UNIVERSITY OF LOUISVILLE®

CONNECTING SPEED SCHOOL

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY FOR THE ENGINEERING CAMPUS

December 6, 2024

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PREPARED FOR:

UNIVERSITY OF LOUISVILLE®

PREPARED BY:

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Architecture | Engineering | Interior Design

A/E Comm. Number: 2024.073

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UNIVERSITY OF LOUISVILLE

Acknowledgments

Luckett & Farley would like to thank University of Louisville for another opportunity to envision J.B. Speed School of Engineering's campus and future growth of the university at-large. A special thank you to Carrie Whitmore, Director of UPDC, and Kimberly Noltemeyer, Program Manager at UPDC, for supporting the design process and providing critical feedback during the study.

The architectural design team included Aric Andrew, architect and Interim Higher Education Market Director; Matt Gullo, Director of Landscape Architecture and Urban Planning; Tanner Prewitt, landscape designer and planner; and Trenton Kastensmidt, civil engineer and Speed School graduate.

Executive Summary

The University of Louisville is furthering master-planned development with a pedestrian bridge to connect the engineering campus with the University of Louisville Foundation's property to the south. Previous designs from the 2021 J.B. Speed School of Engineering Master Plan and 2024 University Master Plan identified the need for such a crossing, but existing constraints forced the university to consider an overpass-style bridge.

The project began with research into existing pedestrian crossings at the university and other locations. Case studies examined various bridge designs that overcame challenges like railways, steep terrain, and highways. These designs informed the conceptualization of the engineering campus crossing, which would need to accommodate specific height and distance requirements set by Norfolk Southern Railroad. This research helped shape potential bridge forms, including the use of ramps, stairways, and elevator systems.

The design process involved ideation, gathering feedback from university stakeholders, and presenting options at an open house. Responses indicated preferences for a curvilinear bridge with ramps, avoiding elevators, and incorporating greenspaces and gathering areas. Two final design concepts emerged: an intermediate solution, addressing immediate needs such as parking and guest access, and a master plan concept that fully integrates the bridge into the university's development plans.

The concepts combine a monumental stairway with a pedestrian ramp, meeting at a central landing to facilitate both accessibility and a visual gateway to the campus. This design respects engineering constraints while also enhancing campus connectivity. A cost estimate for the project, focusing on the northern connection, suggests a construction cost of $4.2 million, with potential for higher costs depending on further development. The bridge will significantly improve campus connections, stimulating growth and reinforcing the university's commitment to academic excellence.



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1.0. RESEARCH AND ANALYSIS

The 2021 J.B. Speed School of Engineering Master Plan called for a pedestrian crossing between the engineering campus and the University of Louisville Foundation's property to the south. The 2024 University of Louisville Master Plan completed by Sasaki also called for a pedestrian crossing to link the two properties and complete the southern campus. However, during construction design for the Student Success Building, a 42-inch water main was surveyed parallel to the railroad tracks. Additionally, during preliminary investigation into an underground passage, Norfolk Southern Railway stated it would not agree to underground construction. These constraints forced the university to consider an overpass-style crossing between the two campuses.

The following pages document case studies for pedestrian crossings on the university's campuses and elsewhere. Researching how other places crossed constraining infrastructure, interpreting design schemes, and created interesting spaces lends a hand at conceptually designing the engineering campus crossing. Additionally, this section analyzes the two master plans and their development scenarios, seeing how a future pedestrian crossing will impact the growth of campus.

1.1. Case Studies Research

University of Louisville's Belknap campus already has several pedestrian bridges due to the number of railways that thread through it. Examining those informs designers about what works well, what design language was used, and how these bridges fit into the overall academic vernacular of campus. Likewise, seeing how other municipalities, universities, or design firms have addressed pedestrian impediments allows decision makers to think differently about one for their university. The following studies examine crossing constraints, the system used, its design form, its function, and character imagery.



The 2024 University Master Plan provided another iteration of the engineering campus and Foundation's land's development.
Source: Sasaki, 2024.

Case Studies Research – UL Campus

Trifecta Apartments Bridge

- **Location:** 3rd Street, Belknap Campus
- **Constraints:** Railway
- **System:** Elevator and stair tower
- **Form:** Weathered steel, structural truss bridge
- **Function:** Connects the top floor of the apartment complex with a stair/elevator tower down to the Reynolds Lofts parking lot



Source: Trifecta, 2020



Source: Google, 2024

Floyd Street Parking Garage Bridge

- **Location:** Floyd Street, Belknap Campus
- **Constraints:** Railway
- **System:** Elevator and stair tower
- **Form:** Brutalist-style concrete structure spanning between towers; steel fencing encircles the crossing for further protection
- **Function:** Pedestrians pass from the parking garage to a stair/elevator tower that deposits them near the Houchens Building



Source: University of Louisville, 2017



Source: Google, 2024

Case Studies Research – UL Campus

Student Activities Center Bridge

- **Location:** Student Activities Center, Belknap Campus
- **Constraints:** Railway
- **System:** Elevator and stair tower
- **Form:** Brick stair/elevator towers connected with a black, steel-braced crossing
- **Function:** Connects the recreation fields and parking lots on the west side of campus with off-campus housing at the Retreats



Source: Google, 2024



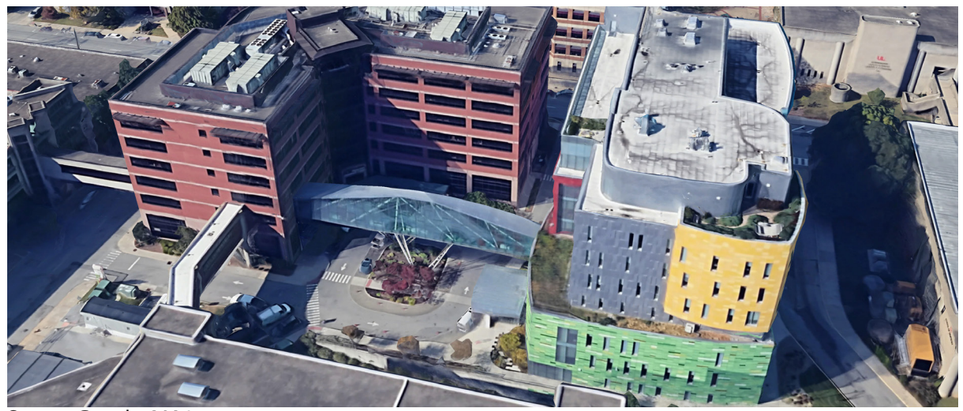
Source: University of Louisville, 2018

Chestnut Street Skywalk

- **Location:** Chestnut Street, Downtown Health Campus
- **Constraints:** Vehicle drop-off and ambulance departure zone
- **System:** Skywalk between buildings
- **Form:** 120-FT-long cantilevered steel skywalk with a semi-transparent skin which lends it a modern appearance
- **Function:** Connects the Novack Children's Hospital and UL Health Chestnut Street Outpatient Center



Source: Uzun & Case, 2018

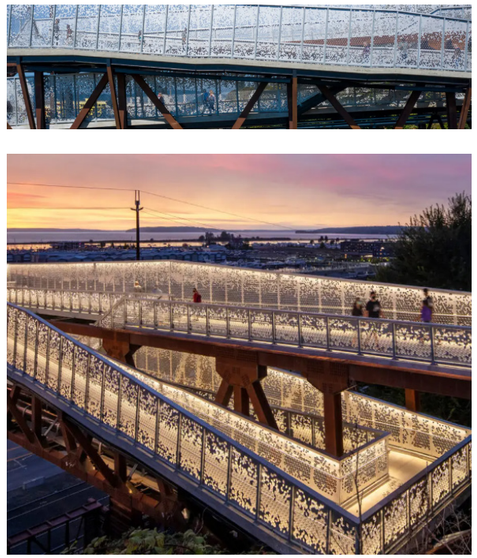


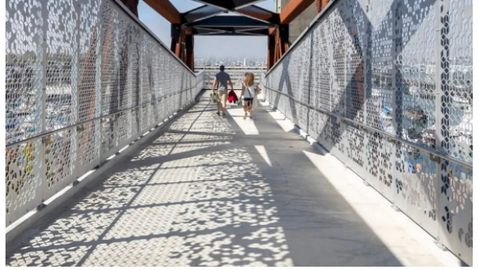
Source: Google, 2024

Case Studies Research – Other Cities and Institutions

Grand Avenue Park Bridge

- **Location:** Everett, WA
- **Constraints:** Steep terrain, commercial railway, busy state highway
- **System:** Elevator and stair tower
- **Form:** 200-FT-long structural truss bridge; weathered steel trusses wrapped in a digitally-fabricated, bare-aluminum guardrail system to lend it a modern look
- **Function:** Connects a residential pedestrian plaza in the city's northwest neighborhood with a stair/elevator tower down to the waterfront



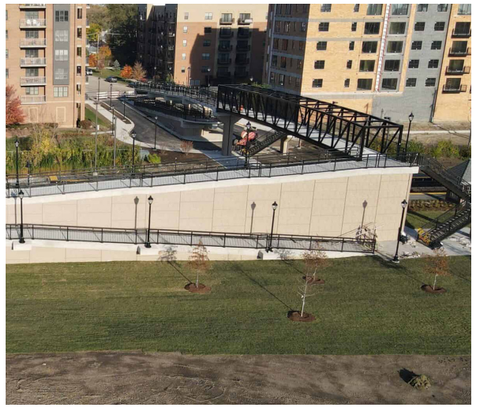



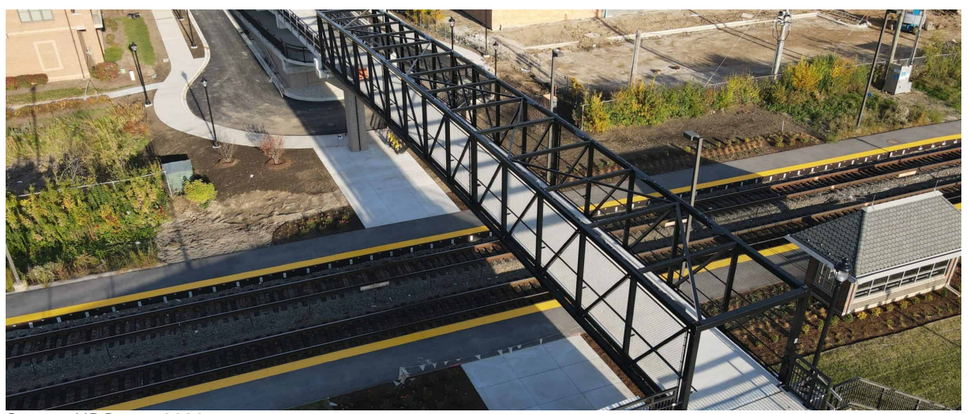

Source: LMN Architects and Adam Hunter, 2023

Mundelein Pedestrian Bridge

- **Location:** Mundelein, IL
- **Constraints:** Railway
- **System:** Ramps
- **Form:** Prefabricated steel truss bridge with stacked, switchback ramps on the east side and an MSE switchback ramp on the west side
- **Function:** Connects a multi-family residential complex with a local park and Metro railway stop which travels to Chicago







Source: HRGreen, 2020

Case Studies Research – Other Cities and Institutions

Town of Kansas Bridge

- **Location:** Kansas City, MO
- **Constraints:** Railway, flood wall, and steep terrain
- **System:** Elevator and stair tower
- **Form:** 635-FT-long structural truss bridge with steel cage to protect pedestrians; overlook at the end of the bridge
- **Function:** Connects River Market neighborhood at a pedestrian plaza with the riverfront, depositing pedestrians into the park with a stair/elevator tower



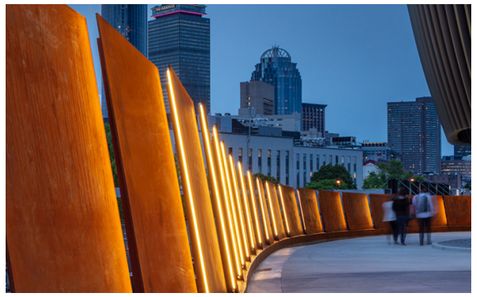
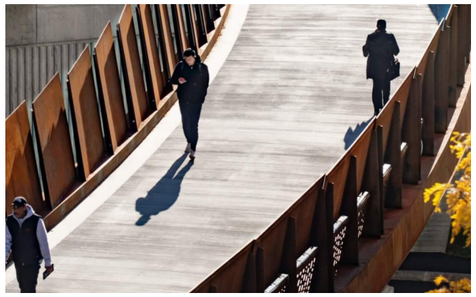




Source: BNIM Architects, 2004

Northeastern University PedX

- **Location:** Northeastern University, Boston, MA
- **Constraints:** Major MBTA/Amtrack rail corridor
- **System:** Elevator and stair tower, ramps
- **Form:** 500-FT-long concrete bridge with weathered steel plates to protect pedestrians from electrical infrastructure; the plates angle outward at 10˚and increase in height towards the south end; grand staircase and elevator tower on the north end; pedestrian plaza on the south end
- **Function:** Connects the main campus with the new science and engineering campus, as well as providing students a means of access to MBTA stops


Source: Payette; Warren Jagger Photography; Robert Benson Photography; Chuck Choi Photography (2019)

Case Studies Research – Other Cities and Institutions

Almaty Pedestrian Bridge

- **Location:** Almaty, Kazakhstan
- **Constraints:** Highway
- **System:** Ramps and elevator towers
- **Form:** 1,200-FT curvilinear form set on piers overtop the highway and park resembles native ornamentation and architecture
- **Function:** Connects the botanical gardens with Sunkar Park using a direct path threaded with a meandering pathway for more leisurely experiences; the voids are filled with plantings and landscape design







Source: Parametric Architecture, 2023

University District Gateway Bridge

- **Location:** Spokane, WA
- **Constraints:** Railway and highway
- **System:** Ramps
- **Form:** 450-FT span bridge; bisected by a 120-FT-tall arch connected with steel cables and connectors to the bridge length
- **Function:** Connects the University District with the East Sprague neighborhood; pedestrian plazas and topographic landscapes enhance the access experiences on both sides; programmable lighting elements along the bridge's length provide safety and aesthetic features







Source: LMN Architects and Adam Hunter, 2022

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY

1.0. RESEARCH AND ANALYSIS

In order to better understand these case studies, they have been organized on a quadrant chart to indicate degrees of design, in Figure 1.0. The horizontal axis represents the design intensity; the right axis represents design form.

