



East Frederick Monocacy Boulevard City-owned Property Development

Joint Urban Design Studio and Real Estate Capstone
Spring 2015



UNIVERSITY OF MARYLAND

ARCH 407 Graduate Architecture Design Studio

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This course is part of the PALS program at UMD. PALS (Partnership for Action Learning in Sustainability) is a campus-wide action learning initiative that blends customized coursework, faculty expertise and student ingenuity to tackle challenges facing Maryland communities.

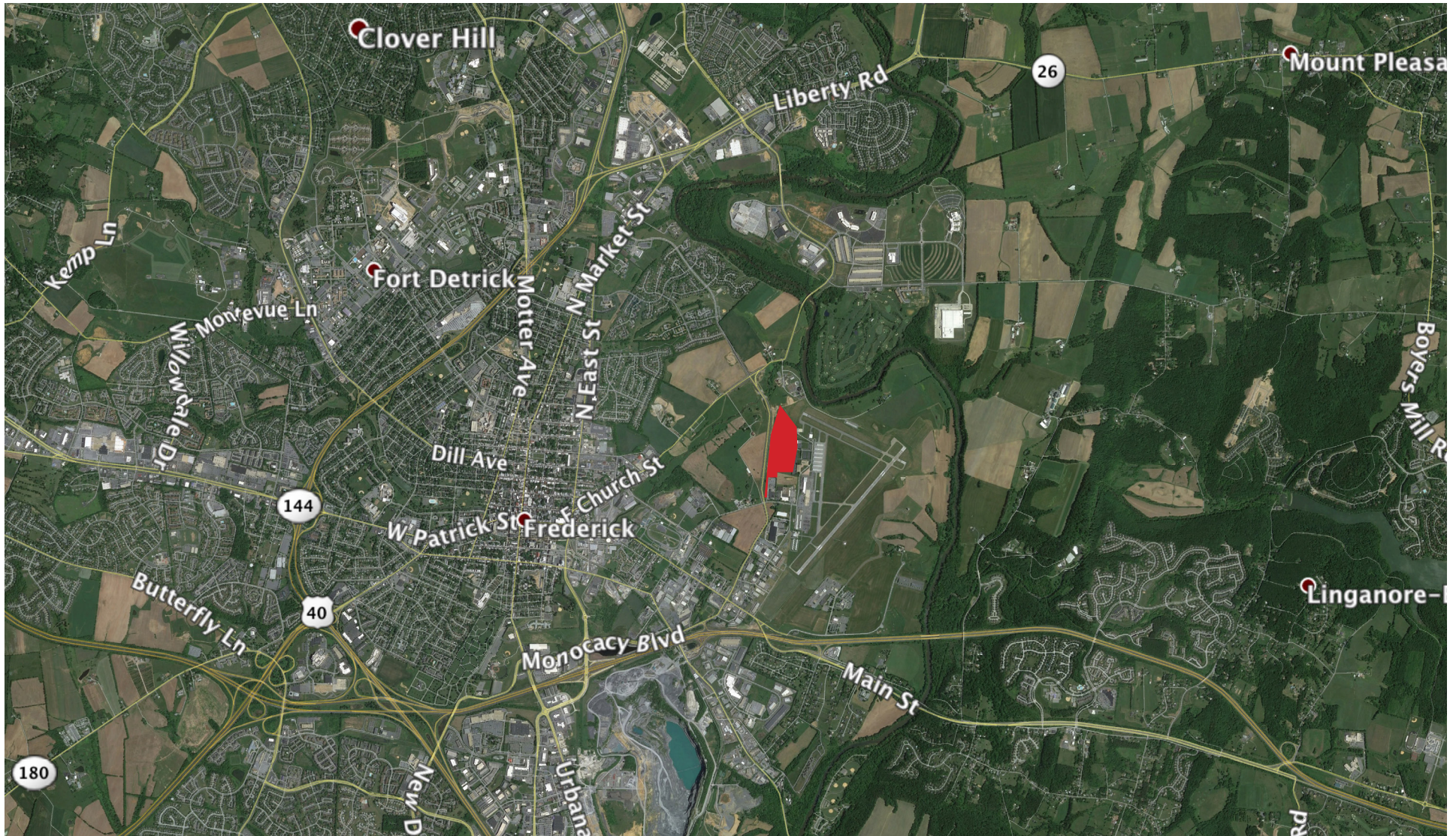
ARCH 407 is a collaboration studio – that is, a studio that joins graduate students from Architecture with graduate students from Real Estate Development to work collaboratively on a design project. The project for the Spring 2015 semester worked with community stakeholders and practitioners to come up with a plan for development of the Monocacy Boulevard site in Frederick, Maryland.

This studio concentrated on the problems and theories of urbanism and urban design techniques in the context of The City of Frederick and the State of Maryland. Applied theories ranged from Landscape Urbanism, Neo-Traditional Design, Transit-Oriented Development, ecological systems and infrastructure, building typology, and street design.

Through early semester research exercises and community workshops, ARCH 407 explored the relationships between cultural, social, and ecological systems in the built environment. The course introduced issues of field (architecture that reaches past its building envelope to shape landscape, ecology, culture, economy, and social behavior), environment, theory, tectonics, and assemblage.

By applying fundamental urban design theories and sustainability principles, students proposed three schematic designs illustrated with graphic data conveying the variety of possible development opportunities.

Development potential of the 32 acre Monocacy Boulevard property, City of Frederick

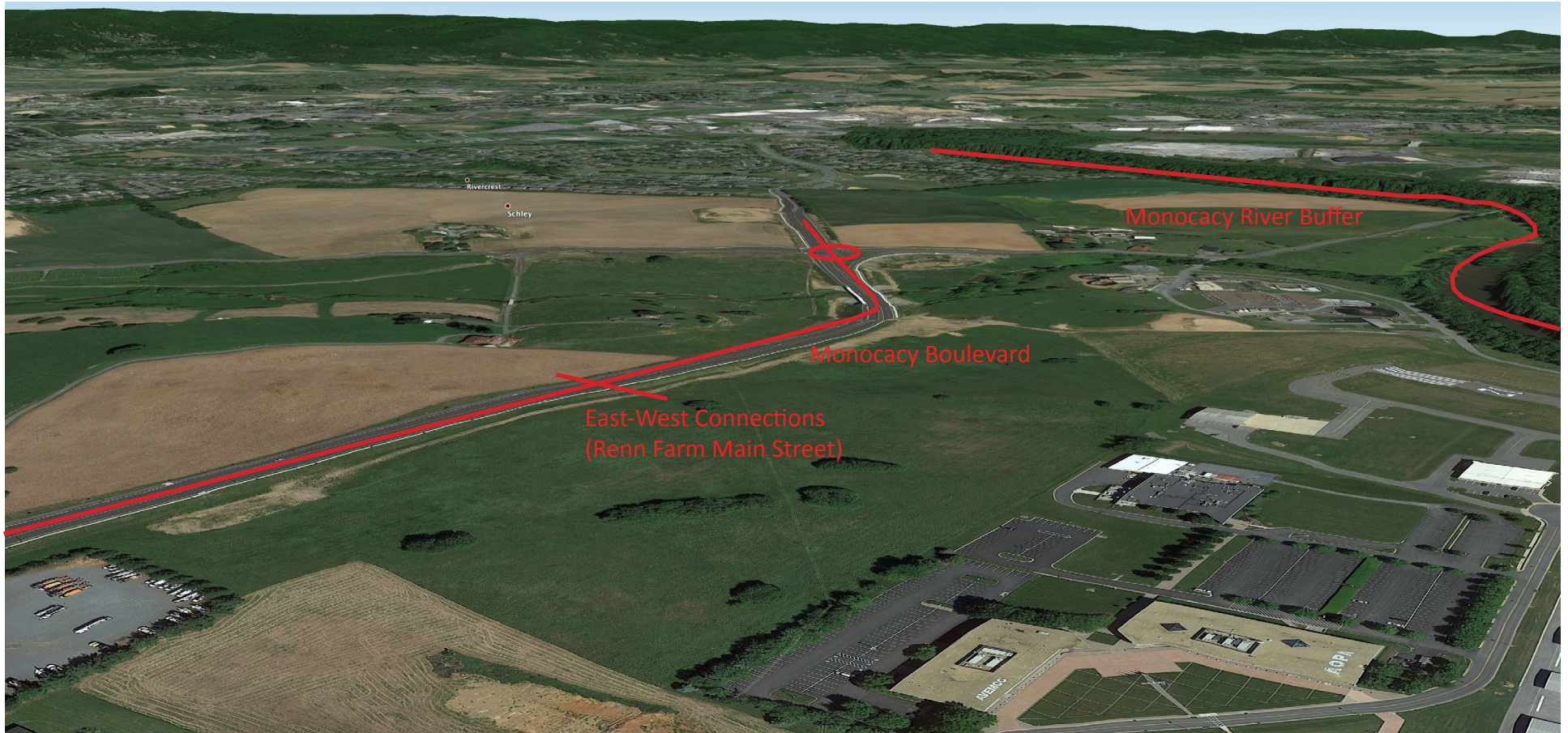






Carroll Creek Wildlife Recreation Area
Credit to: Chris Ellis' Fall 2015 LA course—LARC642





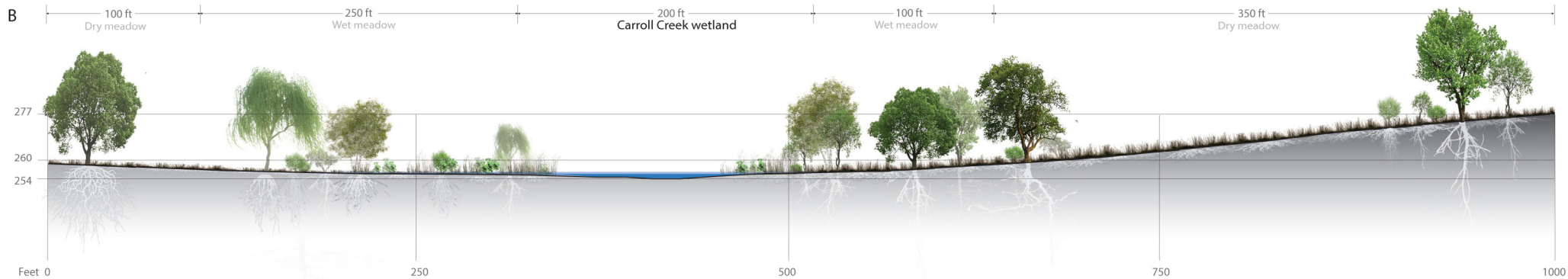
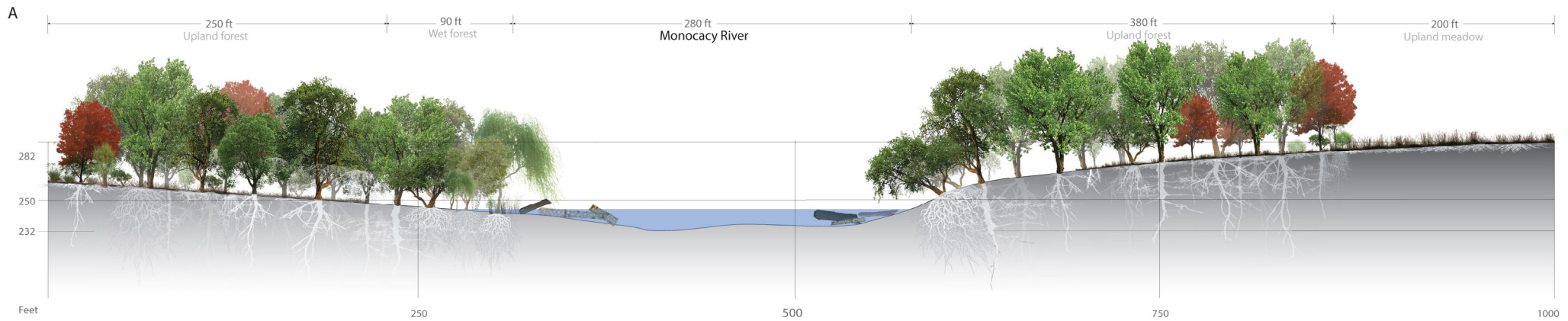
Monocacy Boulevard, Monocacy River and Renn Farm Main Streets are three major urban elements around the site. They are included in a larger urban design scope, implementing the site as a sustainable, walkable and accessible destination for future residents. Here three groups of students create ideas to improve Monocacy Boulevard's green infrastructure, transit options, and streetscape.

