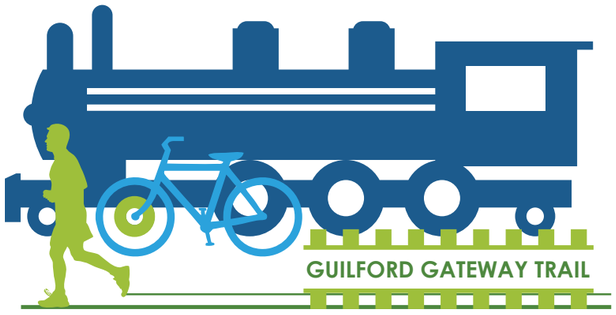
GUILFORD GATEWAY TRAIL

Landscape Architecture
DEPARTMENT OF PLANT SCIENCE AND LANDSCAPE ARCHITECTURE



Guilford Gateway Trail

Bachelor of Landscape Architecture Regional Design Studio

Spring 2016

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psla university of maryland plant science & landscape architecture

HC

PALS

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Acknowledgements

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Executive Summary

The Guilford Gateway Trail project presented here proposes to transform 3.5 miles of unused CSX railroad right-of-way into a shared use path system to serve the Southeast Howard County area. The section of right-of-way extends from Washington Boulevard (Route 1) in Jessup northwest to the intersection of Broken Land Parkway and Snowden Parkway passing residential, retail, industrial and open space land uses.

The conceptual design master plan of the new shared use path establishes a new pedestrian and bicycle network that would connect the surrounding neighborhoods and encourage non-motorized transportation options.

Mission Statement

• • Increase connectivity between neighborhoods in Southeast Howard County by implementing a shared use path network that respects natural and cultural resources.

This report is the result of collaboration between Howard County and the University of Maryland Landscape Architecture Program facilitated through the Partnership for Action Learning in Sustainability.

Figure 2. Lake Elkhorn

Figure 3. CSX Train

Figure 4. Housing nearby

Figure 5. Savage Stone

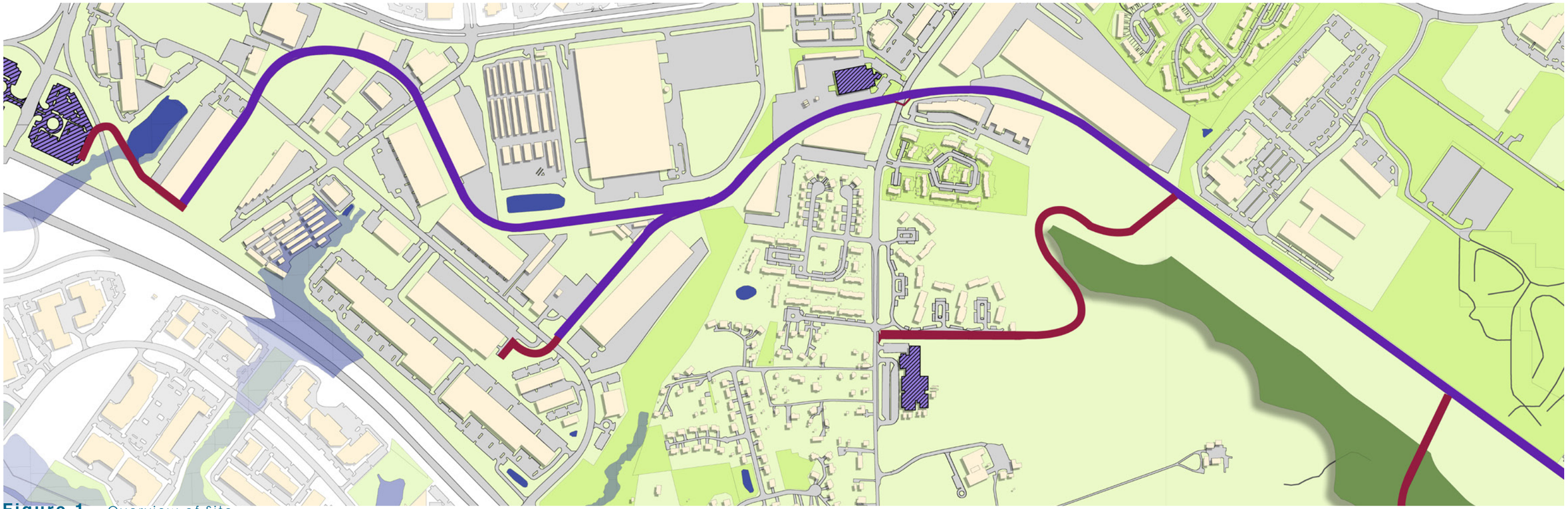


Figure 1. Overview of Site

INTRODUCTION

Introduction

Howard County actively plans for bicycle transportation and walkability through an initiative called Bike Howard. An existing master plan provides guidance for the county's future actions to improve conditions for bicyclists and promote bicycling as a safe and convenient travel option. Howard County is partnering with the University of Maryland Landscape Architecture program through the Smart Growth Center's Partnership for Action Learning in Sustainability (PALS) to provide this design opportunity. The design team worked specifically on a system of shared use trail facilities extending out from a central spine along an existing but unused CSX railroad right-of-way leading from Route 1 in Jessup up to Broken Land Parkway near the intersection with Snowden Parkway.

Six associated design teams concentrated on different focus areas along the main route including the Patuxent connection, Lake Elkhorn, Columbia Gateway Business Park, Savage Stone Quarry (referred to as Mission Lake in this report), Washington Boulevard trail head, and the main CSX line called the Guilford Gateway Trail. The design goals were to provide access to the trail from adjacent residential, commercial retail, industrial and open space land uses.

Project Goals

- • Explore feasible routes for shared use paths connecting to the CSX right-of-way corridor
- • Identify and address opportunities and constraints including natural and cultural resource protection
- • Illustrate design concepts for the trail with plans, diagrams, and perspectives

The idea behind this project is to embrace the documented benefits of active, healthy living through community shared use paths system. By linking residential, commercial and other land uses, the path system would provide important alternative transportation options for Southeast Howard County.

Figure 6. Bridge on existing Patuxent Branch Trail .

Figure 7. Proposed Retention Pond .

Figure 8. Lake Elkhorn

Residential Land Use

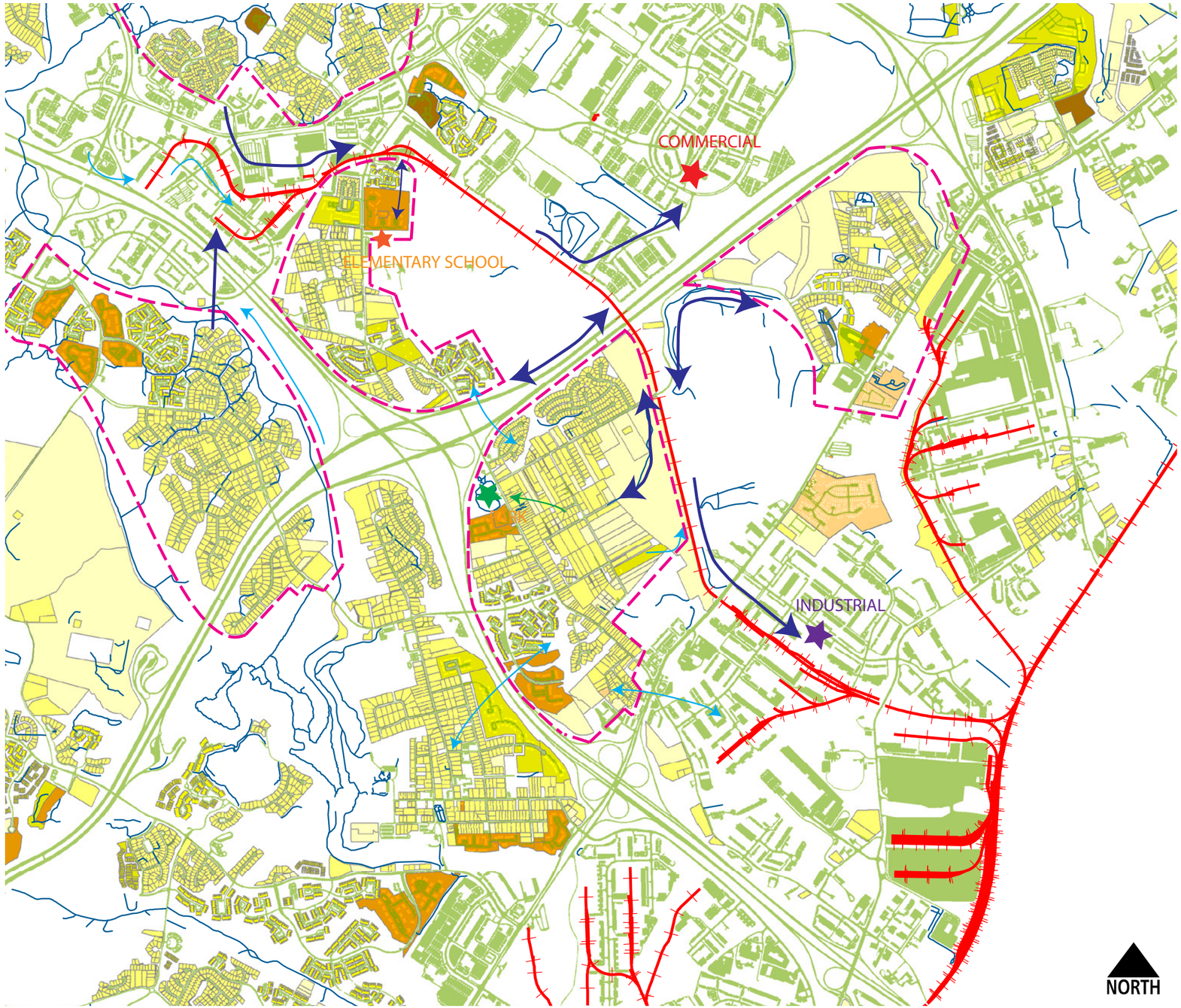


Figure 9. Unique Land Use Map of Site

Residential Land Use Analysis at Guilford Gateway Trail

The center of the study area is high density development, surrounded by industrial uses to the south and commercial uses to the north. Highways divide the community. Trees cover the undeveloped area. Some existing trails are in neighborhood and undeveloped area. Around 7,000 people live in Jessup, and around 104,000 people live in Columbia.

Site Analysis

1. Provide convenient bike trail connections to industrial and commercial areas to decrease driving

2. Has suitable connections between each area

3. Takes care of the topography and uses bridges to cross highway for safety

4. The trails should go around the high-density area

5. Has proper relations between trails with rail-trail

6. Connects to neighborhood with secondary trails

Industrial Land Use

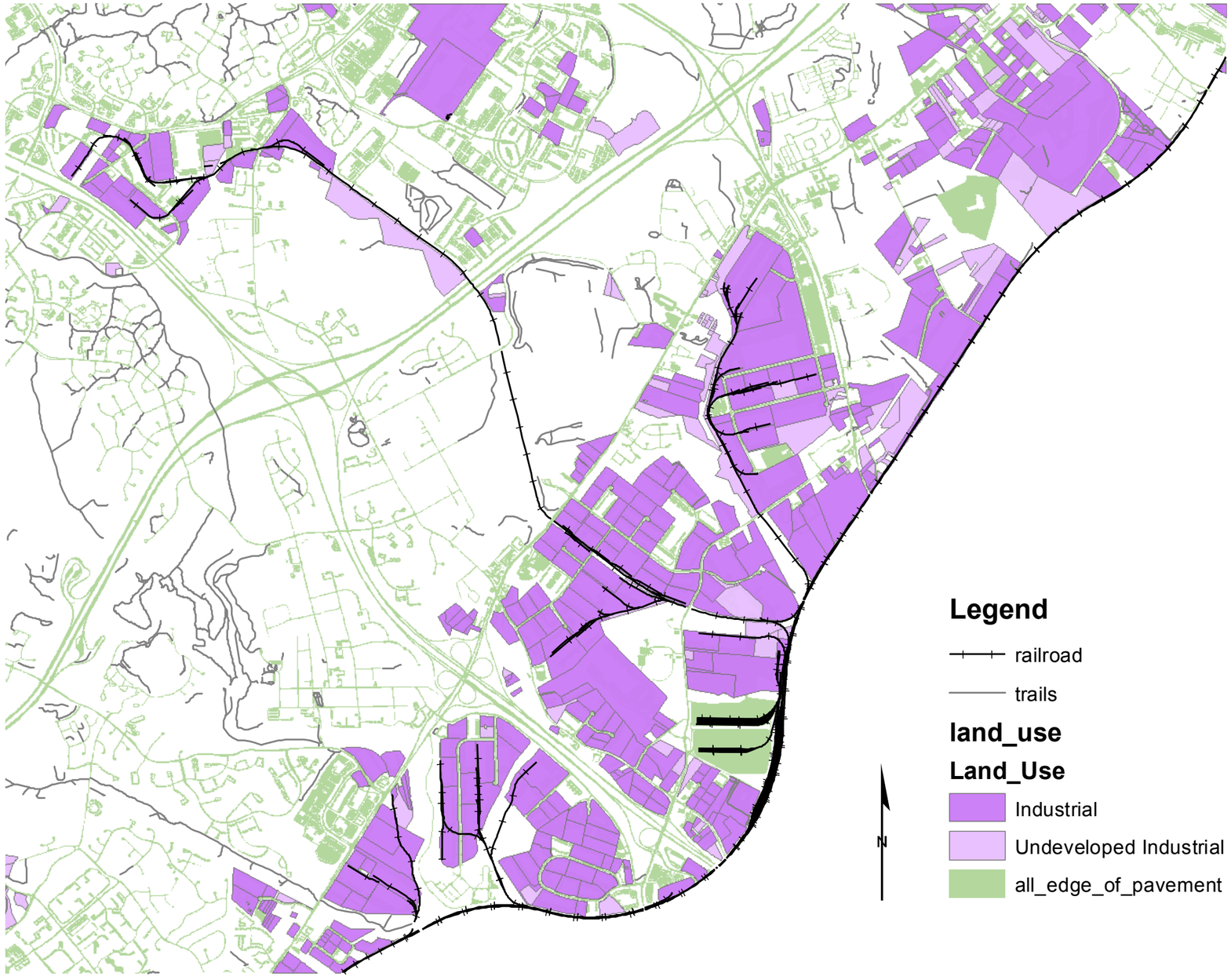


Figure 10. Industrial Land Use Map of Site

The site includes a variety of different land uses. The southeastern corridor heavily relies on manufacturing and practices while the northwestern locations are more commercial and residential focused. However, it would be essential to provide shared path trails to the railroad track end at the Guilford Industrial Center.

This area has a collection of popular paper mills, environmental system manufacturing plants and wholesale warehouses where many people work. Providing a pedestrian/bike-friendly trail through this corridor would allow for sustainable transportation and promote cultural and economic benefits in the area.

Since historic Howard County used the railroad network for industrial transport in the past, the travel network is already set up in favor of the industrial districts.

The railroad branches throughout manufacturing centers and makes for a good network for workers to travel upon without automobiles. North of the existing railroad, the designer should account for the Columbia Gateway Drive where a variety of developed warehouses are located.

This location is amongst a collection of residential roadways that could be easily reconstructed for shared-road designs. Including a connection to this district will allow workers to travel to Columbia Restaurant Parks.

In terms of safety, consider heavy truck and vehicle traffic to industrial centers. Trails should be designed away from loading docks and manufacturing equipment.

Commercial Land Use

Figure 14. Commercial Land Use Map of Site

Site Analysis

The site has many commercial buildings on the northern side of the rails. Points of interest include gyms and other indoor physical activity facilities, a wide variety of restaurants and coffee shops, and a mall that includes a movie theater and other big retailers such as Bed Bath & Beyond and Home Depot. the site also includes the Howard County Recreation and Parks Department and a large quarry on the northeastern side of the site. All these commercial buildings have potential to draw more people to them if there was a safer route to access them other than cars. Some existing trails already connect a few of them, but a denser system of trails and paths would benefit the site much more.

Figure 13. Howard County Rec & Park Department

Figure 11. United Artists Snowden Movie Theater

Figure 12. Life Time Fitness

- A movie theater and gym have the potential to draw large ammount of people to them in the area if accessible through bike paths
- Other places of interest include a local quarry and the Howard County Recs & Parks building.

Parks and Open Space

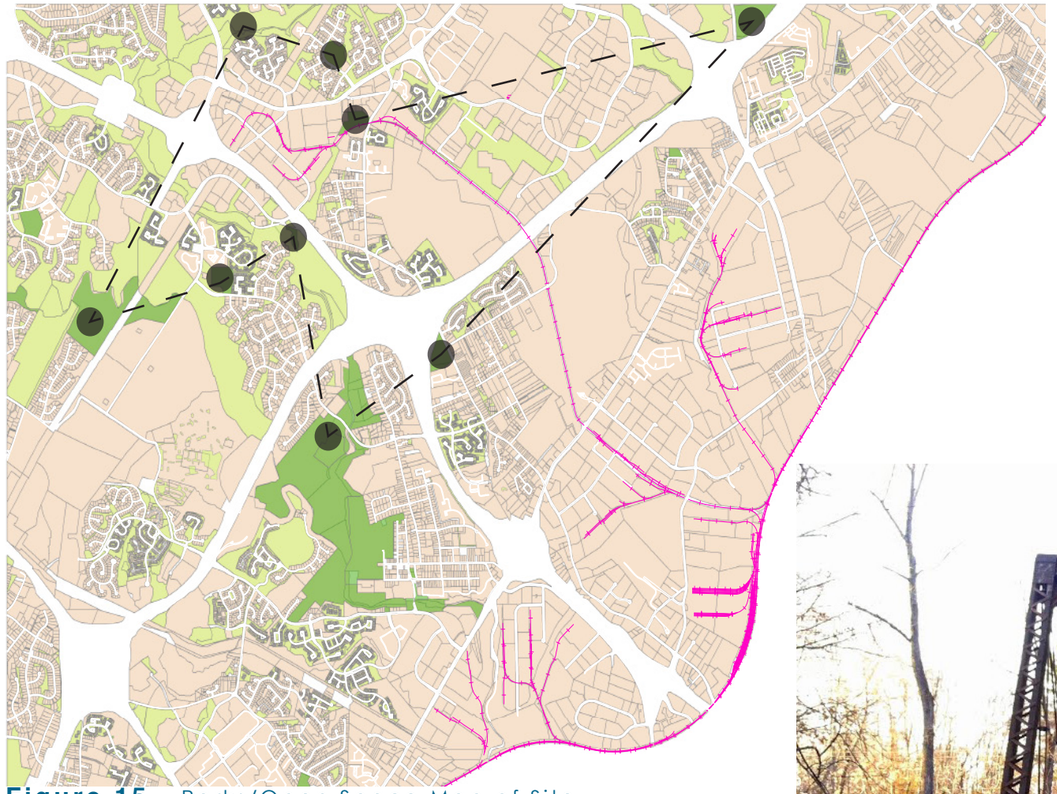


Figure 15. Parks/Open Space Map of Site

Figure 16. Potential Destination Point at Lake Elkhorn

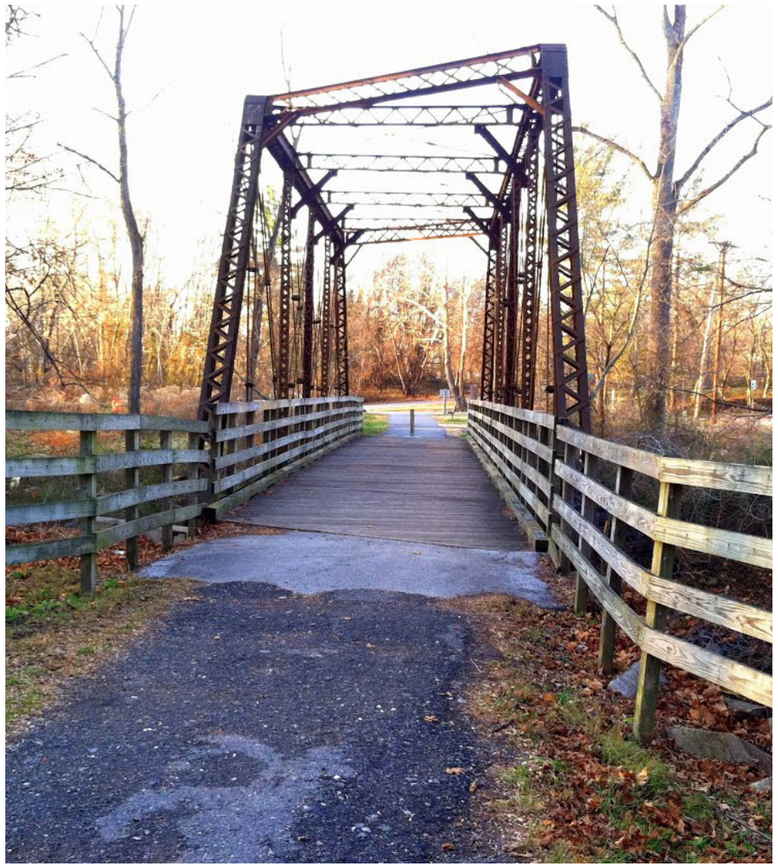


Figure 17. Bridge at Patuxent Branch Trail

Open Space Analysis

To the north of the rail line is a business park with intermittent open spaces throughout. This could allow for potential connections to the rails to trails area for employees in this area. To the northwest of the train line, there is Lake Elkhorn which features a park and picnic areas, as well as a two mile walk surrounding the lake. This is a great site for potential connections and creates a sense of destination from the main rails to trails area. To the southwest of the site is a neighborhood with a large amount of other open space. This area already has a trail system so it would be beneficial to connect this trail system to that one. Also to the Southwest of the site is Patuxent Branch Trail, a site previously completed by Howard County. This trail runs 11 miles long and could provide an extended greenway for rails to trails to consider connecting to in order to make Howard County more cohesive and have larger parks and/or open spaces. Relatively close to the site are a number of parks including Gorman Park, Hopewell Park, Dickinson Park, Kings Contrivance Park, and Guilford Park. All of these parks are within 5 miles and can potentially be connected to via spur trails from the main railroad line.

