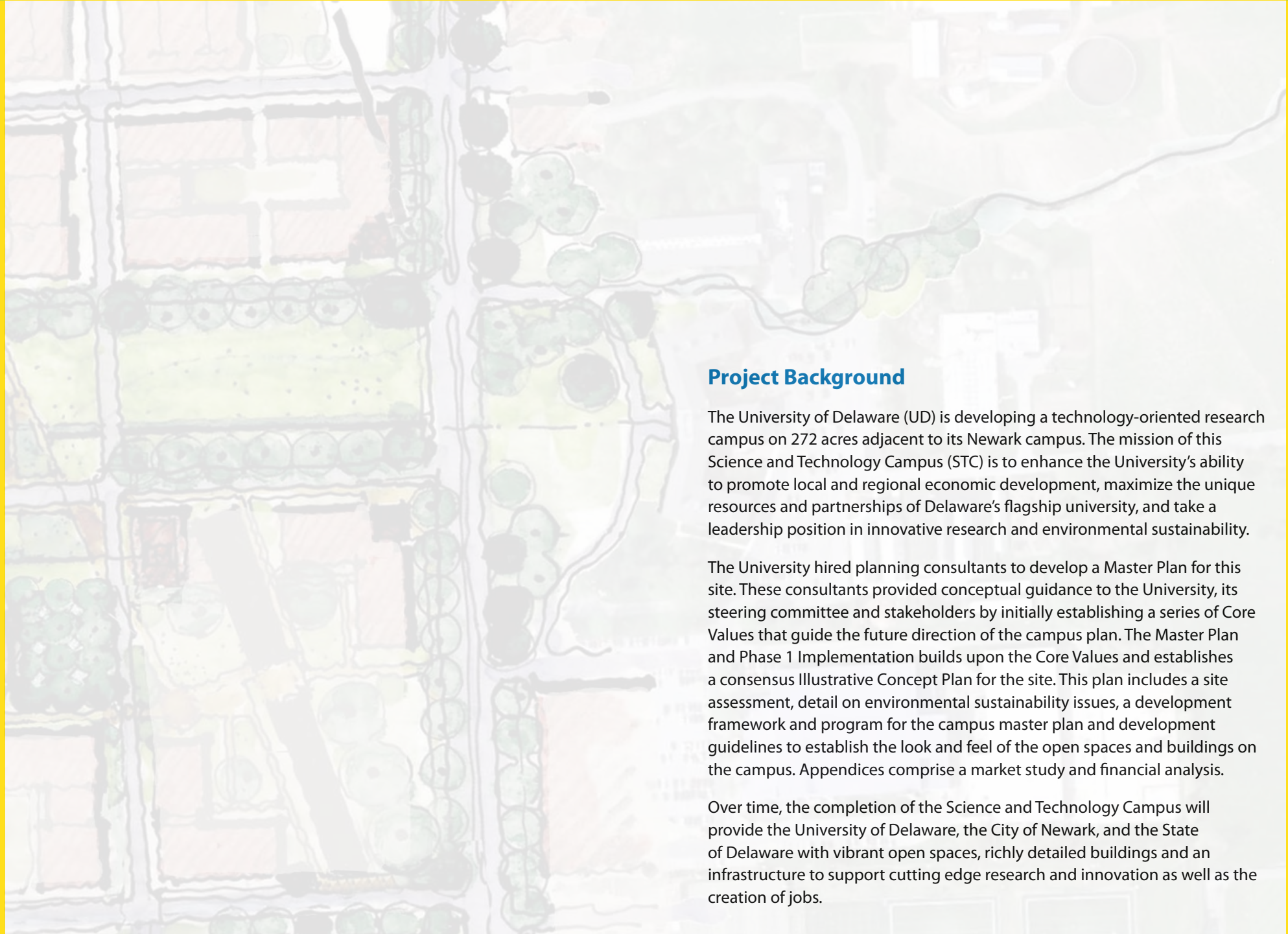




MIX
Paper from
responsible sources
FSC® C018743



Project Background

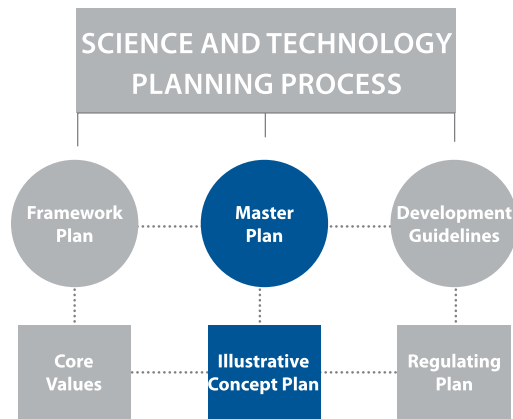
The University of Delaware (UD) is developing a technology-oriented research campus on 272 acres adjacent to its Newark campus. The mission of this Science and Technology Campus (STC) is to enhance the University's ability to promote local and regional economic development, maximize the unique resources and partnerships of Delaware's flagship university, and take a leadership position in innovative research and environmental sustainability.

The University hired planning consultants to develop a Master Plan for this site. These consultants provided conceptual guidance to the University, its steering committee and stakeholders by initially establishing a series of Core Values that guide the future direction of the campus plan. The Master Plan and Phase 1 Implementation builds upon the Core Values and establishes a consensus Illustrative Concept Plan for the site. This plan includes a site assessment, detail on environmental sustainability issues, a development framework and program for the campus master plan and development guidelines to establish the look and feel of the open spaces and buildings on the campus. Appendices comprise a market study and financial analysis.

Over time, the completion of the Science and Technology Campus will provide the University of Delaware, the City of Newark, and the State of Delaware with vibrant open spaces, richly detailed buildings and an infrastructure to support cutting edge research and innovation as well as the creation of jobs.

Purpose of Study and Planning Process

The University has been working with planning consultants on the overall Newark Campus Master Plan for several years and initially met in the fall of



2009 to discuss the scope of work, process and project intent for the STC Master Plan 2011. Over the course of 18 months, the project team gathered primary and secondary data, analyzed trends, and explored the existing site in order to produce the Master Plan and Phase 1 Implementation, the Market Study and Financial Analysis and Development Guidelines.

Throughout the project, a steering committee chaired by UD Executive Vice President Scott Douglass provided input and direction for the development of the Master Plan 2011 documents. The project team consisted of members of the University of Delaware faculty and administration, University Facilities staff, 1743 Holdings, LLC staff as well as external consultants.