- Simplicity: Regular form, plain appearance, purposeful means of crossing
- Complexity: Irregular form, intriguing appearance, dynamic means of crossing
- Muscular: Sturdy appearance, emphasizes geometric patterns, heavy feeling, use of raw materials
- Agile: Delicate feeling, emphasizes movement, sleek appearance, use of fabricated materials

Bridges in the top left quadrant are simple bridges that convey people from destination to destination and have a regular, geometric appearance. They emphasize raw materials like structural steel, stone masonry, and concrete. Bridges in the top right quadrant also emphasize materiality but have a complex manner of construction that makes it appealing. Bridges in the bottom right quadrant are complex design systems that integrate a variety of materials to celebrate architecture, engineering, and construction. Bridges in the bottom left quadrant achieve something similar, but with a simpler, streamlined approach. The engineering campus pedestrian bridge will fit into this chart; finding where is part of the design experience.

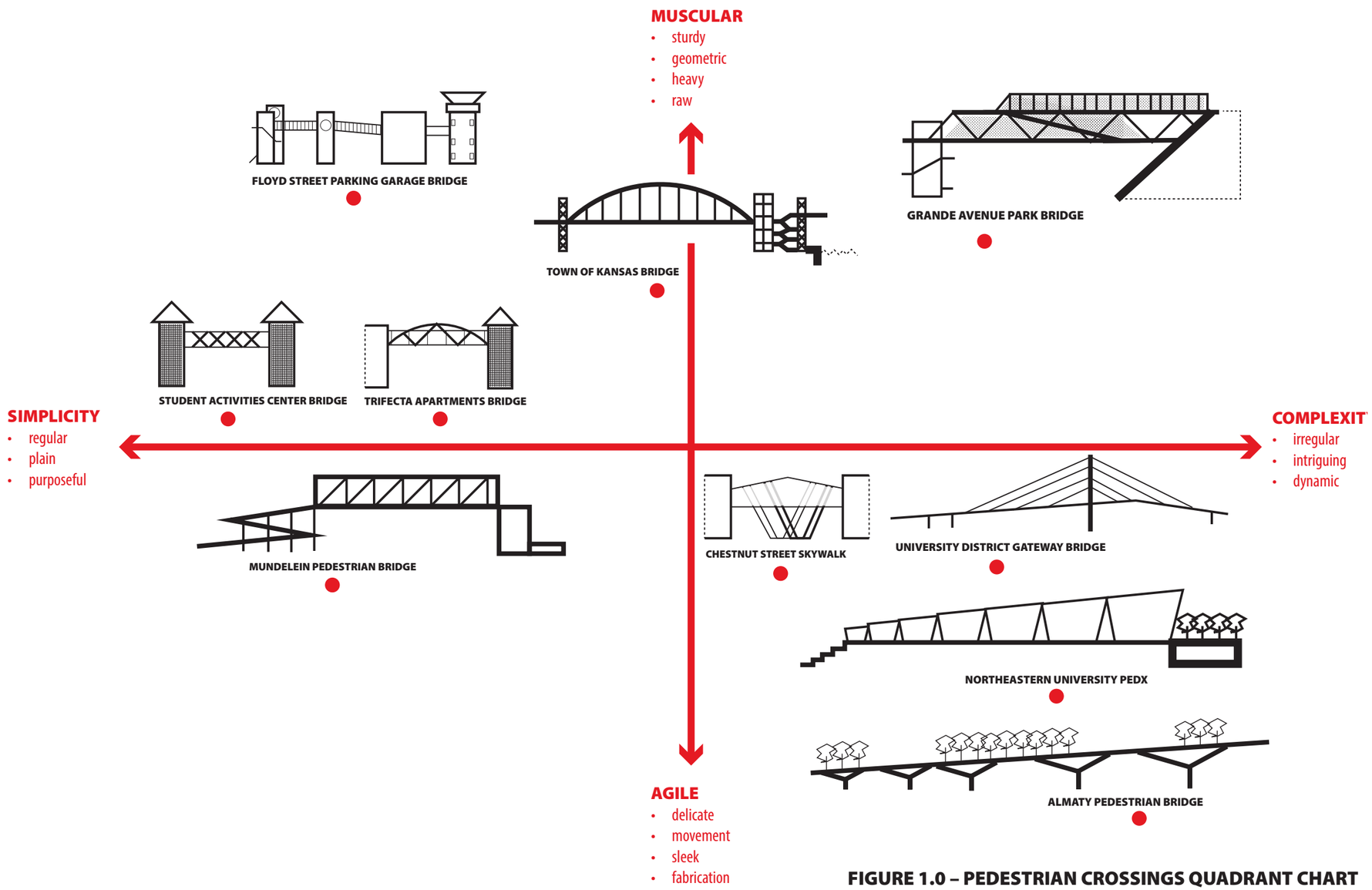


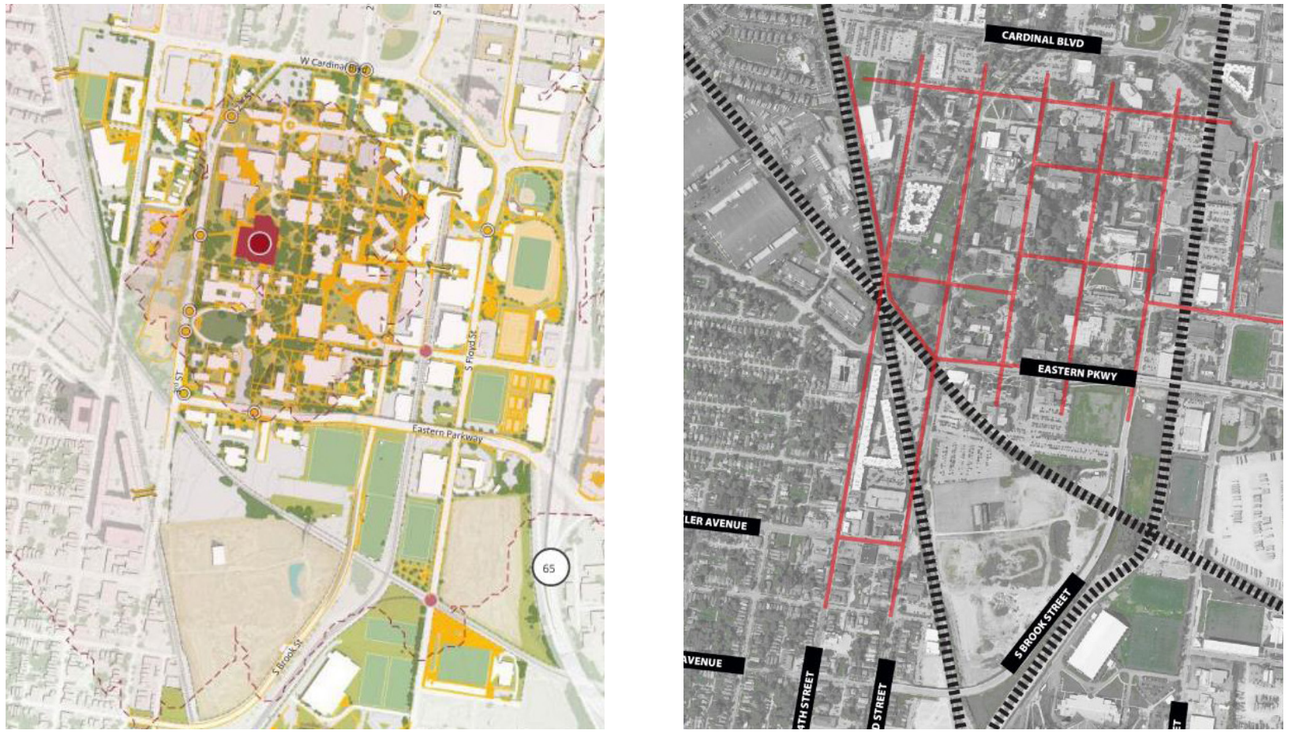
FIGURE 1.0 – PEDESTRIAN CROSSINGS QUADRANT CHART

1.2. Growth Analysis

The Speed School Master Plan re-greened the engineering campus by replacing nearly all surface parking with a parking garage. It also suggested new buildings on the east part of campus along Brook Street and as mentioned, a pedestrian crossing. A driveway from Brook Street to Voght had to be maintained for vehicles and deliveries to access the existing buildings and parking garage. The University Master Plan expanded on the ideas generated for the engineering campus plan. But it responded to newer information, namely the constraints of an underground crossing and the Student Success Building's east parking lot remaining intact.

Figure 1.1 blends the two master plans together with greener pedestrian corridors, a promenade connecting north through the Belknap campus, and an east-west mall. The new buildings to the east match the footprints suggested in the University Master Plan, including a new STEM block to the north of Eastern Parkway. This growth analysis – seeing how the engineering campus will look fully developed – informs design decisions about the bridge's scale, its form, and where connections must occur to carry people up and over the railway. The diagram calls out the major vehicular corridors and how they intercept pedestrian corridors at gateway nodes. While the visual plane becomes more articulate with large buildings and greenspace, the ground plane follows two major axes: the north-south promenade and the east-west mall. The new pedestrian bridge is a terminus for both, constantly visible from the mall and the endpoint of the promenade. The bridge will connect the parking garage, the Student Success Building, and a large greenspace at the south end of the promenade. It visually obstructs the driveway into campus too, and due to its probable size, will be visible from several vantage points on campus. It will certainly drive development of the Foundation's and University's properties south of the railway.

The design team researched utility infrastructure too, documenting where lines criss-cross campus and may impede future construction in Figure 1.2. The biggest impediment is the water main on the south side of the railway. Communications and stormwater lines run through the promenade but likely won't be as prohibitive as the water main. The university does have plans for a micro-grid display just south of the Student Success Building, but the bridge would be too far removed if sited in this location. These research efforts also included understanding setback requirements for Norfolk Southern Rail concerning overhead structures. According to their design standards, the pedestrian bridge would have to be a minimum 23'-6" tall; this vertical clearance must extend 6-FT on either side of the centerline of the railroad. Support columns or other piers must maintain a 22-FT minimum distance from the centerline as well. These strict parameters dictate the bridge span's dimensions and elevation changes from the ground plane to the deck of the bridge.



Understanding pedestrian circulation was the most critical aspect of this design study. Both Sasaki (left) and Luckett & Farley (right) found similar patterns of movement across campus. They identified a major thoroughfare running north-south from Cardinal Boulevard to the engineering campus. The railway impeded this corridor from crossing into the Foundation's property.