- Three sites nearby potentially provide interesting destinations: Lake Elkhorn, Patuxent Branch Trail, and the Howard County Recreation and Parks Department
- Nearby parks can possibly be connected with trails, creating a green loop around (and branching from) the train tracks
- Parks within 5-10 miles allow for bikable/ walkable connections

Unique Land Use

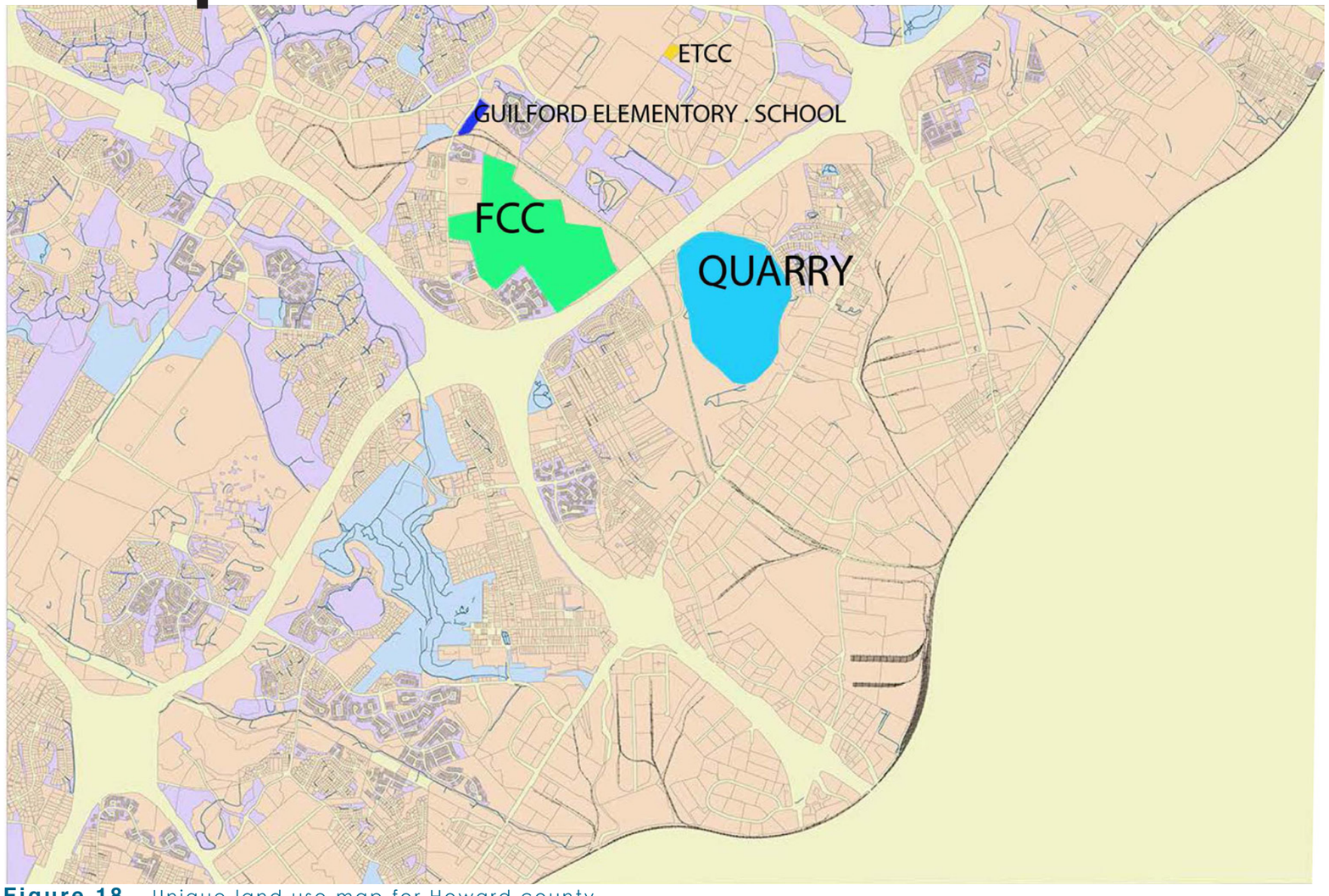


Figure 18. Unique land use map for Howard county

Main goal of this site analysis is to determine further development of existing bike trail of near Guilford road Howard county MD, including making possible connections. This analysis focus on analyzing possibilities of unique land use opportunities of the bike trail.

The quarries at Guilford were originally opened around 1834, and were operating almost continuously from then until up to outbreaks of the civil war in 1860. There are many possibilities to make new connections to the trail across the quarry due to shady nice location and topography.

Potential institutions, employers, employees, and clients that may benefit from the trail are indicated below:

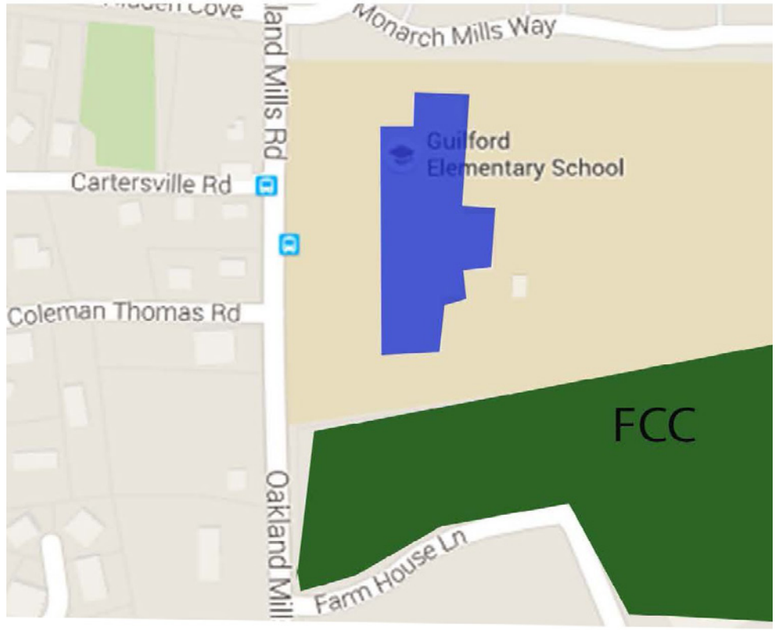


Figure 19. FCC and Guilford Elementary

The Federal Communications Commission regulates interstate and international communications by radio, television, wire, satellite and cable across all 50 states, the District of Columbia and U.S. territories. An independent U.S. FCC is located at 445 12th Street, SW Washington, DC 20554.

Guilford Elementary School located in Columbia, Maryland - MD.

Trails

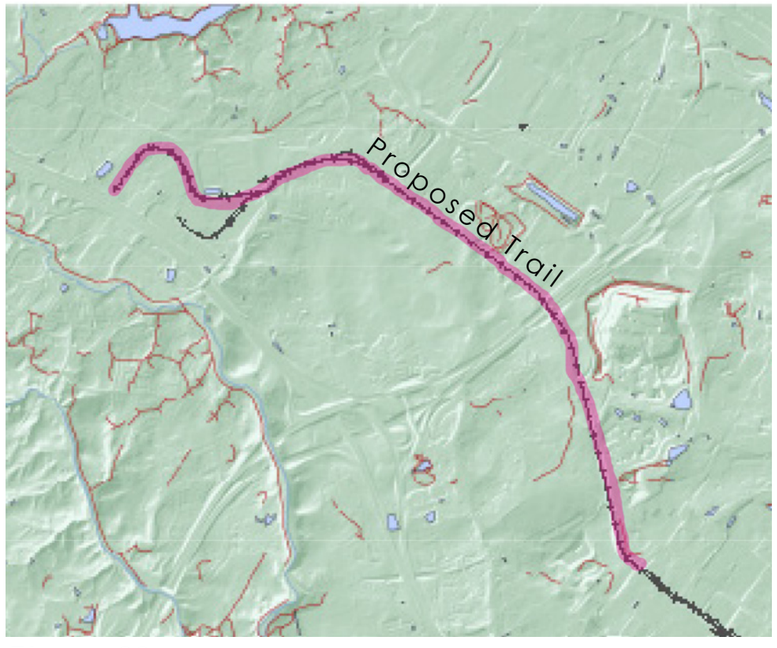


Figure 20. Existing Rail Road & Trail System

Trail Analysis at Howard County

Most of Howard's existing trails have good vehicle access. Figure 20 shows a connection between the existing trails and the railroad right-of-way. Major regional trail starts from northwestern side of Figure 21 and connect to the south section of the stream. However, there are not many trails throughout the east side of the study area. Howard County has many industrial buildings in south part of this map that have vehicle access but not trail access. A trail system along existing railroad right of way will provide an excellent connection from Lake Elkhorn to industrial and commercial areas.

The steep slopes near the existing railroad are a challenge for designing a new trail system, generating safety concerns as well as erosion and flooding issues. The Patuxent Branch Trail includes many areas with trees and vegetation that provide shade and fresh air in a relaxing natural environment.

The proposed trail, built mostly as a paved pathway would provide a hiking or biking trail. The County has also developed a bicycle trail. As Figure 21 shows, the trail and bicycle trail have some connection points but they do not connect throughout the trail site. Howard County is proposing a new design for the bicycle trail with varying connections between locations. The proposed trail has the potential to create unique trail system throughout the area and would allow bicycles to become a transportation mode to reach school, industrial and commercial areas.

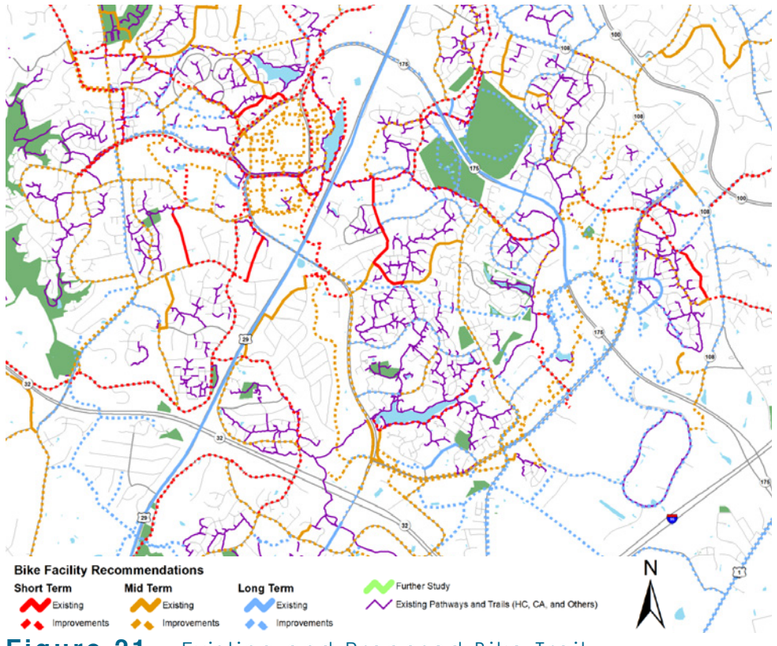


Figure 21. Existing and Proposed Bike Trail

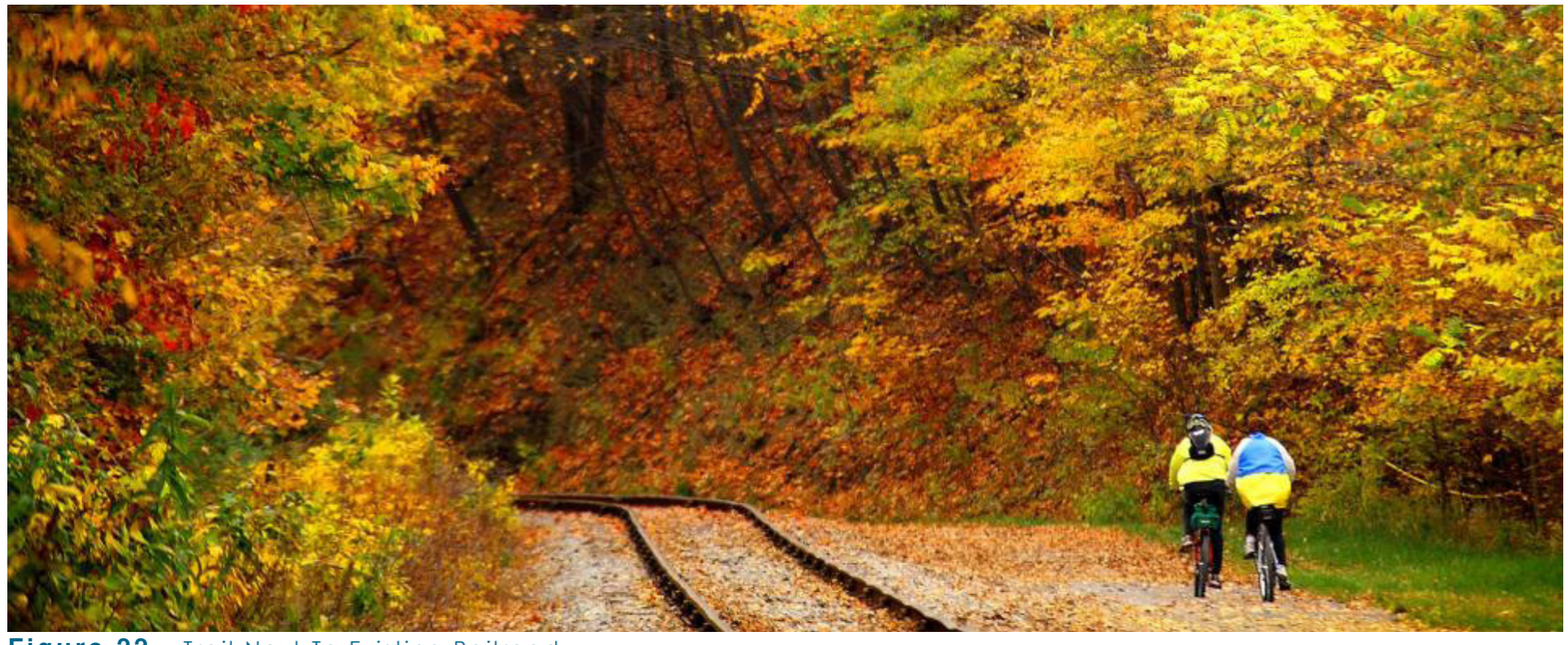


Figure 22. Trail Next To Existing Railroad

Transit

Transit Analysis

Transit near the proposed Guilford Gateway Trail includes four bus lines, with a total of 16 stops within 1 mile of the trail. The 407 Brown Line, which stops once an hour throughout Columbia, is within walking distance from both the proposed Guilford Gateway Trail as well as the Parks and Recreation Office. Another Bus Route within the area is the 501 Silver Line, servicing along Snowden River Parkway. The Silver Line also stops once an hour, and key destinations include the Dorsey MARC Station and BWI Airport. On the southern end of the trail, the Purple Line services Route 1 and Laurel Town Center, another possible feeder for Guilford Gateway Trail.

Although primarily situated in a car commuter community, the proposed Guilford Gateway Trail is an opportunity for residents to explore alternative transit routes, and connect to nearby hubs, such as the Park & Ride, numerous bus stops, and the commercial district. Residents along the entire route would be able to access the bus stops concentrated on the north end of the trail (See Figure 23). The bus stops near Guilford Gateway Trail improve access for more Howard County residents to the site and provide alternative transit options for those living along the trail.

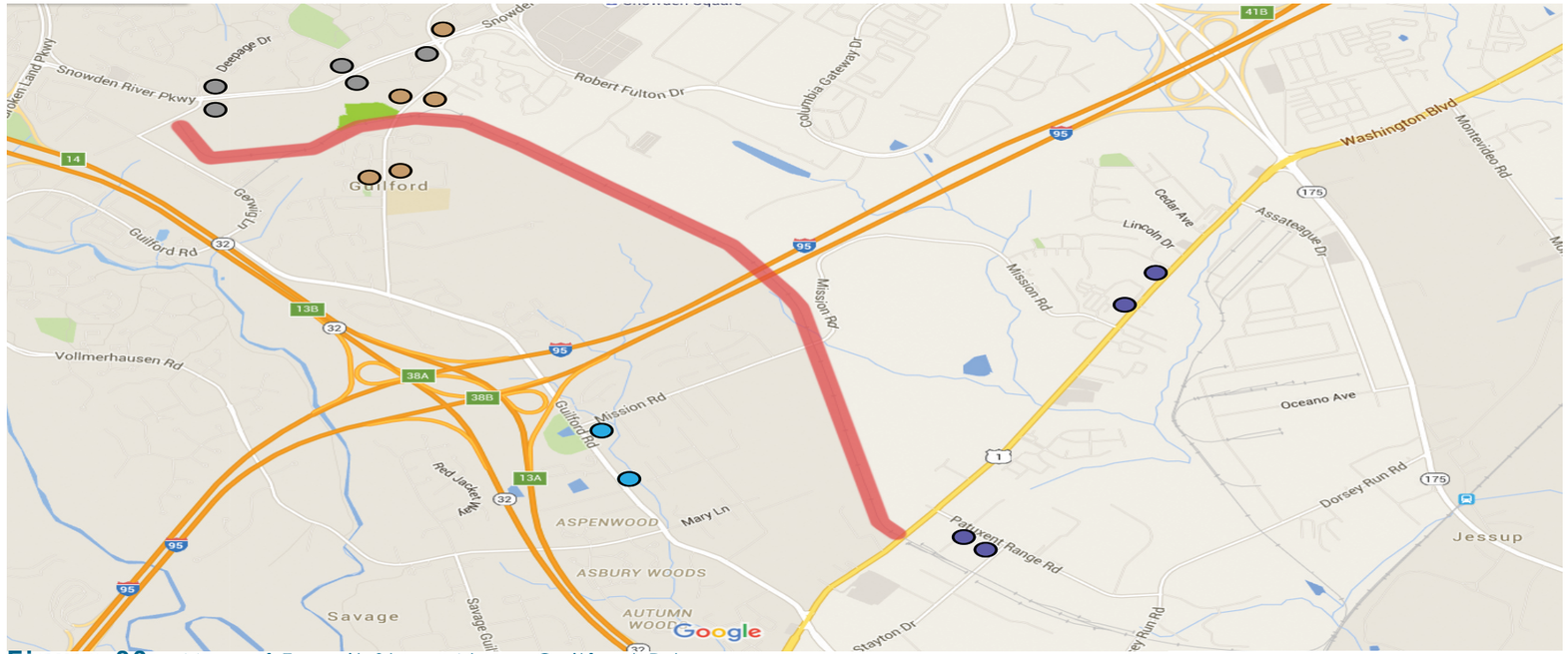


Figure 23. Map of Transit Stops Along Guilford Rd.

Figure 24. Transit stop

Roads

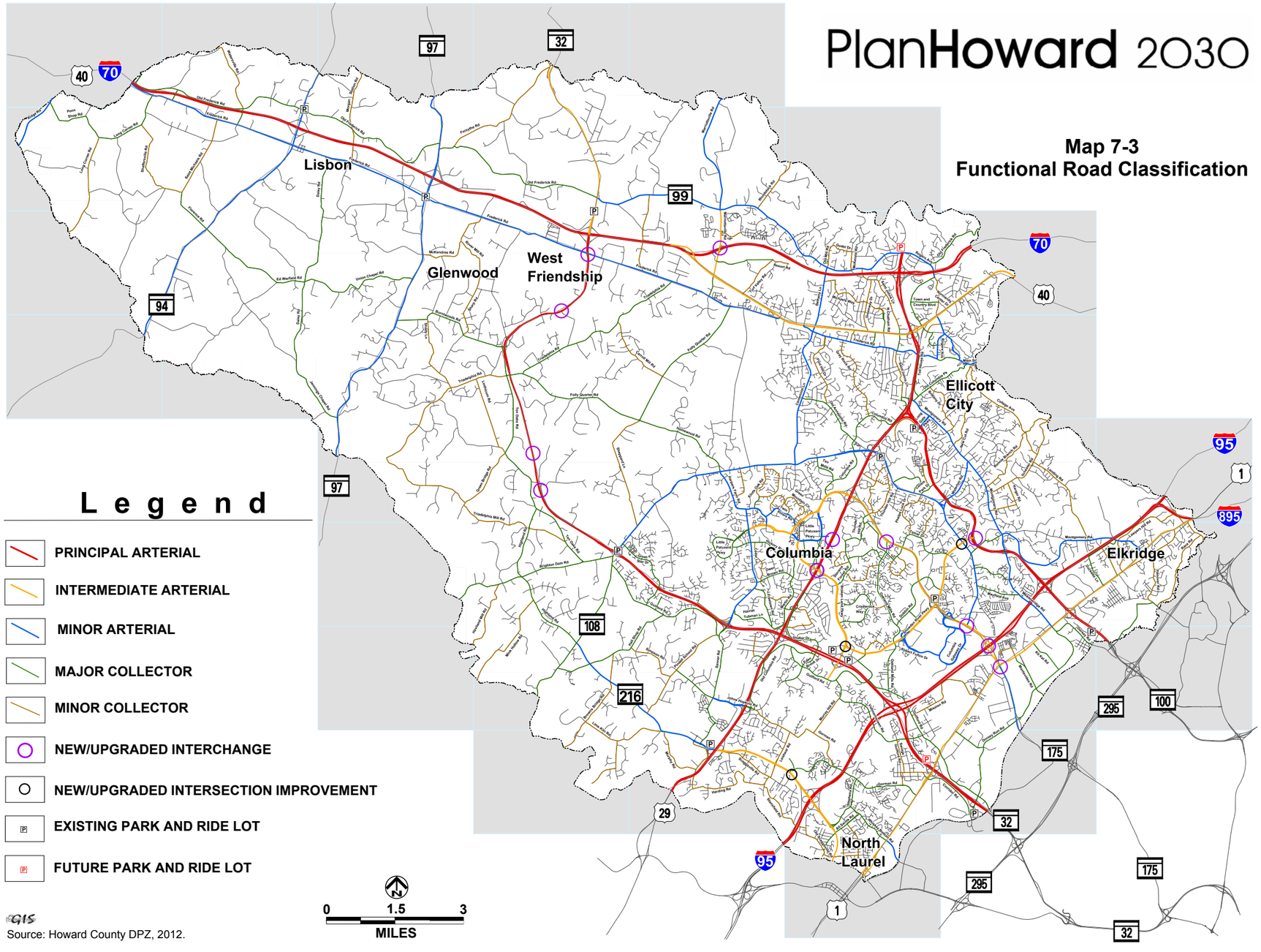


Figure 25. Howard County Road Classification Map

Roads

Recommendations

• Route I-95(principal arterial) crosses over the rail-trail introducing noise, and unsightly views. This might be improved by planting dense tree canopy and redesigning the bridge facade.

• Route 32(principal arterial) crosses through southern portion of the rail-trail as well, but connects to Park & Ride areas. Consider planting design for large volumes of noise/ traffic.

• Snowden Parkway(intermediate arterial) connects neighborhoods/existing communities. Might be improved by introduction of shared-use pathway to accomodate commuters into residential and commerical areas to allow safer passage.

• Oakland Mills Road(major collector) stems from intermediate arterials to connect more directly to the residetial communities. Consider vehicle/pedestrian traffic volume as well as making better connections to bus stops for easier passage.

• Columbia Gateway is surronded by principal and intermediate arterials with great volumes of traffic. Consider planting design to help with noise.

• Consider long term connections for Route 1 to surrounding areas such as Baltimore and Prince George's County.

• Mission Road is closer to the mine/quarry. Consider natual/vegetative pathways to provide aesthetic natural theme for the area.

• Consider theme or fuction along major/ minor arterials that provide insight to rail-trail system and are scaled appropriately for each section.

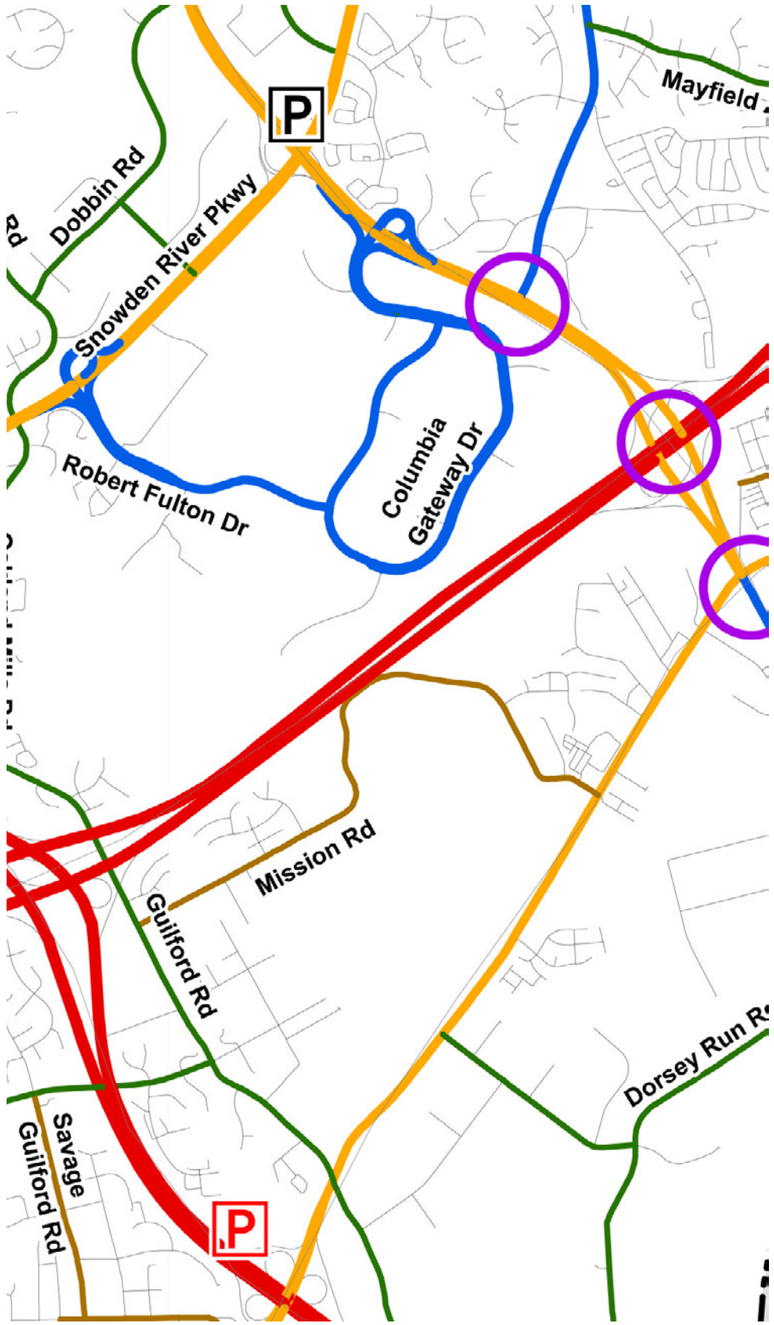


Figure 26. Zoom in of Road Classification Map to Site

• Consider using Spur concept designs to connect surrounding communities/potential school district to major/minor collectors such as Berger Road/Gerwig Lane.

