus. The development of the infrastructure is detailed further within the Infrastructure Guidelines of this report. The diagram at the right indicates recommended routing for each individual utility, broken into two phases. Verification of the routing will need to occur with local utility companies during final design documents for the site.

A key design consideration that influenced the routing was to verify that each site, and the campus as a whole, has access to redundant utility connections for electricity, water, gas, and telecommunications.

FUTURE UTILITY MODIFICATIONS

1. Redesign and relocate new utilities underground.
2. Recommend working with the City of Lincoln to utilize public utilities on site.
3. Utilities must be phased appropriately to not disrupt existing buildings on site, such as the Ice Box.
4. A new fiber-based communication system will be provided throughout campus.



SITE DESIGN GUIDELINES

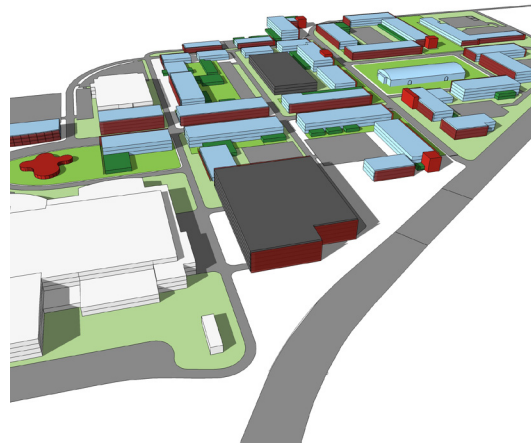


In addition to this master plan, the consultants agreed to provide the university a set of guidelines and analyses for implementing the master plan. These documents will be provided to the university pursuant to its RFP.

Site Design Guidelines include the following topics:

- Setback/Build-To Lines
- Land Use Opportunities
- Landscape Character
- Streetscape Character
- Gateways
- Site Lighting
- Sustainable Landscape
- Stormwater

ARCHITECTURE DESIGN GUIDELINES



Architecture Design Guidelines include the following topics:

- Building Massing, Scale, and Proportion
- Building Heights
- Roofscapes
- Architectural Style, Materials
- Facility Planning
- Sustainable Buildings

INFRASTRUCTURE GUIDELINES



Infrastructure Guidelines will address specific site requirements in coordination with established design standards. These guidelines will highlight opportunities and constraints inherent to the site characteristics. Infrastructure Guidelines include the following topics:

- Sanitary Sewer
- Storm
- Domestic Water
- Gas Utility
- Electric Utility
- Telecom/Fiber Optics
- Alternative Energy

VIEWS



Bird's Eye View Looking North Along Innovation Avenue



Street Level View Looking North Along Innovation Avenue

VIEWS



Bird's Eye View Looking Northeast Toward the 4-H Innovation Commons at the Corner of Innovation Avenue and Main Street



Street Level View Looking East Along Main Street