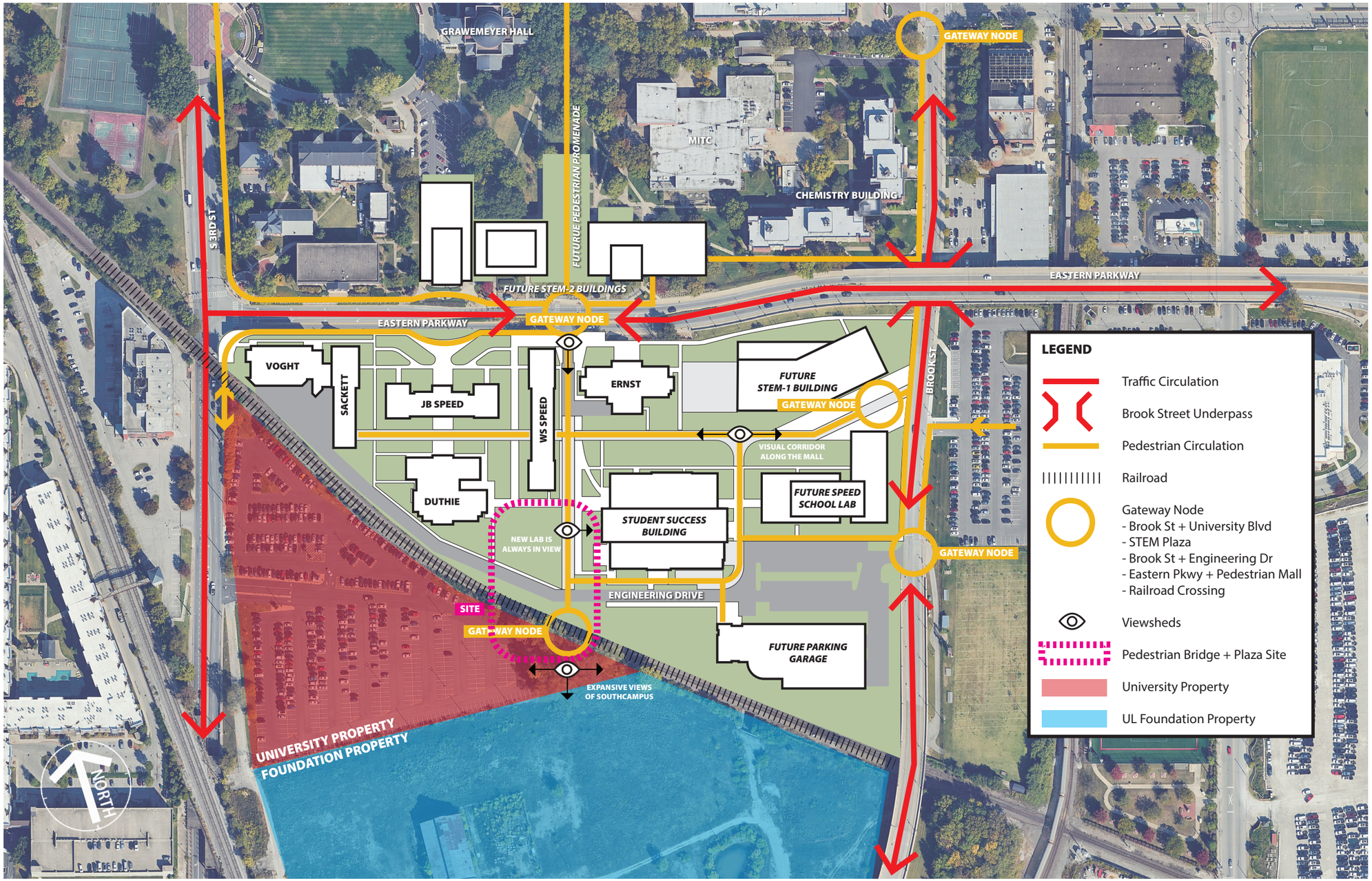


FIGURE 1.1 – GROWTH ANALYSIS

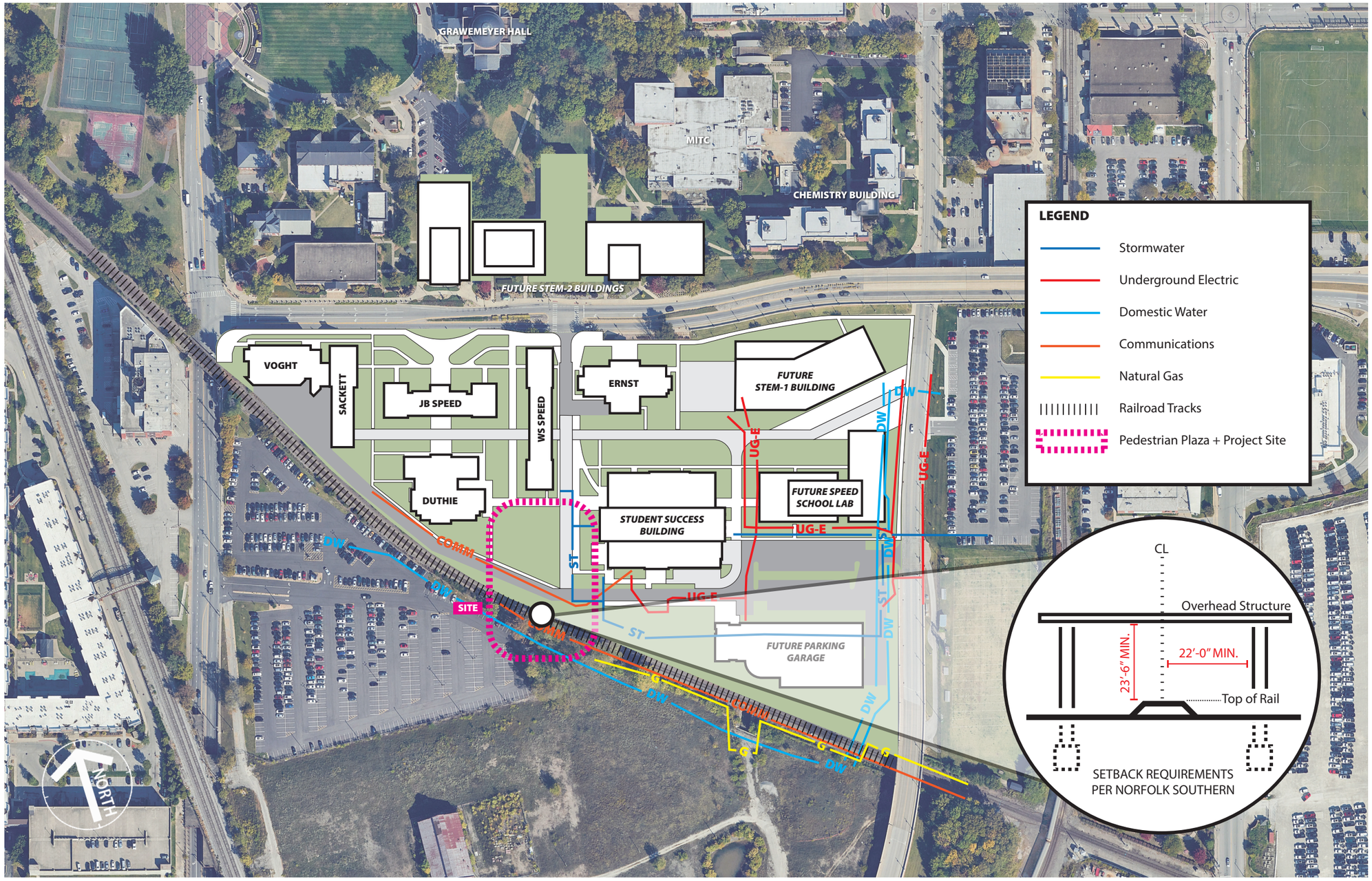


FIGURE 1.2 – INFRASTRUCTURE ANALYSIS

2.0. IDEATION

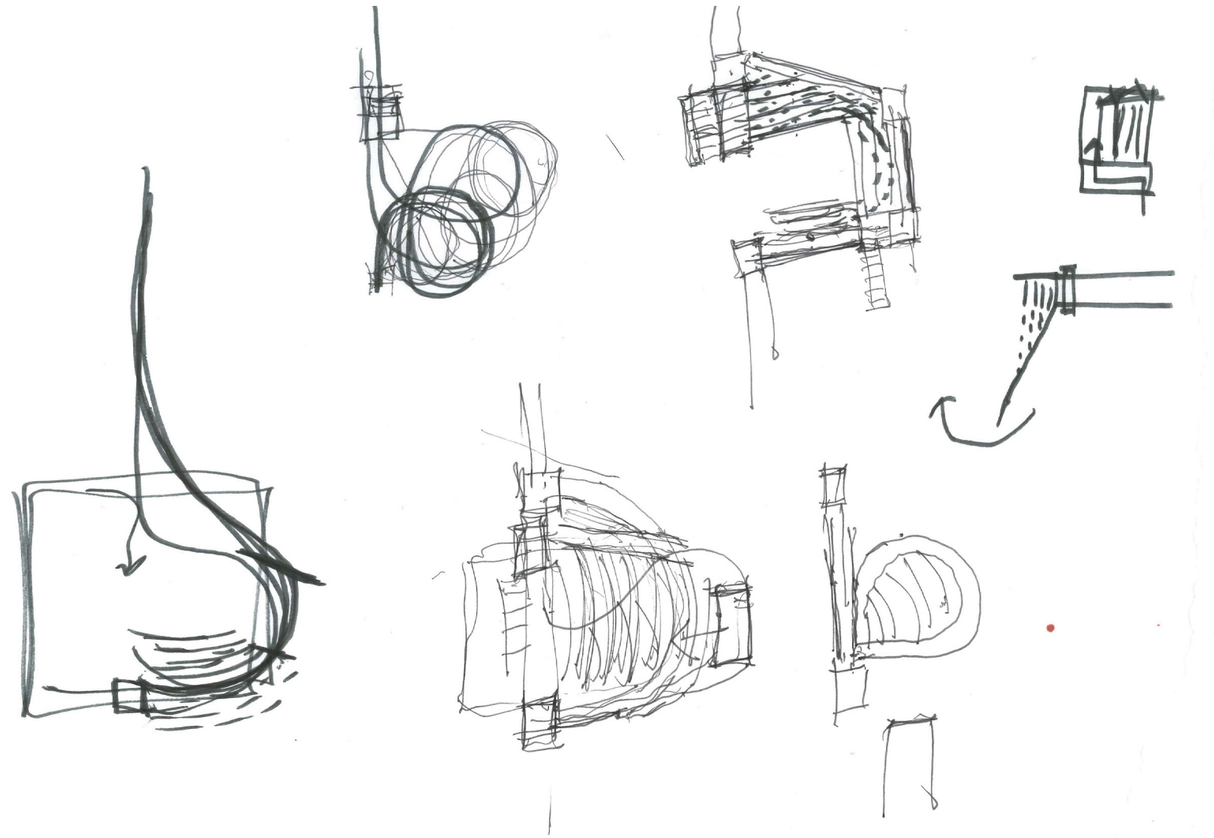
Sketching exercises explored plan concepts, circulation patterns, and the relationship the bridge would have with other buildings on campus. The southern crossing was less important than understanding how site and engineering impacted Speed School on the north side. Five key concepts were studied as to their effectiveness on the engineering campus. These were presented to university stakeholders in October for feedback. Each concept was a variation on stairs and an elevator or a ramp as a means of crossing. Some were simple design solutions like a monumental stairway connecting to a bridge; others were more complex, like a ramp that corkscrewed upon itself and cantered over the railway.

Some of these concepts were further developed and presented at an open house forum at the university. The data gathering session at the Student Activities Center utilized presentation boards to collect feedback from university students and staff regarding concepts. The open house allowed participants to engage with bridge typologies and greenspace preferences. Three designs were presented: a monumental stairway, a campanile-style tower bridge, and a pedestrian ramp. Key findings from the session revealed:

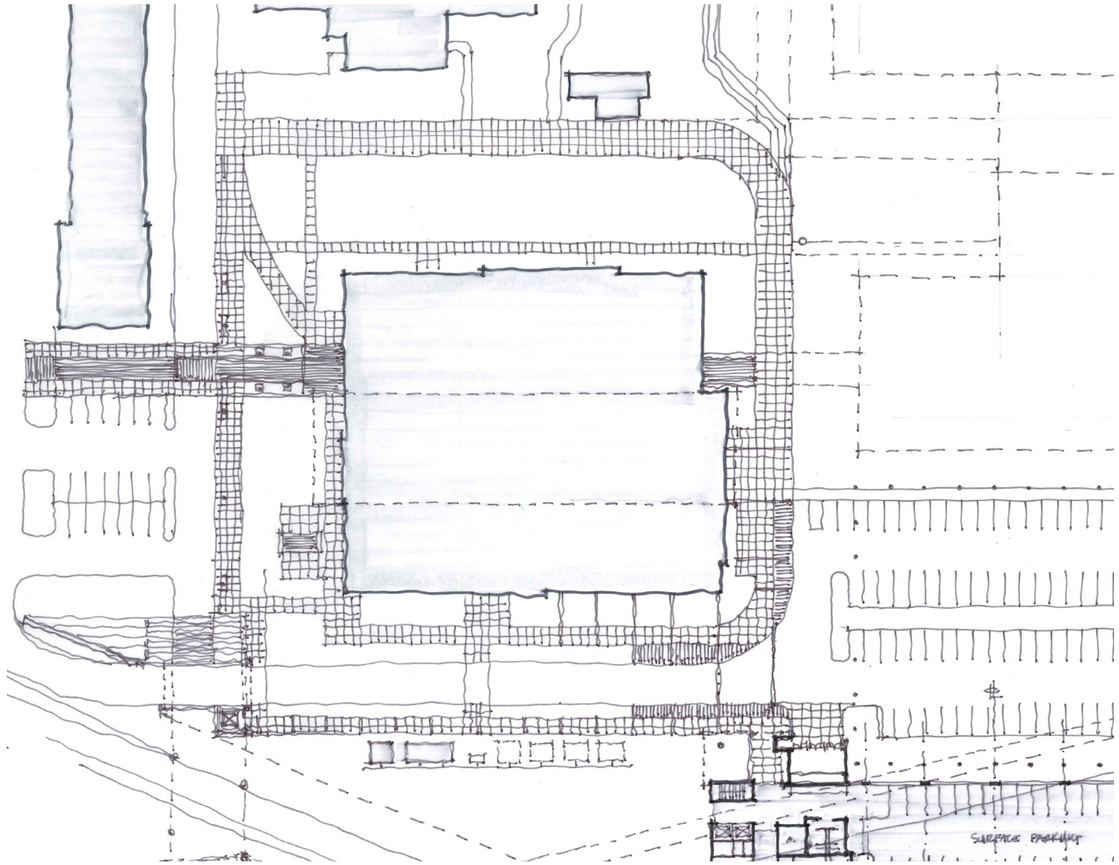
- Strong preferences for a curvilinear bridge, modern design elements, and ramps.
- A design that was similar to the Big Four Bridge at Waterfront Park.
- Integrating greenspace as amphitheater-style seating.
- Respondents appreciate the familiarity of a stairway.
- The ped-ramp was praised for its creative solution, accessibility, and visual appeal.
- The tower bridge was dismissed for its redundancy with other crossings on campus and locally.

Additionally, there was an overwhelming opinion to not include an elevator as part of the crossing design. Today, elevators on campus are notorious for being unwanted spaces, breaking down, taking too long to arrive, and aren't accessible. The open house had indicated a clear desire for a modern, accessible pedestrian crossing that seamlessly connects campuses and offers engaging gathering spaces like a green amphitheater or parklet. The stairway and ped-ramp were the best choices for a future crossing.

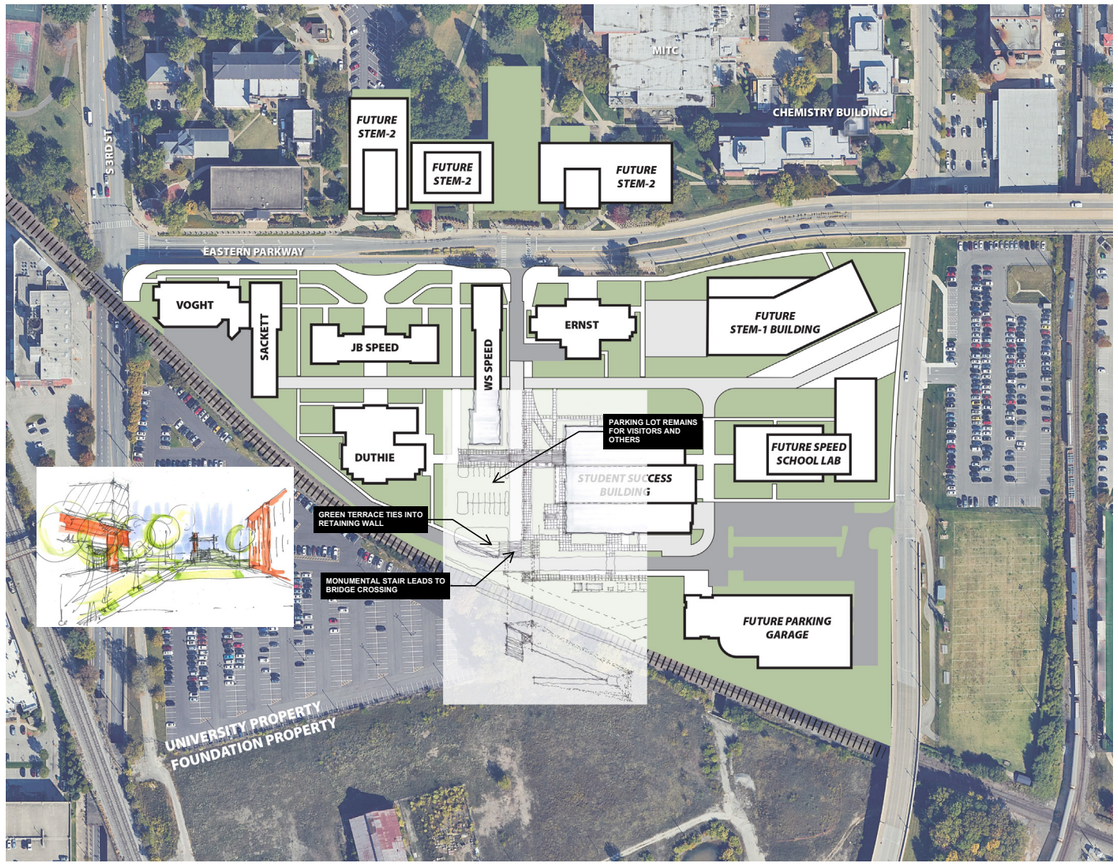
Concepts and presentation boards have been included in this section for reference.