• Minor collectors/local roads such as Berger Road and Gerwig Lane don't have as much volume, but consider the users of these roads. These roads connect to school districts, bus stops, etc. Consider planter buffers and combination oh shared-use pathway safety regulations to provide easier passage to residential/commerical areas.

• Consider using Spur concept designs to connect surrounding communities/potential school district to major/minor collectors such as Berger Road/Gerwig Lane.

• Consider connecting Snowden River Parkway to Parks and Rec Center. Would have to provide suitable passage through commericial district as well as connectiing to surrouding/proposed trail system and bus stop.

• Consider creating terminus for rail-trail system on Berger Road.

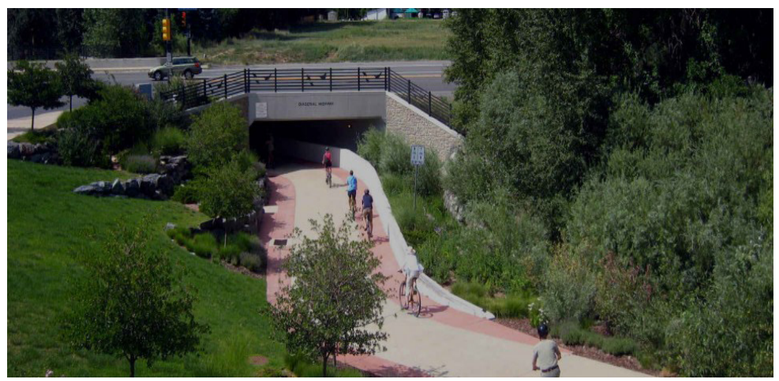


Figure 27. Underpass Pathway

Unique Circulation

Unique Circulation Analysis

A large power line right of way exists near the north end of the trail. This power line right of way offers the opporunity to create pedestrian and bicycle circulation to connect the Guilford Gateway Trail to more tranist, businesses, and residential communities. The power line right could connect joggers and bikers to the surrounding shoping centers, businesses, rivers, and Lake Elkhorn. Little Patuxent river has potential for kayaking and canoeing but It might not be possible because of generally low water level.

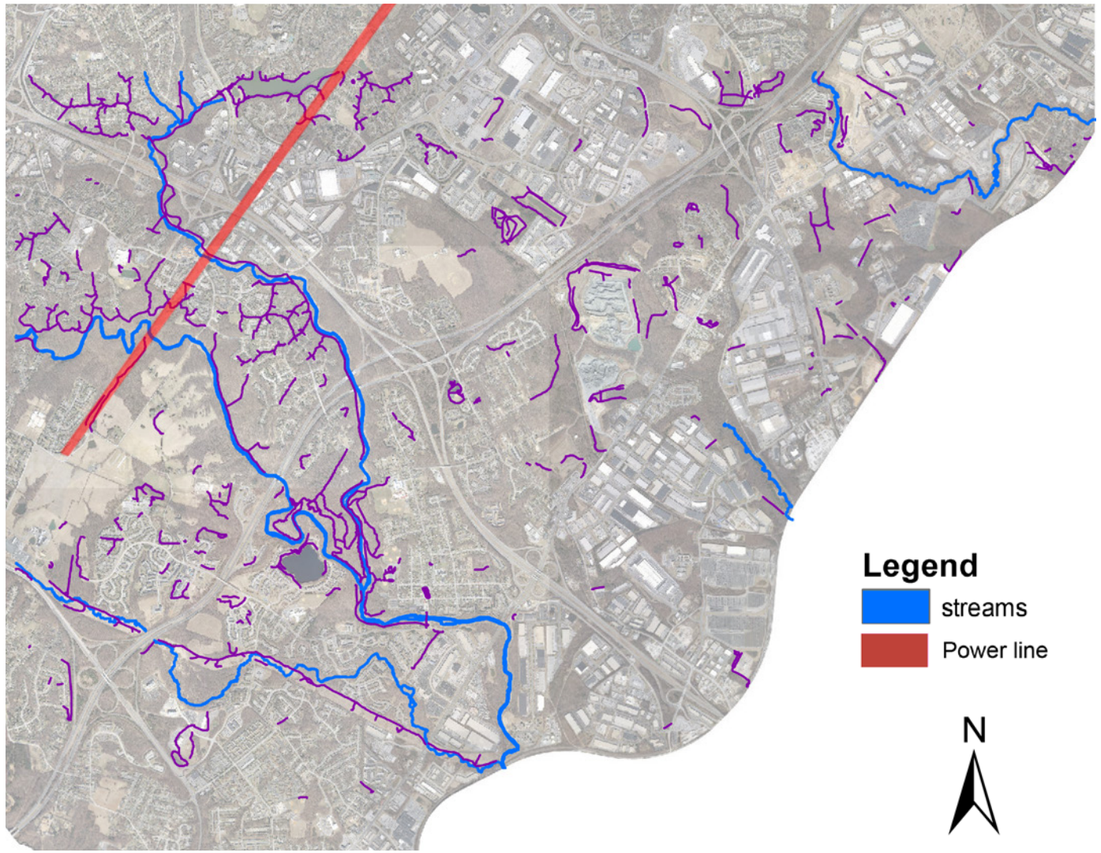


Figure 28. Unique Circulation Map of the Site

Figure 29. Existing Powerlines

Figure 30. Little Patuxent River

Floodplains

Figure 31. Healthy Meadow within a Floodplain

Floodplains in Howard County

A floodplain is a nearly flat area along the course of a stream or river that is naturally subject to flooding. They are an integral part of our ecosystem performing natural functions of water drainage and supporting wildlife.

Floodplains are mapped and labeled based on their risk of flooding. Risk managament is based on location and storm duration. All areas within a floodplain flood, it is only a matter of when and how severely. Building withing foodplains entails risk, as noted by insurance companies.

Flooding severity is broken down by probability, most commonly, 5-year, 10-year, and 100-year storms. The higher the year designation for a given storm the greater its severity and the less likely it is to occur in any given year. Designing within the floodplain should account for 100-year storm.

Floodplains are great ecological habitats moving silt and nutrients from areas of high elevation to lower areas of elevation.

In Howard County, floods are typically caused by riverine flooding from the tributaries

Recurrence intervals and probabilities of occurrences

Recurrence interval, in years	Probability of occurrence in any given year	Percent chance of occurrence in any given year	Annual exceedance percentage (AEP)
100	1 in 100	1	1
50	1 in 50	2	0.50
25	1 in 25	4	0.25
10	1 in 10	10	0.10
5	1 in 5	20	0.05
2	1 in 2	50	0.02

Figure 32. Flood intervals and probabilities

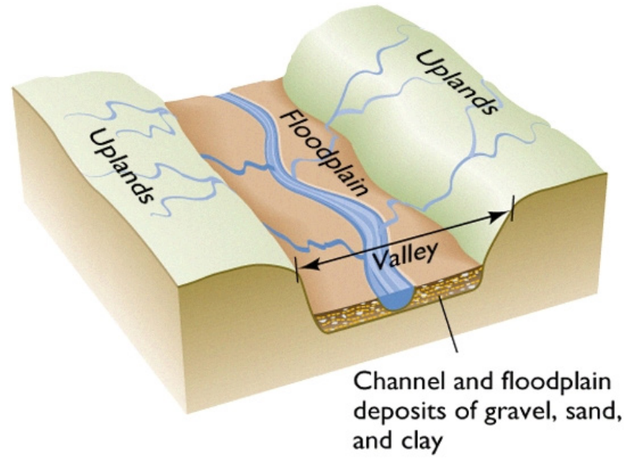


Figure 33. Section diagram of a floodplain

of the Patuxent River. These tributaries collect run off from surrounding hard surfaces often overwhelming the floodplain with excess water. Heavy planting within these areas will help slow down the water and help it to be re-absorbed back into the water table.

Figure 34. Ostrich ferns growing in floodplain silt

Floodplains

Figure 35. An asphalt pedestrain path

Figure 36. A woodland floodplain

The proposed Guilford Gateway Trail would intersect the floodplain at several points; these points merit special attention since they are prone to flooding that could erode any potential path surface, but alse because they could be beautiful focal points,

Asphalt is great to use in floodplains because of its naturally dark color and ease of repair. Its dark color provides great contrast for pedestrian circulation markings making them very noticeable and safe. Areas that tend to collect/pool water provide a calming view to any passerby. Often colonized by unique wildlife they offer an additional element to delight a passerby.

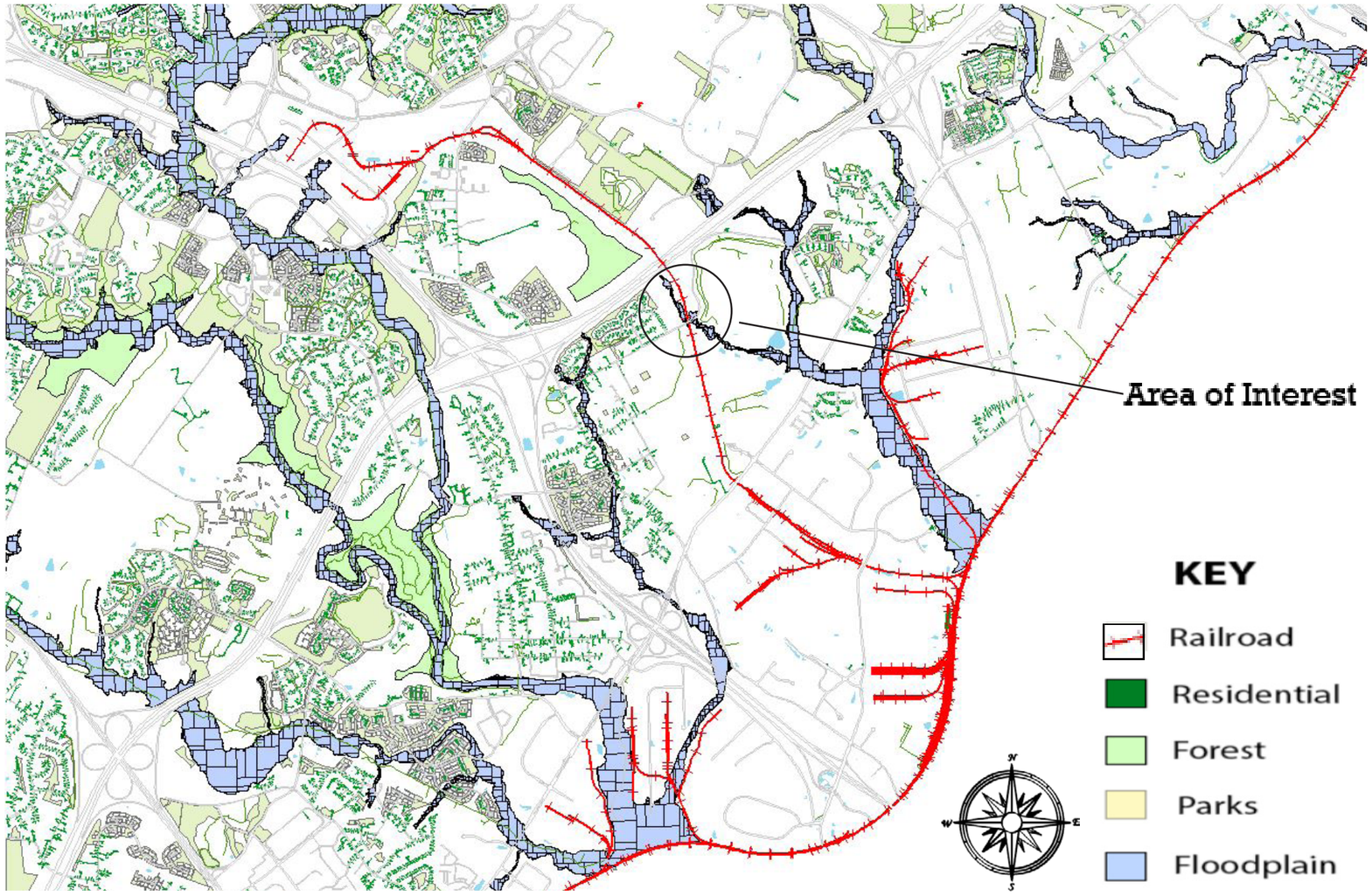


Figure 37. Floodplain Analysis Map of Site

Streams and Water Bodies

Streams and Water Bodies Analsyis at Guilford Gateway Trail

The site includes many branching tributaries and few mass bodies of water. This analysis will focus on four significant bodies that could potentially affect the design phase.

Lake Elkhorn is the first and largest body of water to the north of the site. The lake is already complete with a 2-mile trail and picnic areas that accomodate the residential housing adjacent to it.

The Columbia Association controls and allows the general public to use Lake Elkhorn and would also have jurisdiction over any other man made lakes on the site. Fishing is allowed with a fishing license and each spring the lake is filled with trout and bass.

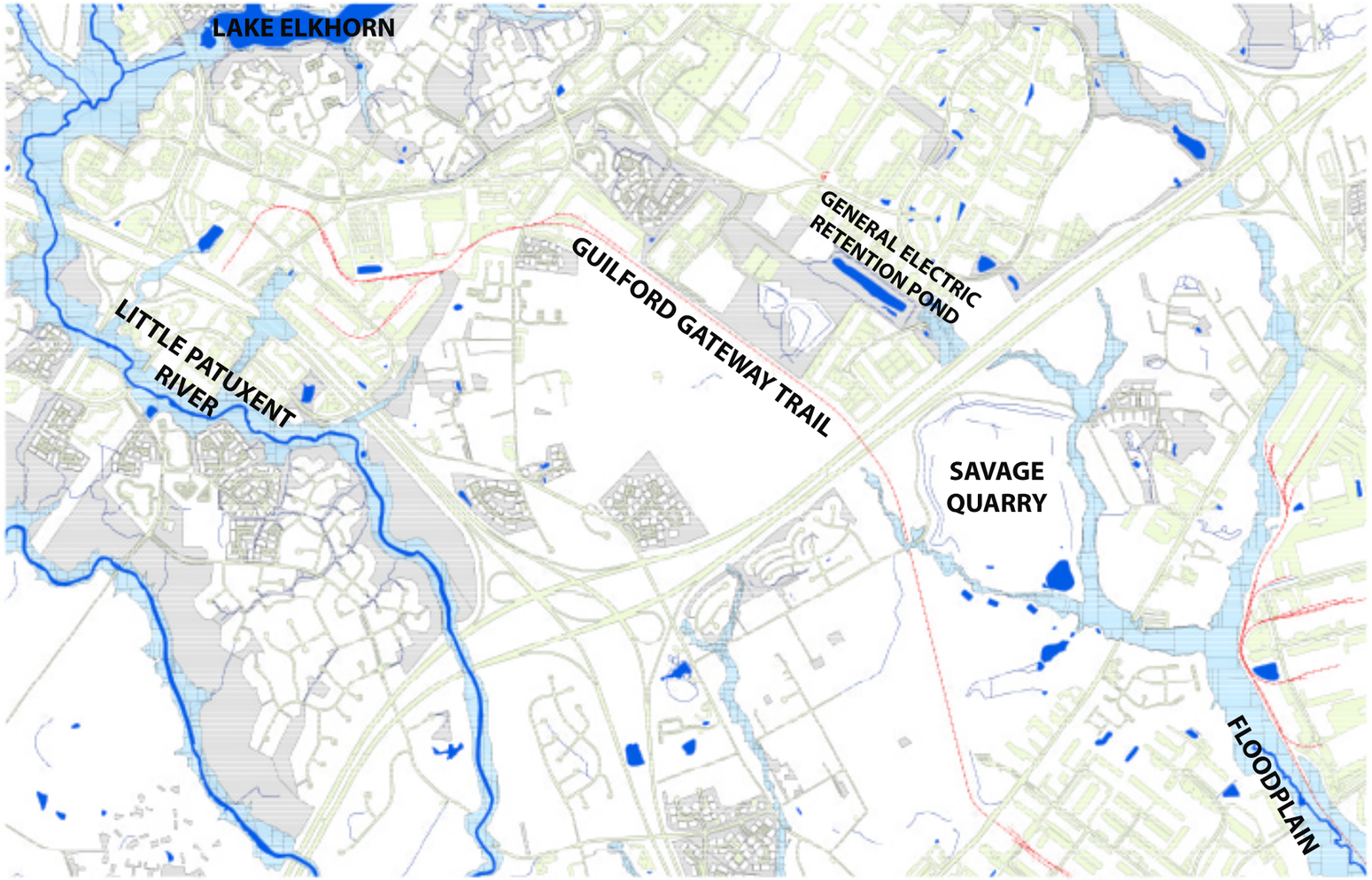


Figure 38. Streams and Water Bodies Map of Site

Figure 39. Water Feature

The General Electric Retention Pond is the second largest body of water. It lies behind an industrial area that would be good to connect existing trails for commuters.

The Little Patuxent River is the main source of water in this area. Lake Elkhorn feeds into this river. Because it is on the other side of Rt.32, it may be too far beyond the site to consider when designing.

Dorsey Run is a small stream that branches off into many tributaries near the southern edge of the site. This stream crosses Rt.1 and Interstate-95 but the aesthetic qualities of the stream are very low.

Dorsey Run also surrounds a quarry around Mission Rd that could potentially be designated as a small lake.

Forests

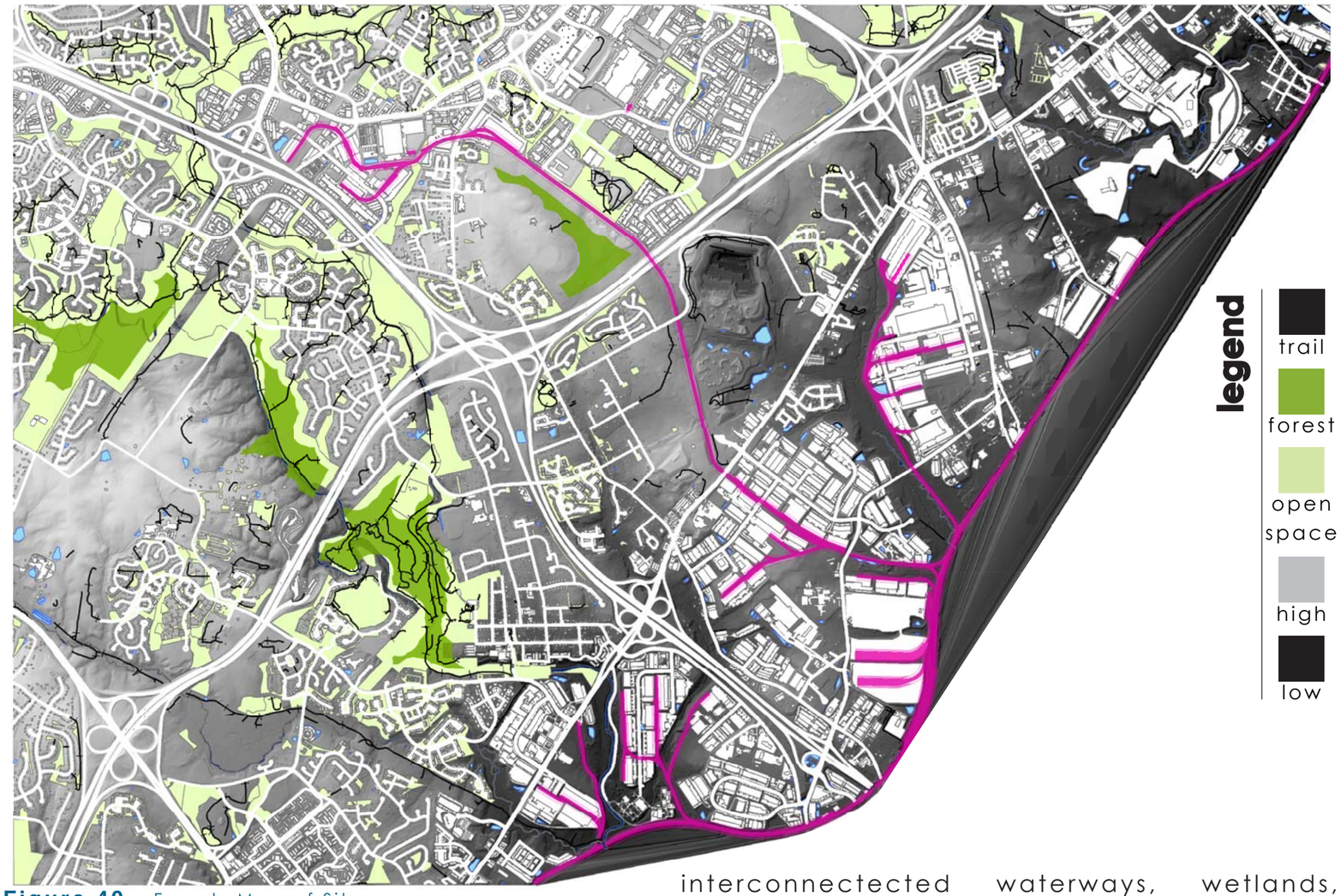


Figure 40. Forests Map of Site

Green Infrastructure

Howard County's **Green Infrastructure Network Plan** aims to "define, protect and enhance a green infrastructure network that includes and links the most ecologically significant natural areas in Howard County." Green Infrastructure is a network of interconnectected waterways, wetlands, forests, meadows and other natural areas. Large contiguous blocks of interior forest are an essential part of hubs, which anchor green infrastructure networks. Narrow sections of forest are essential corridors, linear features that tie hubs together.

A forest is a **land area consisting of trees with overlapping crowns forming 60% to 100% cover**. As seen on the map, only one forest is adjacent to the Guilford Gateway Trail. Forests southwest of the Guilford Gateway Trail are already accessible by the Patuxent Branch trail network.

These forests are in the **Mesic Mixed Hardwood Forest** category. These communities are widespread in mesic/submesic infertile habitats throughout the Piedmont. Forests in this group occupy mesic uplands, ravines, lower slopes, and well-drained flatwoods.

Forest Opportunities

- natural stormwater management
- provides shade and interest
- provides wildlife habitat
- good greenway corridor

Forest Constraints

- maintenance issues (fallen leaves, animal droppings, etc.)
- hazards (i.e. fallen trees)
- sensitive wildlife area
- night lighting may disturb wildlife rhythms, however forests may need to be lit for users

Analysis

- Take advantage of forest for a rest stop.
- Provide signage about native plants and animals.
- Be responsible with lighting and its effects on wildlife. Keep lighting down-facing and minimal.
- Increase trail edging height to ensure users stay on trail.
- Provide a trash bin nearby to reduce litter.
- Ensure little human impact on the forests; protect rare plant species, respect animal/ bird dwellings, stay-on-trail signs.