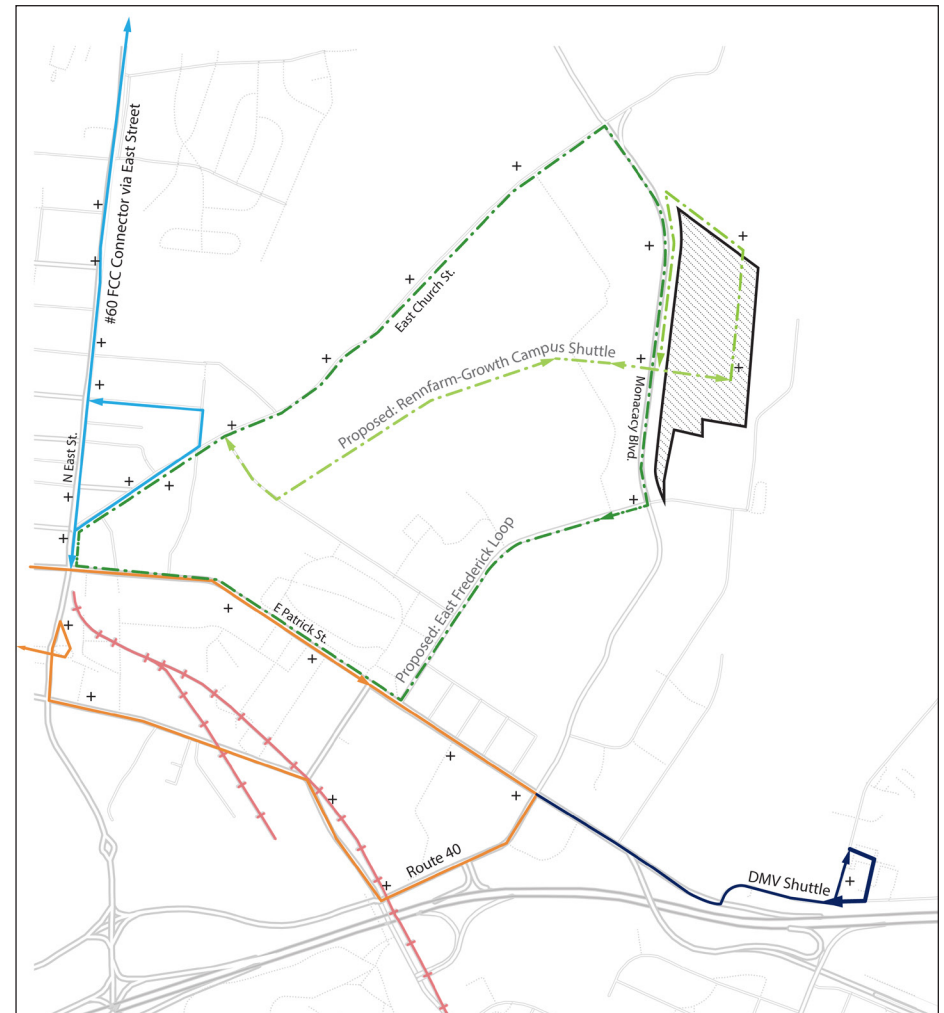
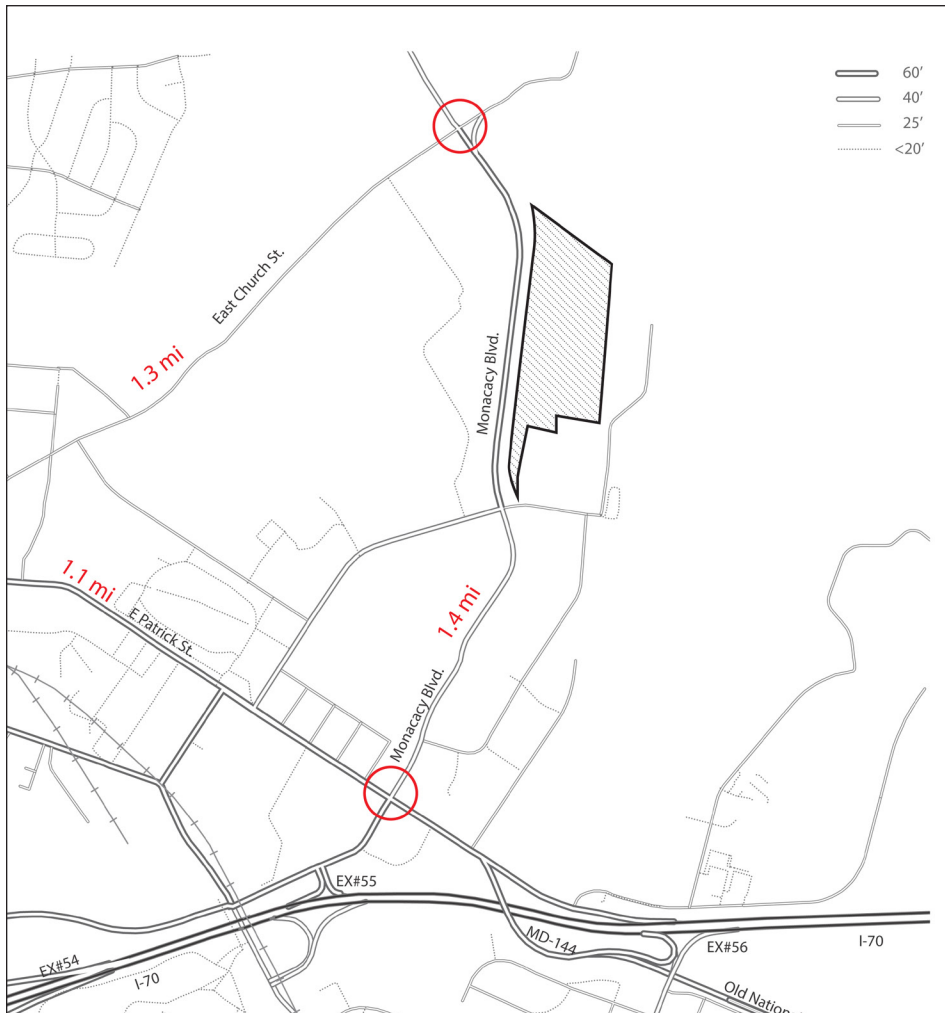
Proposed Plan*

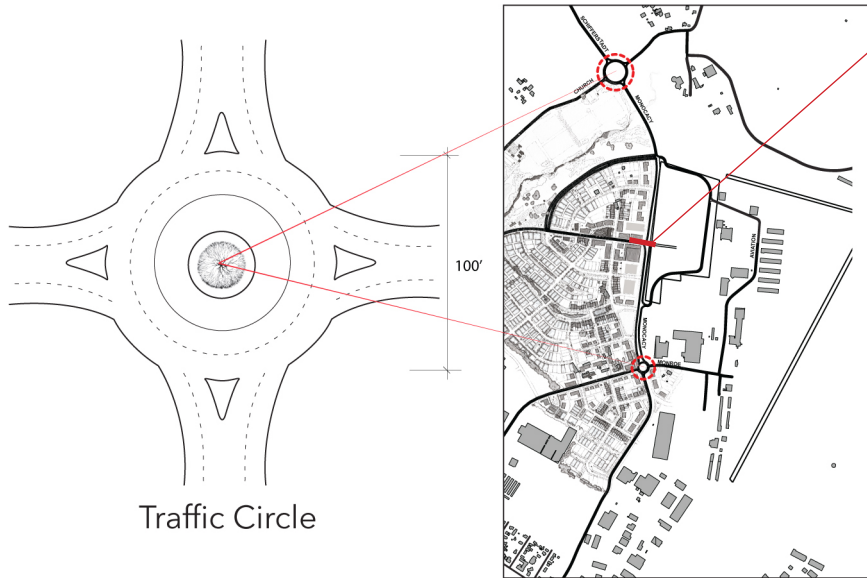
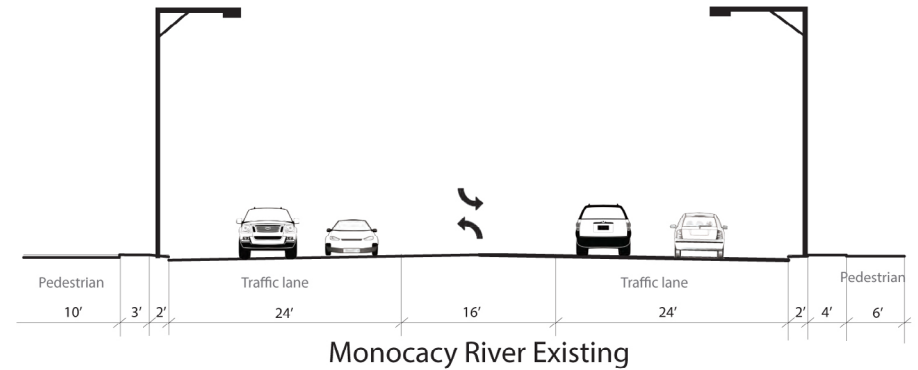
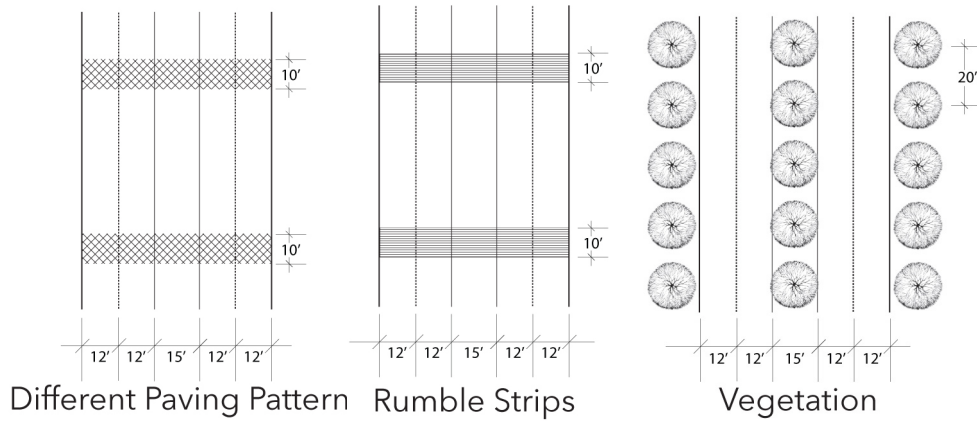


*As proposed by University of Maryland LARC 642 Graduate Landscape Architecture Design Studio III.