University Vision

UD has taken remarkable steps in charting a course toward academic distinction as a world-class research institution and setting an objective for environmental sustainability. This vision will be supported by the development of the Science and Technology Campus. This campus will be a destination where the University formulates partnerships that include research and innovation laboratories in energy, the environment, national security and defense, and health and life sciences, among other areas. The campus will provide modern mixed-use land uses, which may include retail and housing, as well as a new train station. At the same time, this new campus will lessen the impact of development on the environment by implementing best practices for open spaces, infrastructure support and building design.

The nature of the interdisciplinary research that will occur on this campus will address many of the most significant social, civic and scientific challenges of our age. The research, innovation and manufacturing on this campus will be closely aligned through partnerships with private and public-sector organizations that have a similar focus and vision. The STC will provide real-world scholarship for faculty, graduate and undergraduate students to engage and collaborate in research initiatives. In addition, an important outcome of the work occurring on this campus is the enhancement of economic development in the state and the region.

Core Values

The following attributes of the STC encompass the defined Core Values of this campus and support the mission of the University of Delaware:

Campus Experience • Extending the richness of the undergraduate and graduate experience through a mix of activities that foster collaborative ideas and research, and provide places that foster cross-cultural exchanges and celebrate the growing diversity of the faculty, staff and student body.

Community Engagement • Fostering strategic partnership opportunities with local, regional and state organizations and investment in campus growth that is mutually beneficial to the University and to the larger community of which it is an integral part.

Campus Connectivity • Creating a cohesive and aesthetically pleasing campus by evolving from an automobile-oriented campus to a more balanced, well-connected one through transit-oriented development, rail systems and intermodal transportation.