Slope

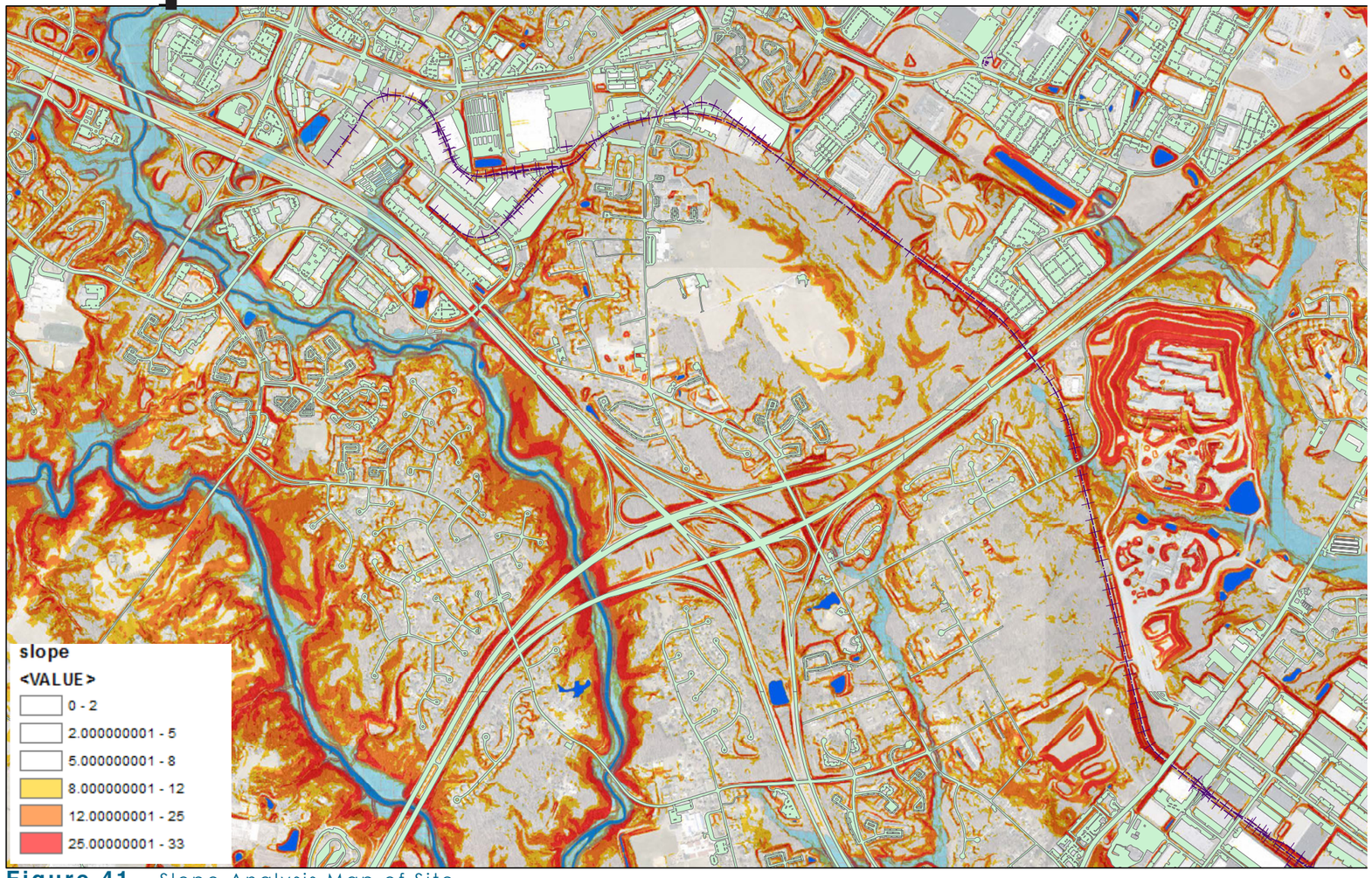


Figure 41. Slope Analysis Map of Site

Slope Analysis

- Moderate slopes can be used and turned in to a terraced areas, paths,for hiking, biking, walking, etc
- Possibly use the quarry's existing pathways to connect to trails and communities, shops, parks, etc
- A rock outcrop can become a focal point
- A low point can become a year round lake
- High points can be used to build a walkout to oversee the landscape to provide a great view
- Flatter areas can be cleared and used as play space
- A little slope is nice for aesthetics and site drainage
- Steeply sloped sites can substantially raise site development coasts, so avoid building on steep slopes
- Can use vegetation to stabilize moderate to steep slopes

Flat sites or gentle grades of less than about 10% (a one foot rise over 10 feet) are the easiest to build on. Between 10% and 20%, you will probably need to do more earth moving and grading, and should plan to spend more on grading and the foundation, which will need to be higher or step down on the low side. Above about 20%, you may have to do extensive earth moving and soil stabilization to create workable grades and prevent erosion. Cut and fill operations can get very costly.

Erosion during the building process can lead to fine (for polluting streams) and extra costs to regrade eroded areas. Some combination of terracing, retaining walls, and special foundation and drainage techniques may be needed to keep the soil and the building itself from sliding down the hill.

Hillside foundations. Structures are routinely built on extreme grades of 50% or more. These structures all have complex engineered foundations installed by specialists in hillside work, which can be dangerous and is always very expensive. Foundations for these structures cost more than many others built on flat sites.

Drainage of steep slopes. On steep sites, pay special attention to soils and drainage. Wet, dense soils on the uphill side of a foundation can exert excessive force on the uphill foundation wall – like a dam holding back a lake of mud. And fast-running water on a steep slope can lead to excessive erosion if not managed properly. Areas of the country subject to heavy winter rains and mudslides are of special concern.

Unique Natural Resources

Figure 42. Aerial image of the Savage Stone Quarry

The Granite Quarries at Guilford

- Granite was quarried in the Guilford area beginning in the 1830s and continued for almost a century.
- As a quality stone, the granite was needed to build up the structures and monuments in the nearby cities of Baltimore and Washington D.C.
- The Baltimore-Ohio Railroad used the quarry's granite extensively for bridge abutments and culverts.
- The granite was used to create cemetery monuments and cobblestone streets in Washington D.C.

Figure 43. A granite cobblestone street in D.C

Recommendations

The design (at least the part nearby the quarry) should acknowledge the important role that granite played in regards to the operation of the old rail line, both economically and structurally. This can be done by incorporating granite in the paving, installing public art made of granite, and making informative signage about the history of granite quarrying in the area.

Figure 44. A bridge culvert on the B&O Old Main Line

Trail Design Standards

Definitions

Basic Cyclist: Casual and/or novice cyclist that includes less experienced adults and children who are not comfortable riding in traffic.

Cross Slope: The slope measured perpendicular to the direction of travel.

Multi-Use Trails: These trails are designed to accommodate several different users, including walkers, joggers, bicyclists, equestrians, and in-line skaters and would have an improved surface of concrete, asphalt, crushed stone, compacted dirt or grass.

Single Track: The single track multi-use trail is the simplest type of trail facility and is planned to accommodate all desired use modes.

Double Track: Double track trails are used when incompatible use modes coexist in the same corridor. They accommodate a variety of modes on two or more different trails, with each trail tailored to the unique needs of the use mode.

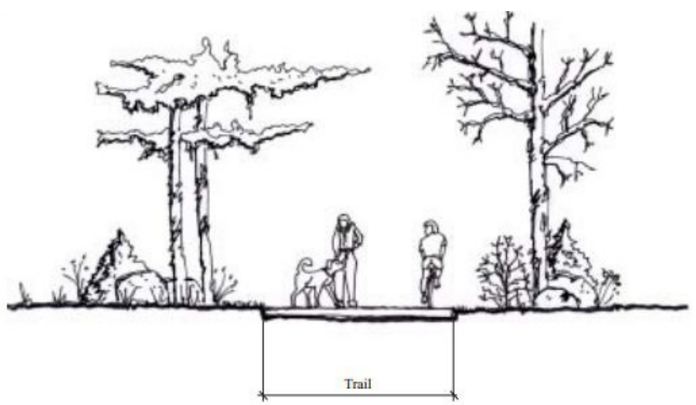


Figure 45. Multi-Use Trail, Single Track

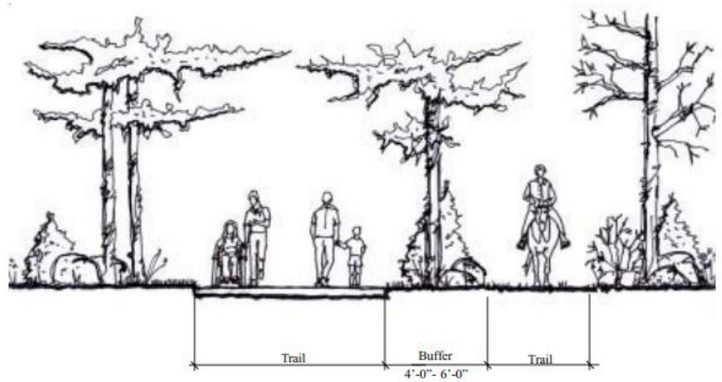


Figure 46. Multi-Use Trail, Double Track with Vegetation Buffer

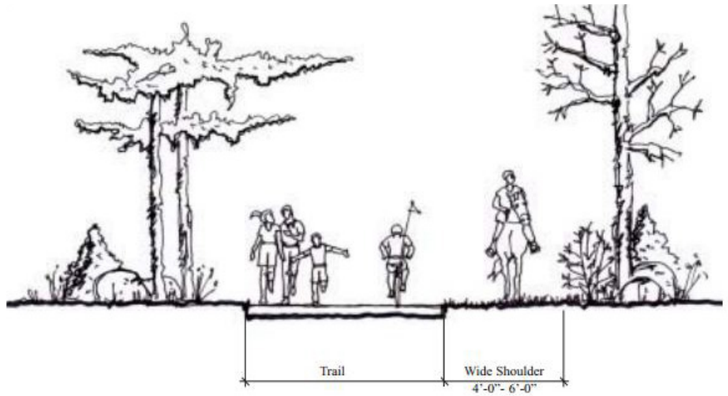


Figure 47. Multi-Use Trail, Double Track with Wide Shoulder

Edge Protection: Edge protection is a physical barrier along the edge of the trail that serves to protect the user from potential hazardous conditions. Hazardous conditions include steep slopes, bodies of water, poisonous plants, etc. The protection can be a small 3 inch curb made of wood, stone, asphalt or concrete, or it can be a 42 inch high railing of sturdy construction. Dense landscaping can also be used for edge protection.

Right-of-Way: A general term, as pertaining to this document, denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Hiking Width and Clearances: Hiking trails should have a clear width of 6 feet to allow room for passing and walking two abreast. A minimum width of 4 feet should only be used when site specific conditions do not allow for the preferred width. Trails through vegetation need regular maintenance to provide sufficient clearance. At a minimum a hiking trail should be cleared one foot beyond the width of the trail and to a height of 8 feet. This clearance may need to be increased to allow for vegetative growth between maintenance periods and to account for snow depth if the trail is used by cross country skiers.

Natural Surface Trails: These trails are designed to accommodate hikers, mountain bikers, or equestrians and would typically be paths without an improved surface.

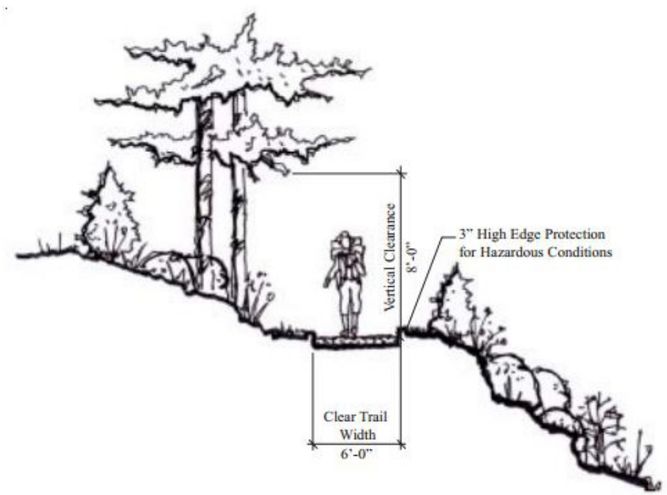


Figure 48. Hiking Trail Clearances

Trail Design Standards

Bicycle Width and Clearance: These trails should have a clear width of 12 feet. A minimum width of 10 feet should only be used when site specific conditions do not allow the preferred width. A minimum clearance of 2 feet is required on each side of the trail. The clearance includes a 2 foot shoulder graded to a maximum slope of 1:6. The vertical clearance is a minimum of 8 feet.

Profile: Refers to the vertical curvature of the trail. It can also be interpreted as the slope of the terrain.

Mountain Bike Width and Clearance: Mountain bike trails should have a clear width of 6 feet for maneuverability and passing. A minimum width of 4 feet should only be used when site specific conditions do not allow the preferred width. The clearance should be a minimum of 2 feet on each side of the trail, with a vertical clearance of 8 feet.

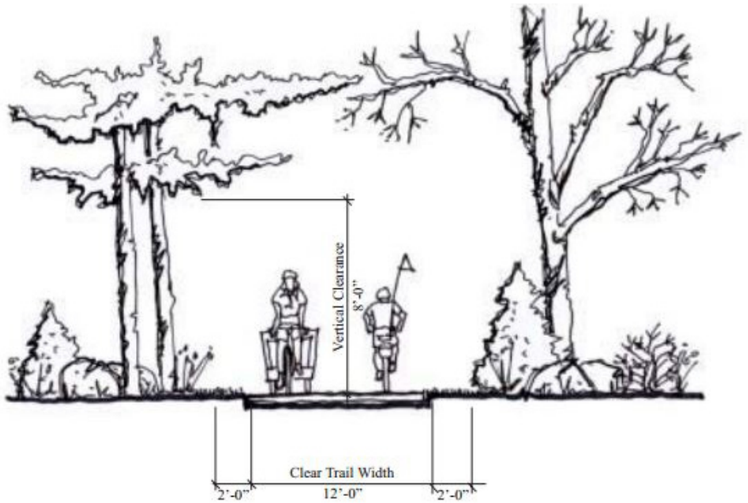


Figure 49. Bicycle and In-Line Skating Vertical Clearance

Surface: Refers to the type of material on the traveled part of the trail, such as asphalt, concrete, stone dust, granular, dirt, grass, or alternative. Surface quality is affected by tread obstacles, such as rocks, and any openings such as gaps and grates

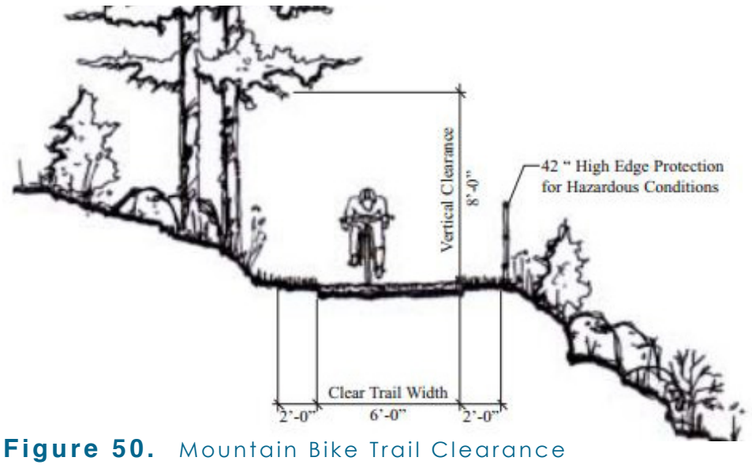


Figure 50. Mountain Bike Trail Clearance

located within the trail surface. Trail surface and cross-section, including materials and thicknesses, shall be based on site specific conditions. Each trail design must be certified by a geotechnical engineer and must be reviewed and approved by applicable federal, state, county and local agencies.

Pedestrian Width and Clearance: Pedestrian trails should have a clear width of 6 feet to allow room for passing, walking two abreast, or for devices such as strollers and wheelchairs. A minimum width of 5 feet should only be used when site specific conditions do not allow the preferred width. Trails passing through vegetation need regular maintenance to provide sufficient clearance. At a minimum, a pedestrian trail should be cleared 2 feet beyond the width of the trail and to a height of 8 feet. The clearance may need to be increased to allow for vegetative growth between maintenance periods and to account for snow depth if the trail is used by cross country skiers or other winter users.

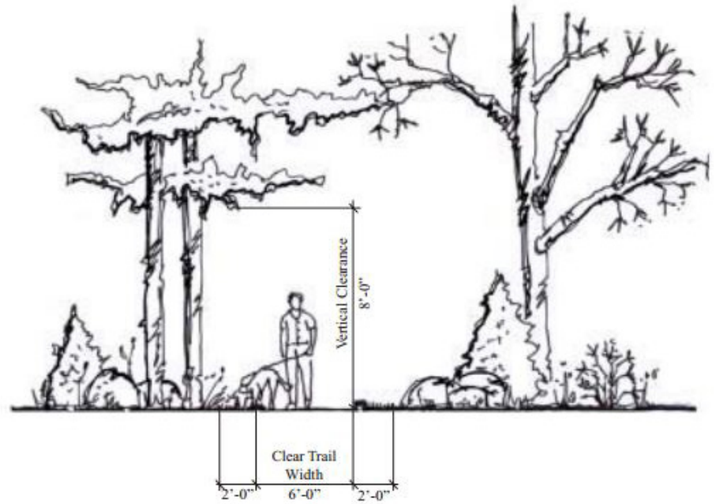


Figure 51. Pedestrian Trail Clearance

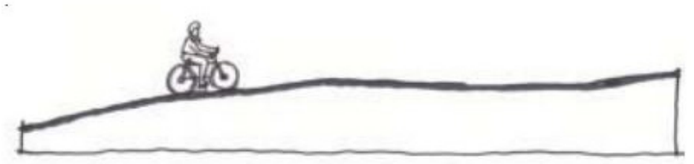


Figure 52. Hypothetical Trail Profile

Signage

Signage Importance

Proper signage on trails can make the difference between a relaxing or frustrating experience for users. Signs range from navigational to educational, and regulatory to cautionary, and all provide important information. It is important to be thorough and consistent about sign design, location and content to create a user friendly environment. The Federal Highway Administration's Manual on the Uniform Traffic Control Devices (MUTCD) 2000 is a valuable resource to consult about standard signage and pavement markings.

Informational signage is used to direct and guide users along a trail in the clearest and simplest way possible, with the most direct approach. Some key, but not all, informational sign types include the indentification of trailheads, access points, cross streets, trail maps, and trail features.

Directional signage informs users where they are along the trail and the distance to other destinations or Points of Interest (POI). Some examples include street names, trail names, directional arrows, mile markers, and milage to POI.

Interpretive signage offer educational information about the trail's surrounding environment. These could include natural, cultural, and historic resources.

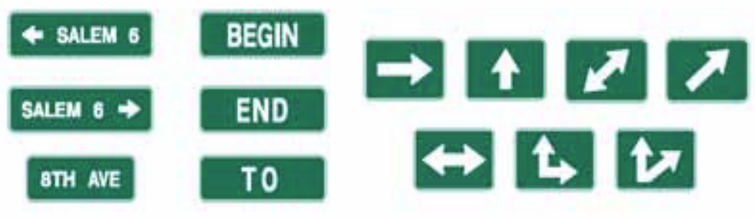


Figure 53. Bikeway and Trail Signage Design Standards

Warning signage alert trail user to potentialy hazardous/ unexpected conditions are are placed where users can see them before the hazard. These include, but are not limited to; blind curves, steep grade, heigh/ width constraints, drop-offs, falling rock hazards and intersections of any kind.

Regulatory signage inform users about the "rules of the trail" and select traffic laws. These include bike speeds, yield and stop signs, direction of traffic, and appropriate user modes, which may be seasonal.

Figure 54. Bikeway and Trail Signage Design Standards

Sign Placement

The placement of signs along a trail will vary depending on the intended use of the trails. Placement of signs are to be reviewed during trail design review phase. The following basic standards should be followed, but consult other sources.

- Lateral sign clearance shall be a min. of 3' and a max. of 6' from the near edge of the sign to the near edge of the path
- Mounting height for ground mounted signs shall be a min. of 4' and a max. of 5' from the bottom edge of the sign to the near edge of the path surface
- When overhead signs are used, the clearance from the bottom edge of the sign to the path surface directly under the sign shall be a minimum of 8'

Sign Design

Signage must be uniform and consistent in order to command respect of trail users and should foll established design principals as laid out in MUTCD 2000, Section 9B.02 and summarized here:

- Signs shall be standard in material, shape, legend, color and font
- All signs shall be retroreflective
- Consider pictoral and symbol signs in place of verbal warnings

Sign	MUTCD Code	Minimum Sign Size	
		Millimeters	Inches
Stop	R1-1	450 x 450	18 x 18
Yield	R1-2	600 x 600 x 600	24 x 24 x 24
Bicycle Lane	R3-16,16a,17,17a	600 x 750	24 x 30
Movement Restriction	R4-1, 2, 3, 7	300 x 450	12 x 18
Begin Right Turn Lane Yield to Bikes	R4-4	900 x 750	36 x 30
No Motor Vehicles	R5-3	600 x 600	24 x 24
Bicycle Prohibition	R5-6	600 x 600	24 x 24
No Parking Bike Lane	R7-9,9a	300 x 450	12 x 18
Pedestrians Prohibited	R9-3a	450 x 450	18 x 18
Bicycle Regulatory	R9-5, 6	300 x 450	12 x 18
Shared-Use Path Restriction	R9-7	300 x 450	12 x 18
Railroad Crossbuck	R15-1	600 x 112	24 x 4.5
Turn and Curve Warning	W1-1, 2, 3,4, 5	450 x 450	18 x 18
Arrow Warning	W1-6, 7	600 x 300	24 x 12
Intersection Warning	W2-1, 2, 3,4, 5	450 x 450	18 x 18
Stop, Yield, Signal Ahead	W3-1a,2a,3	450 x 450	18 x 18
Road Narrows	W5-2a	450 x 450	18 x 18
Bikeway Narrows	W5-4	450 x 450	18 x 18
Hill Sign	W7-5	450 x 450	18 x 18
Bump or Dip	W8-1,2	450 x 450	18 x 18
Bicycle Surface Condition	W8-10	450 x 450	18 x 18
Advance Grade Crossing	W10-1	450 dia.	18 dia.
Bicycle Crossing	W11-1	450 x 450	18 x 18
Low Clearance	W12-2	450 x 450	18 x 18
Share the Road Plaque	W16-1	600 x 750	24 x 30

Figure 55. Sign sizes for Multi-Use Trails

Signage

Trailhead Signs

Informational signs should be provided at each trailhead and major access point to convey accurate and detailed information about existing trail conditions and facilities. This sign type allows users to assess whether or not a trail meets their personal levels of safety, comfort and accessibility. The sign should provide the following information:

- Trail name, map, length, and description
- Howard County Logo
- Permitted users (may vary depending on season)
- Mileage to points of interest
- Elevation change over the total trail length and maximum elevation obtained
- Average running grade and maximum grades that will be encountered
- Average and maximum cross slopes
- Average tread width and minimum clear width
- Type of surface
- Size, location and frequency of obstacles

Markings and Striping

Marking and striping indicate the separation of lanes on multi-use trails.

- A solid white line is recommended for separation of pedestrian traffic and bicycle/ in-line skating traffic and a dashed yellow line is recommended when adequate sight distance exists
- Solid white lines along the edge of trails are recommended where nighttime riding is expected
- A solid yellow center line is recommended where trails are busy, where sight lines are restricted and on unlighted trails where night time riding is expected
- Markings should be retroreflective
- Consideration should be given to selecting pavement marking materials that will minimize loss of traction for bicycles in wet conditions

Marking and Signs at Intersections

- Pavement marking and signs at intersections should tell trail users to cross at clearly defined locations and indicate that crossing traffic is to be expected
- Similar devices to those used on roadways should be used on trails as appropriate
- The AASHTO Guide notes that in addition to traditional warning signs in advance of inter-sections, motorists can be alerted to the presence of a trail crossing through flashing warning lights and striped or colored pavement crosswalks

Patuxent Branch Trail Signs

Figure 56. Existing Signage at Patuxent Branch Trail

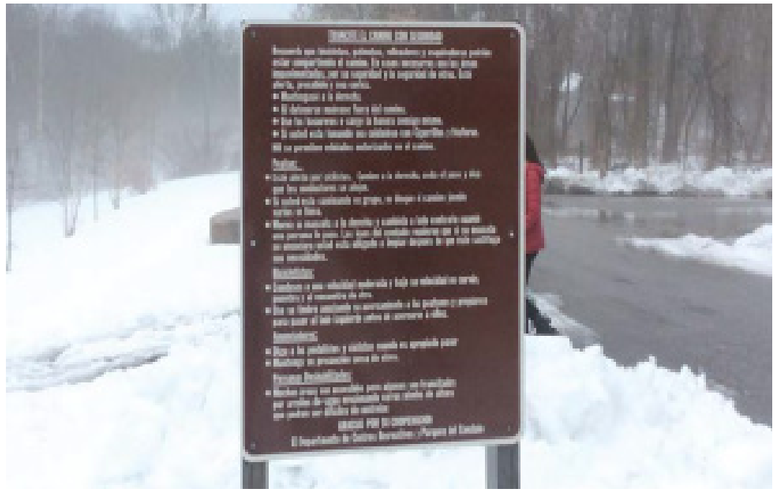


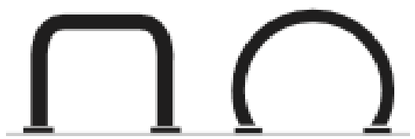
Figure 57. Existing Signage at Patuxent Branch Trail

Figure 58. Map Signage at Patuxent Branch Trail

Bicycle Parking

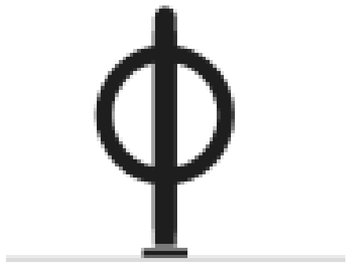
Short-Term Parking

Convenient & Easy to use



- Can be installed in series to create a free-standing parking area in variable quantities

Figure 59. Inverted U or Loop



- Less prone to unintended perpendicular parking

Figure 60. Post & Ring

- Includes an element that cradles one wheel
- Typically contains bikes well.