Above: Assembly of sketches and forms used to understand the design motifs and circulation patterns of the pedestrian bridge.



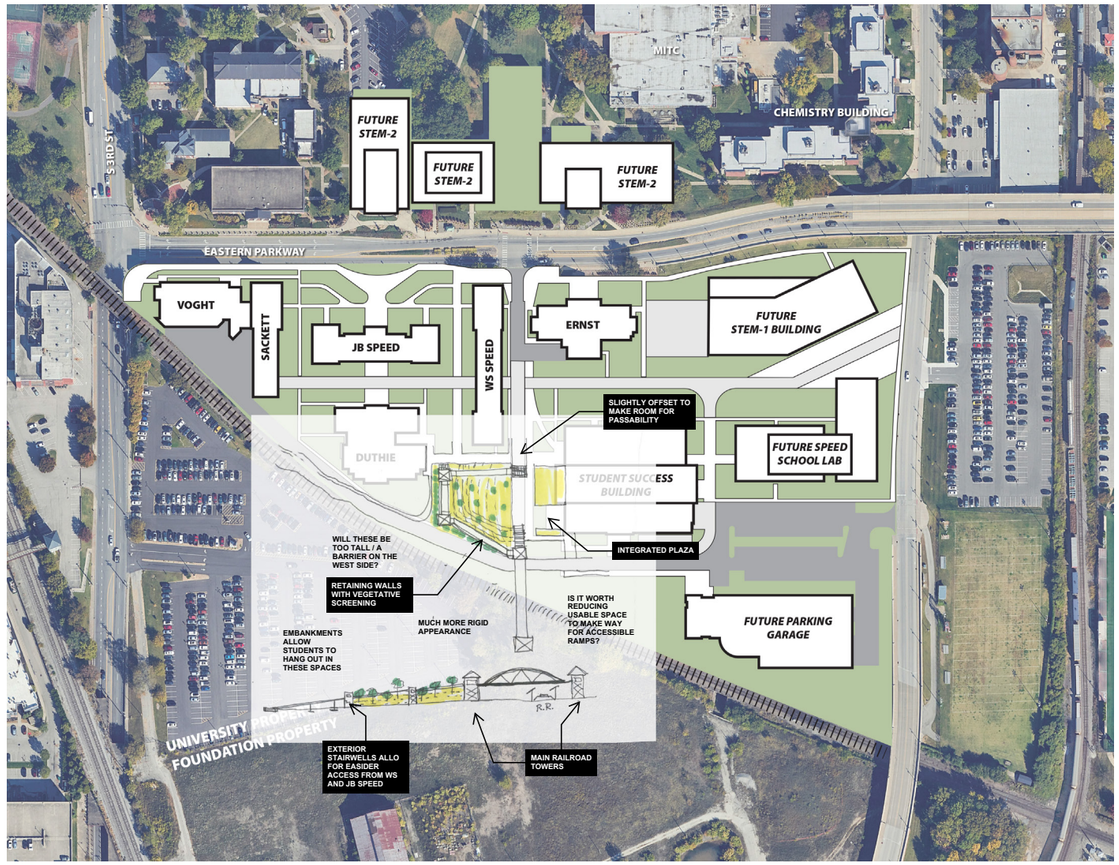
Above: Original "proof of concept" sketch developed by Aric Andrew as a means of exploring the crossing during the design phases of the Speed School Student Success Building.



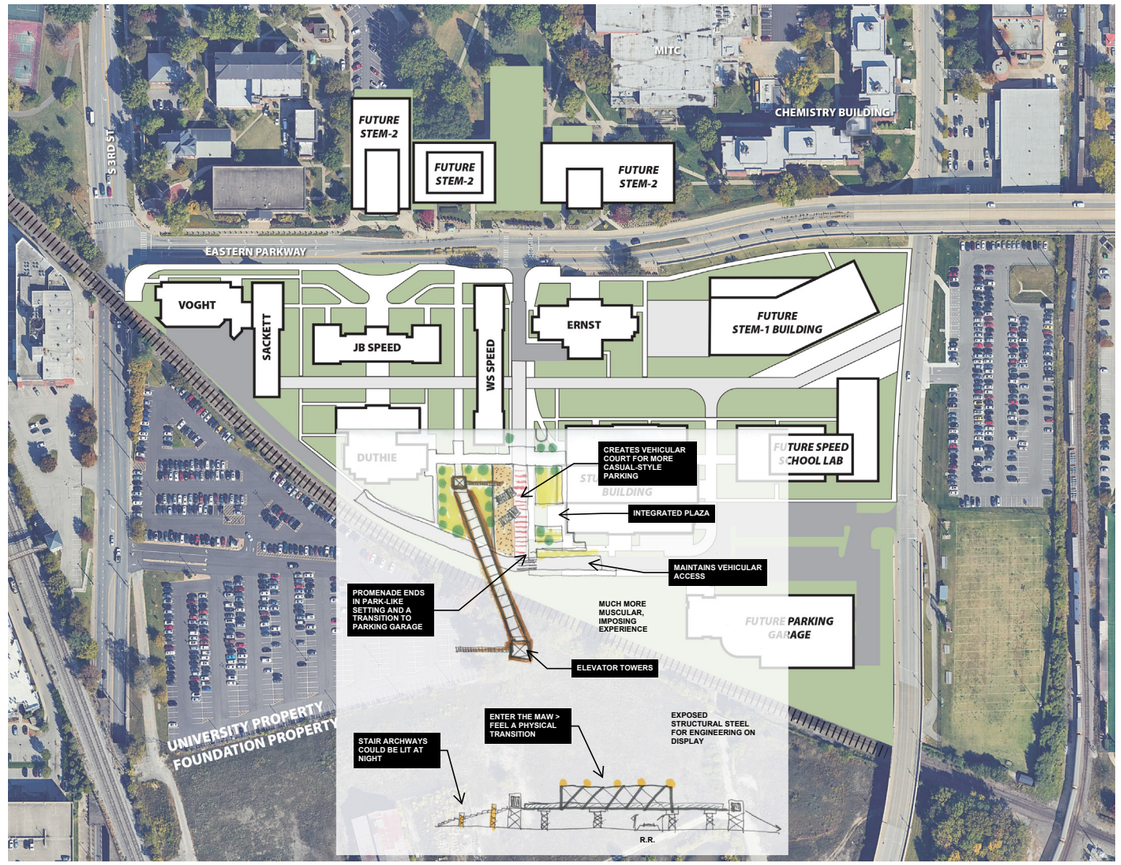
Above: The first concept used a monumental stairway, similar to Andrew's sketch, to cross the railway. It was a simple, familiar gesture, meant to continue the pedestrian promenade across to the Foundation's property.

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY

2.0. IDEATION



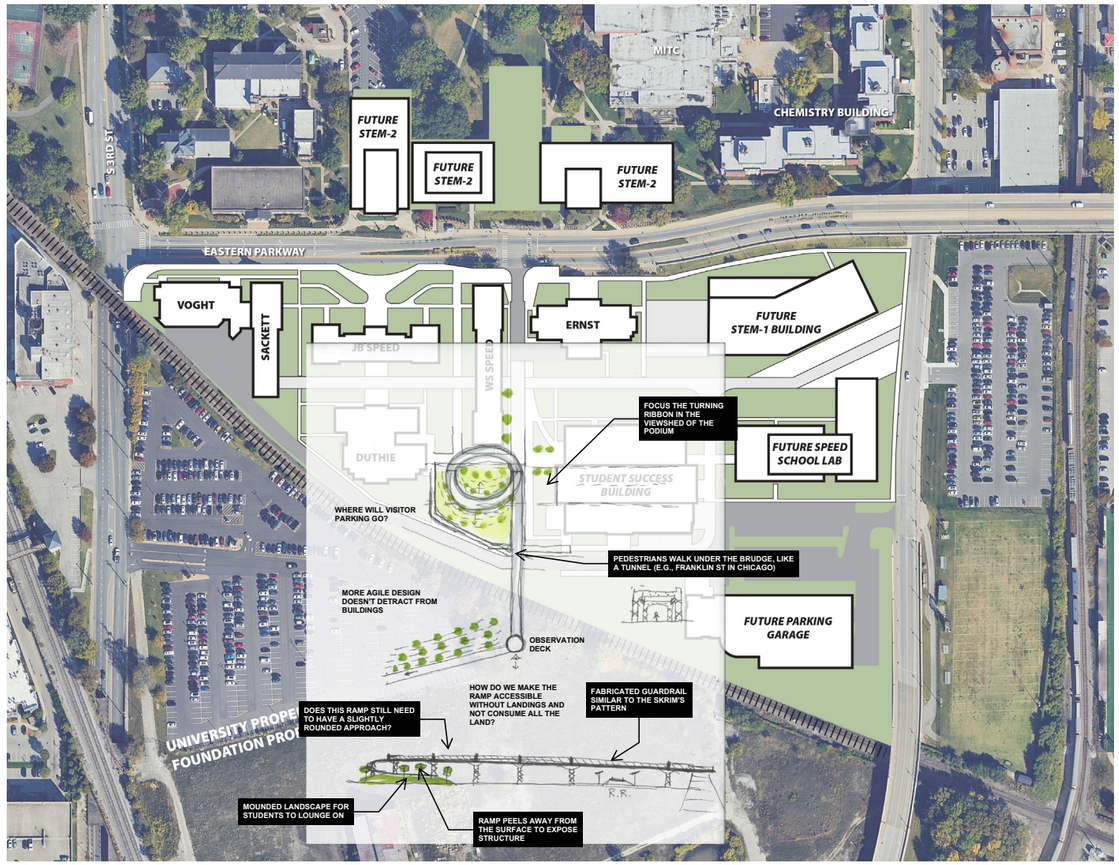
Above: A second concept furthered the monumental stairway, but rather than use an elevator for accessibility, a ramp was wrapped around the site, with an earthen embankment tapering towards the new building. This concept was dismissed because it used too much valuable space for a utilitarian ramp.



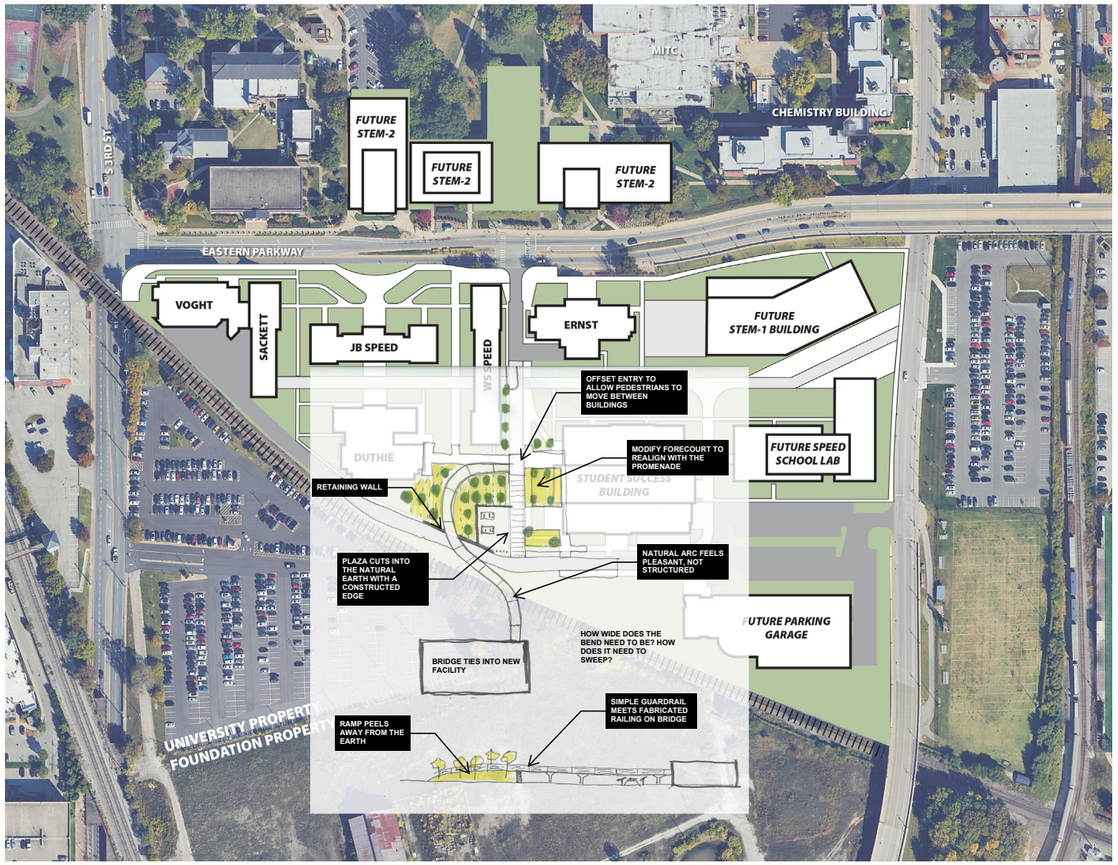
Above: The third concept blended strong, industrial forms with a tower-bridge means of crossing. The campanile-style tower, like in Venice, became a landmark in a quadrangle-type space. This concept maintained VIP parking in front of the Student Success Building.

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY

2.0. IDEATION



Above: A fourth concept departed from stairs and elevators and focused on ramps as a means of circulation. A corkscrew ascent carried pedestrians to the top of the structure and it continued at a similar elevation down the promenade and across the railway. This created a tiered series of pedestrian paths that started to conflict with the new building. It was dismissed.



Above: The fifth concept took a more meandering approach for ramp circulation. It still allowed parking in the core of this space, with some interesting use of retaining walls to carve out niches. The meandering ramp felt more natural, less imposing, and its minimalistic expression was more ideal than other concepts.

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY

2.0. IDEATION

Below: The presentation boards used at the university open house in October. Students were asked to make selections about their favorite bridge typologies, greenspaces, and crossing concepts. Sketches #1 and #3 were favorites.

Right: Images taken during the open house show students engaged with the material and actively taking part in transforming their campus.