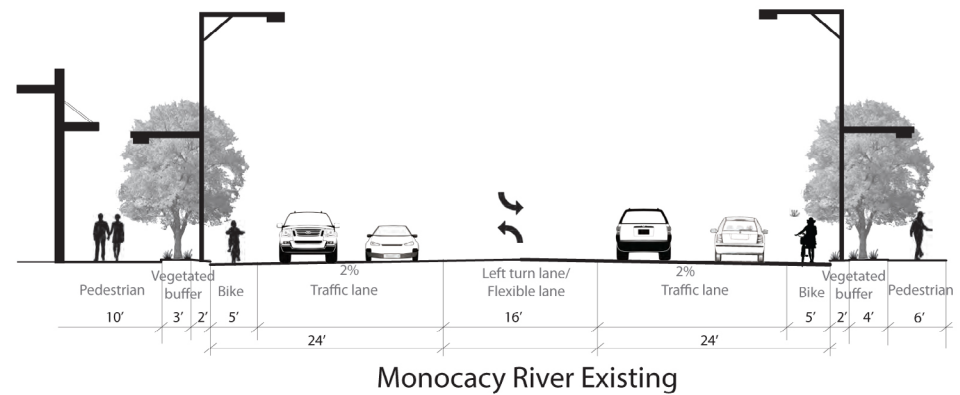
Proposed Improvements







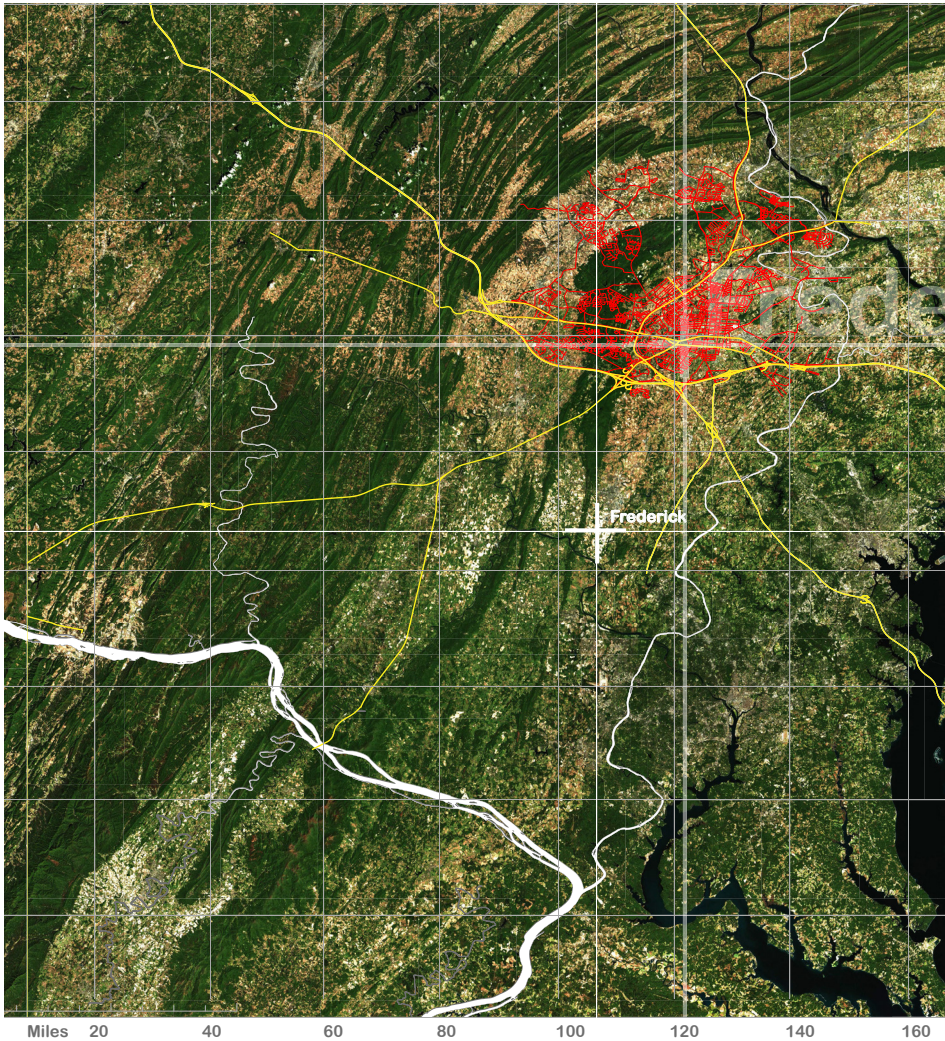
Traffic Light



The task for Assignment 1 was to record an impression of Frederick, Maryland by creating a map. The map consisted of three Geographic Information System (GIS) layers and one “from scratch” layer, and included a three-sentence position statement. Each student made one map.

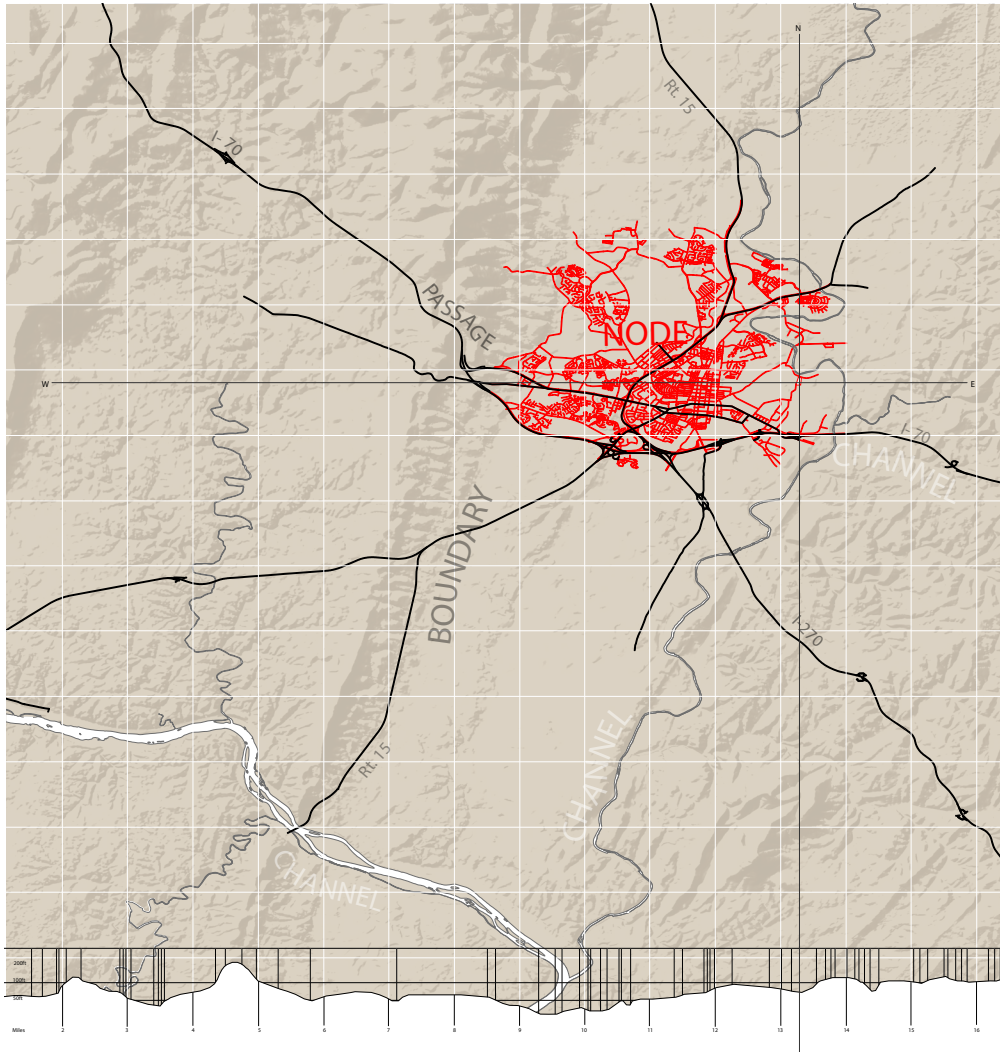
Through this assignment, students exercised their design agency through mapmaking; the maps created were not neutral representations.

Creating maps was part of the preliminary research of students' design work. ArcGIS and Google Aerial Map provided both analytical and tangential perspectives for understanding the larger picture of the landscape and urbanism of the Monocacy Site.



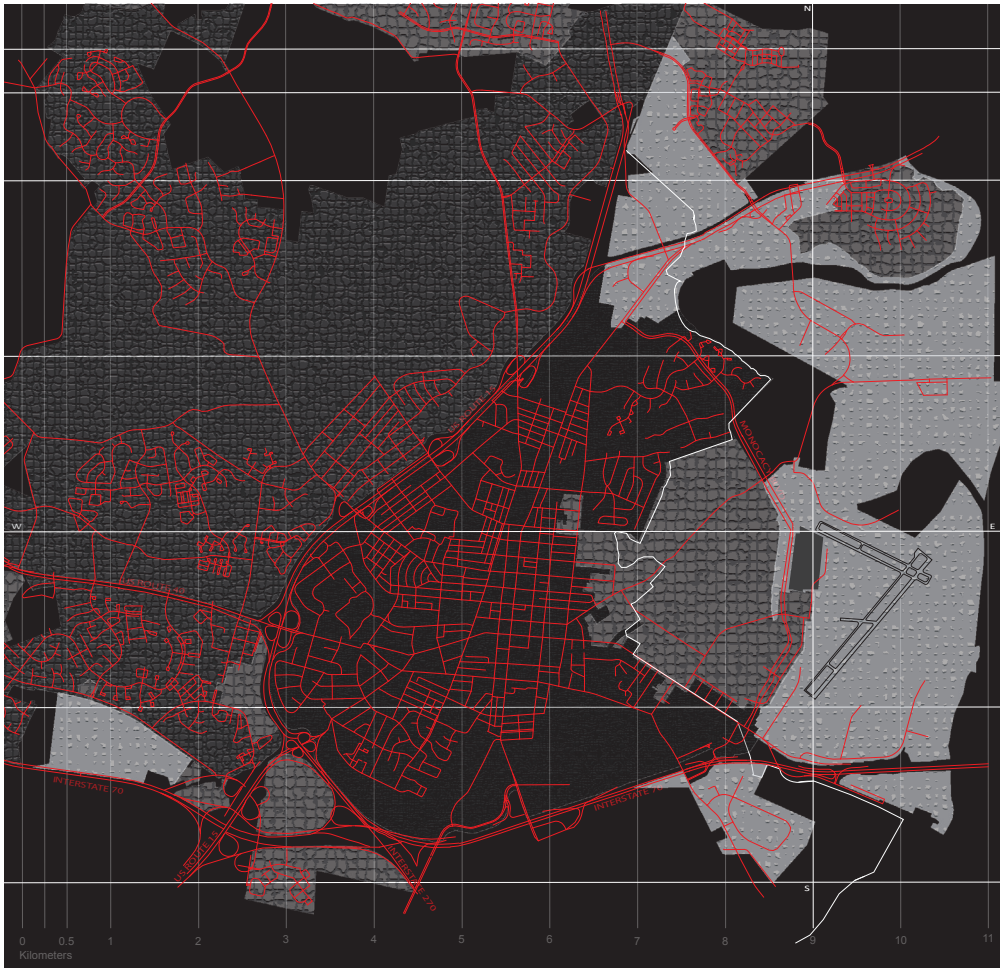
Boundary Node
Sarah Abudulla

The ancient Appalachian Mountains create a boundary at the eastern coastal region and the central part of the North American continent. The form of the mountain range flows in the North-South direction. Frederick lies at the foothills of a passage through this boundary to the middle of the continent.