Figure 61. Wheel Well Secure

Long-Term Parking

Secure & Sheltered

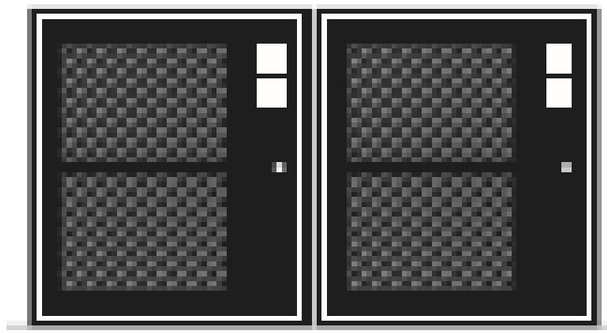


Figure 62. Bike Lockers

- Allows for higher security of bikes

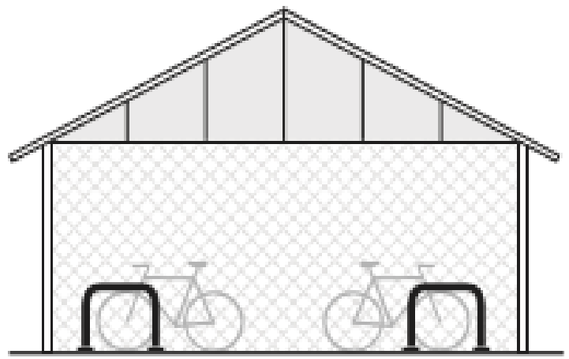


Figure 63. Secure Enclosure

- Provides great weather protection

Location

- Easily accessible from the street
- Protected from motor vehicles
- Visible to passers-by
- Does not impede or interfere with pedestrian traffic of routine maintenance activities
- Does not block access to buildings or bus boarding
- Allows reasonable clearance for opening of doors of parked cars

Performance Criteria

- Supports bike upright without putting stress on wheels
- Accommodates a variety of bicycles and attachments
- Provides security and longevity
- Rack use is intuitive

Basic Bike Parking Information

- The Association of Pedestrian and Bicycle Professionals (APBP)
- Bike parking is a concept that is vital, but easy is when accomplished correctly. Minor installation mistakes may make a bike rack unusable. Bicycle shapes, sizes, and attachments are ever increasing, so good bike parking should accommodate all these changes for usage on the site (APBP).

Bicycle Parking

Minimum Spacing Requirements

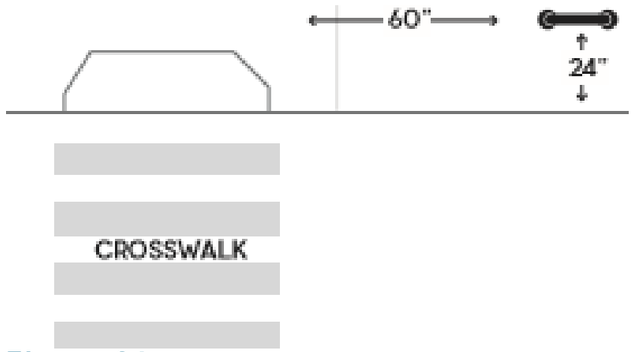


Figure 64. Minimum Spacing Requirement

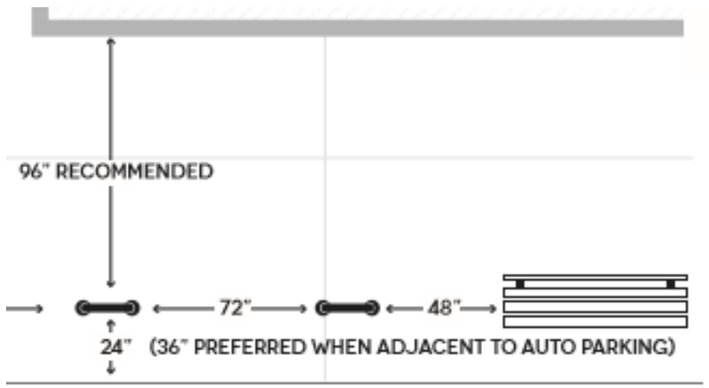


Figure 65. Minimum Spacing Requirement

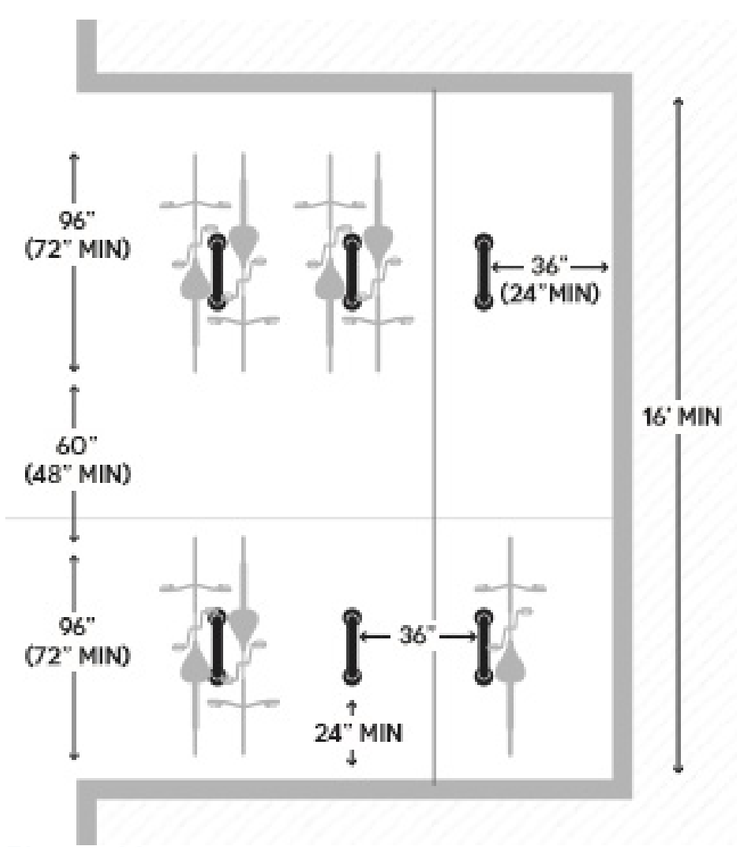


Figure 66. Minimum Spacing Requirement

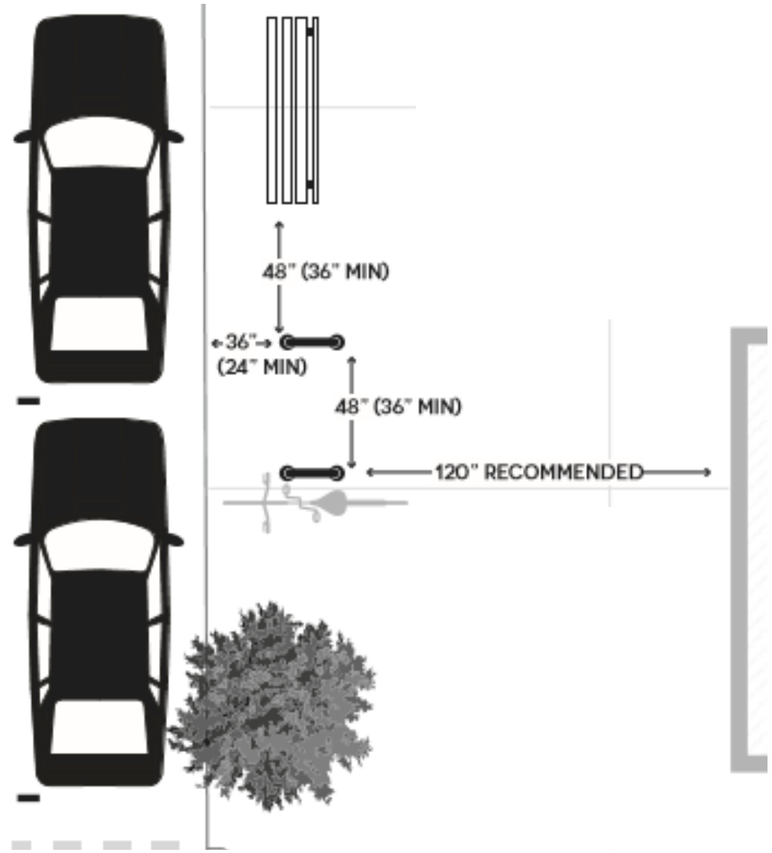


Figure 67. Minimum Spacing Requirement

DESIGN

Guilford Gateway Masterplan

Guilford Gateway Trail Master Plan

Figure 69. Main Trail Master Plan

The goal of Guilford Gateway is to create a multifaceted, interdependent trail system that would ultimately enhance commuter/ cyclists connections for Howard County. The system would combine existing, and proposed bike trails in order to provide a main spine into Howard County's proposed bike trail system as well as connecting residential, commercial, and industrial complexes to each other. The system would also provide a larger recreational system that would increase community usage. In order to achieve these goals, we broke down the main trail spine into three areas: Broken Land Park & Ride and the Howard County Parks and Recreation Department, Guilford Elementary School and I-95 Underpass, and the Mission Road Overpass.

We hope to create a major trail head with our design for the Broken Land Park & Ride by providing pedestrian ramp options that will allow access for commuters and create a more secure and efficient commute into the Park & Ride. We also proposed multiple bike bay and long term bike parking options to accommodate every day commuters. At the Howard County Recreation and Parks Headquarters, we hoped to create a main focal point of the trail spine that has an urban

Figure 68. Circulation Map

Performance Metrics

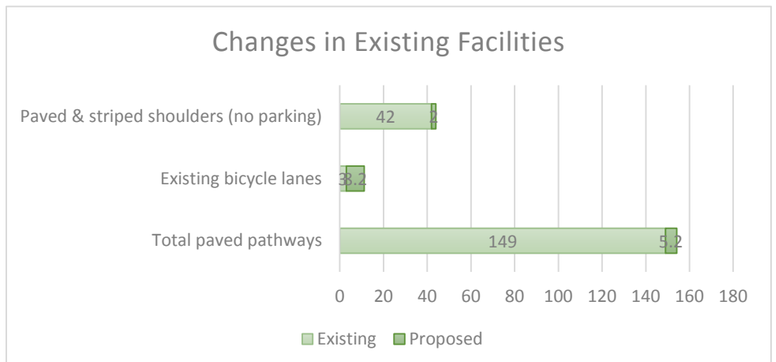


Figure 71. Changes in Existing Facilities

connection to that part of the landscape that will also provide a visitor center and major trail entrance. We hope to include an educational and historic feel to the site so that visitors get a sense of the history of Howard County.

The combination of Guilford Elementary School and the surrounding apartment complex will serve also serve as a major trail head that will include educational and interpretive signage. The design will incorporate enhanced safety and security measures to accommodate commuters/pedestrians, as well as a forested corridor. The I-95 Underpass is one example of the multiple scenic routes from the school that ultimately serves as neighborhood connections to residential districts. We also plan to include several rest stops and picnic areas.

The proposed design for Mission Road Overpass includes proposed decorative fencing for the rails portion of the trail, as well as the use of rock from the quarry on the bridge in addition to rest stops. We also plan to incorporate appropriate signage into a forest corridor as well as trying to accomplish a

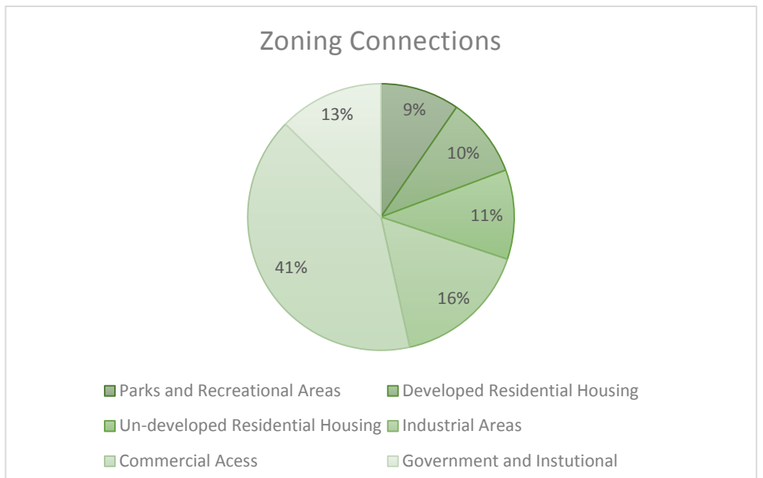


Figure 70. Number of Zoning Connections

historic yet industrial/commercial connection to the surrounding area. By making a connection to Mission Lake and Washington Blvd, we feel very confident that the historic/ industrial theme will be accomplished.

The Guilford Gateway Trail will go a long way in connecting citizens to commercial, residential, and industrial areas. For example, residents near Mission Road would be able to get on the trail, bike to the Park & Ride location, and have access to public transportation without the need for a car.

Currently there are only 3 miles of bicycle trail within half a mile surrounding the scope of our project site. Our addition of the Gateway Trail Network would expand on that to a total 8.2 miles, more than doubling the existing connectivity and expanding the total paved pathways of our site by 3.5%. This opens doors for new connections that benefit both public and private well-being.

Our proposed trail system will support new businesses with a 40% increase in connectivity betwen commercial sectors and residences.

The industrial sector will have a 16% increase in connectivity. This is important because buildings in the industrial sector tend to employ a lot of workers in a predominately labor-intensive industry. Having close proximity of neighborhoods to industrial sector means that there would be a huge opportunity for bicycle commuting, taking more cars off the road. It also may lead to an increase in the employment pool for local business looking at people without a car being able to commute to and from work. Fast and reliable transportation between zones is critical for development and that is exactly what the Guilford Gateway Trail would deliver.

Performance Measure	Quantity in Acreage
Parks and Recreational Areas	114
Developed Residential Housing	115
Un-developed Residential Housing	129
Industrial Areas	195
Commercial Acess	484
Government and Instutional	151

Circulation:	Connection #'s
Existing/Planned Bike Paths	7
Path Access Parking	2
Public Transportation	3

Table 1. Performance Metrics

Miles	Existing	Proposed
Total paved pathways	149	5.2
Existing bicycle lanes	3	8.2
Paved & striped shoulders (no parking)	42	2
TOTAL		5.2 Miles Added

Table 2. Additional Milage Calculations

Perspectives

Extending the Guilford Gateway Trail to terminate at the Broken Land Park & Ride is a major goal of ours. Pedestrian and biker connection to a large public transportation hub can decrease the use of personal motor vehicles and provide recreational opportunities to a larger number of people. Adding covered bike parking will appeal to users who can store their bikes safely while they take public transit.

Figure 72. Park & Ride Pedestrian Ramp/ Trailhead

The Howard County Recreation and Parks center sits at the edge of the trail's main stem. A trail entrance from the center could provide recreational and educational opportunities. We envision the office can evolve into a visitor center for the trail. The entrance will sacrifice a few parking spaces to provide a decorative landing for trail users.

Figure 73. Howard County Recreation and Parks Office

Perspectives

Figure 74. Elementary School Trailhead

Providing children at the Guilford Elementary School with access to this trail can promote fitness, education and green transportation alternatives. Currently, a rusty and vine covered fence separates the school from the neighboring apartment complex. Our proposed connection replaces the fence with a paved trail, interpretive signage, and tall hedging to maintain security for the elementary children.

Figure 75. I-95 Underpass

The main stem of Guilford Gateway Trail passes underneath I-95, an area that is currently uninviting. Graffiti is scrawled on the concrete pillars and the forest edge presents weeds and overgrown vegetation. Additionally, there is no existing lighting underneath the highway.

We found that we could change this experience with the addThis experience would be enhanced by adding an art installation, perhaps made with up-cycled railroad ties from the right-of-way and using the unique shape of the bridge span between piers. With the railroad largely responsible for the development of Howard County, it makes sense to combine past and present means of transportation in a visual display that will inspire curiosity and interest trail users.

Ample lighting at different heights will increase security and a sense of safety. Future interventions can include a planted edge and opportunities for seating and resting.

Perspectives

As it currently stands, the bridge over Mission Road is meant to carry trains only, but with a few structural modifications it could carry pedestrians and bicyclists. The face of the bridge and its supports are covered in rust and graffiti.

Using natural stone veneer on the piles and forest green paint on the bridge span will allow the bridge to disappear amongst the vegetation. Our proposed guardrail has a vintage-like appearance akin to the railroad-based theme that is seen throughout the rest of the trail. The addition of lighting on the bridge, painted façade and signage will hopefully deter graffiti artists in the future.

Figure 76. Mission Road Overpass

The Guilford Gateway trail is divided up into at least 2 main sections, the busier area near the park-and-ride location and the forested area of trail located near Washington Blvd, with the divide located roughly in about the middle of the two. We chose to put our rest stops in the forested half of the trail simply because of the lack of access the user would have to stores for things like water and food.

The design goal for the rest stops is to create an experience that feels like a calming space connected with the rest of the trail. Boulders from the nearby quarry, up-cycled railroad signage, and plants native to the adjacent forest will help achieve this. Each component plays a role in continuing the visual narrative from other sections of the Trail.

Figure 77. Proposed Rest-Stop

Precedents

Figure 78. Public Bike Shelter Precedent

Figure 79. Park & Ride Precedent

Figure 80. Highway Overpass Precedent

As a team we searched for precedents that helped us make decisions on the design of our Park & Ride connection, rest-stop ideas, and the trail entrance from the Recreation and Parks center.

(RIGHT) Covered bike parking and different ramping ideas for the Park & Ride were considered.

(LEFT) Decorative options that reflect the trail's history as an abandoned CSX railroad were researched and placed along the trail.

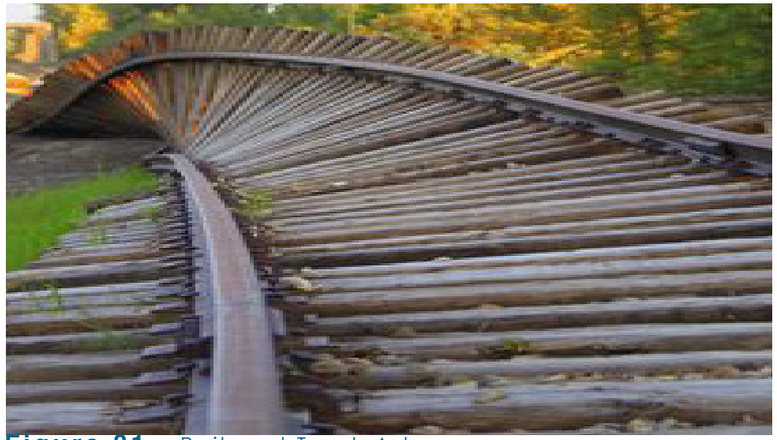


Figure 81. Railroad Track Art

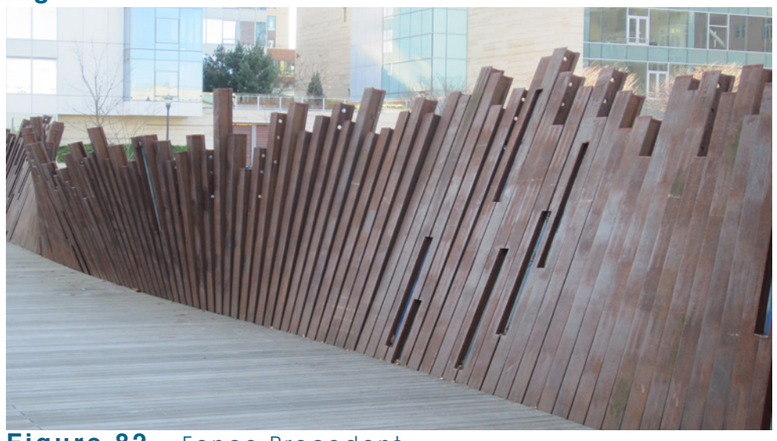
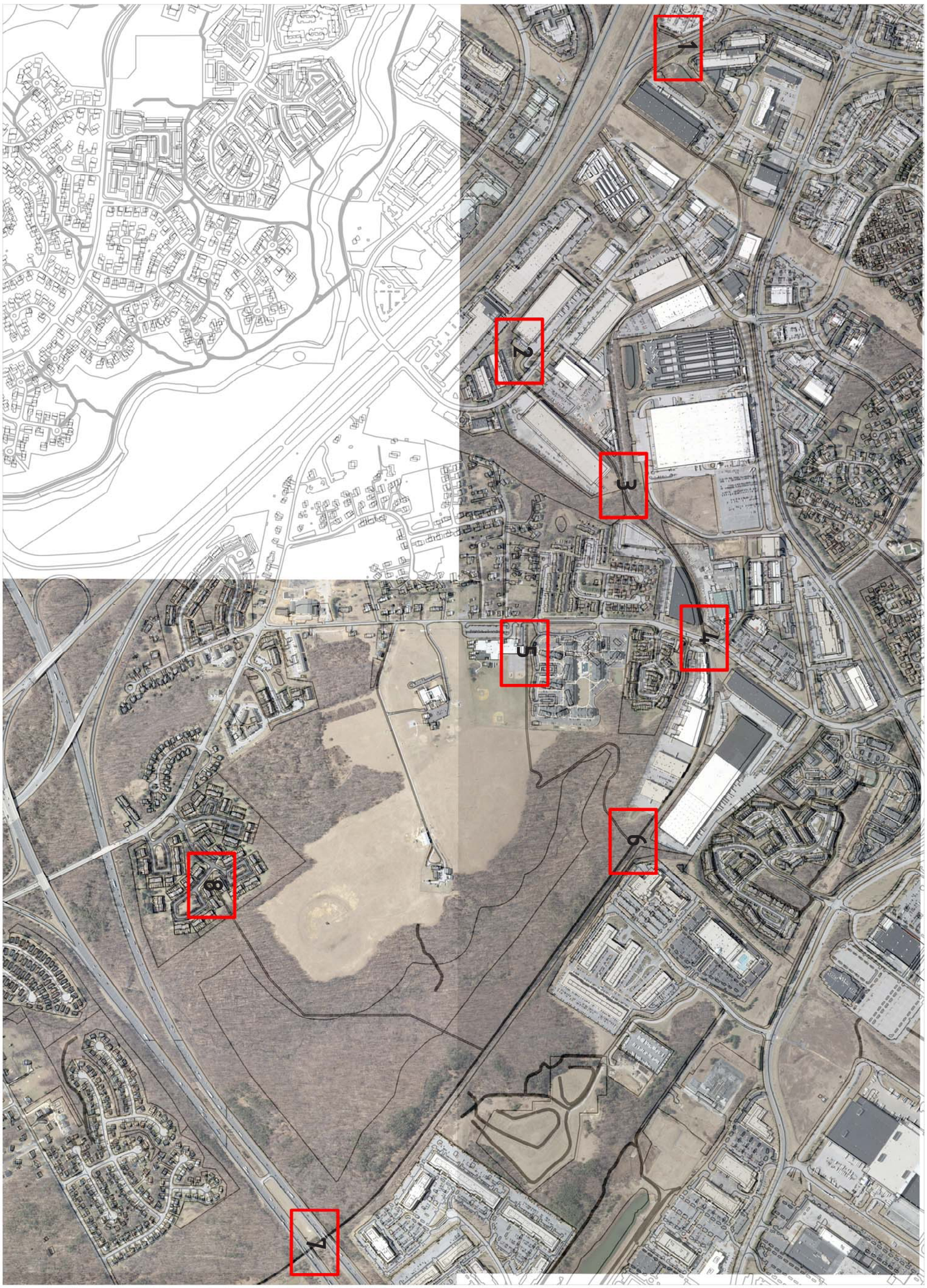