Sustainable Growth • Developing the campus in an





environmentally responsible way through sustainable and efficient use of buildings and natural systems, seeking opportunities to increase and reclaim open space and protecting the quality of the campus environment as UD expands to meet the needs of its educational mission.

Campus Architecture and Capacity • Maintaining a compact and collegial campus through strategic site organization, circulation access, density, open space connections and incremental development.

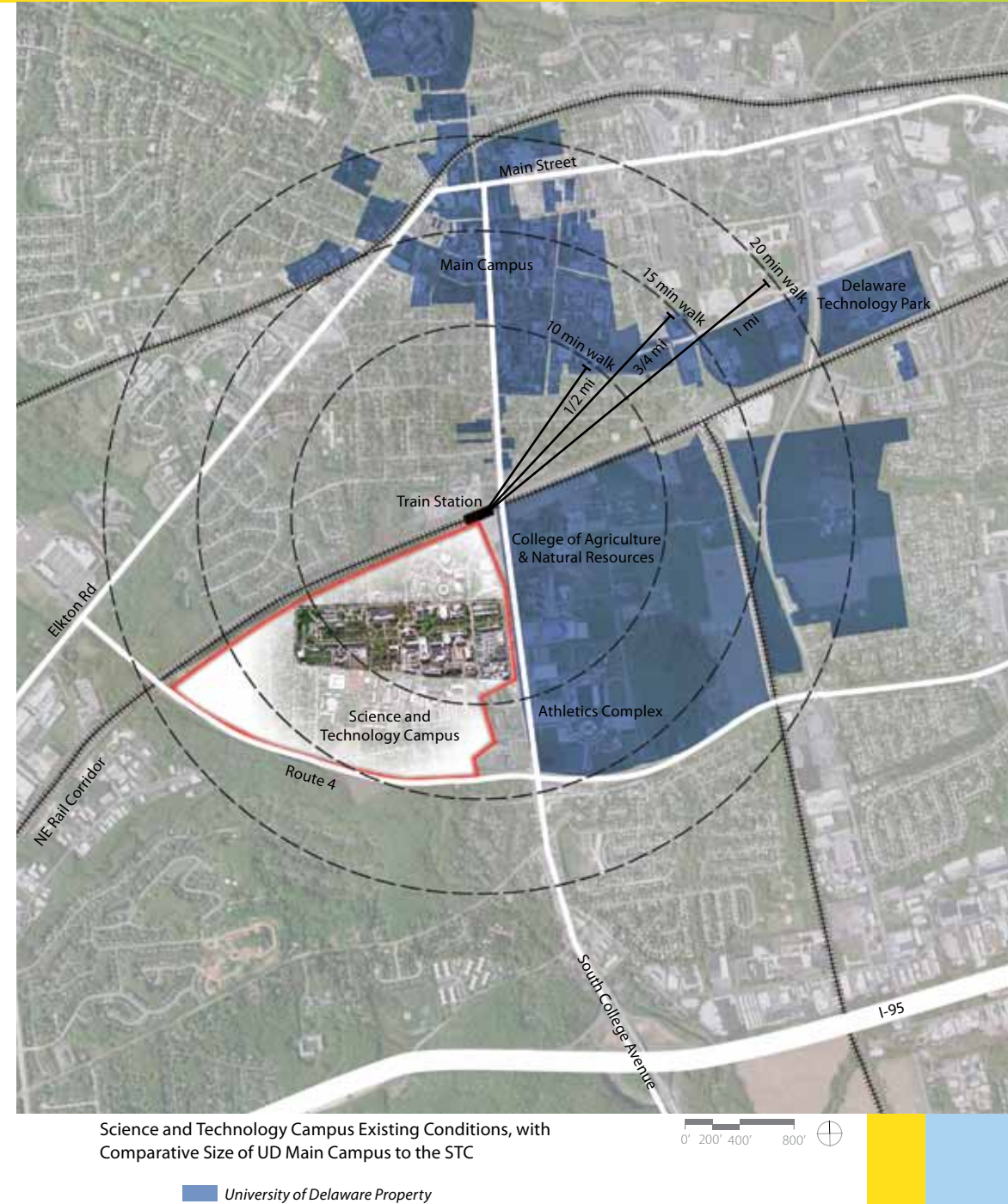
Site Evaluation

The site is adjacent to significant UD resources, such as the College of Agriculture and Natural Resources, and the University's Athletics facilities, which are situated directly east of the new campus across South College Avenue. The site is bounded to the north by the Norfolk Southern and Amtrak train lines, to the east by South College Avenue and to the south by Route 4.