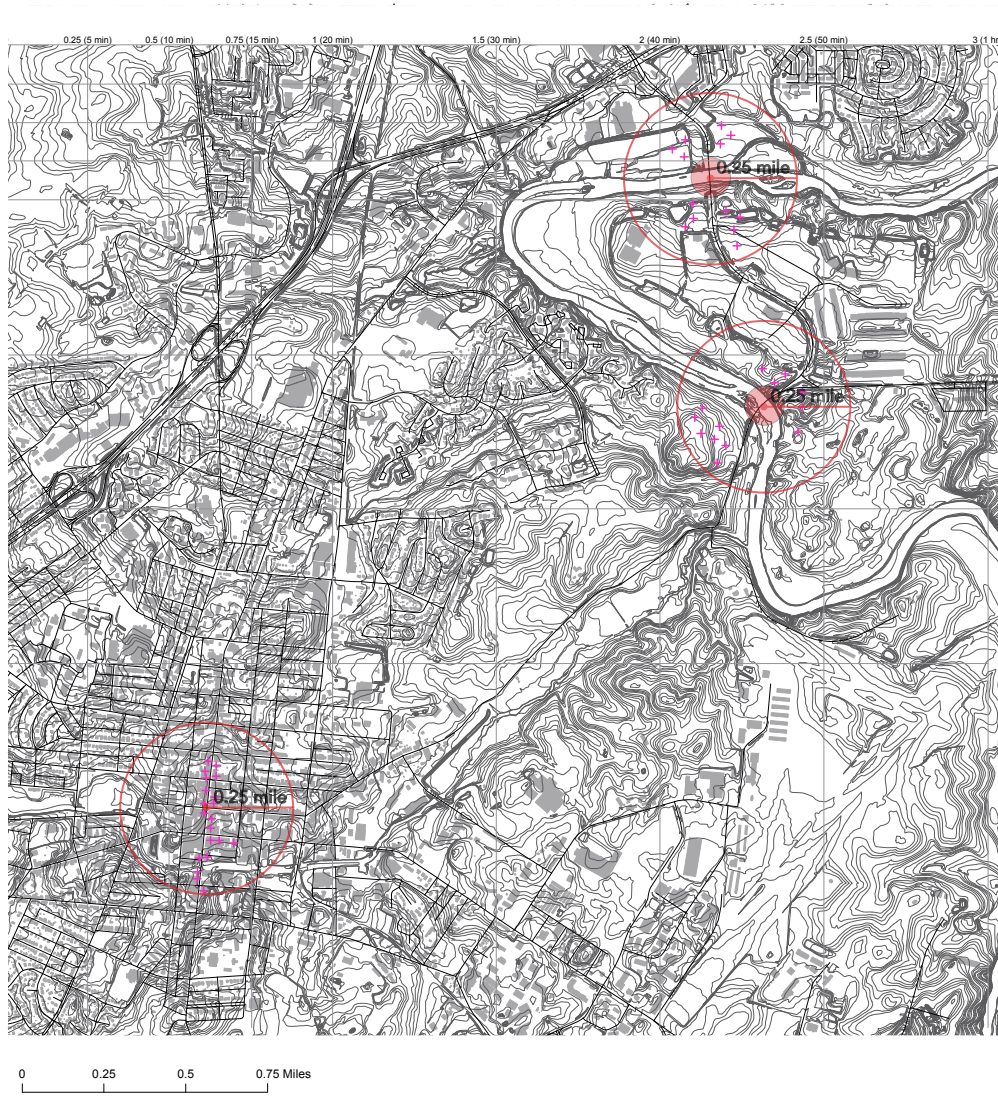
Boundary Node
Sarah Abudulla

The hard and straight boundary of the Catoctin Mountains encouraged a perpendicular shift from the east-west channel of Interstate 70/US Route 40 to the north-south channel of MD Route 15. The channel of the Monocacy River enforces this shift as it flows southward to join the Potomac River. The City of Frederick grew into a node at the intersection of mountain boundary and road and water channels.



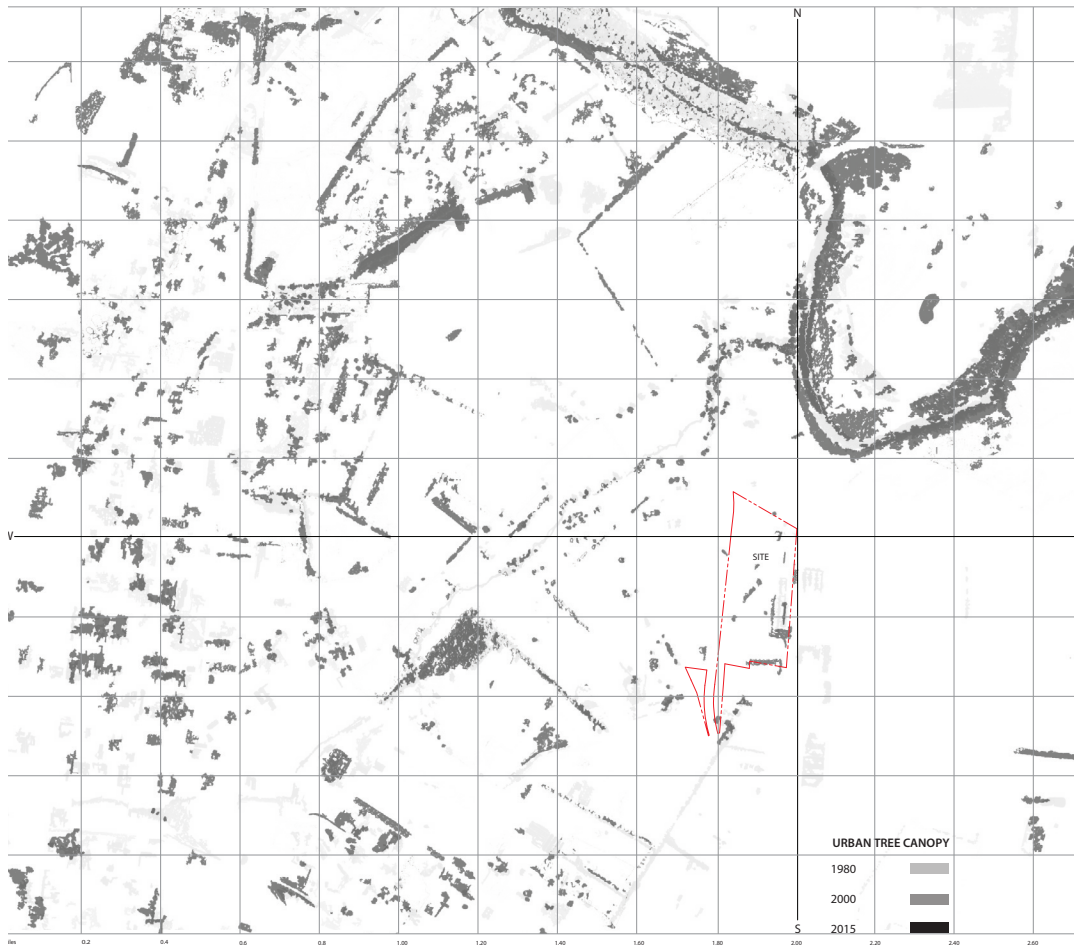
Commercial Crossroad
Brittini Adams

The intersection of Interstates 70 and 270 with US Routes 15 and 40 has become the vertebrae connecting the City. The major roads connect to green spaces and reinforcing this through design will help further commerce and accessibility to recreation. Monocacy Boulevard can help weave together a road and park system that moves from downtown to East Frederick and the Monocacy River. With the densely developed downtown area at the core, this future development of East Frederick could potentially create a circle of social and economic amenities.



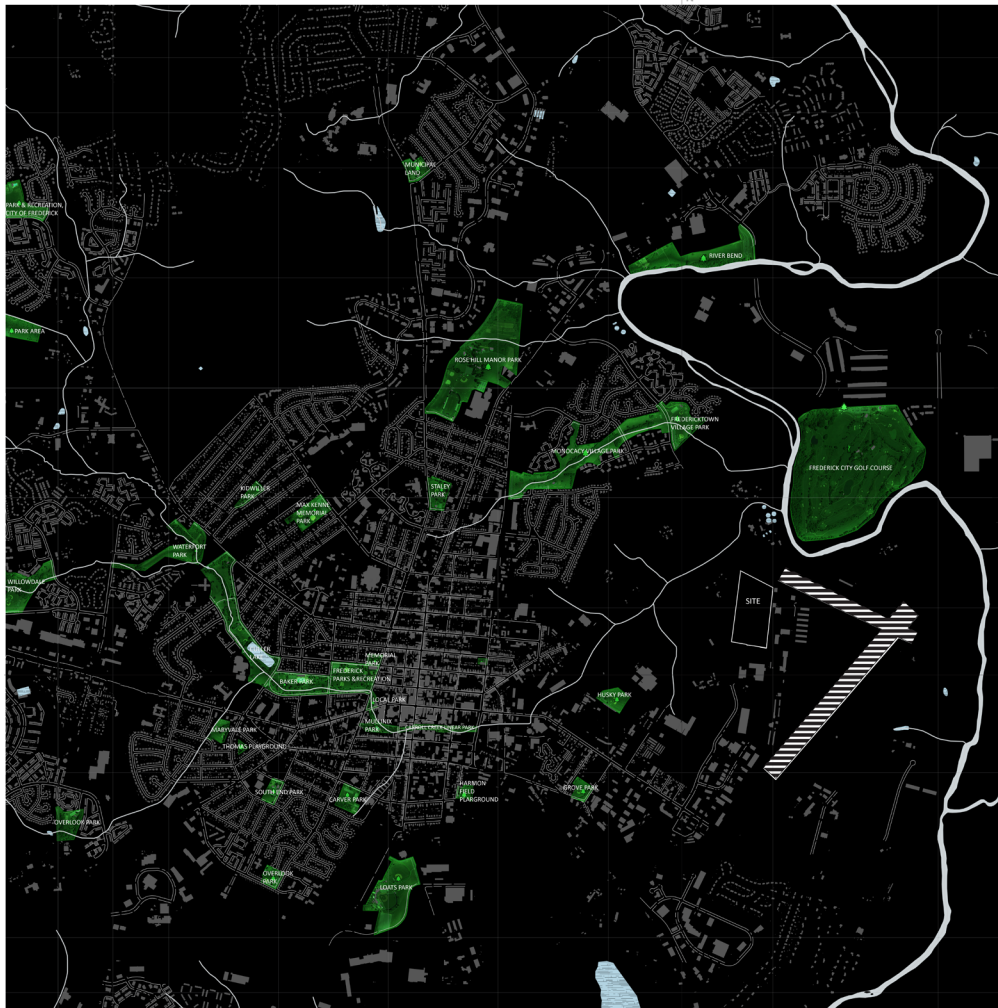
Walkability
Karen Kim

The Monocacy River is an asset for The City of Frederick. Its intersection with Monocacy Boulevard brings potential density to the area. Developing public spaces along the riverfront can create hub spots, similar to the hubs of activity in downtown Frederick.