Figure 82. Fence Precedent

Figure 83. Historic Railcar Precedent



Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

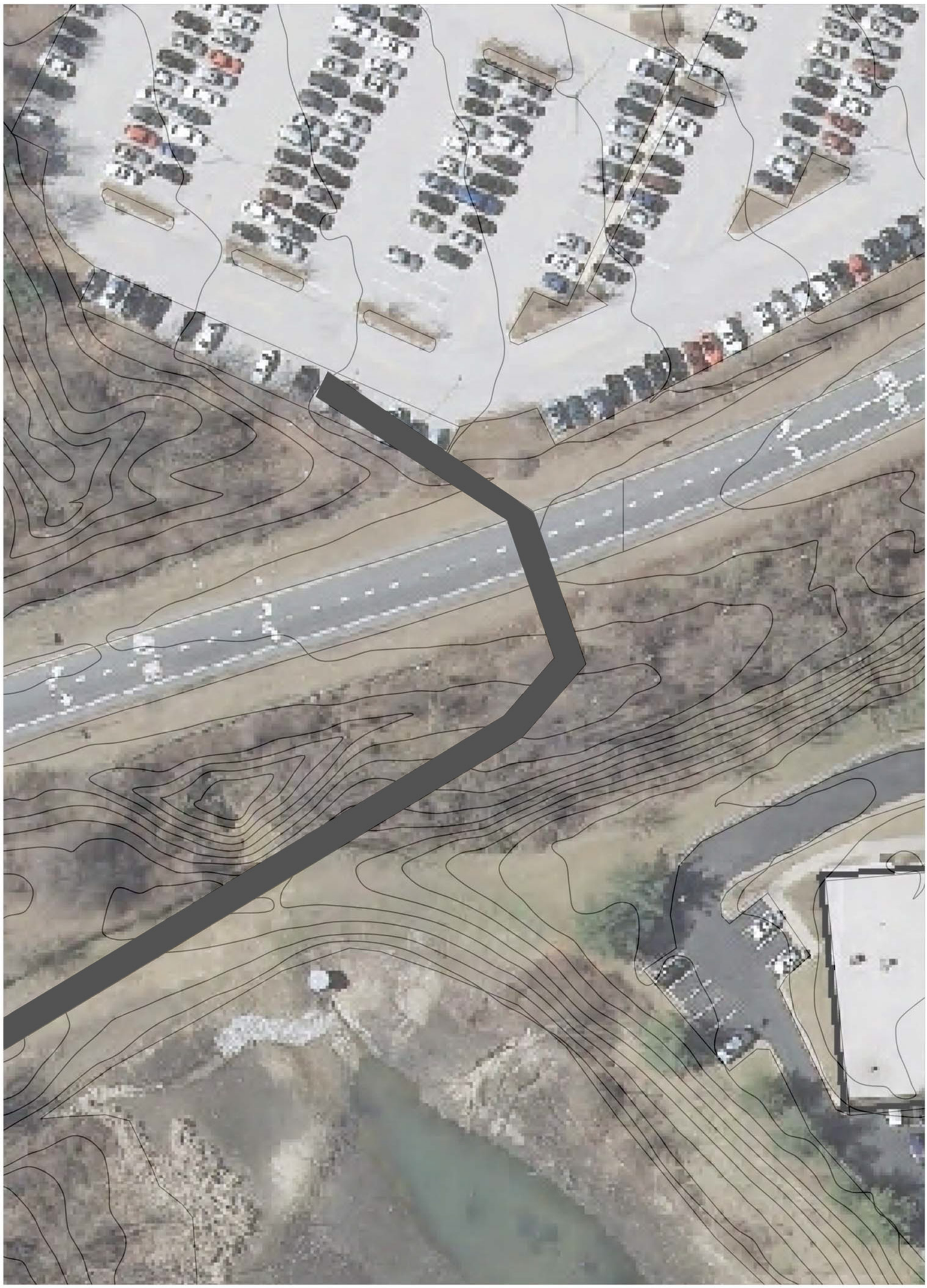
GUILFORD GATEWAY TRAIL

PATH ALIGNMENT

N

0 10 20 800

Scale: 1" = 800'-0"



Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

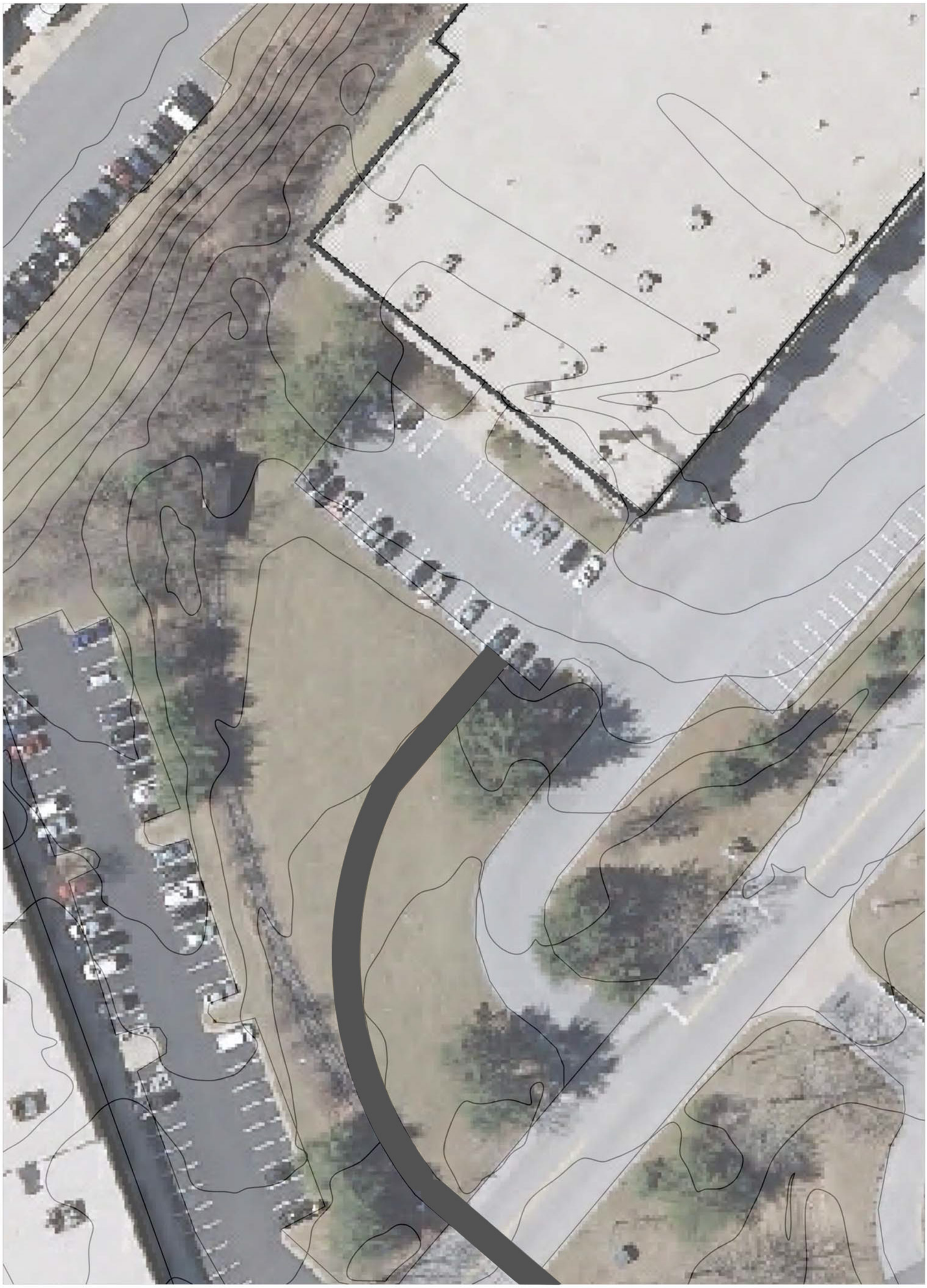
Scale: 1" = 40'-0"

0 10 20 40

N

PA # 1

GUILFORD GATEWAY MAIN STEM: PATH ALIGNMENT 2



GUILFORD GATEWAY TRAIL

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 2

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 3

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA #4

GUILFORD GATEWAY TRAIL

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 5

GUILFORD GATEWAY MAIN STEM: PATH ALIGNMENT 6

GUILFORD GATEWAY TRAIL

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

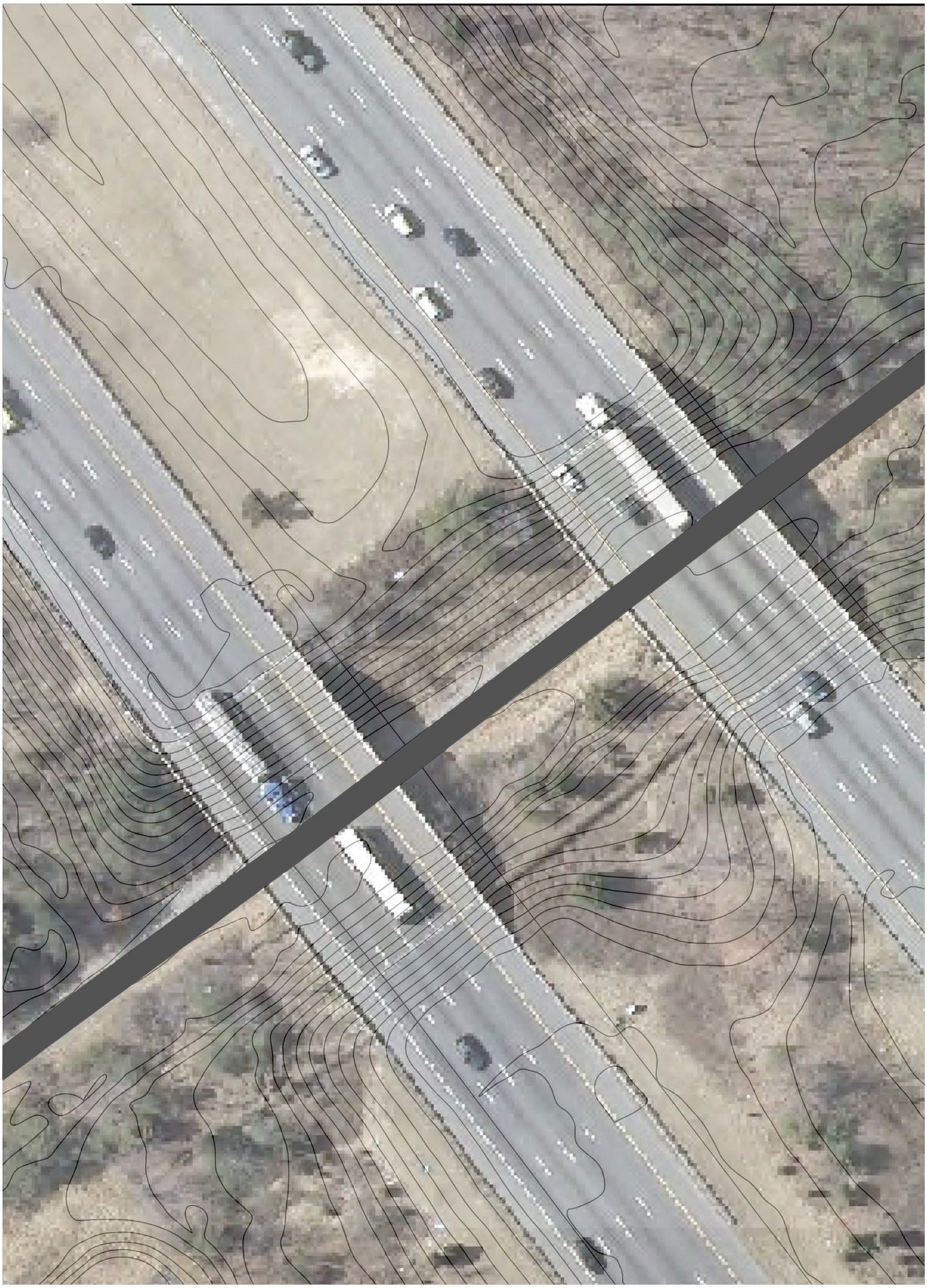
Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 6



GUILFORD GATEWAY TRAIL

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 7

GUILFORD GATEWAY MAIN STEM: PATH ALIGNMENT 8

GUILFORD GATEWAY TRAIL

Guilford Gateway Main Stem

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Autumn Dorsey, Drew Yelverton, Alex Wyman

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 8

Lake Elkhorn

Lake Elkhorn

Figure 84. Master plan of all proposed pathways

LAKE ELKHORN

- OPEN SPACE
- FLOODPLAIN
- PERSPECTIVES
- GUILFORD GATEWAY MAIN STEM
- STUDENT PROPOSED PATHWAYS
- EXISTING TRAILS
- WATER BODIES

Lake Elkhorn Narrative

The Lake Elkhorn subsection, located on the northern side of The Guilford Gateway Trail, consists of multiple advantageous destinations, including The Howard County Recreation and Parks Department, local commercial areas, residential neighborhoods and parks, and Lake Elkhorn. Lake Elkhorn is a 37-acre park with a picnic pavilion and a two-mile walking path around the lake. The lake, built in 1974, is named for the Elkhorn branch of the Little Patuxent River, which is located a few miles south of The Guilford Gateway Trail. It serves as a reservoir and a symbol for the community. The subsection successfully connects the lake, along with hundreds of single family homes and a commercial area with the rest of Guilford Gateway, adding another great amenity to the trail.

The main goal of the Lake Elkhorn subsection was to find the safest and smartest way to connect the existing paths of Lake Elkhorn and its surrounding residential area to the Guilford Gateway Trail. In order to do so multiple pathways were used to ensure users have a safe and enjoyable time. The main 2 spurs from the trail occur on Oakland Mills Rd. and 5,000 feet west on the trail on Minstrel Way. These two paths are adjacent to the road and include bike lanes with safe crossing routes at major crossings.

Both pathways include routes that would pass valuable destinations including commercial areas and Hopewell Park. The commercial area includes stores such as Starbucks, Burger King, Pizza Hut, and many more local lunch destinations. Hopewell Park includes its own series of paths, a basketball court and a pool. The pathways will then continue along residential roads using bike lanes, connecting to existing residential paths that usually begin in cul-de-sacs and continue to Lake Elkhorn. By joining these pathways, a successful connection will occur with The Guilford Gateway Trail and existing Patuxent

Supplemental Diagrams

Branch Trail.

This **contextual map** gives a better view of the Lake Elkhorn Subsection. Located Northwestern portion of the proposed Guilford Gateway Trail, there is a high amount of diversity in land usage in the area including commercial, residential, and public parks. Because of this great diversity of land usage, we proposed a series of pathways and trails that would seamlessly connect prime destinations in the subsection with each other and the overall Guilford Gateway Trail.

This **trail loop map** shows two different subsections of the Guilford Gateway Trail, Lake Elkhorn and Little Patuxent. It shows a 4.7 mile loop that connects paths from the two subsections. This connection is an integral part of the proposed Guilford Gateway Trail as it provides a closed loop circuit for residents in the area to use and reaches destinations such as, The Howard County Recreation and Parks building, Lake Elkhorn, and the Little Patuxent River.

This **traffic density map** of the Lake Elkhorn subsection shows how the vehicular circulation relates to the overall design of the area. The three main high density roads that pass through the subsection include Broken Land Pkwy, Snowden River pkwy, and Oakland Mills Rd. These three roads took the most planning when trying to provide the safest, most intelligent way to provide bike lanes and paths for the subsection. Roads such as Minstrel Way, Carved Stone, and Rusting Leaf still experience traffic, but at a much lower density. These roads connect the main parkways, commercial areas, and local parks to the residential roads, which experience a very low amount of traffic, as many are dead ends or cul-de-sacs.

This **drawing of a proposed crossing at a major intersection** shows the close attention to detail that was paid in order to providing safe and secure crossings for bikers and pedestrians. The design prevent cars from entering the pathway of cyclists turning right. Based off The Dutch junction, a clever and surprisingly simple solution to a conflict that's plagued communities for years, bicycle and pedestrian safety. It's especially effective, since it specifically addresses the place where bicycles and cars are most likely to collide, at

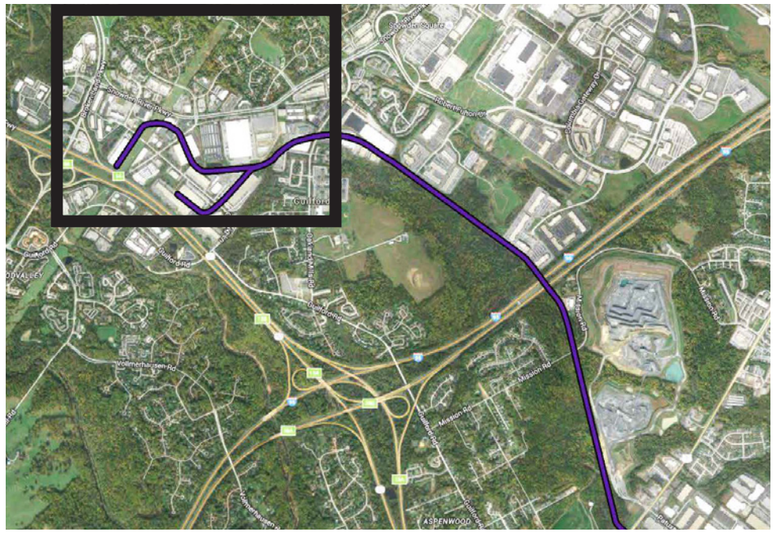


Figure 85. Contextual Map

Figure 87. Traffic Density Map

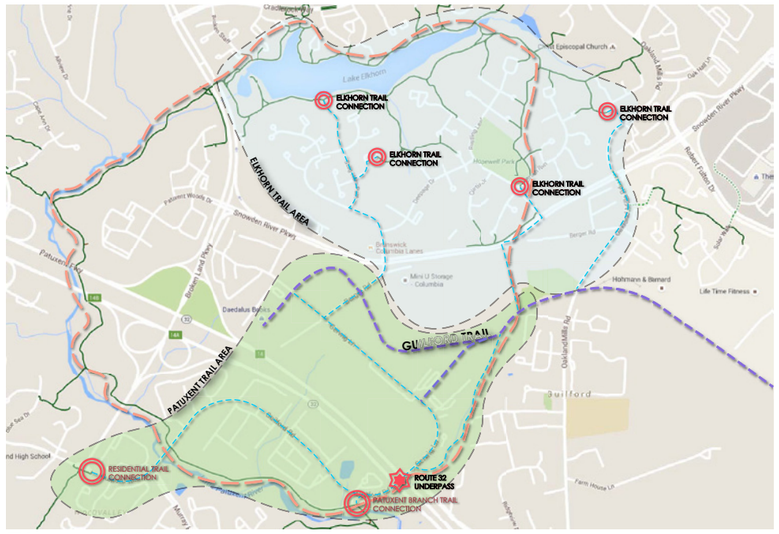


Figure 86. Trail Loop Map

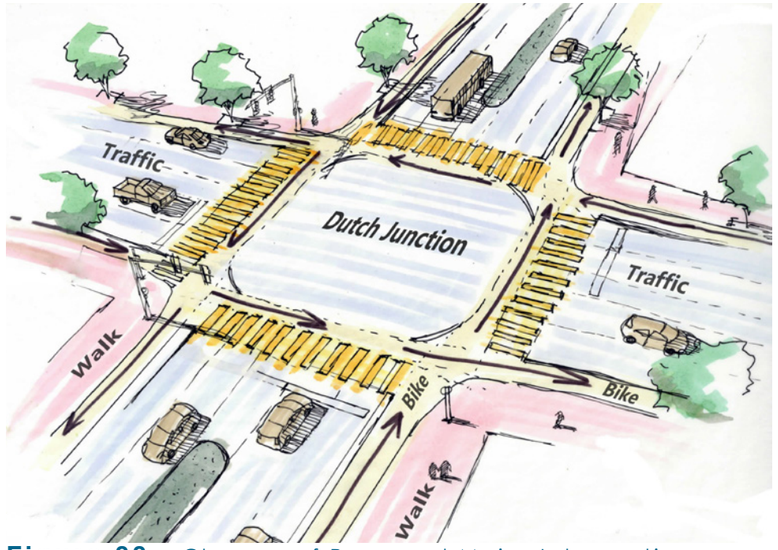


Figure 88. Closeup of Proposed Major Intersection

Perspectives

Figure 89. Pathway towards Lake Elkhorn

Perspectives

Figure 90. Pathway along Lake Elkhorn

Perspectives

Figure 91. Rail line meets Oakland Mills Road

Figure 92. Pathway along Hopewell Park

Figure 93. Bike lanes along Oakland Mills Road

Figure 94. Residential Intersection

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

0 500 1000 2500

Scale: 1" = 2500 m

N

PATH ALIGNMENT MASTER

LAKE EKLHORN: PATH ALIGNMENT 1

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

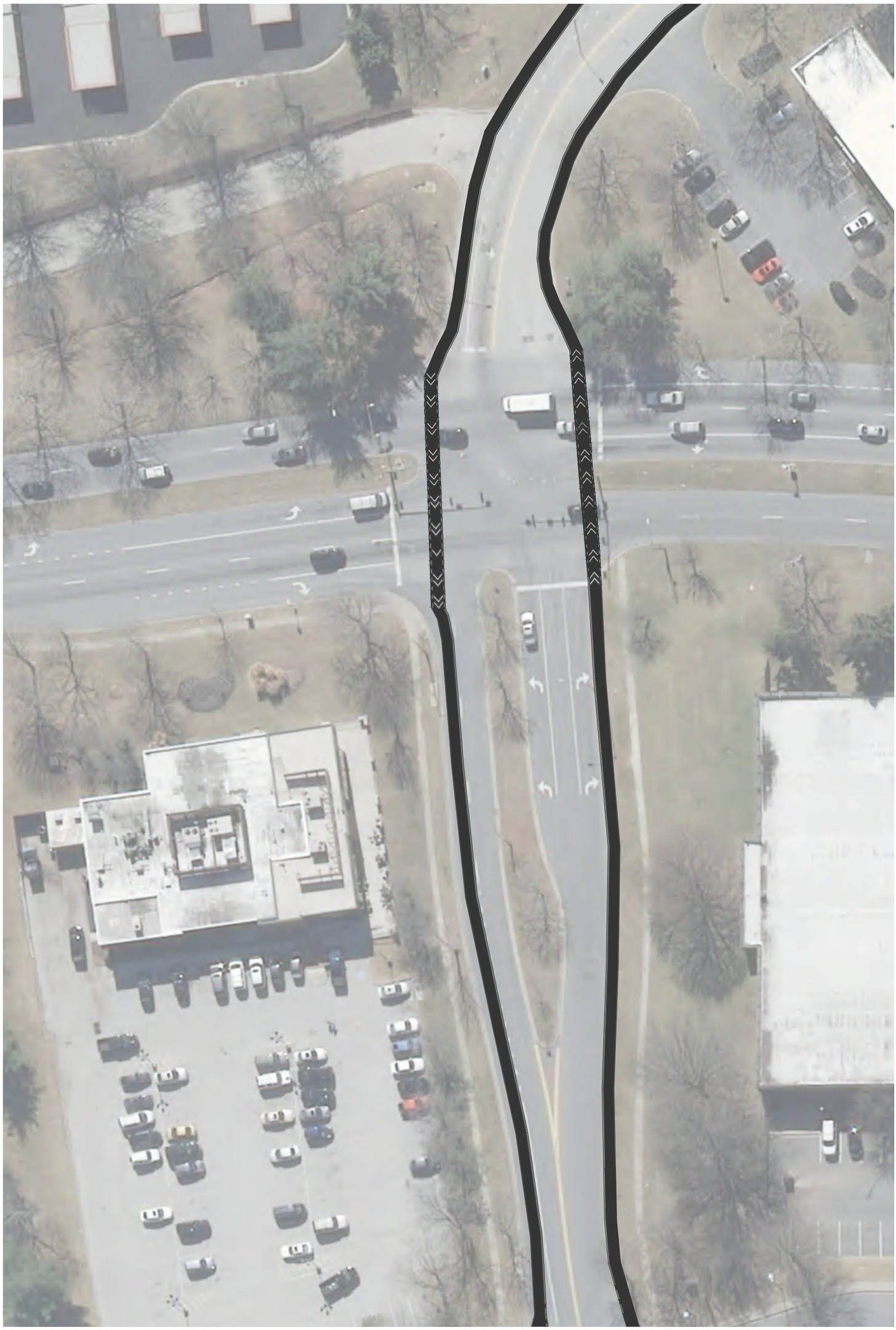
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

Scale: 1" = 40'
0 10 20 40

N

PA# 1



GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

Scale: 1" = 40' 0"

0 10 20 40

N

PA# 2

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

0 10 20 40

Scale: 1" = 40' 0"

N

PA# 3

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

0 10 20 40

Scale: 1" = 40' 0"

N

PA# 4

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

0 10 20 40
Scale: 1" = 40' 0"

N

PA# 5

GUILFORD GATEWAY TRAIL

Lake Elkhorn

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Noah O'Malley, Will Otremba, Jacques Cassagnol

0 10 20 40

Scale: 1" = 40' 0"

N

PA# 6

Patuxent

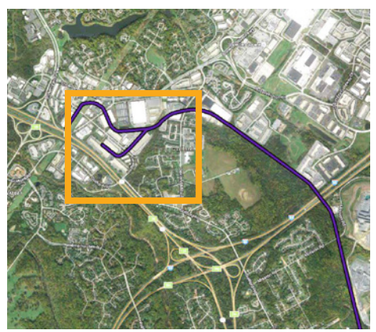
Patuxent

Map of Trails

Introduction and Narrative

The Patuxent subsection of the site is an invaluable piece to the proposed Guilford Gateway Trail. The existing Patuxent Branch Trail system consists of 4.6 miles of pathways (connecting a greater 20 miles) that connect Savage Park to Lake Elkhorn. The proposed Patuxent subsection of pathways will provide easy access to the Patuxent Branch Trail, the commercial and industrial sector nearby, and provide several points of interest along the way. Travelling westward on the Guilford Gateway Trail stem, users can reach the Patuxent Branch Trail by exiting the main stem and travelling southward on a shared use path through the woods, then travelling underneath Patuxent Freeway on a comfortable shared use path that leads directly to the Patuxent Branch Trailhead. Commuters wishing to reach the commercial and industrial parks nearby can travel along bike lanes on Guilford Road, Gerwig Lane, and Berger Road. Residential areas surrounding Guilford Elementary School will have new easy access to the proposed Guilford Gateway Trail via the wooded trail.