LOOK-AND-FEEL – PEDESTRIAN BRIDGES

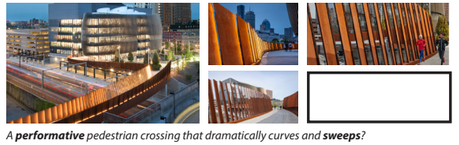
Please place a dot next to the pedestrian bridges that you think would look best on campus.



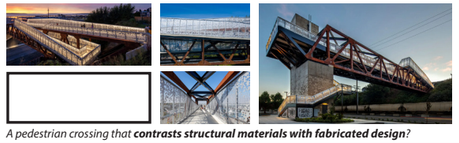
*A pedestrian crossing that uses **ramps to connect unique greenspaces**?*



*A pedestrian crossing that emphasizes physical size with **stairs and raw materials**?*



*A **performative** pedestrian crossing that dramatically curves and **sweeps**?*



*A pedestrian crossing that **contrasts structural materials with fabricated design**?*

LOOK-AND-FEEL – GREENSPACE TYPOLOGIES

Please place a dot next to the types of greenspaces that you'd hang out in on campus.

CAMPUS QUAD



DINING HALL COURTYARD



GREEN AMPHITHEATER



BUILDING PLAZAS



OUTDOOR CLASSROOM



MONUMENTAL STAIRS



GREAT LAWN



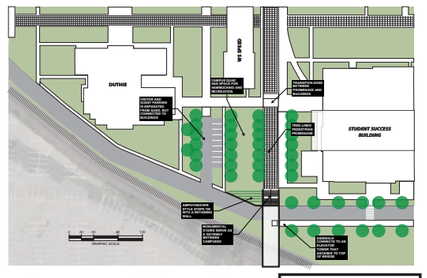
PROMENADE

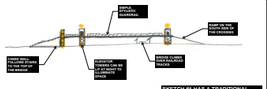


CAMPUS PARKLETS



SKETCH #1 – MONUMENTAL GATEWAY

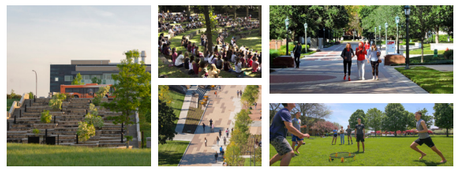




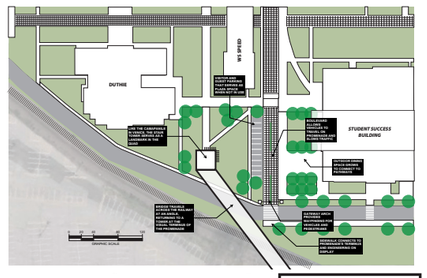
SKETCH #1 HAS A TRADITIONAL DESIGN STYLE, USING REGULAR GEOMETRY TO DEFINE SPACES LIKE THE FORECOURT AND QUAD. THE BRIDGE IS A FORMAL TRANSITION BETWEEN SPACES

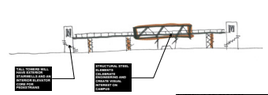
Like this concept? Give it a dot!

CHARACTER IMAGERY



SKETCH #2 – AN ANGLED APPROACH





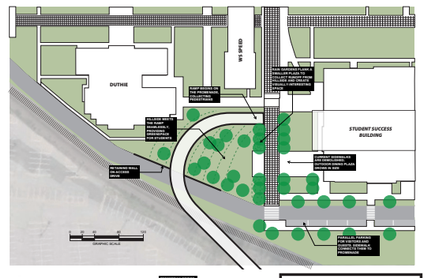
SKETCH #2 CELEBRATES ENGINEERING WITH A LARGE BRIDGE STRUCTURE. TOWERS PUNCTUATE THE LANDSCAPE TO CALL ATTENTION TO THIS FEATURE.

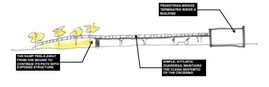
Like this concept? Give it a dot!

CHARACTER IMAGERY



SKETCH #3 – THE PED-RAMP

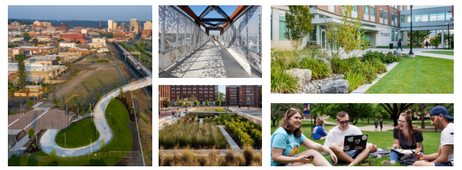




SKETCH #3 IS A MORE MODERN APPROACH AND UTILIZES THE LANDSCAPE AS PART OF THE EXPERIENCE. VEHICLES ARE COMPLETELY REMOVED FROM THIS SPACE.

Like this concept? Give it a dot!

CHARACTER IMAGERY



3.0. FINAL CONCEPTS

University stakeholders had expressed interest in seeing two versions of a final concept: One version which served as an intermediate solution and another version that realized the 2021 and 2024 master plans. Combining the monumental stairway and pedestrian ramp concepts is the best design solution moving forward. It achieves the stairway's gateway motif on the engineering campus and provides accessible access without needing an elevator. This combination is responsive to the constraints set by the railway, namely, height restrictions. The final concept for both iterations includes:

- A pedestrian ramp with a 5% slope winding up to a landing at the terminus of Engineering Drive. The interior curve length of the ramp is approximately 380-FT and is 10-FT wide.
- A formal landing space 18-FT above grade. This allows the bridge deck to be 16-FT above the roadway, which is the minimum height required for tractor trailers to pass under an overhead structure.
- A monumental stairway with a typical 6" riser and 12" tread, with twelve sets of steps (12-FT total horizontal length) before a 5-FT-long landing. The entire stairway is 24-FT-wide. There are three sets of these steps.
- A 24-FT wide bridge deck that ascends over the railway at a slope greater than 5%. According to Norfolk Southern, any overhead crossing needs to be 23'-6" above the railway. For the purposes of this study, the design team used 24-FT as a whole, round number for calculations.
- A revised outdoor dining plaza at the Student Success Building, to better align it with the pedestrian crossing.
- Open greenspace in the crook of the ramp's bend, with a green, amphitheater-style terrace that, at its highest, is 6-FT tall and stair-steps down to grade.

Figure 3.0 showcases this proof of concept in modeling software. The 18-FT landing where both components meet is an intentional design. It reduces the overall length and intensity of slope for the pedestrian ramp, making it more comfortable. It reduces the number of risers necessary to climb on the monumental stairs. And it minimizes the impact of the structure in this space. The bridge is surrounded by tall volumes, like the Student Success Building and Duthie Hall. Managing the human scale of the pedestrian bridge – exposing the structural decks and piers of both the ramp and the stairs – makes the space feel comfortable and integrated into the campus.



Left: Proof of concept of the engineering of the bridge system, with high-level spot elevations and slopes indicated in modeling software. The exactness of these numbers would be resolved during construction design.

Below: Sketch concept of the pedestrian crossing and greenspaces surrounding it.

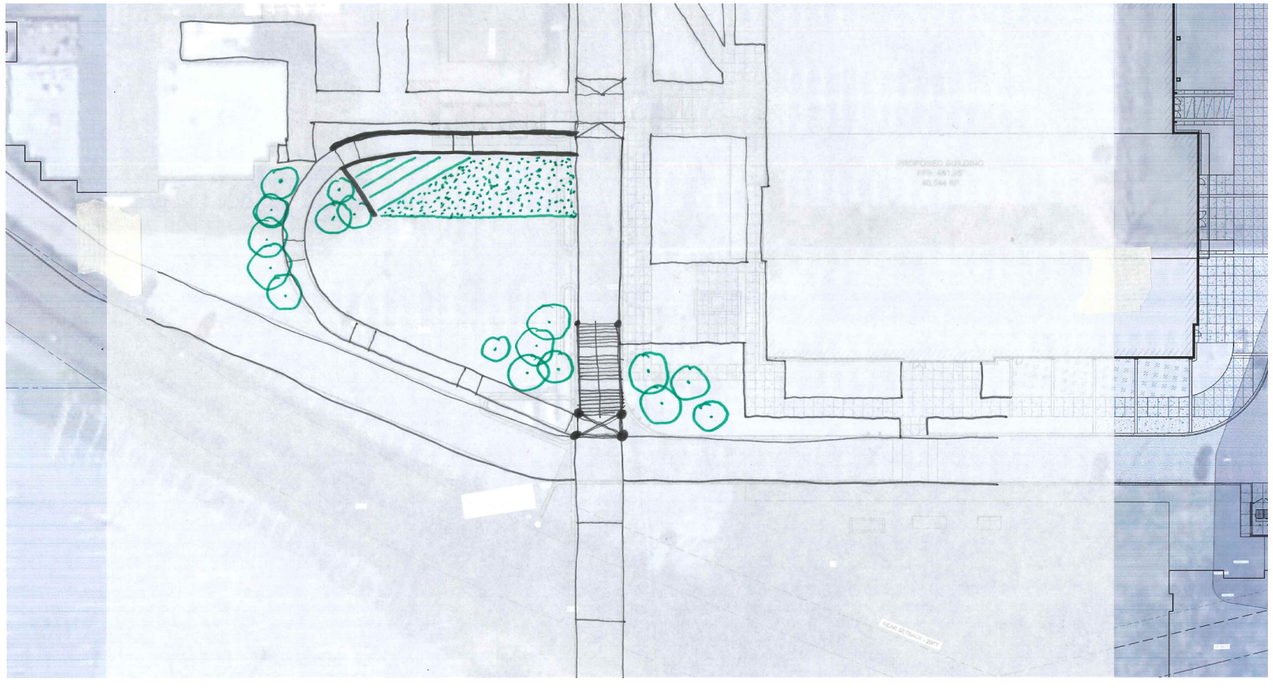
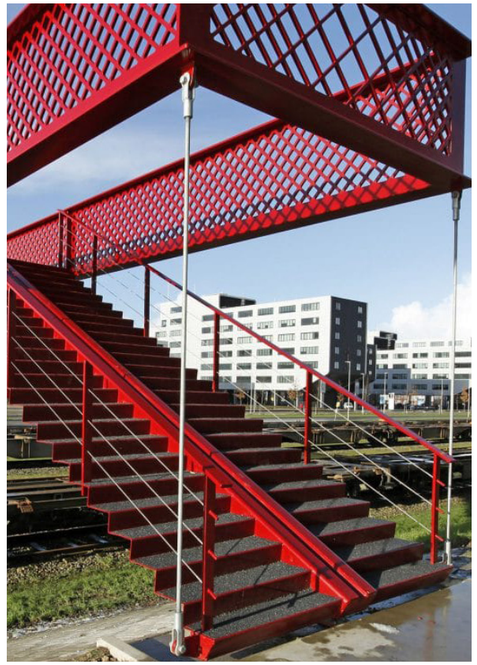


FIGURE 3.0 - PROOF OF CONCEPT

PEDESTRIAN BRIDGE DESIGN AND FEASIBILITY STUDY

2.0. IDEATION

The bridge crossing is a high-level concept, responding more toward the practicality of the design than its aesthetics and materiality. Final design and construction of a pedestrian connection will need to be completed once the university is ready for its development. The concept included in this study may not be the final design. Figure 3.1 contains a collection of character imagery and experiences alluding to a finished design for this concept. The remainder of this section covers two versions of the bridge and how each meets the needs of the engineering campus.























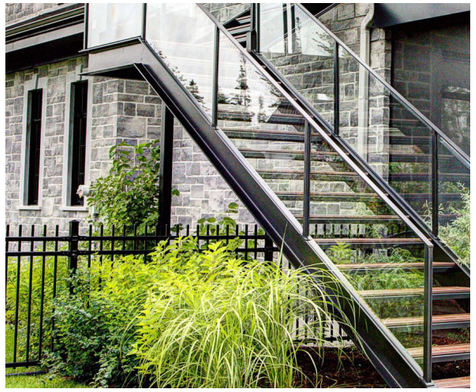


FIGURE 3.1. – CHARACTER IMAGERY AND EXPERIENCES



3.1. Intermediate Concept

While the purpose of this study is to act as a design and feasibility exercise, furthering the crossing concept, the design team first needed to consider how it impacted growth and development. As indicated in the 2021 Speed School Master Plan, a pedestrian crossing into a future research park will incite rapid development of the Foundation's property. But currently, it's vacant land and a parking lot. Constructing a pedestrian crossing raises several questions. What should the southern connection look like? Do grants and funding apply to the construction of the pedestrian bridge as the next phase? Should those funds apply toward another building? Is it better if the pedestrian bridge is developed once the Foundation's property is redeveloped? Or does it need to occur first?

An intermediate concept is necessary to answer some of these questions. It takes place after the construction of the Student Success Building but before the research park is completed. It includes the following designs:

- Engineering Drive remains a vehicular driveway up to the SSB crossing. Here, bollards indicate a dead-end for vehicles. A pedestrian promenade continues south.
- An immediate need for guest parking on campus still exists. The intermediate concept provides 10 parking spaces at WS Speed. This brick-paved space can also function as a pedestrian plaza or events space for Speed School.
- The revised outdoor dining plaza and greenspace remain the same.
- A monumental stairway and pedestrian ramp meet at a central landing on the north side. The bridge crosses the railway and plateaus 30-FT above grade on the south side. The bridge turns west, toward 3rd Street, and continues down to grade in the same design fashion as the north side.
- The southern connection ends in a pedestrian plaza and greenspace meant to serve the parking lot located off 3rd Street. The number of spaces in this lot is reduced.

Rendered concepts of the study model are included hereafter. This concept integrates the more immediate needs of the campus (e.g., guest parking and a quick southern connection) into the design. Since the northern and southern connections are duplicates of each other, they create a familiar but unique experience for pedestrians using the bridge. However, this concept sets constraints for development of the southern campus. It creates a more-permanent, at-grade connection that future buildings will need to respond to.