Among the site characteristics evaluated are: infrastructure and utilities; transportation; trails and the natural environment.

Infrastructure and Utilities • The STC will have to provide the necessary infrastructure including roads, water, sewer and thermal utilities. Worrilow Hall, which lies across from the campus on the east side of South College Avenue, has some extra capacity for thermal utilities and space for expansion, which can help alleviate the initial demand during the early stages of campus development.

Transportation • One of the most important features of the STC is the existing Amtrak and SEPTA rail service provided to the station at South College Avenue in the northeast corner of the site. Plans to construct new platforms,





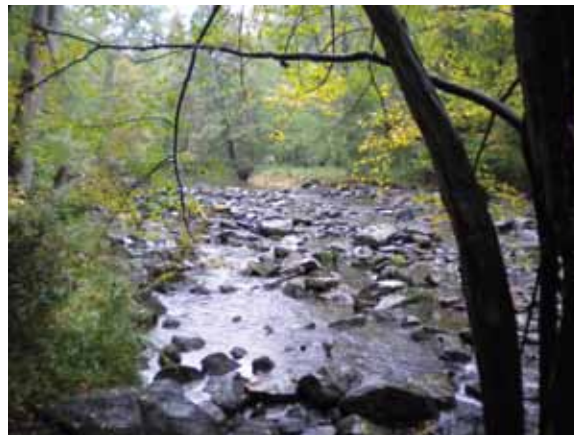
The Historic Newark Rail Station

a pedestrian connection across the rail tracks, and move the train station closer to the core of the STC make the train station a vital component of overall connectivity. Ultimately, the rail links will become a vital connection for various academic, research and

business uses to cities along the Northeast Corridor passenger rail line and will help establish transit as an ordinary and reasonable commute option, including the possible extension of commuter service to and from Maryland.

Trails • Like many college towns, Newark has established or constructed a number of bicycle facilities, including bike lanes, paved or unpaved off-street bike paths and roads shared with other vehicles. Near the site, bike paths are found along Route 4 to the south and on the James F. Hall Trail towards the north, directly across the train tracks from campus.

The Natural Environment • The site is generally flat with some swales and berms along Route 4. Large Willow Oaks populate the area in front of the Administration Building on the South College Avenue side of the site. There are some trees along the Route 4 area of the site and a wooded area where Silver Brook Stream emerges from its culvert. Today, Silver Brook Stream crosses the campus in an underground culvert. The stream is currently piped through a portion of the residential area upstream of the STC and is contained



Silver Brook Stream North of Science and Technology Campus

underground within an 84-inch culvert for the majority of its length on the STC. It emerges from the culvert approximately 1,200 feet prior to entering another culvert that flows under Route 4 and discharges into the Christina River. The Silver Brook Stream watershed is approximately 600 acres, draining over 300 acres of residential development to the north of the site and approximately 250 acres of the STC. The STC is the most densely developed portion of the watershed, and includes approximately 14 acres of woodlands, 18 acres of grass and scrub growth and 240 acres of impervious surfaces.

Sustainability

Just as jobs are an important focus for the creation of the STC, an equally important consideration is the development of a framework for the campus' relationship to the environment. The vision of the University is to develop this campus and build a framework for the future while minimizing impacts to the land. The goal for development of the STC is organized around the University's definition of environmental sustainability. As the University develops the Science and Technology Campus, UD has a significant opportunity to lessen its impact on the environment by restoring ecological corridors and habitats, improving water quality and minimizing energy demand. Potential sustainable development methods that can be used on the STC include: environmental site design; sustainable building systems and sustainable infrastructure.