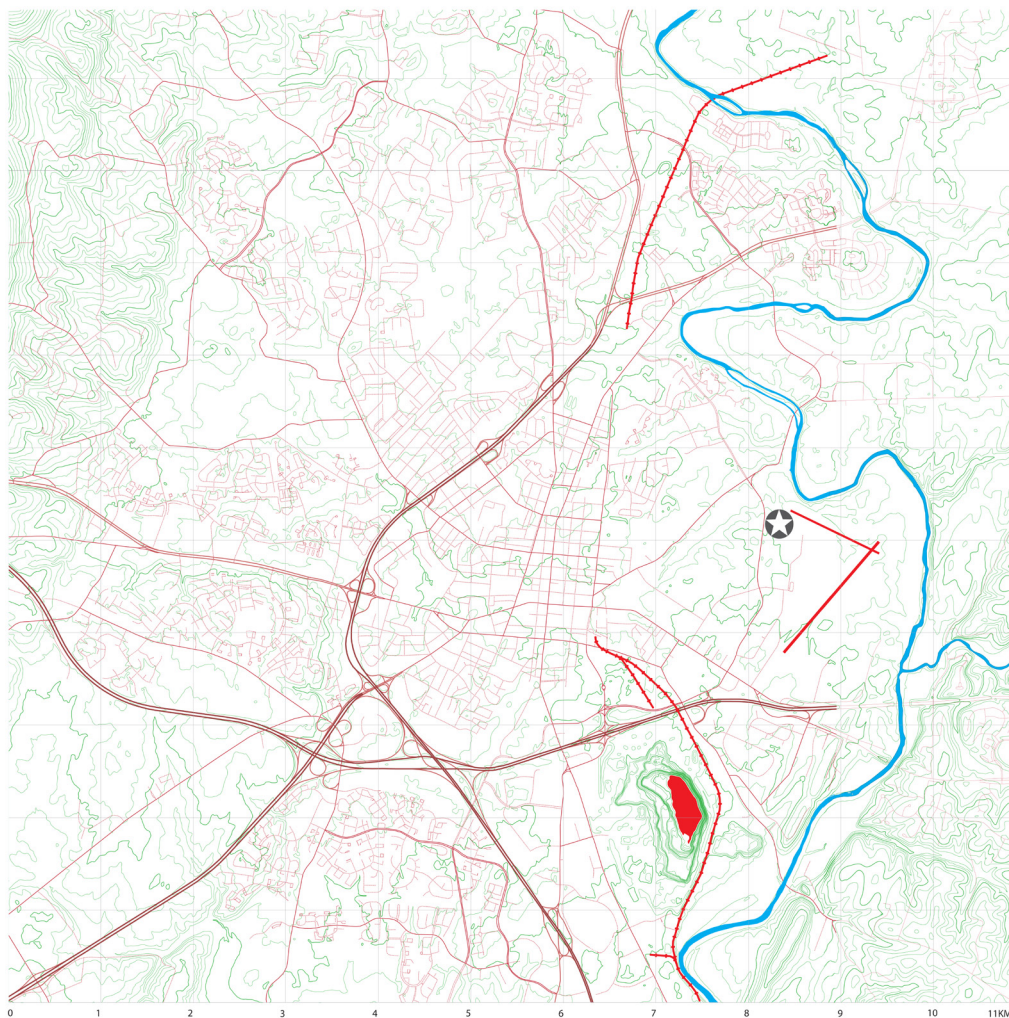
Frederick was first settled by Europeans in the 1730s. Since then, deforestation as result of urbanization has become an increasing issue. Native trees and local ecologies have been compromised by development that prioritizes impermeable surfaces and that undervalues green open spaces. Future planning of East Frederick should consider urban forests as a form of green infrastructure that helps process stormwater, lessens noise and air pollution, reduces the urban heat island effect in the summer, and acts as a barrier for noise generated by car, train and airport transportation systems

Void
Thuy Do



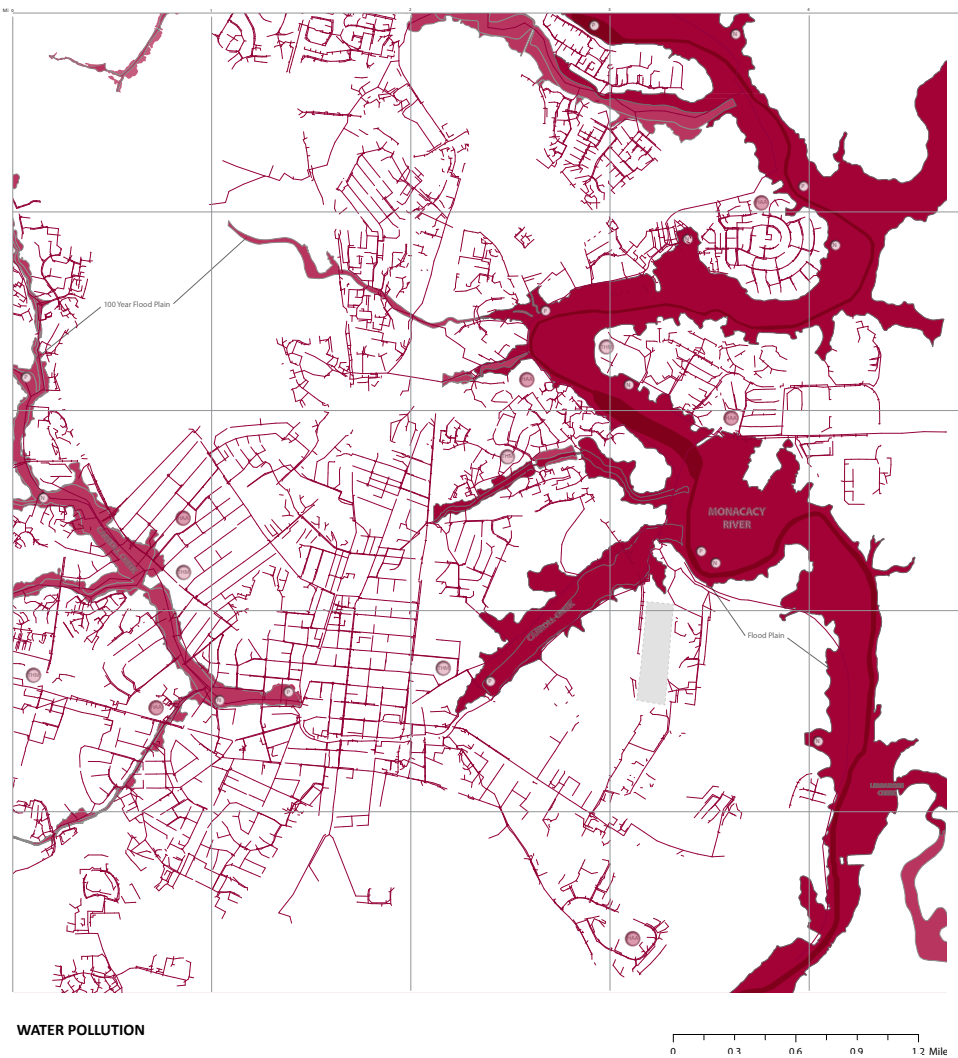
The connection between river, landscape and activities
Haomin Yang

The well-designed open spaces along the river, such as Baker Park, attract people from all over the City. They not only provide customers for the downtown area, but open spaces also bring energy to the waterfront for recreational activities. By contrast, the recreational quality around the airport results in a lower density of inhabitation.



Human Interruption
Zara Naser

Frederick is a heavily constructed landscape. Evergreen Point quarry, the Frederick Municipal Airport, and the road and rail network are all examples of how human have modified topography, hydrology, and the atmospheric environment. These human interruptions to the natural landscape have at the same time served to create a distinct industrial and agricultural character for East Frederick. At the moment these industrial and agricultural monuments lack social amenity and access, but there is great potential for a new kind of urbanism if these and other places like it became accessible public amenities.



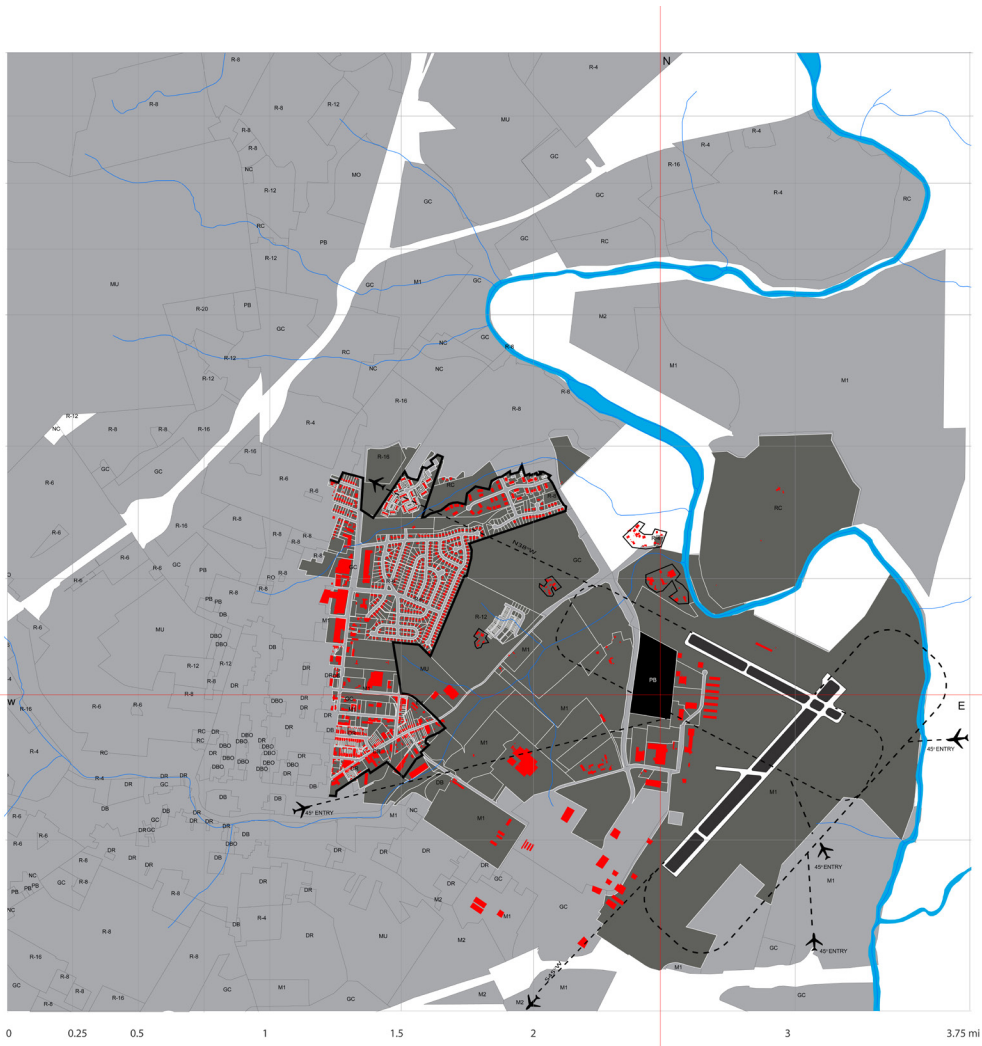
WATER POLLUTION

Water Pollution
Meghen Leahy

Frederick's water supply comes from the Linganore Creek, Monocacy River, Fishing Creek and the Potomac River. But water pollution has become a concern for area residents. Potential sources for the contamination of the Monocacy River are agricultural land, including crops and pasture; discharge from three major and several minor wastewater treatment plants; spills and runoffs from roads and railroad; and existing and future housing developments in the watershed. Deficiency in the City's water treatment has resulted in a recent tap water violation of dangerous levels of chlorination by-products, such as Trihalomethanes (THMs) and Haloacetic Acids (HAAs). There is potential for soft ecological infrastructure to help address this problem in East Frederick and make it distinct from the engineered infrastructure of downtown Carroll Creek.

Sources: Environmental Protection Agency | Chesapeake Bay Foundation | City of Frederick | Maryland Department of Environment

M-1 Light Manufacturing zoning has created a distinct line between East and West and had created scattered urban fabric in East Frederick



R-6>M-1
Boyu Li

Future development of City-owned property along Monocacy Boulevard and near the Frederick Municipal Airport requires reevaluating zoning codes to anticipate a shift from properties that are currently regulated as Manufacturing (M-1) to properties that can be developed as mixed residential and commercial use (R-6). The current development pattern in Frederick is a vivid visual record of the divide between zoning districts as well as the historical inclination to build near water sources. The areas near the airport have remained low density and largely undeveloped, while the properties along the river, creek and stream corridors show higher density urbanism.

Source: City of Frederick Planning Department | Noise Abatement of Frederick Airport



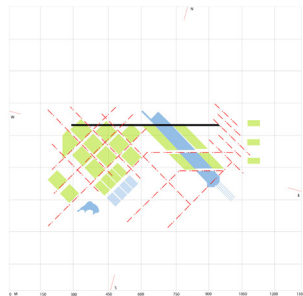
International Frederick
Rusty Holstine

As technology and the demand for air travel expands, it makes sense to connect downtown Frederick to one of its greatest assets—the Frederick Municipal Airport. The airport is not only growing in size, it is also becoming a hub for social activity. The airport is a relief airport for BWI, Dulles, and Reagan National, providing charter services, car rental, and a flight school. Redevelopment is an opportunity to provide an easy, effective, attractive way to the airport from downtown Frederick. This map shows a shuttle route from downtown to the airport that is supported by a series of social hubs along its route.