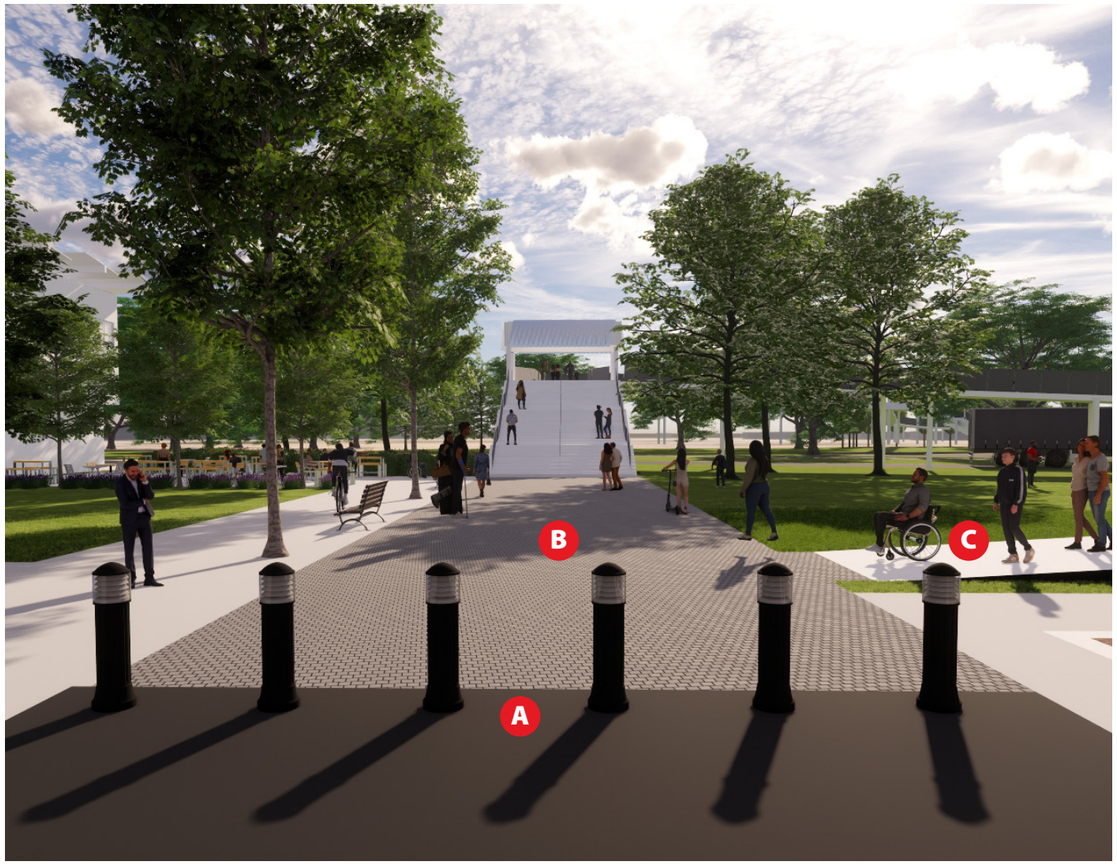


LOOKING SOUTH FROM ENGINEERING DRIVE

A Engineering Drive terminates at a pedestrian promenade in front of the SSB. To the right, a parking court is available for guests and special visitors.

B The promenade continues to the monumental stairway adjacent to the SSB's outdoor dining plaza. The stairway ascends to a gateway landing were the pedestrian ramp intersects it.

C The southern connection is a copy of the northern connection, just at a different orientation. It serves the student parking lot along 3rd Street.

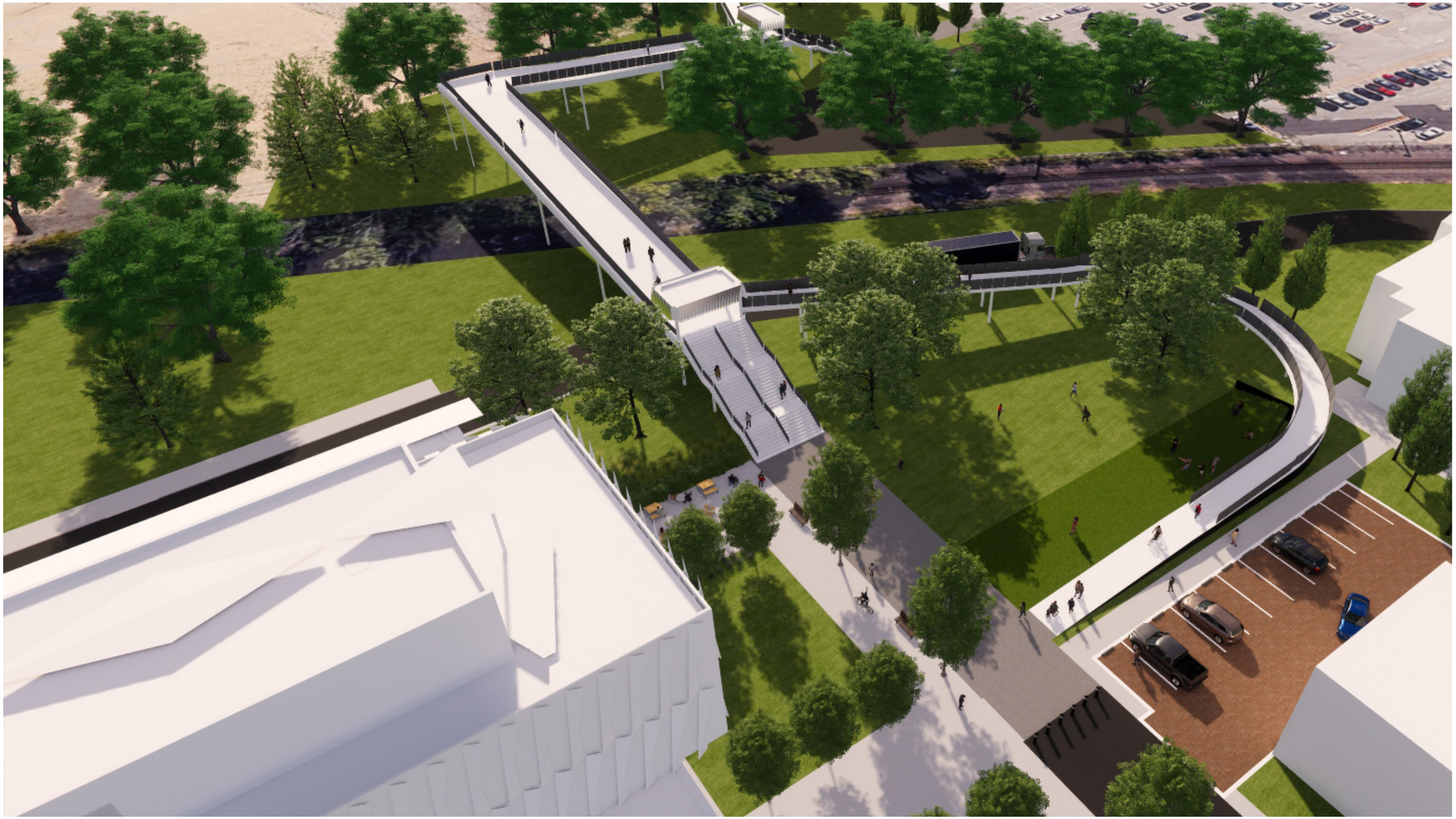


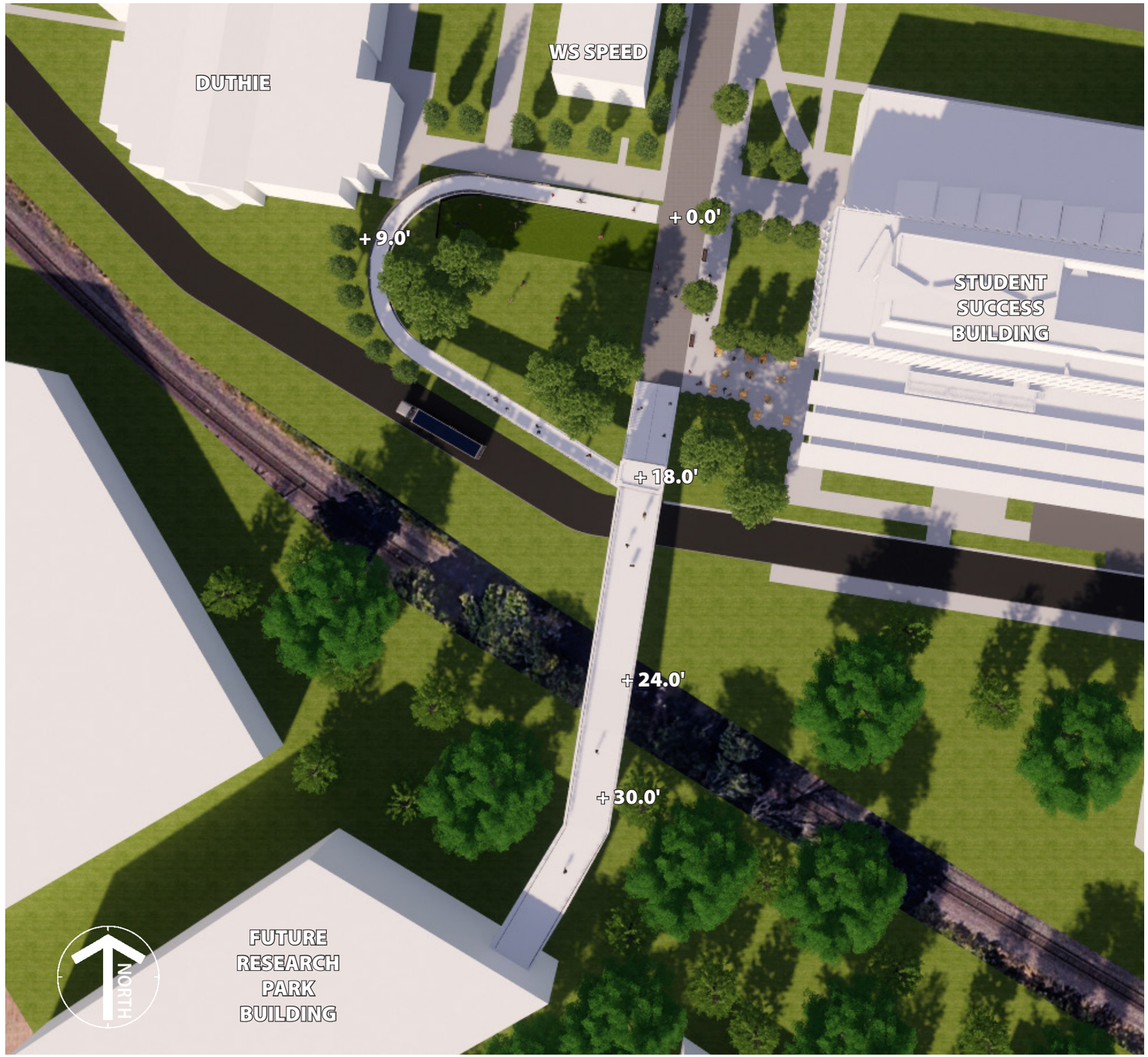
LOOKING SOUTH TOWARD THE MONUMENTAL STAIRWAY

A The vehicular driveway terminates at bollards, clearly indicating a dead-end to motorists traveling down Engineering Drive.

B A special paver system for the promenade elevates this space and delineates pedestrian spaces from vehicular spaces.

C The pedestrian ramp begins at-grade just south of the SSB's forecourt and ascends toward the gateway lending at a gentle slope.



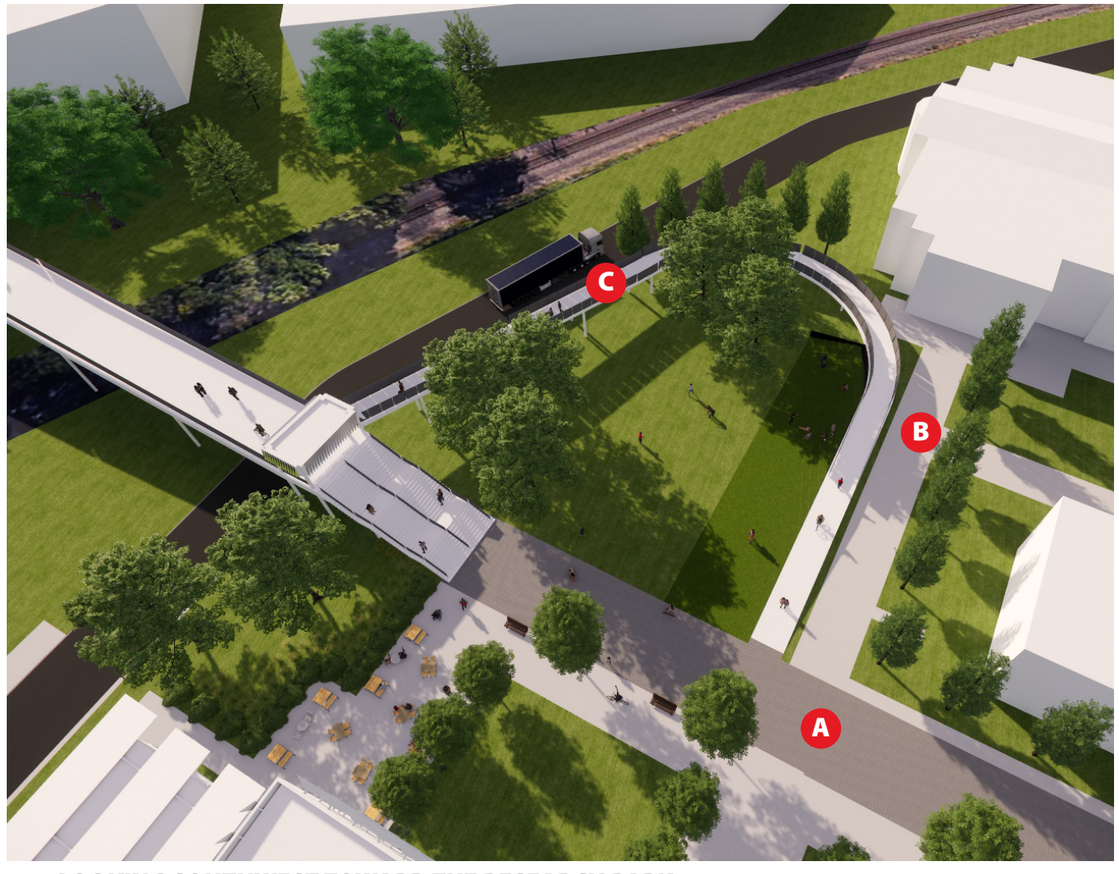


3.2. Master Plan Concept

Implementing the master plans for the university allows the pedestrian bridge to seamlessly integrate itself between both the academic campus and research park. It achieves its best purpose: bridging constrictive infrastructure to unite campus from Cardinal Boulevard to Central Avenue. The master plan concept represents the completed planning efforts of the university. It includes the following designs:

- Engineering Drive is repaved as a pedestrian promenade starting at its intersection with the master-planned east-west mall. Vehicles will still need access to Ernst Hall.
- Campus improvements to the spaces near Duthie Hall and WS Speed. A wide sidewalk links Duthie to the SSB and is intersected by a connection to JB Speed to the north. Greenspace and plantings brighten this space.
- The revised outdoor dining plaza and greenspace remain the same.
- A monumental stairway and pedestrian ramp meet at a central landing on the north side. The bridge crosses the railway and plateaus 30′-0″ above grade on the south side.
- The southern connection ends in a future building in the research park. This dynamic intersection melds indoor and outdoor environments and strengthens connections between the two campuses.