Environmental Site Design • Incorporating alternative stormwater management strategies, developing green spaces, restoring Silver Brook Stream, minimizing light pollution and creating a multi-modal transportation system and comprehensive transportation demand management program.

Sustainable Building Systems • Utilizing the latest environmental technologies and strategies, including water conservation, energy, air quality and building orientation considerations.

Sustainable Infrastructure • Realizing efficiencies in terms of power and thermal utility systems.



Water Tower

Paseo

Relocated Train Station

Central Green

Sub-Station and CUP

Co-Gen Plant and CUP

Main Quad

Field

Paseo

Park

Quad

Park

Amtrak / Norfolk Southern Railway

Route 4

South College Avenue

Campus Master Plan

The illustrative site plan (pages 8 and 9) suggests potential ways of developing the campus that embody the guidance and principles articulated by the University. The STC Master Plan provides the opportunity to shape growth so that this campus becomes a center for innovation, jobs and sustainability, a location that is rich in amenities for students, faculty and staff of the campus and the larger community of Newark.

The Framework Plan and Core Values are exemplified in the illustrated plan and include the following design and development program features:

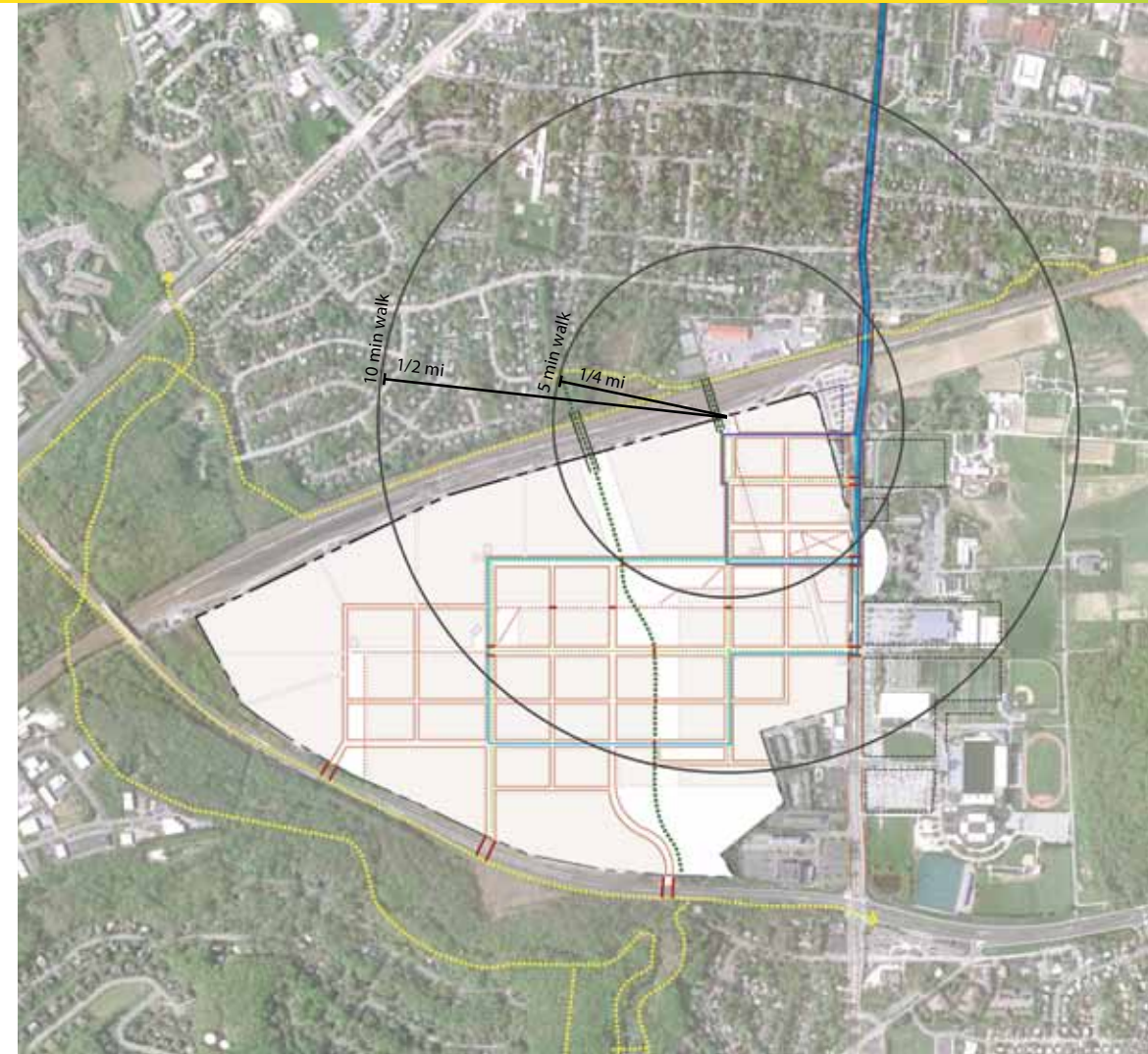
Street Grid • Including a regular pattern to the street grid promoting efficient land use. Underground utilities will also follow the street grid. Phasing and building system needs will play a large role in the placement of the lines as the development progresses, but it is anticipated that the network will originate at the Worrihow Hall regional plant and be extended to and throughout the campus.