Site Visit Photos





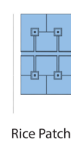
Landscape Regulating Territories: Recreational, Academic, and Social Activities
 Tutorage: Shenyang Architectural College
 Author: Architecture Design Studio IV
 PIA: Jane Henderson
 02/28/2019



Chronographed edge connecting campus moments
 Tutorage: Shenyang Architectural College
 Author: Architecture Design Studio IV
 PIA: Jane Henderson
 02/28/2019

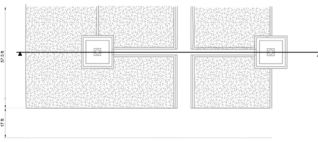


Urban matrix: linking with water body
 Tutorage: Shenyang Architectural College
 Author: Architecture Design Studio IV
 PIA: Jane Henderson
 02/28/2019



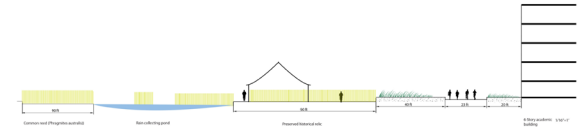
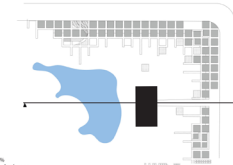
Rice Patch

Area: 402,241 sq ft (37,000 acres, 13.9%)
 Function: Flood Control, Water Landscape, Rice Fields



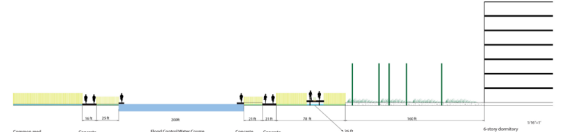
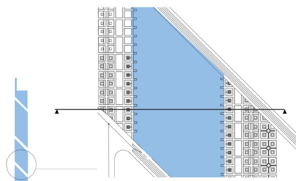
Pond

Area: 302,246 sq ft (3 acres, 8.8%)
 Function: Flood Control, Water Landscape



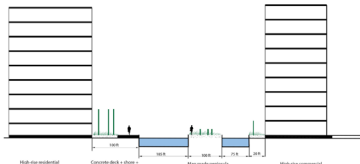
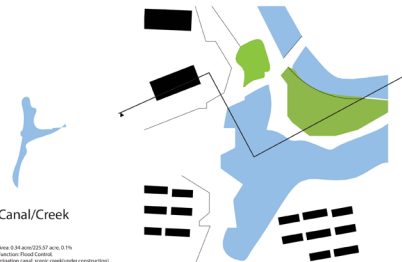
Water course

Area: 5.19 acres (220,000 sq ft, 2.3%)
 Function: Flood Control, Water Landscape



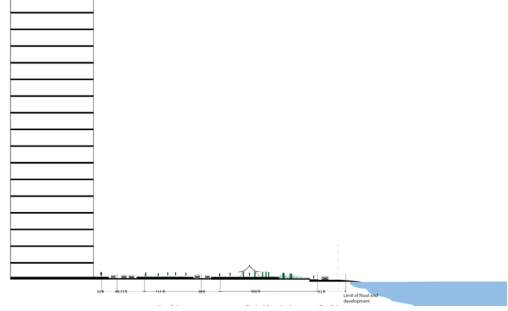
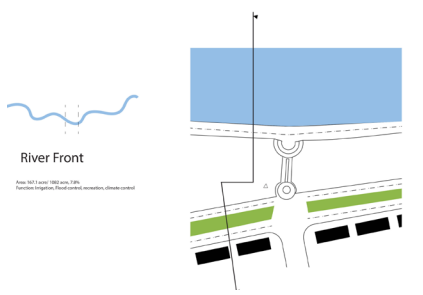
Canal/Creek

Area: 5.84 acres (252,000 sq ft, 5.1%)
 Function: Flood Control, Irrigation and some landscape construction



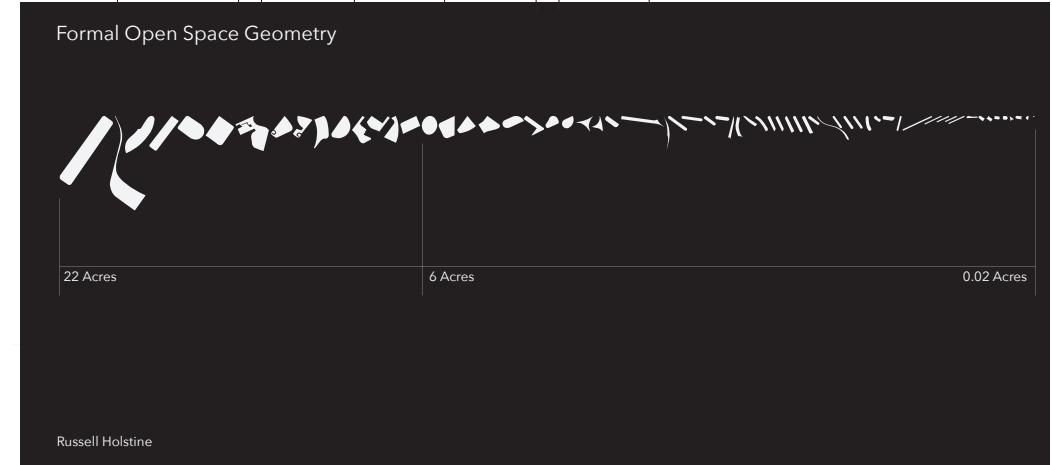
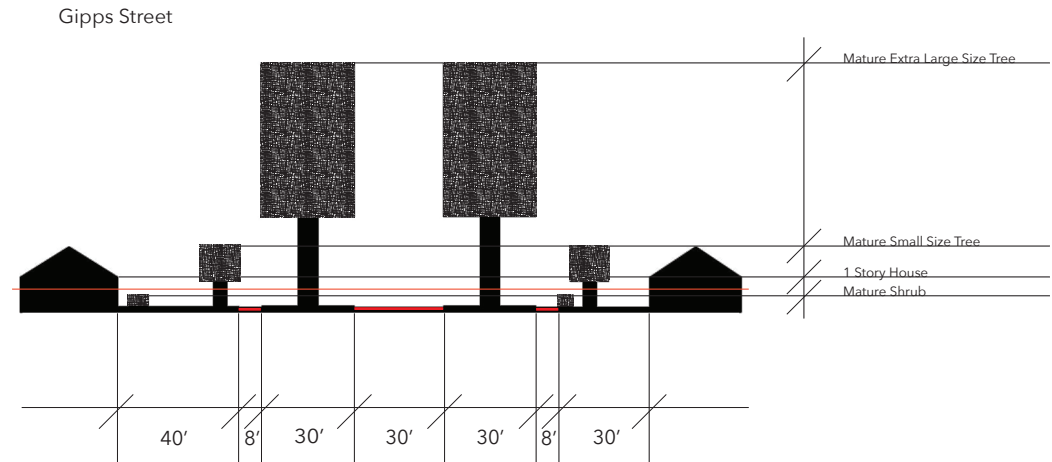
River Front

Area: 161 Acres (692 acres, 1.9%)
 Function: Irrigation, Recreational, Scenic, Urban Control



Boyu Li
 Precedent: Rice patch landscape, Shenyang, China

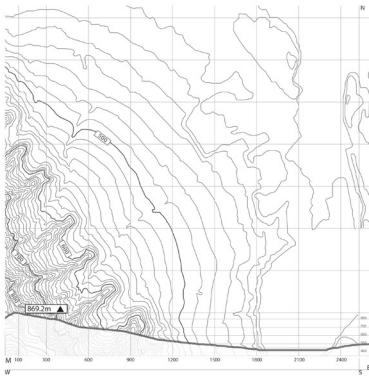
This landscape design project is located in what was once rich soil for rice crops. The school uses rice paths and canals to celebrate the agricultural traditions of the city and create public outdoor classrooms for students. Water features are used in a hierarchy based on the size of the community and eventually connected back to the river. This precedent study serves as an example for how East Frederick might develop properties next to the Monocacy River as soft, floodable infrastructure that at the same time serves as public space.



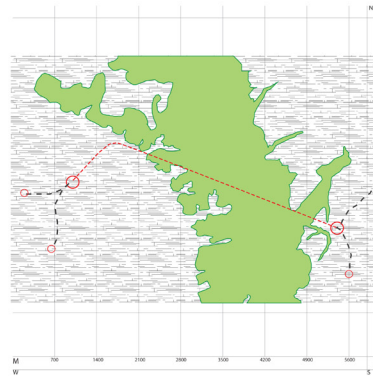
Rusty Holstine
 Precedent: Canberra, Australia

Canberra, the capital of Australia, is located in a windy and desert-like environment. An idea called “shelter belt” was proposed, using trees to prevent strong wind for the residents. A few decades later, the shelter belt generates a linear, green open space for people in Canberra and creates a natural defense against wind and dry air. This precedent study provides design ideas for vegetation to create a buffer from winds and traffic on Monocacy Boulevard.

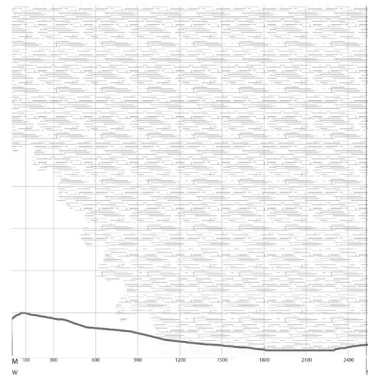
Precedent studies and urban design projects in various cultural contexts continued



City in the river valley
Arch 407 Architecture Design IV
Professor Vanderford
ZARA NASER
02/14/2015

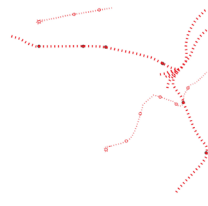
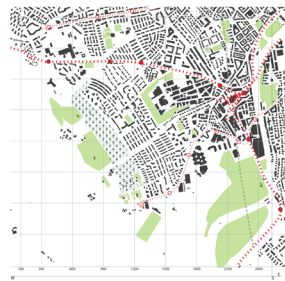


Respect the Forest
Arch 407 Architecture Design IV
Professor Vanderford
ZARA NASER
02/14/2015



Albis meets Zurich
Arch 407 Architecture Design IV
Professor Vanderford
ZARA NASER
02/14/2015

*Nature and Landscape Protection Inventory 1990.



Train Routes



Open spaces and community Gardens

zürich

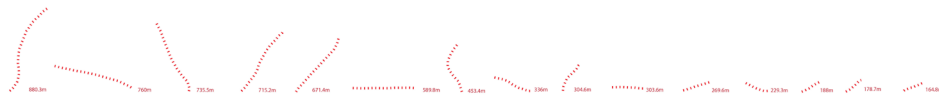


Buildings

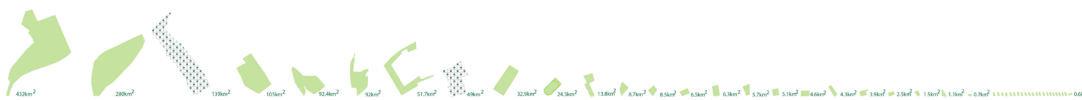


Zara Naser
Precedent: Zurich Urban Green, Switzerland

Path



Open Spaces and Community Gardens



Central Zurich is located next to a protected historical forest. The edge of the city merges into the natural green with a long belt of community gardens. The use of public transit and the walkability of Zurich makes community gardens and preserved forests accessible to people living in the central city. Zurich is a case study that provides a rich design language for condition where dense city core intersects and the outer agricultural periphery much like the condition where downtown Frederick meets East Frederick.