Rendered concepts of the study model are included hereafter. This concept realizes the full visions of the master plans and seamlessly connects the two. While there is no immediate plan for a building on the Foundation's property, the master plan concept encourages redevelopment so this crossing can be realized. The transition from indoor to outdoor spaces is unique and can be celebrated with dramatic relationships between floor plates and design elements. Northeastern University in Massachusetts, a case study for this plan, has a pedestrian bridge with a similar experience. It takes advantage of architectural programs and systems, like elevators, and erases the ground plane momentarily. University of Louisville can celebrate similar feats of architecture and engineering, allowing it to demonstrate its pride in academic excellence for its students.



LOOKING SOUTHWEST TOWARD THE RESEARCH PARK

A Engineering Drive is remade as a pedestrian promenade starting at the intersection with the east-west mall and continues south to the research park.

B A pedestrian connection between the SSB and Duthie Hall further connects the east and west pieces of the engineering campus.

C The pedestrian ramp wraps around a large greenspace in front of the SSB. Once trees reach full maturity, this space will capture unique feelings as people proceed up to the bridge crossing.

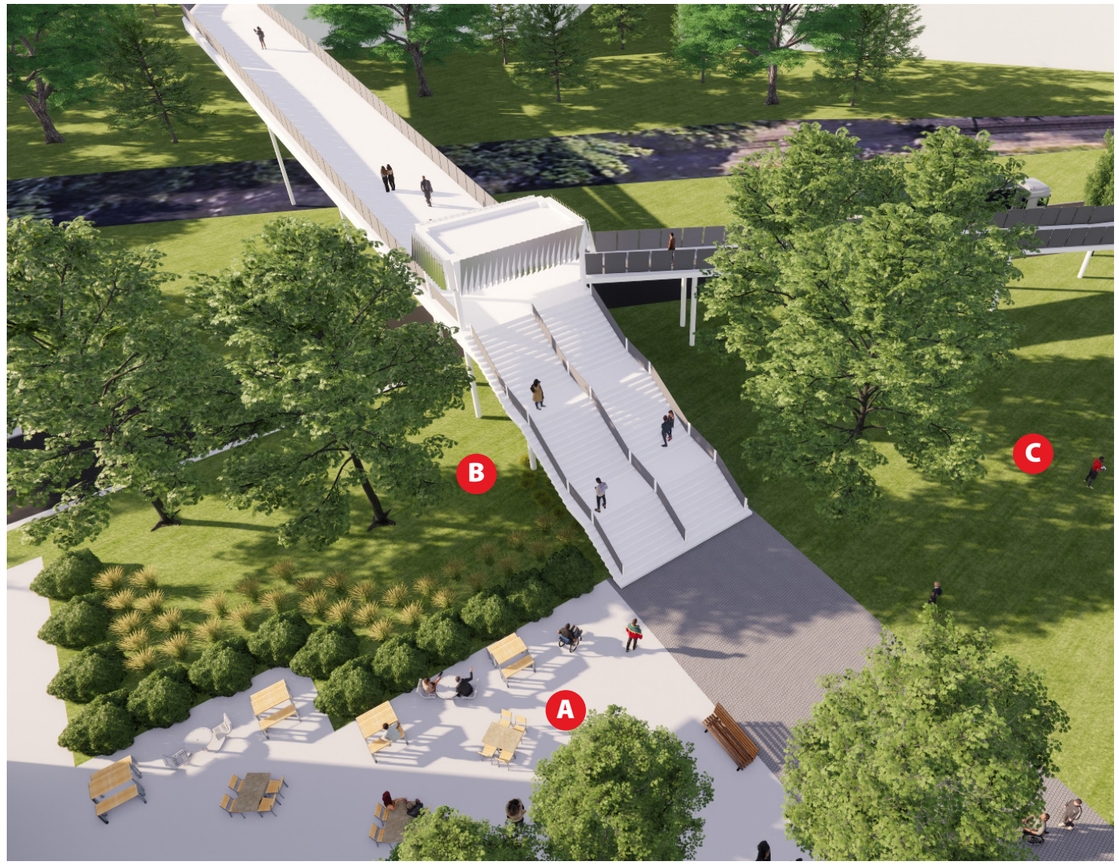


LOOKING SOUTH TOWARD THE MONUMENTAL STAIRWAY

A Wide pedestrian sidewalks are intentionally laid out to provide multi-modal transit opportunities. Cyclists, those on scooters, and pedestrians can all fit comfortably as they traverse campus.

B Using decorative-type or specially-fabricated railings for the stairway and ramp specializes the space and differentiates it from others on campus.

C Maintaining a large greenspace, with only minimal numbers of trees, makes it more usable.

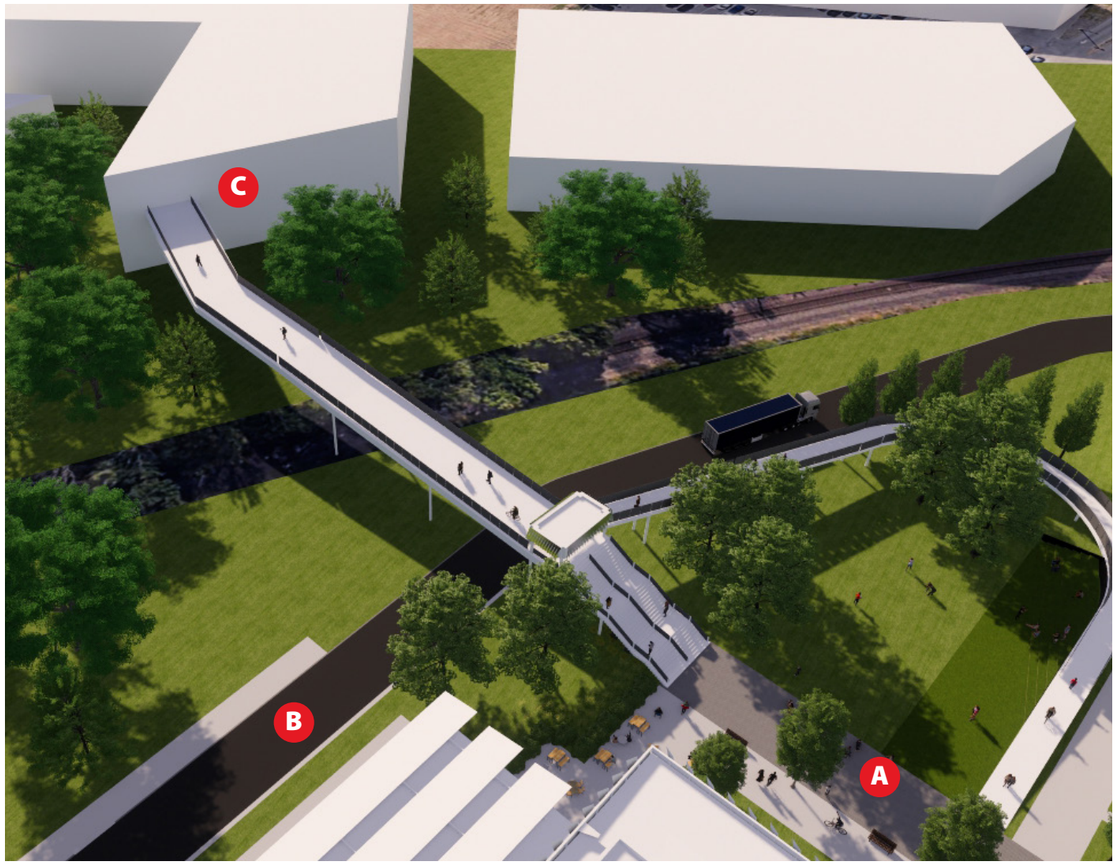


CLOSE-UP OF THE MONUMENTAL STAIRWAY

A The outdoor dining plaza at SSB grows to accommodate the pedestrian bridge's design and an increased number of users. Placing it near the monumental stairway activates it.

B The exposed structure of the monumental stairs creates opportunity for shade-loving plantings and stormwater mitigation underneath the deck.

C The adjacent greenspace is large enough for casual recreation and lounging. The size of the space helps reduce the bridge's immensity in terms of human scale.



WIDE VIEW OF THE PEDESTRIAN BRIDGE

A Creating a terminus at the end of the promenade that articulates movement, design aesthetics, and continues to function as a crossing was essential for this part of campus.

B The driveway off Brook Street remains because of vehicular access needed at Voght and Sackett. The bridge needs a 16-FT clearance to allow trucks to pass underneath.

C The bridge ends in a building on the research park, physically connecting the two campuses. It's a celebration of architecture and engineering on the southern Belknap campus.

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UofL Pedestrian Railroad Crossing Study

Meeting Name
Design Workshop

Meeting Date
October 16, 2024

Location
L&F/Virtual

Time
3:30 PM – 5:00 PM

Prepared by
Matt Gullo

L&F Project Number
2024.073

Attendees
Carrie Whitmore
Kim Noltemeyer

Planning Team Attendees
Matt Gullo
Aric Andrew
Tanner Prewitt
Trenton Kastensmidt
Brooks Benton

The following minutes summarize input gathered from the design workshop conducted virtually on Teams.

Meeting Minutes

- Like celebration of space - entering into a space for pedestrians before going over a bridge or gateway.
- Need some spaces for ADA and parking somehow. Doesn't necessarily need to be at this location, but needs to be figured out at some point.
- Keep bridge solution on the south side of the tracks with no solution, since we do not know what is happening on this side of the track we do not know how to react properly.
- Type of crossing
    - Like the simple crossing with just a railing but how to incorporate engineering on display
    - Bridge/Crossing should not compete with other larger buildings on site. Fit in with the natural landscape.
    - Can be just a simple crossing - not the only event, but integrated with other events on the site.
- Stairs vs Ramp
    - Ramps - Seem long and non-efficient for some of the solutions- if we can minimize this as much as possible.
    - 22' to top of crossing is required. ADA is less than 8.33% slope.
    - Stairs seems long and difficult - unless integrated with green terracing and not feel daunting to climb. Fit stairs into natural environment and plaza spaces to help lessen the feel.
    - Any solution should have some type of pedestrian space integrated with the crossing, similar to the Speed School MP.
- Concept 1 – further concept design for Student meeting
    - Like the true gateway
    - Approach to rail line
        - Need to feel like speed school master plan with plaza and pedestrian space
    - Like the simplicity
    - Stairs are not the main focus, student spaces.
- Concept 2
    - Not moving forward - too much ramp
- Concept 3 - further concept design for Student meeting
    - Like the angle
    - Visual connection vs true connection
    - Good use of a destination and plaza space
    - Need visual barrier on roadway
- Concept 4
    - Too much turning and length of bridge
    - Too substantial
    - Do not move forward with this concept
- Concept 5 - further concept design for Student meeting
    - Big mass of hill up to bridge
    - How to minimize massing of earth
    - What does that mound vs exposed structure feel like, would like to see in model
    - Like lots green space and usable student space, it becomes the focus of the area around Speed School and incorporates the master plan best.
- Next Steps - Student Presentation Wednesday Oct 23.
    - Options to look at 1, 3, 5.
    - Make it feel sketchy and airy - we don't have a final solution.
    - What would be successful in this space?
    - Utilitarian questions and answers for students.
    - Can be sketches on plan views, no models needed.
    - Images off to the side of what it could look like, character imagery.
    - Printed boards in 117 room - also has projector if needed.

Attached:

- Presentation Design Sketches

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UL PEDESTRIAN BRIDGE STUDY
October 23 Student Activities Center Open House

Meeting Name
Open House

Meeting Date
Wednesday, October 23, 2024

Attendees
Assorted Students
Assorted University Staff
Carrie Whitmore, UPDC
Kimberley Noltemeyer, UPDC

Planning Team Attendees
Matt Gullo
Tanner Prewitt
Trenton Kastensmidt
Aric Andrew

Location
University of Louisville

Time
11:00 AM – 1:00 PM

Prepared by
Tanner Prewitt

L&F Project Number
2024.073

Summary:
Luckett & Farley conducted a data gathering session at the Student Activities Center, utilizing five presentation boards to collect feedback from university students and staff regarding bridge crossing concepts at Speed School. The open house forum, held near the dining facilities, allowed participants to engage with bridge typologies, greenspace preferences, and three pedestrian bridge design concepts.

Key findings from the session revealed strong preferences for a pedestrian bridge featuring curvilinear, modern design elements, akin to the Big Four Bridge on the waterfront, with ramps connecting greenspaces. Participants overwhelmingly supported the idea of integrating green amphitheater seating element into the campus as part of the greenspace options.

Among the three design concepts for pedestrian bridges, the monumental stairs and pedestrian ramp emerged as favorites. Respondents appreciated the familiarity and campus design alignment of the monumental stairs, while the ped-ramp was praised for its creativity, accessibility, and visual appeal, despite some noting the longer walk. The campanile-style tower was the least favored, dismissed for its redundancy with existing campus and regional motifs. There was an overwhelming opinion to not include an elevator as part of the crossing design. Current elevators provide unwanted spaces, breakdown, take too long, and don't provide good access.

This feedback highlights a clear desire for a modern, accessible pedestrian crossing that seamlessly connects campuses while offering engaging gathering spaces like a green amphitheater or parklet. Luckett & Farley will use this data to guide the next steps in the project's design process.

Results:

Board #1: Look-and-Feel – Pedestrian Bridges

- Folks were asked to place a dot next to the pedestrian bridges that they thought would look best on campus.
- 12 responses preferring a pedestrian crossing that uses ramps to connect unique greenspaces.
- 0 responses preferring a pedestrian crossing that emphasizes physical size with stairs and raw materials.
- 7 responses preferring a performative pedestrian crossing that dramatically curves and sweeps.
- 5 responses preferring a pedestrian crossing that contrasts structural materials with fabricated design.