Connected Open Spaces • A linear progression of open spaces moves east-west through the site, linking significant University resources and on-site landmarks, such as the existing water tower.

Connections to Adjacent UD Resources • The STC on the west side of South College Avenue complements the existing UD property on the east side. The development potential on both sides of the avenue essentially creates an opportunity to provide a new gateway to the University along South College Avenue toward the Main Campus.

Transportation Systems • The STC enjoys proximity to I-95, and several arterial roadways link the campus with the interstate freeway. Signal improvements near the STC will promote efficient site access and improve overall progression of traffic on the adjacent roadways. The Framework Plan is designed to make efficient use of multiple forms of transit.

Regional multi-use trails will also be connected to this campus with additional bike lanes on the streets and a possible multi-use trail along the proposed ecological corridor, which runs north-south on the site. New and improved pedestrian and bicycle bridges over the railroad tracks will better integrate the STC pathway network with the neighborhoods to the north.



Framework Plan Showing Transit Connections

- Proposed Shuttle Bus Route 1 (Train Station)
- Proposed Shuttle Bus Route 2 (Full Site)
- Proposed Trails
- Proposed Bike Lane Treatments
- Existing Trails
- Sidewalks
- Pedestrian Paths
- High-visibility Crossing Treatments

0' 200' 400' 800' ⊕



Quad Illustration

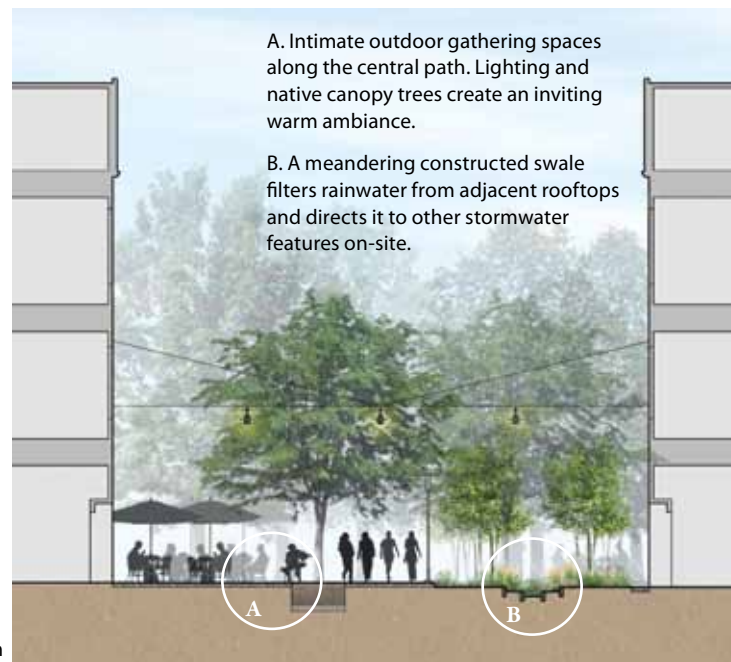
Programs and Partnerships • The College of Health Sciences, currently located on the Main Campus, the Delaware Rehabilitation Institute and the Delaware Health Sciences Alliance, a coalition of leading education, health care and medical research institutions have plans to locate on this campus.