Scheme #1: East Frederick growing campus



Scheme Proposal:

Recall the agricultural history of Frederick and embrace technology, looking toward an agriculturally sustainable future

Phase 1:

- Proposed no-truck access entry
- Bus loop connecting the site with Renn Farm, downtown Frederick
- Urban Forest featuring a rain garden and a diagonal urban axis connecting site to Monocacy river as end vista

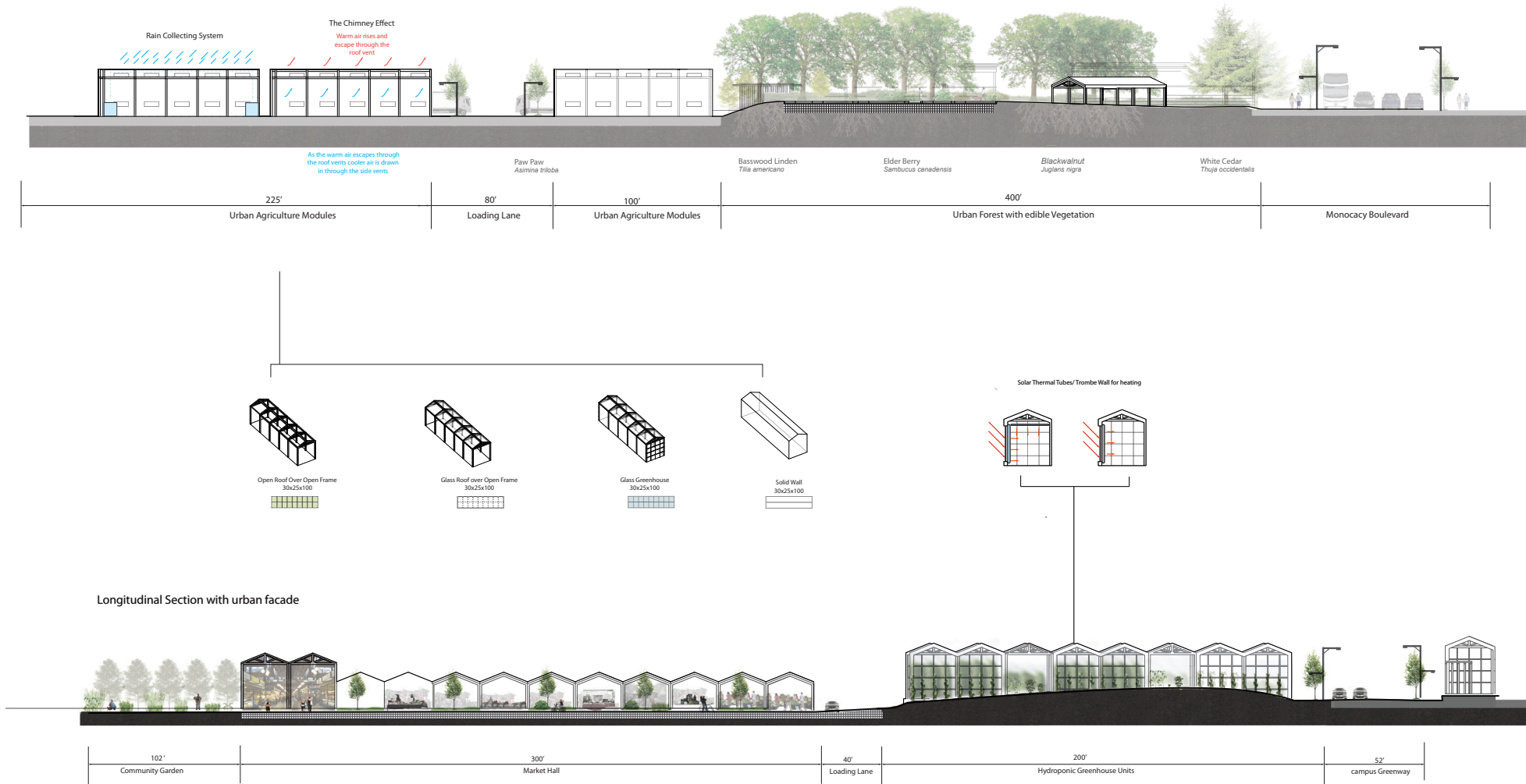
Phase 2:

- Bringing the "Dormer Street" commercial blocks featuring gourmet food to create a second method of pedestrian access to the site
- Continue the modular agriculture units, creating different architectural characters



- Phase 3:
- Introduce market hall units, a local food hub and a community garden
 - Complete infill agriculture practice, featuring 4 types of structures for various types of produce and crops

Urban section, displaying eco-conscious and community-based food resources



Urban Section

A diagram of the architectural language of the urban design scheme as well as sustainability practices on the site, specifically natural ventilation and glass thermal tubes for vegetation.



4 distinct urban moments featuring different activities and urban atmospheres:
 A. Threshold Vista; B. Industry Moment; C. Market Hall; D. Dormer Street



A. Threshold Vista



B. Industry Moment

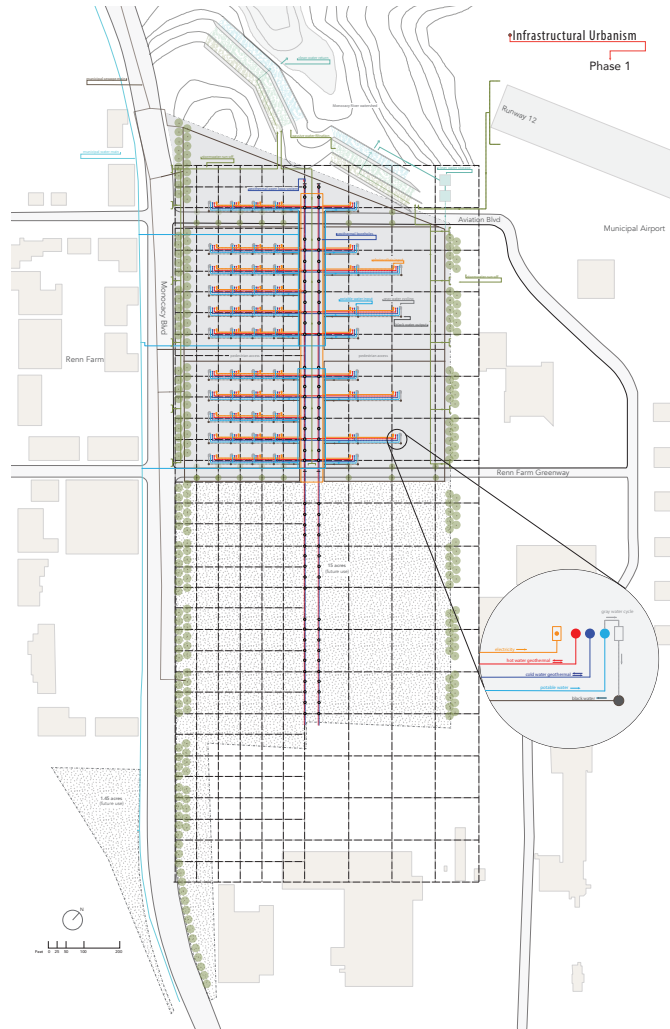


C. Market Hall



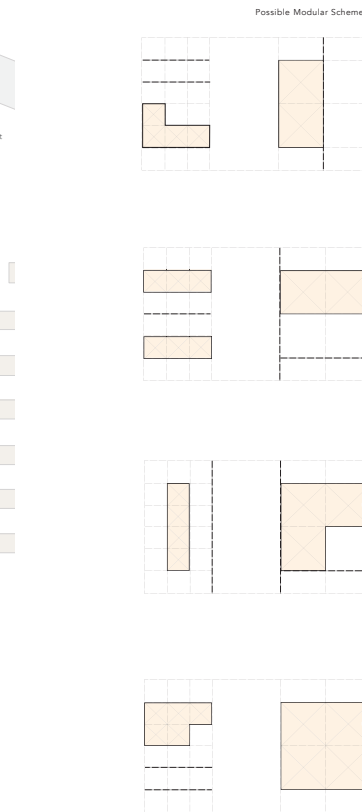
D. Dormer Street

Scheme #2: East Frederick net-zero warehouse district and sky park



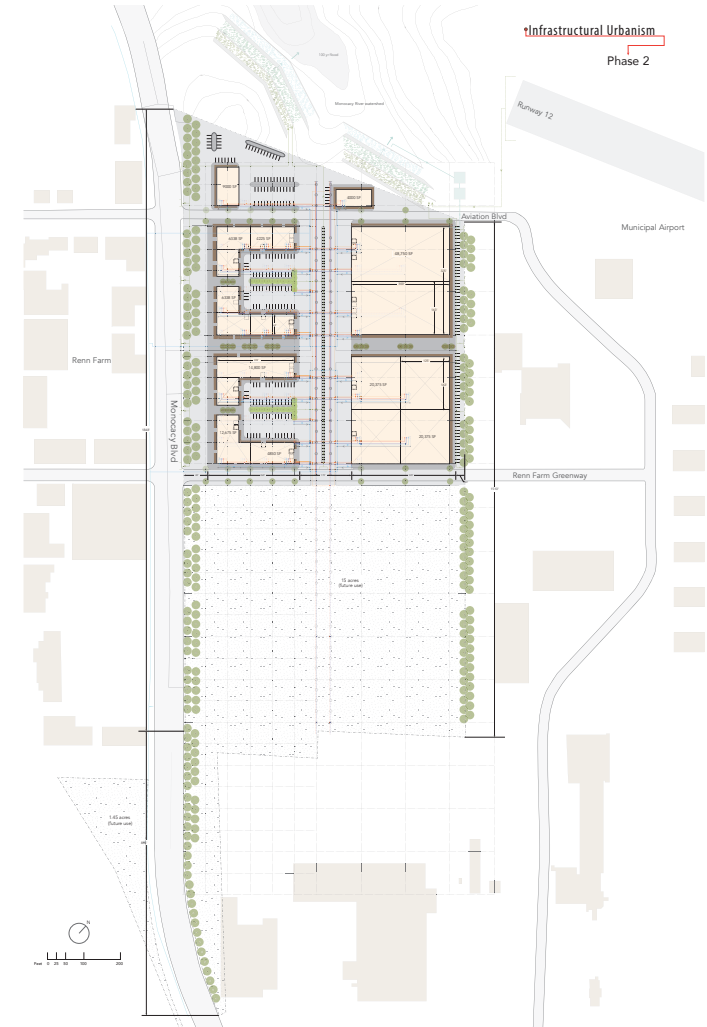
Scheme Proposal:

Celebrate the industrial character of East Frederick and create public spaces through energy-efficient and sustainable urban infrastructure, specifically graywater recycling and geo-thermal utilities



Phase 1

- Set forth an urban form grid through constructing a utility spine



Phase 2

- Based on the grid, create modular units
- Configure the composition of each unit to make public places