Board #2: Look-and-Feel – Greenspace Typologies

- Folks were asked to place a dot next to the types of greenspaces that they'd hang out in on campus.
- 7 responses for campus quad
- 9 responses for dining hall courtyard
- 20 responses for green amphitheater
- 5 responses for building plazas
- 9 responses for outdoor classroom
- 9 responses for monumental stairs
- 7 responses for great lawn
- 5 responses for promenade
- 9 responses for campus parklets
- 1 written response for comfortable, lounge-style seating

Board #3: Sketch #1 – Monumental Gateway

- Sketch #1 has a traditional design style, using regular geometry to define spaces like the forecourt and quad. The bridge is a formal transition between spaces.
- 28 responses supporting monumental stairs, a green amphitheater, an open lawn, and a simple means of crossing the railway.

Board #4: Sketch #2 – An Angled Approach

- Sketch #2 celebrates engineering with a large bridge structure. Towers punctuate the landscape to call attention to this feature.
- 5 responses supporting a campanile-style tower with stairs and an elevator in a large quad, with a structural bridge connection to the Foundation's land.
- Strong opinion by students and ADA coordinator to not include an elevator into the design of the crossing. Current elevators provide unwanted spaces, breakdown, take too long, and don't provide good access.

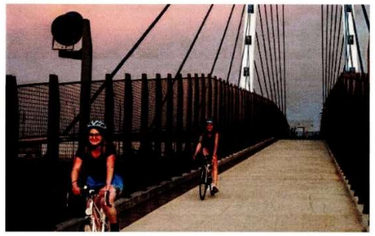
Board #5: Sketch #3 – The Ped-ramp

- Sketch #3 is a more modern approach and utilizes the landscape as part of the experience. Vehicles are completely removed from this space.
- 25 responses supporting a curvilinear ramp rising out of mounded earth and traveling across the tracks.

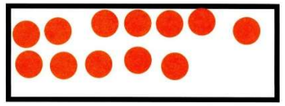
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LOOK-AND-FEEL – PEDESTRIAN BRIDGES

Please place a dot next to the pedestrian bridges that you think would look best on campus.







*A pedestrian crossing that uses **ramps to connect unique greenspaces**?*







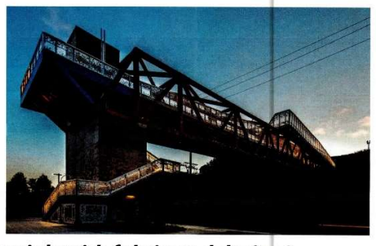
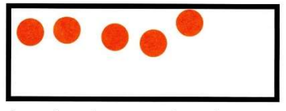
*A pedestrian crossing that emphasizes physical size with **stairs and raw materials**?*






*A **performative** pedestrian crossing that dramatically curves and **sweeps**?*



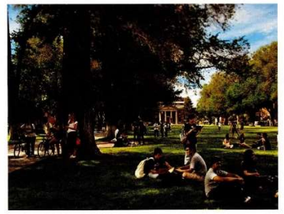

*A pedestrian crossing that **contrasts structural materials with fabricated design**?*

PEDESTRIAN BRIDGE STUDY | 10/23 OPEN HOUSE

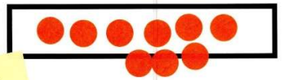
LOOK-AND-FEEL – GREENSPACE TYPOLOGIES

Please place a dot next to the types of greenspaces that you'd hang out in on campus.

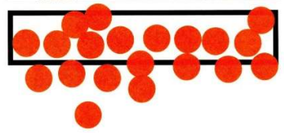
CAMPUS QUAD




DINING HALL COURTYARD

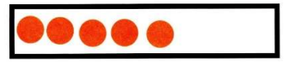



GREEN AMPHITHEATER

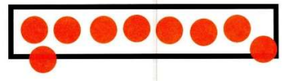



Comfortable Pool-side style lounge seating

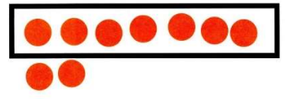
BUILDING PLAZAS

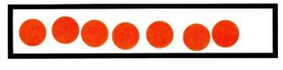
TDOOR CLASSROOM

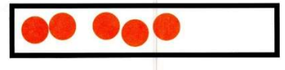
MONUMENTAL STAIRS

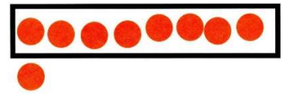
GREAT LAWN

PROMENADE

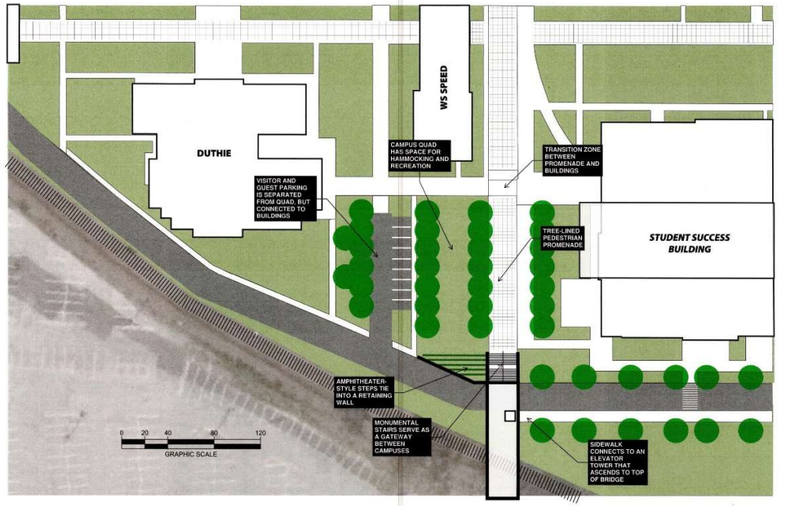
CAMPUS PARKLETS

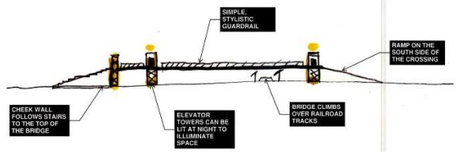



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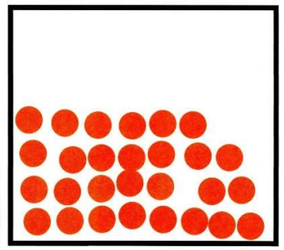
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SKETCH #1 – MONUMENTAL GATEWAY



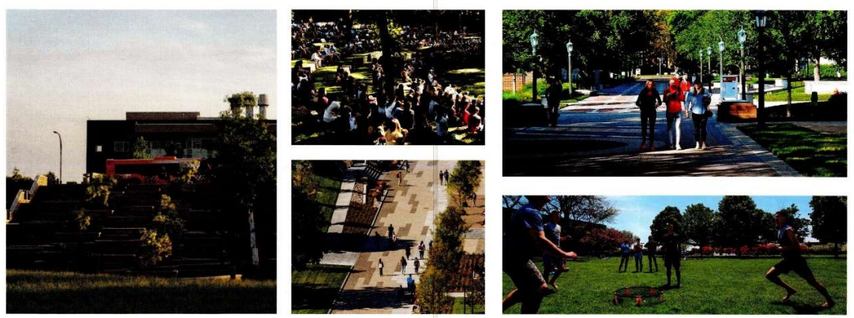


SKETCH #1 HAS A TRADITIONAL DESIGN STYLE, USING REGULAR GEOMETRY TO DEFINE SPACES LIKE THE FORECOURT AND QUAD. THE BRIDGE IS A FORMAL TRANSITION BETWEEN SPACES.

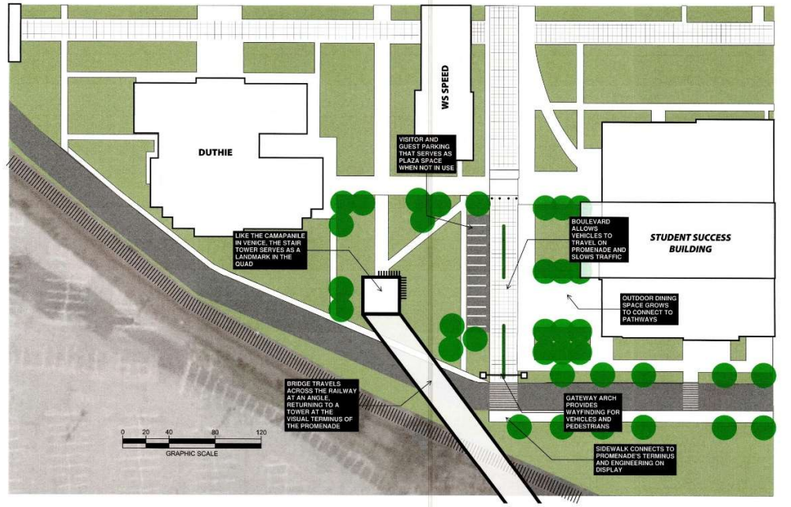


Like this concept? Give it a dot!

CHARACTER IMAGERY

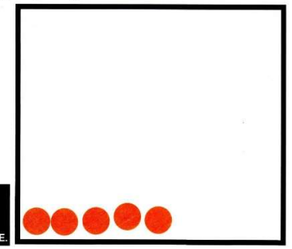


SKETCH #2 – AN ANGLED APPROACH





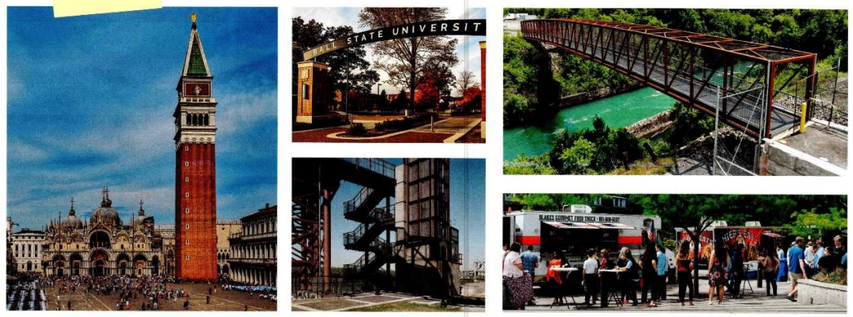
SKETCH #2 CELEBRATES ENGINEERING WITH A LARGE BRIDGE STRUCTURE. TOWERS PUNCTUATE THE LANDSCAPE TO CALL ATTENTION TO THIS FEATURE.



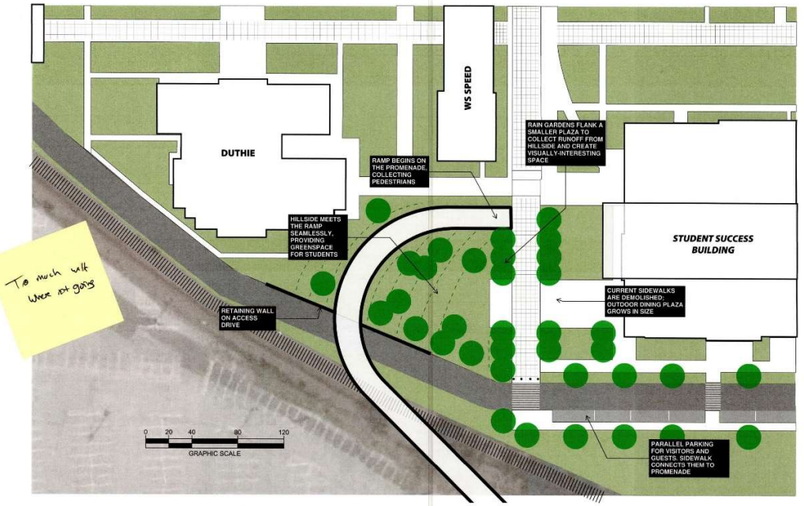
Like this concept? Give it a dot!

Colleen Martin
- Disability Resource Center
- Schneider Hall

CHA AGERY



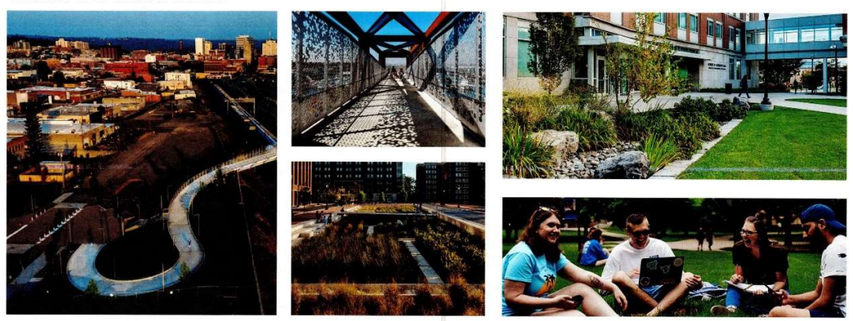
SKETCH #3 – THE PED-RAMP



SKETCH #3 IS A MORE MODERN APPROACH AND UTILIZES THE LANDSCAPE AS PART OF THE EXPERIENCE. VEHICLES ARE COMPLETELY REMOVED FROM THIS SPACE.

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7

UofL Pedestrian Railroad Crossing Study

Meeting Name
Design Workshop

Meeting Date
October 31, 2024

Location
Virtual

Time
2:00 PM – 3:00 PM

Prepared by
Matt Gullo

L&F Project Number
2024.073

Attendees
Carrie Whitmore
Kim Noltemeyer

Planning Team Attendees
Matt Gullo
Aric Andrew
Tanner Prewitt

The following minutes summarize input gathered from the design workshop conducted virtually on Teams.

Meeting Minutes

- Add additional notes to the student data gathering session report about elevator. Student and faculty (Jessica – ADA coordinator) provided feedback to not wanting to introduce another elevator at this location. Need to document in the report.
- Carrie liked the final solution in marrying the ramp and stairs. Thought it was an overall good solution to move forward with.
- Carrie appreciated the removal of large earthen berms and to make the ramp minimalistic.
- The top of ramp should have a more prominent feature vs what is shown currently.
- Add entourage to the final model with some additional "color" to provide better context.
- Provide character images of what the ramp and spaces could look like as reported by UofL and students.
- The current amphitheater steps seem small in model, need to show more prominently. Maybe larger tread.
- Need to provide two version of the model
    - First with vehicular access ending at the ramp with visitor or VIP parking area.
    - Second with no vehicular access ending in plaza space that marry the ramp plaza and current student success building.
- Need to show how the crossing would end on the other side of the track. L&F to show one ending in a plaza space with current parking lot. One ending more prominently with current master plan.
- Next steps
    - LF to provide both model version, maintaining vehicular access and one pedestrian only.
    - LF to set up a final review session November 18th at 3:30.
    - LF to send student report with updates to Carrie.
    - LF to get cost estimator engages for price to finalize plan.

Attached:

- Student Data Gather Session Report

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