The U.S. Army is in the process of consolidating its Research Development and Engineering Command (RDECOM) operations at the Aberdeen Proving Ground (APG) in Aberdeen, MD, as part of the BRAC (Base Realignment and Closure) initiative. The University of Delaware is the closest Category 1 research institution to APG, making it ideally suited to meet RDECOM's education, research, intern and re-staffing needs due to its strength of academic and research programs, intellectual resources, technical workforce, and the STC's direct access to both commuter and Amtrak rail service and close proximity to two I-95 exits.

Mixed-use buildings located near the train station will have commercial uses located on the first floor with residential or office uses on other floors. Mixed-use centered on the train station will help reduce traffic congestion and commute times, air quality, economic and fiscal conditions and improve quality of life.

Open Spaces • The public realm within this new campus will consist of two principal elements: the street network and public open spaces, such as quads, squares and parks. Both elements

Typical Paseo Section



A. Intimate outdoor gathering spaces along the central path. Lighting and native canopy trees create an inviting warm ambiance.
 B. A meandering constructed swale filters rainwater from adjacent rooftops and directs it to other stormwater features on-site.

are defined and framed by the building façades along their edges. The plan calls for the creation of a linear network of open spaces that traverses the site in an east-west fashion and terminates at Townsend Hall. The open space network is connected visually through preserved landmarks of the former Chrysler facility, such as the water tower.

The Master Plan illustrates the ecological corridor tightly integrated into the proposed open space and development networks. Views into the space, paths, program elements, and adjacent uses work to ensure that it will achieve a balance of ecological functionality and activation as an amenity.

Streets and Sidewalks • Streets within the STC will accommodate pedestrians, bicyclists and drivers comfortably and safely. The character of the public realm will be predominately urban and walk-able, with consistent building frontage on both sides of the streets, generous sidewalks and shared travel



Multi-Use Trail Example, UD Main Campus

lanes for bicycles and cars. Select streets will incorporate bike lanes, rows of street trees, and integrated stormwater management facilities, such as planted filter strips, to improve the quality of runoff from sidewalks. Consistent standards for paving materials, site lighting and streetscape furnishings help to convey a sense of place in this urban, collegiate environment.

Infrastructure • The design, maintenance and operations of the water, sanitary sewer and stormwater infrastructure serving the STC will impact on the environmental



Landmark Corner Buildings – Arlington, VA

quality as well as the quality of life of the campus community. The complete redevelopment of this campus “from scratch” provides a unique opportunity to develop a holistic system and plan for innovation and efficiency.

Transit • While the STC will have a unique character, it will still be a part of the cohesive, over arching campus identity of the University of Delaware. Local transit systems will play an important role in linking the STC with the rest of the University and other destinations in Newark. By considering the needs of pedestrians and bicyclists in the planning process, the groundwork has been laid to establish walking and bicycling as a popular mode choice for commuters. The site provides the opportunity to address parking for the STC, Athletics events and Main Campus overflow through multi-modal transportation systems.

Implementation

Development Guidelines will be created to sustain the vision set forth in the Master Plan. Coupled with the upcoming zoning ordinance specifically created for the Science and Technology Campus, the guidelines will:

- Create predictability and common expectations for the outcome of the campus.
- Set quality assurance to the stakeholders, the University and the larger community.
- Create a process for design review and approval.

The Master Plan, Guidelines and Zoning Ordinance created for the STC are designed to provide broad planning guidance to specific development projects when opportunities arise. Due to the size and scope of the opportunity, the development of the Science and Technology Campus will likely take multiple generations and will occur in incremental phases. The Campus Master Plan is designed to provide broad planning guidance that will shape development and help the University navigate the development challenges in the years to come.