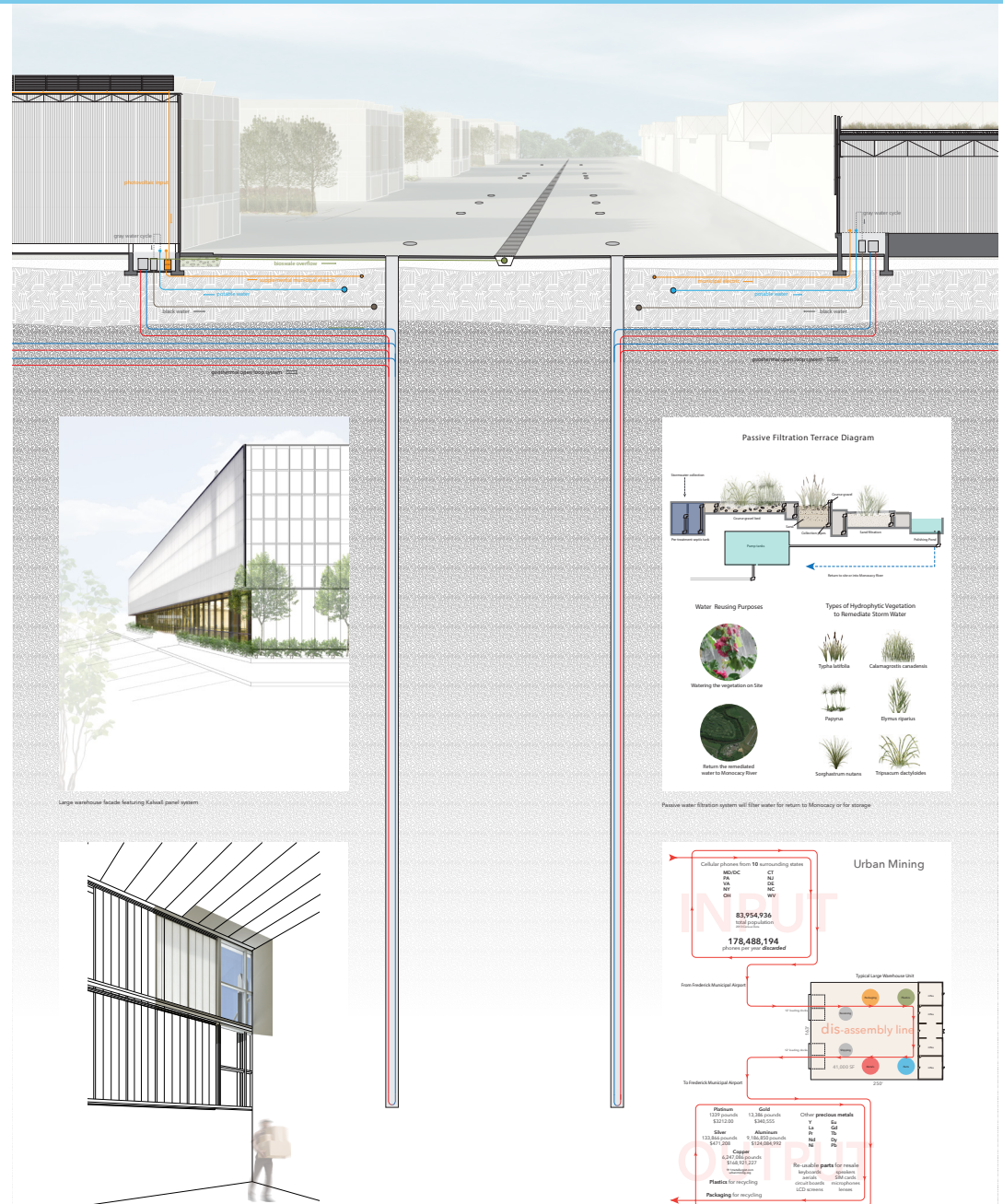


Phase 3

- Elaborate on the courtyard and units, making them pedestrian-friendly
- Design a green roof for the big industrial warehouses to collect rainwater and create a public green space in the form of a rooftop terrace



A sustainable industrial park: Geothermal, passive filtration through the greenery



Utility Spine Section

A close look at the mechanism of the infrastructure as well as a unique industrial streetscape from a pedestrian perspective

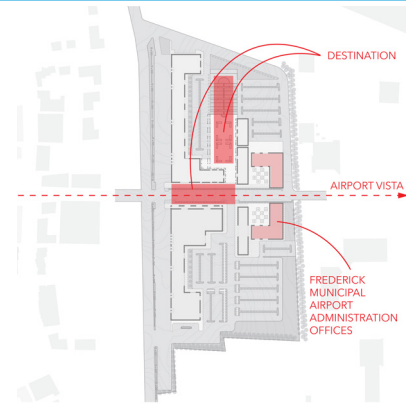


Scheme #3: East Frederick Town Square

Scheme Proposal:
To create a gateway retail destination and town square for East Frederick

- Phase 1
- Define Airport Boulevard as an urban Promenade
 - Array trees on the west side, serving as a visual "speed bump" and loading lane buffer

- Phase 2
- Create a second hierarchy of spaces through a loggia
 - Introduce a variety of retail spaces, including a truck market, walking alley and an amphitheater which also serves as the fourth wall of the plaza
 - Include an airport service building as part of the plaza to attract airport employees and patrons



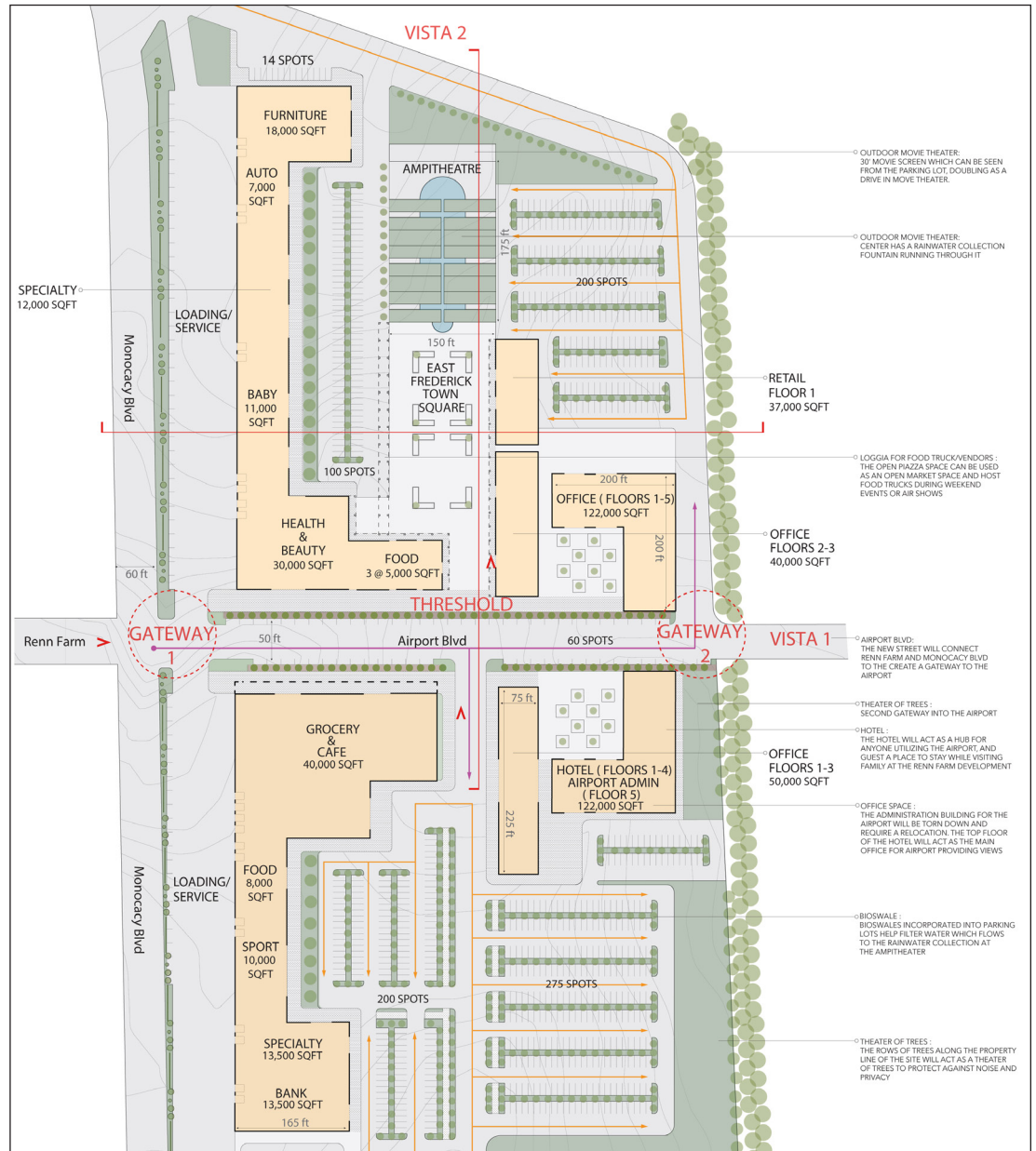
Precedent Study of Trastevere, Rome



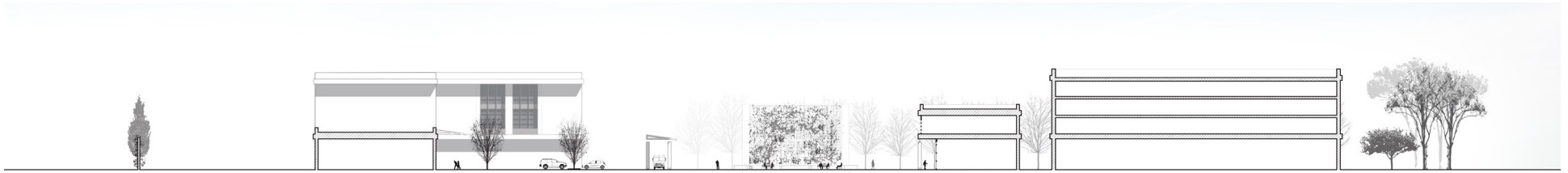


Airport Boulevard, a visual connection of the airport and East Frederick

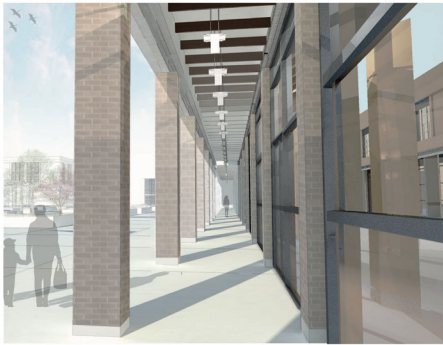
Phase 3
- In-fill the street to complete enclosure of the town square



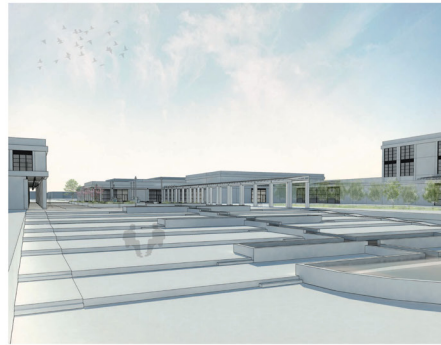




Section 1



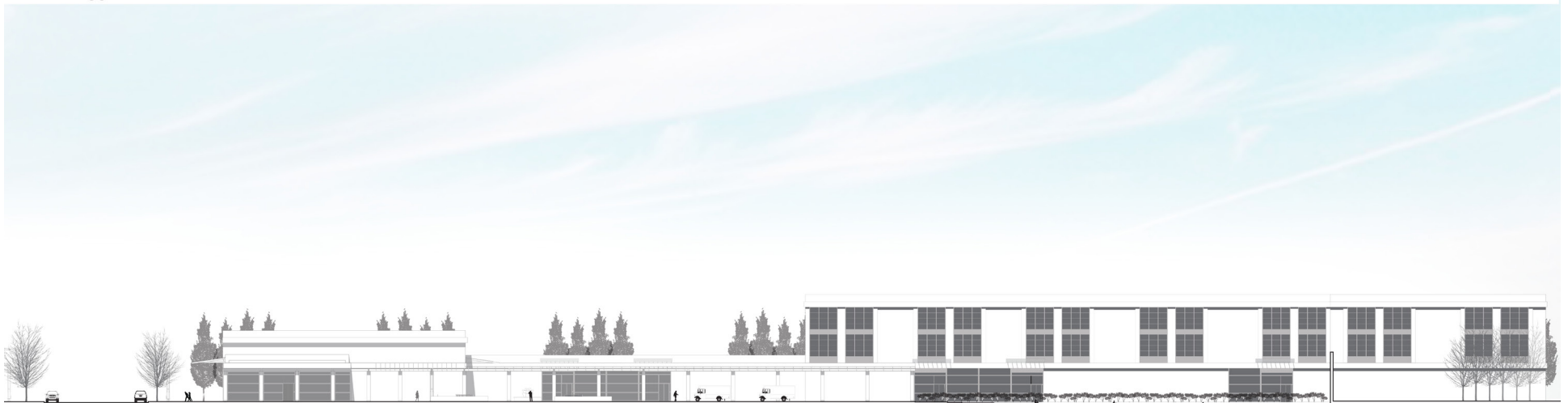
Loggia



Theater



Office Park



Section 2

PALS Course Spring 2015
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