Conclusion

Based upon the Master Plan and Phase 1 Implementation, as well as the market study and financial analysis, the University’s vision of the Science and Technology Campus as the place to embark on a new future for the University and become a catalyst for jobs for the State of Delaware and the surrounding area, is viable. This vision is based upon an understanding of what has been successful for top research universities across North America. By building upon this base of knowledge, expectations are that the Science and Technology Campus will be able to go beyond what is expected for the standard research park and create a place where scholars come together.

Focusing on areas such as energy, the environment, national security and defense and the health and life sciences will help create national awareness of excellence for research and innovation at the STC. This reputation will be further enhanced by the creation of public/private partnerships with the U.S. Army and other private-sector organizations, including members of the Delaware Health Sciences Alliance.

The commitment the University is making to develop the site using environmental sustainability principles will set an example for future development within the region and beyond. By creating a green, inviting campus consisting of trees, native plantings, open spaces, trails, an alternative transportation network and site amenities that aesthetically fit the landscape, the Science and Technology Campus will be viewed as a community asset and a public gathering area.

Once developed, the campus will significantly enhance economic development locally, regionally and even nationally. This resurgence in development is part of the broader vision of the Science and Technology Campus and the University of Delaware.

Acknowledgements

1743 Steering Committee

Scott Douglass, Committee Chair
Executive Vice President & University Treasurer

Mark Barteau
Sr. Vice Provost for Research & Strategic Initiatives

Michael Bowman
Chairman & President, Delaware Technology Park, Inc.

H. Alan Brangman, AIA
University Architect & Campus Planner

David Brond
Vice President for Communications & Marketing

Jennifer Davis
Vice President for Finance & Administration

Christina Hudson
Sr. Administrator, Business Operations

Peter Krawchyk, AIA, LEED AP
Director, Facilities Planning & Construction

Andrew Lubin
Director, Real Estate & Development

Kathleen Matt
Dean, College of Health Sciences

David Singleton
Vice President for Facilities & Auxiliary Services

Karl Steiner
Sr. Associate Provost for Research

David Weir
Director, Office of Economic Innovation & Partnerships

University Facilities

David Singleton
Vice President for Facilities & Auxiliary Services
University of Delaware
141B General Services Building
222 S. Chapel Street
Newark, DE 19716
(302) 831-1110

Peter Krawchyk, AIA, LEED AP
Director, Facilities Planning & Construction
University of Delaware
142A General Services Building
222 S. Chapel Street
Newark, DE 19716
(302) 831-6264

H. Alan Brangman, AIA
University Architect & Campus Planner
University of Delaware
142F General Services Building
222 S. Chapel Street
Newark, DE 19716
(302) 831-6509

Andrew Lubin
Director, Real Estate & Development
University of Delaware
141G General Services Building
222 S. Chapel Street
Newark, DE 19716
(302) 831-6629

Ken Grablewski
Director, Facilities Maintenance & Operations
University of Delaware
200 Academy Street, Rm. 121
Newark, DE 19716
(302) 831-2619

1743 Holdings

Victor Costa
Executive Director, 1743 Holdings, LLC

David Levandoski
Director, 1743 Holdings, LLC

Project Team

Ayers Saint Gross
1040 Hull Street, Suite 100
Baltimore, MD 21230
(410) 347-8500

Affiliated Engineers, Inc.
1414 Raleigh Road, Suite 305
Chapel Hill, NC 27517
(919) 419-9802

VHB | Vanasse Hangen Brustlin, Inc.
8601 Georgia Avenue, Suite 710
Silver Spring, MD 20910
(301) 562-9433

Duffield Associates, Inc.
5400 Limestone Road
Wilmington, Delaware 19808
(302) 239-6634

Rummel Klepper & Kahl, LLP
81 Mosher Street
Baltimore, MD 21217
(800) 787-3755

KCI Technologies
936 Ridge Brook Road
Sparks, MD 21152
(410) 316-7800

The University Financing Foundation
75 5th Street, NW, Suite 1050
Atlanta, GA 30308
(404) 214-9200

Econsult Corporation
3600 Market Street, Sixth Floor
Philadelphia, PA 19104
(215) 382-1894