Context



Land Use

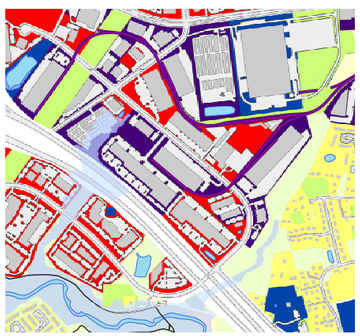


Figure 95. Illustrative Plan of proposed Patuxent Area

Perspectives

Trail Roadway Typologies

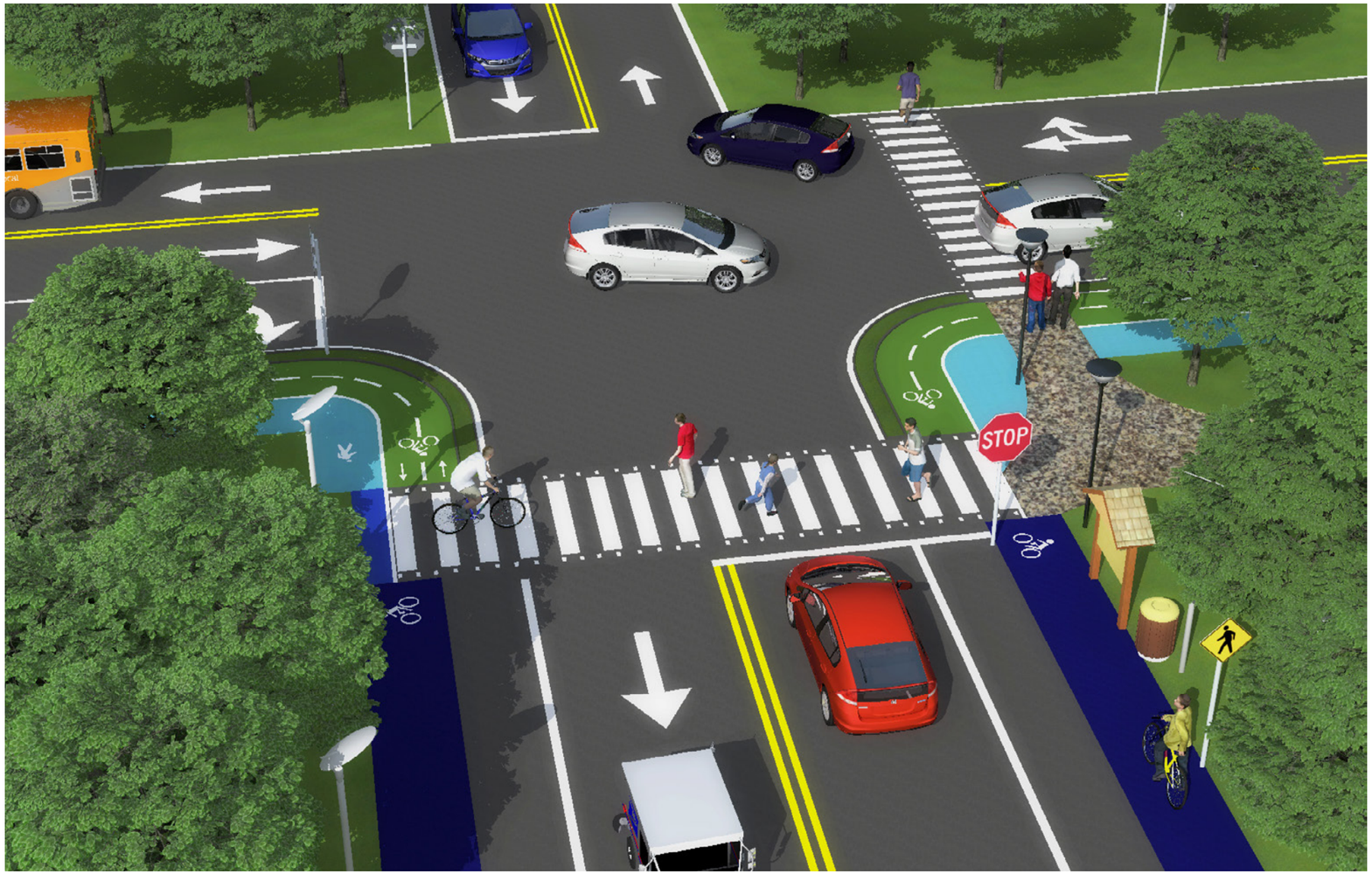


Figure 96. Crosswalk Entry into wooded trail (T2).

Figure 97. Shared use path under Patuxent Freeway (T1)

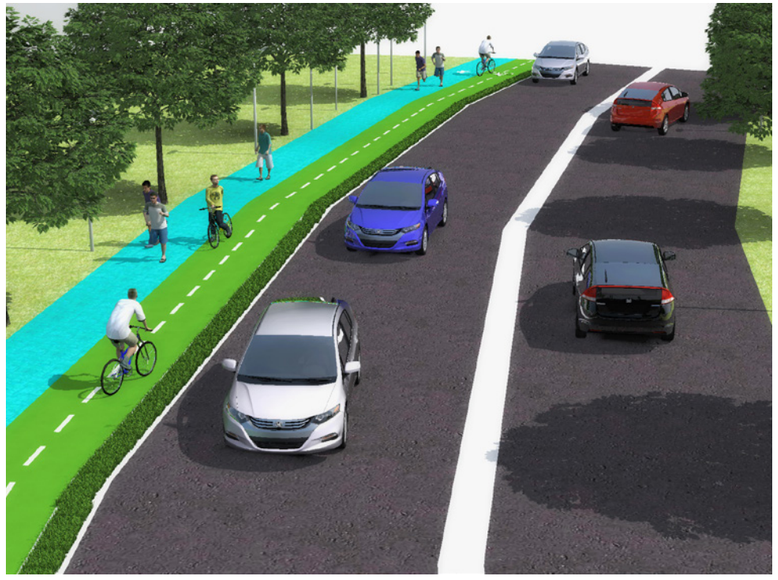


Figure 98. Shared use path along Gerwig Lane (T4)

Performance Metrics

Miles of New Trail: 2.48
Connections to Existing Trails: 5
Road Intersections: 28

Wooded Trail

Significance

In the proposed design, a shared use path extends through an existing woods corridor. As it hugs the floodplain, two portions of this path would need to be elevated 1-5 feet due to steeper slopes (Fig. 100, Fig. 101) This pathway serves several purposes:

1. It provides trail access to the adjacent neighborhoods and Guilford Elementary school.

2. It offers an alternative trail experience for recreational or commuter use. Woods offer shade, fresh air, and natural enclosure. Users will be able to escape the roadways and see a variety of plants and animals on their ride or run.

3. It is the vital piece in creating a 7.5 KM loop of existing and proposed trails. This could open new opportunities for community events such as bike races or marathons. (Fig 99)

Figure 99. Diagram of 7.5km trail loop around Lake Elkhorn area (blue) and Patuxent area (green).

Figure 100. Elevated boardwalk section

Figure 101. Wooded trail perspective and connection of asphaltic material with elevated boardwalk (T3).

Amenities

Significance

Two proposed amenities along the Patuxent are the Middle Terminus (Fig. 103) and Powerline Park (Fig. 102, Fig. 104). The Middle Terminus would occur on a portion of land owned by the Kline Paper Mill. It is currently enclosed by the CSX rail line, however in the proposed design, the Guilford Gateway trail stem would end at this terminus, and the old railroad would remain in its existing condition to provide some context and historical character, demonstrating that this is a Rails to Trails project. The terminus would include bike racks, water refill stations, and a shady seating area.

The Powerline Park is a concept developed as a future option. Like a railline, a powerline is an existing right of way that spans great distances. The portion of powerline land shown on the map (A2) is adjacent to Daedalus Books, Gracie Jiu-Jitsu, Central Maryland Youth Ballet and the Olenka School of Music. This park could start as a community trailhead to the Guilford Gateway Trail - complete with art installations, shared use paths, rest areas, and recreational areas.

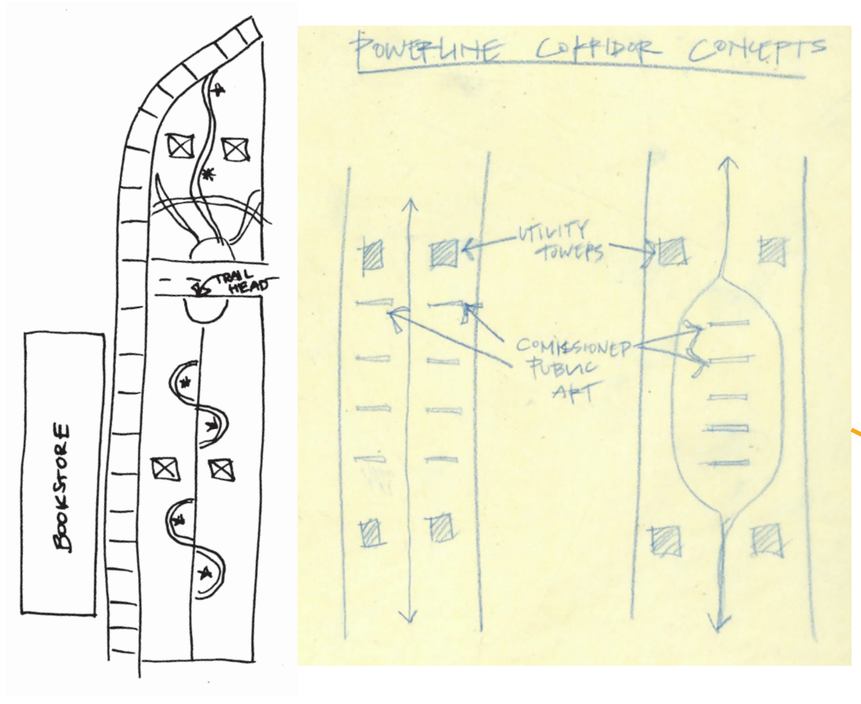


Figure 102. Powerline Park concept layouts.

Figure 103. Middle Terminus (rest stop) concept design

Figure 104. Powerline Park concept image

Precedents and Inspiration

Figure 105. Horsham Powerline Trail, PA

Figure 112. Atlanta Beltline art installations

Figure 113. Indianapolis Cultural Trail shared use path along a roadway

Figure 106. Indianapolis Cultural Trail shared use crosswalk pattern

Figure 110. Glick Peace Walk art installation, educational signage, and night lighting

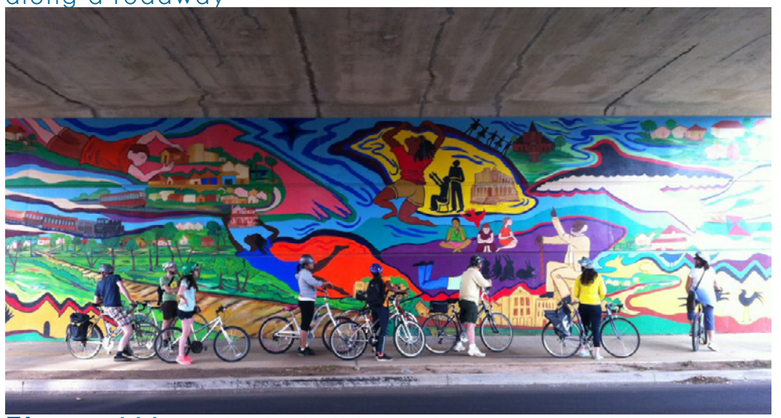


Figure 111. Atlanta Beltline art underneath highway overpass

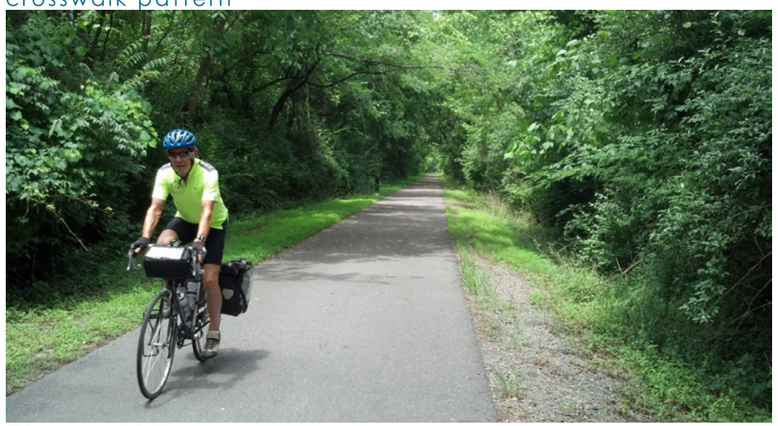


Figure 107. Western Maryland Rail Trail

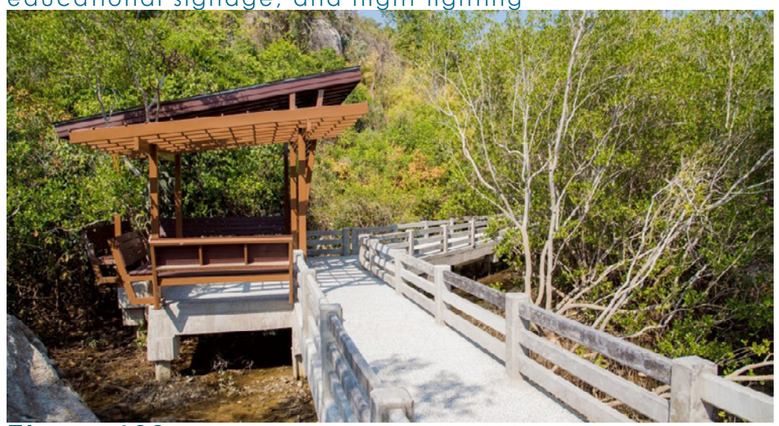


Figure 108. Elevated boardwalk, Chiva Som Wellness Retreat

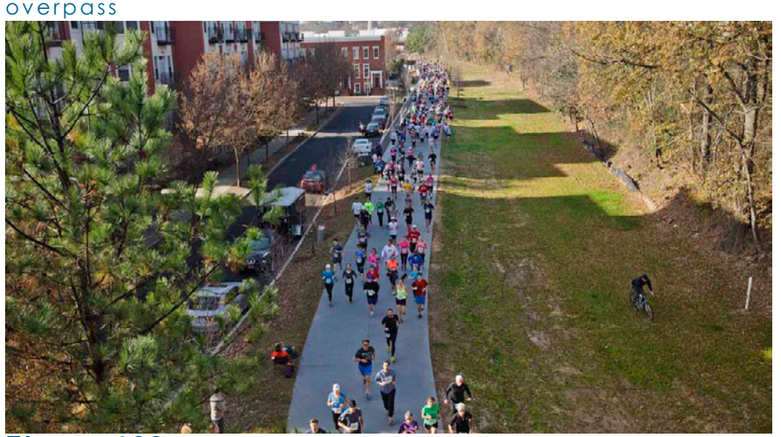
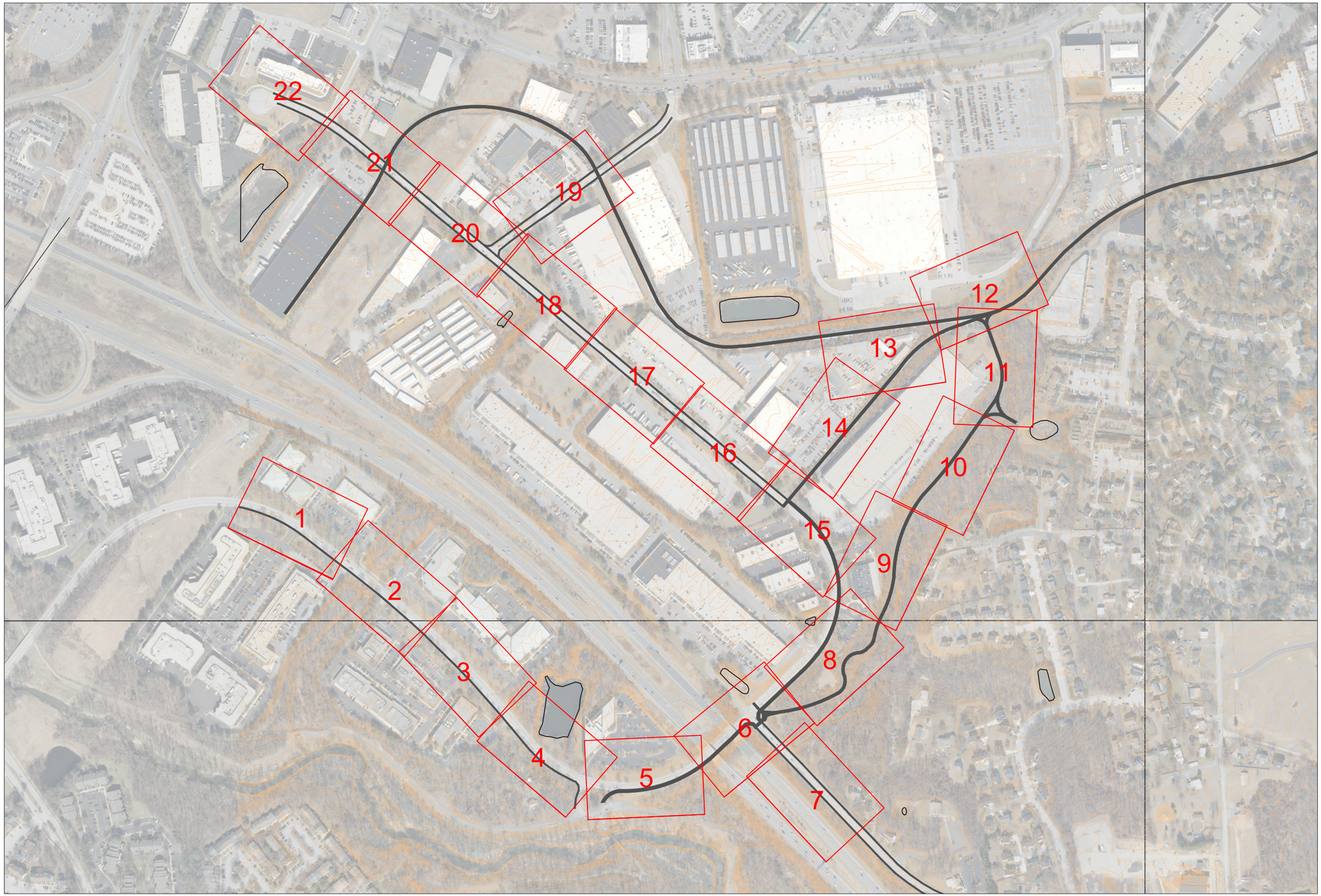


Figure 109. Use of pathway for community events, Indianapolis Cultural Trail



PA Master

N

0 225 450

Scale: 1" = 450'-0"

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

GUILFORD GATEWAY TRAIL

PATUXENT: PATH ALIGNMENT MASTER

PATUXENT: PATH ALIGNMENT #1

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #1

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #2

PATUXENT: PATH ALIGNMENT #3

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #3

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #4

PATUXENT: PATH ALIGNMENT #5

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

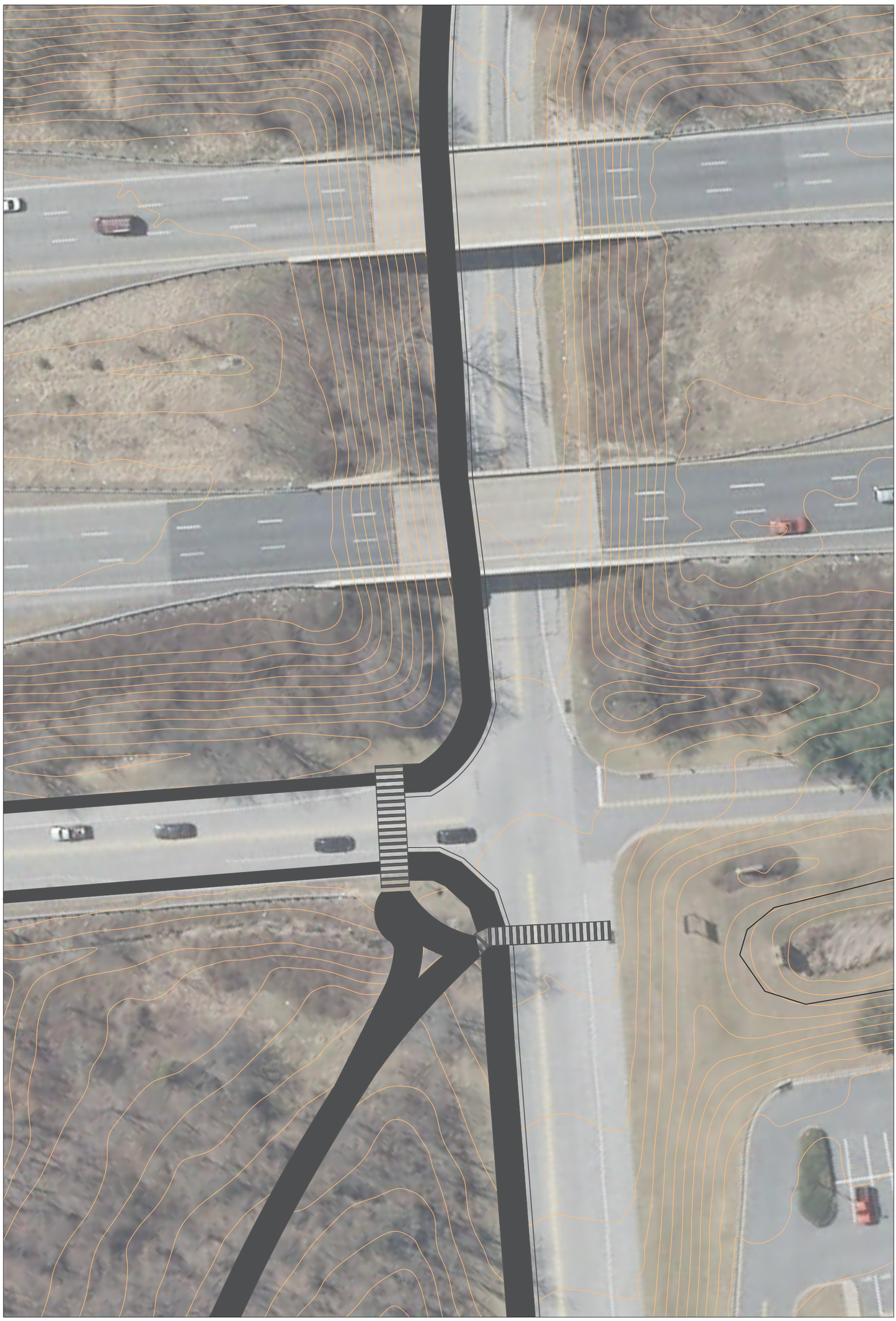
Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #5



GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #6

PATUXENT: PATH ALIGNMENT #7

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #7

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #8

PATUXENT: PATH ALIGNMENT #9

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #9

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #10

PATUXENT: PATH ALIGNMENT #11

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #11

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #12

PATUXENT: PATH ALIGNMENT #13

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

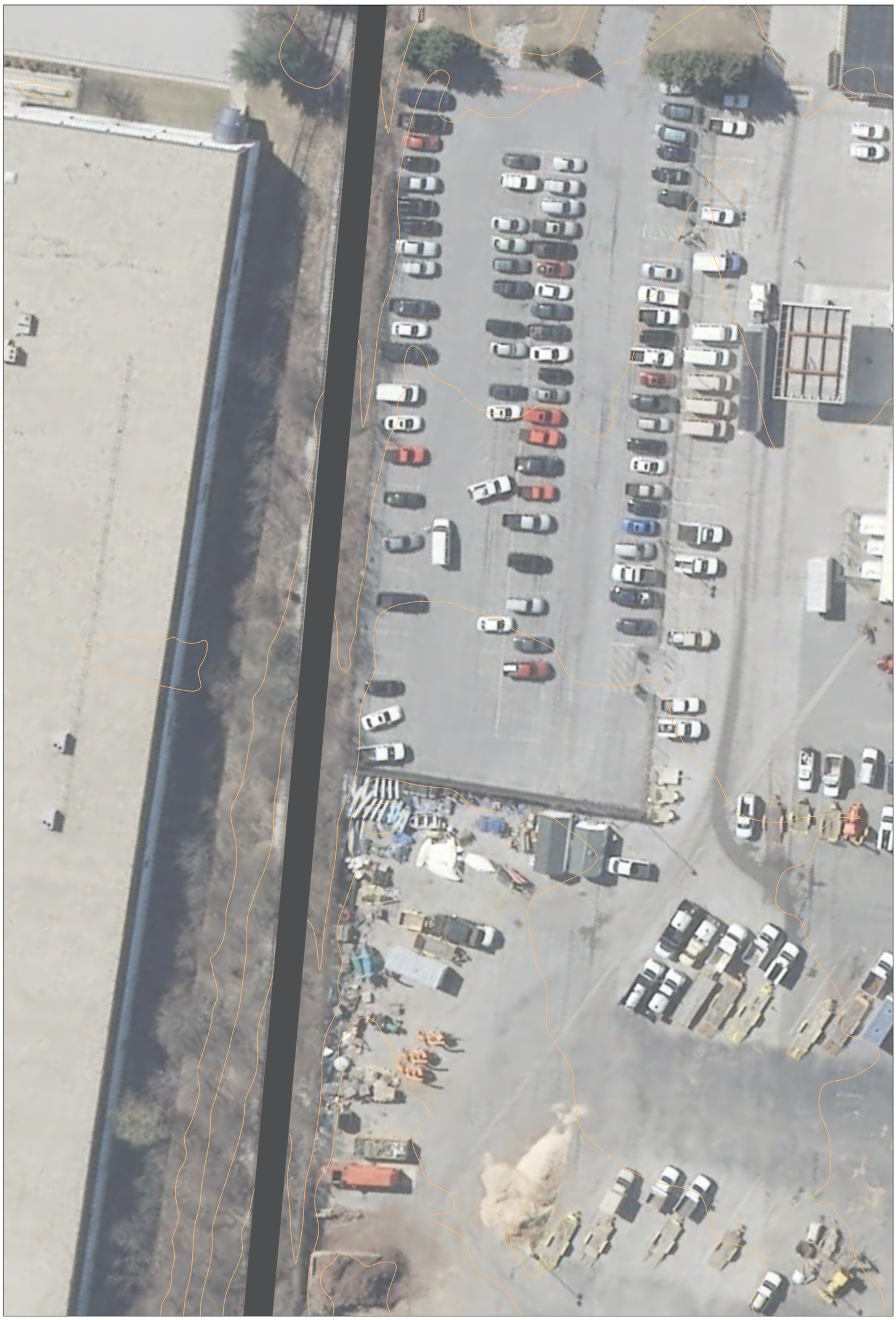
Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #13



GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #14

PATUXENT: PATH ALIGNMENT #15

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #15

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #16

PATUXENT: PATH ALIGNMENT #17

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #17

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Scale: 1" = 40'-0"

0 10 20 40

N

PA #18

PATUXENT: PATH ALIGNMENT #19

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Scale: 1" = 40'-0"

0 10 20 40

N

PA #19

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Scale: 1" = 40'-0"

0 10 20 40

N

PA# 20

PATUXENT: PATH ALIGNMENT #21

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Scale: 1" = 40'-0"

0 10 20 40

N

PA #21

GUILFORD GATEWAY TRAIL

Patuxent

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Tandis Hamidzadeh, Simon Lee, Yixuan Li

Scale: 1" = 40'-0"

0 10 20 40

N

PA #21

Columbia Gateway

Columbia Gateway

Mission Statement

To provide connections between residential and commercial, employment, and educational uses that are accessible to all ages and abilities of users

Goals

- To develop bikeway and trail corridors that connect with existing and proposed trails
- To improve safety for pedestrians and cyclists
- To provide low-environmental impact trasportation
- To transform the trail site into an educational component

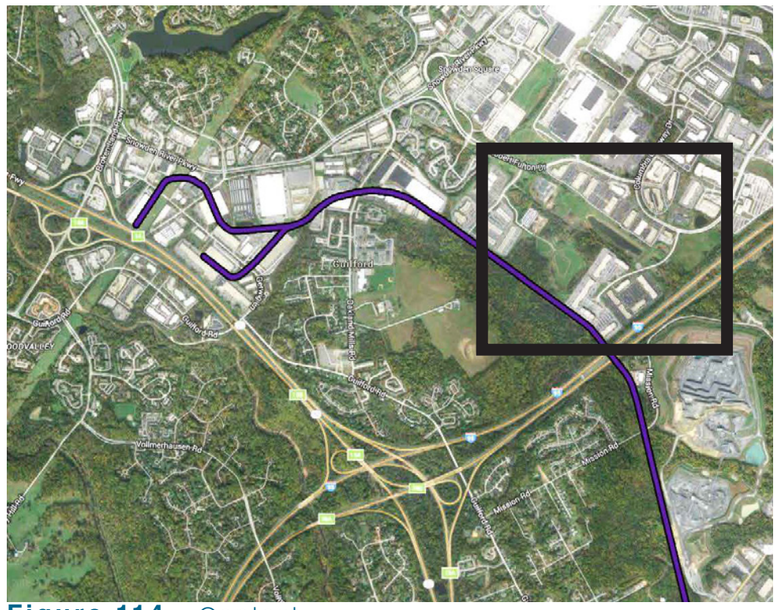


Figure 114. Context

Guilford Gateway Trail

Columbia Gateway is dominated by impervious surfaces and about three quarters pervious surfaces. We proposed our main trail from the two main intersections located at the Columbia Gateway. The intersection located at View 1 will lead down Samuel Morse Dr. to the retention pond and through the open field south to Guilford Gateway Trail. The second main trail will lead down Robert Fulton Dr. to Solar Walk Dr. and eventually will connect to Guilford Gateway Trail. Columbia Gateway has green space that can be utilized so we proposed a trail system that loops around the retention pond. The rentention pond can be a feature that can provide aesthetic values to the public.

Figure 115. Site Plan

COLUMBIA GATEWAY

Diagrams & Approach

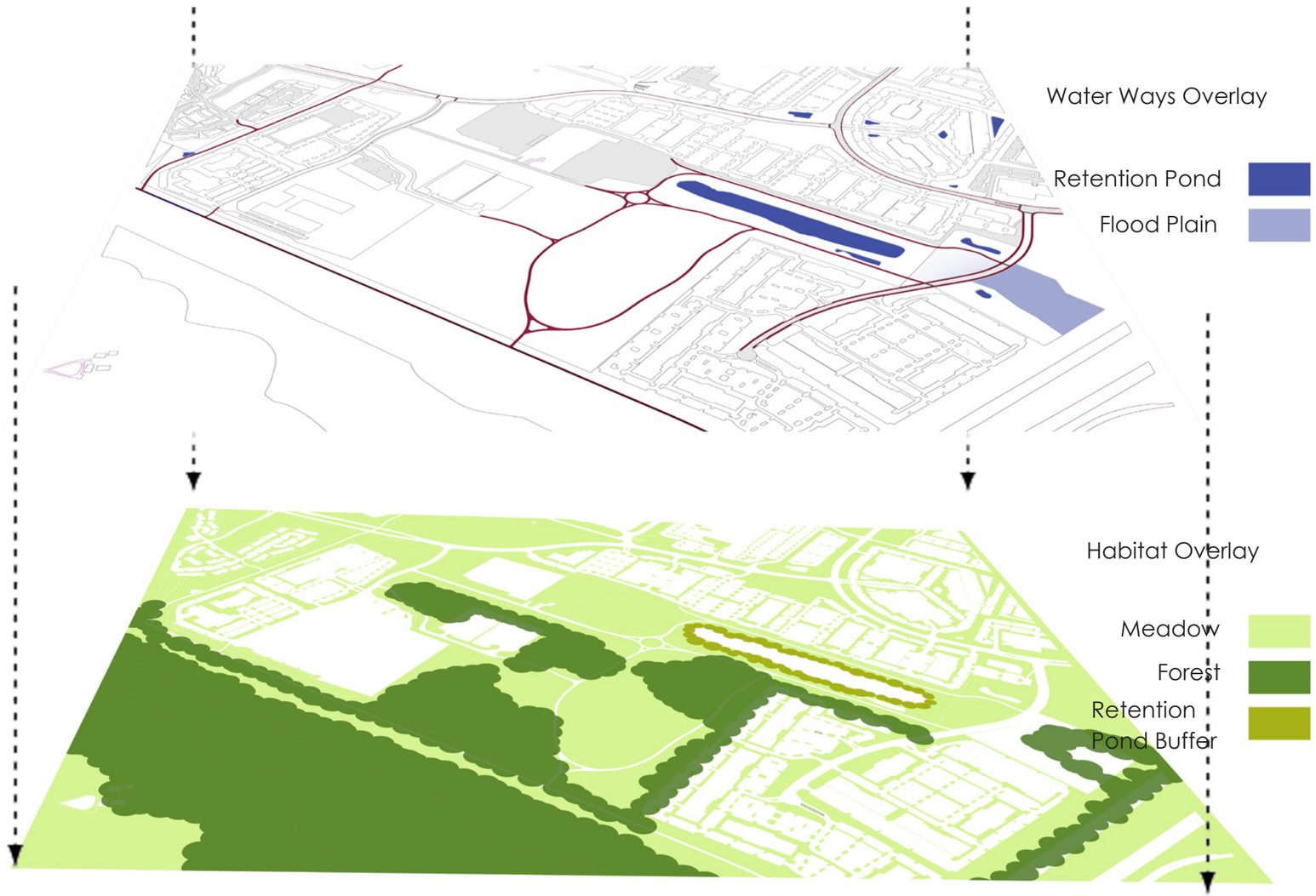
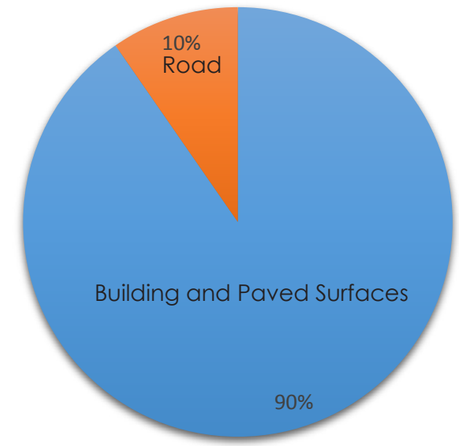


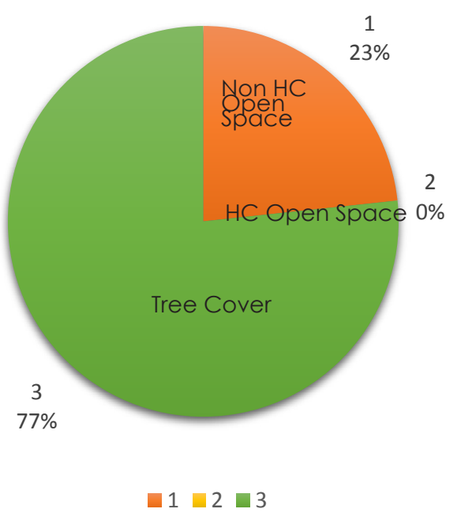
Figure 116. Ecological Approach

We broke down the site into pervious and impervious serfaces. This provides a better perspective of how much green space is available and how much structural built systems are on site. The proposal of trails will allow Howard County to integrate better path systems and provide the community with better amenities that can be used by the community. Based on the graphs, the amount of impervious serfaces should be reduced on the next future projects.



- Building and Paved Surfaces 197.6 acres
- Road Coverage 21.1 acres

Figure 117. Impervious Surfaces



- Non HC Open Space 33.6 acres
- HC Open Space 0 acres
- Tree Cover 110.6 acres

Figure 118. Pervious Surfaces

Perspectives

Figure 119. Perspective View 1

Figure 120. Perspective View 2

Figure 121. Perspective View 2 - Alternative

Figure 122. Perspective View 4

Perspectives

Figure 123. Perspective View 5

Figure 124. Perspective View 7

Figure 125. Perspective View 6

Figure 126. Perspective View 7 - Night View

Precedents and Inspiration

Figure 127. Two-way Bicycle Trail Next to a Traffic Road

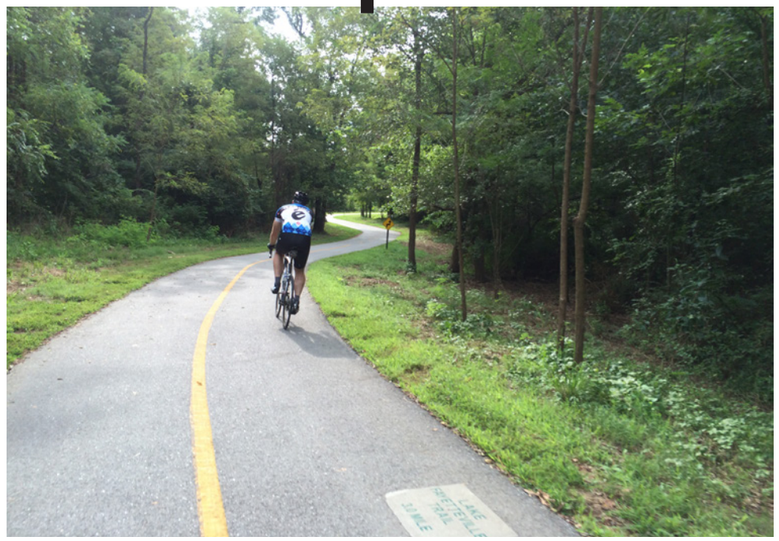


Figure 128. Two-way Bicycle Trail Within a Forest

Figure 129. Asphalt Trail Into The Forst Area

Figure 130. Natural Trail Along With a Pond

Figure 131. Natural Trail Along With a Pond

PA Master

N

0 325 650 1300

Scale: 1" = 1300'-0"

Columbia Gateway

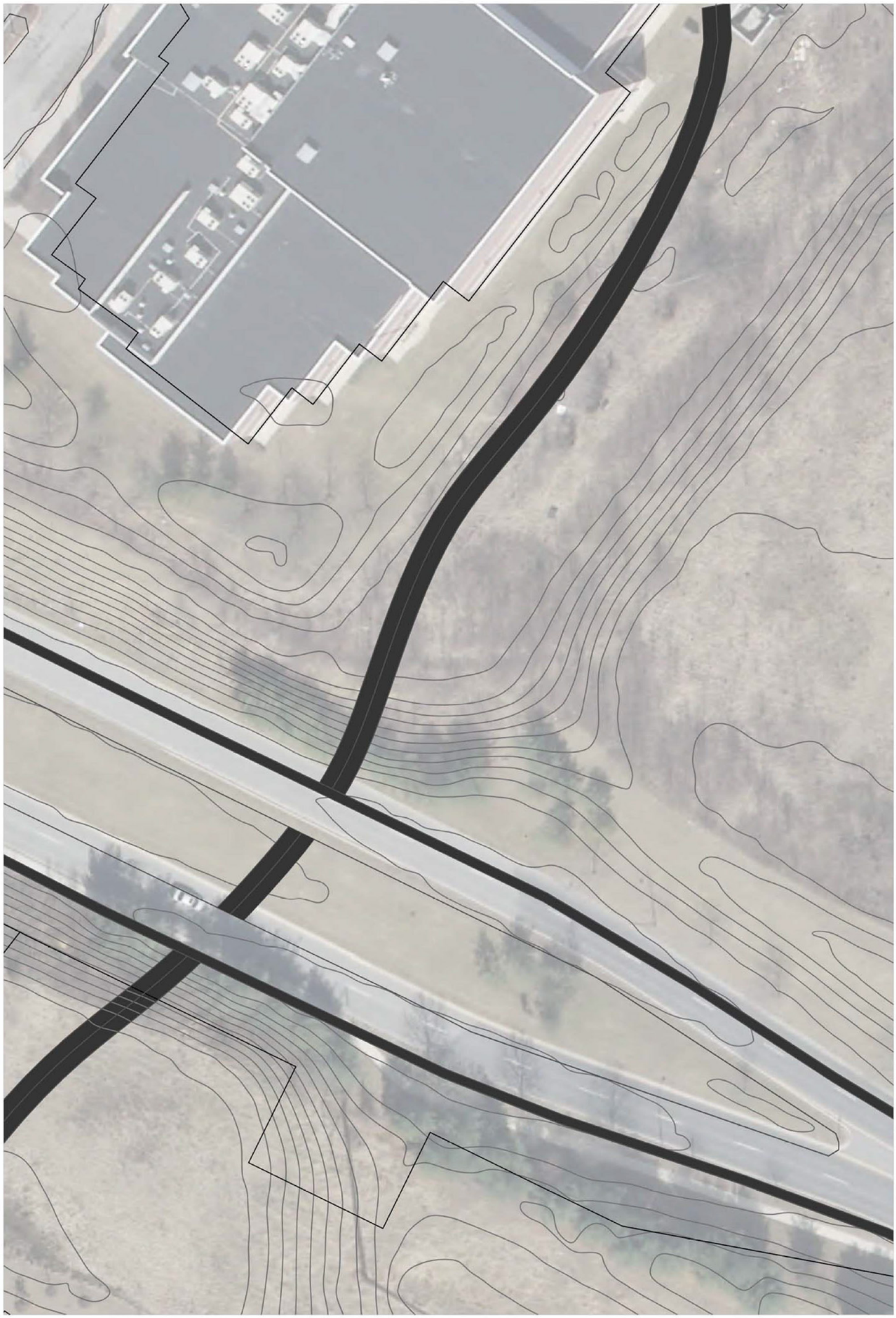
University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

GUILFORD GATEWAY TRAIL

COLUMBIA GATEWAY: PATH ALIGNMENT #1



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

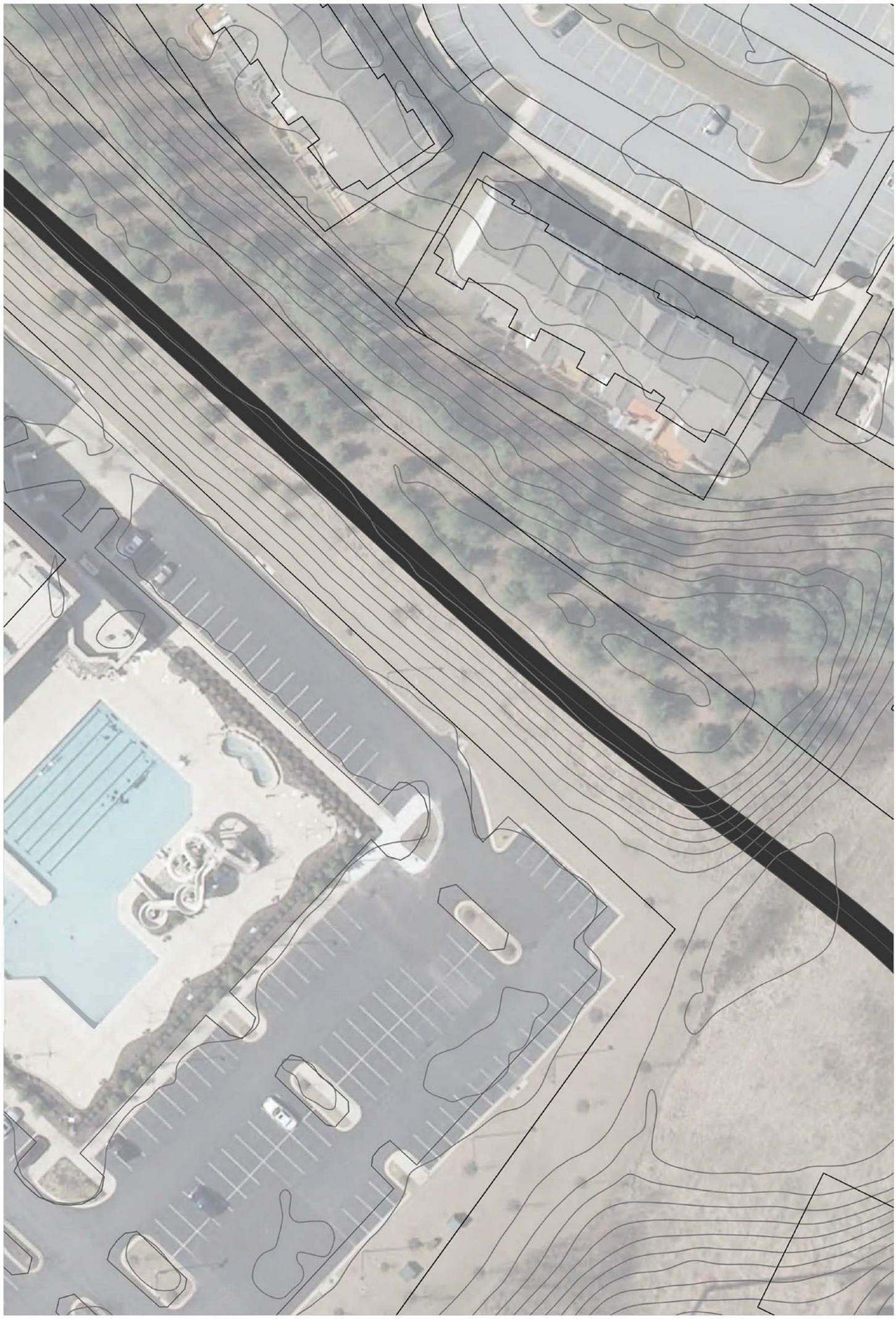
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 1



Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

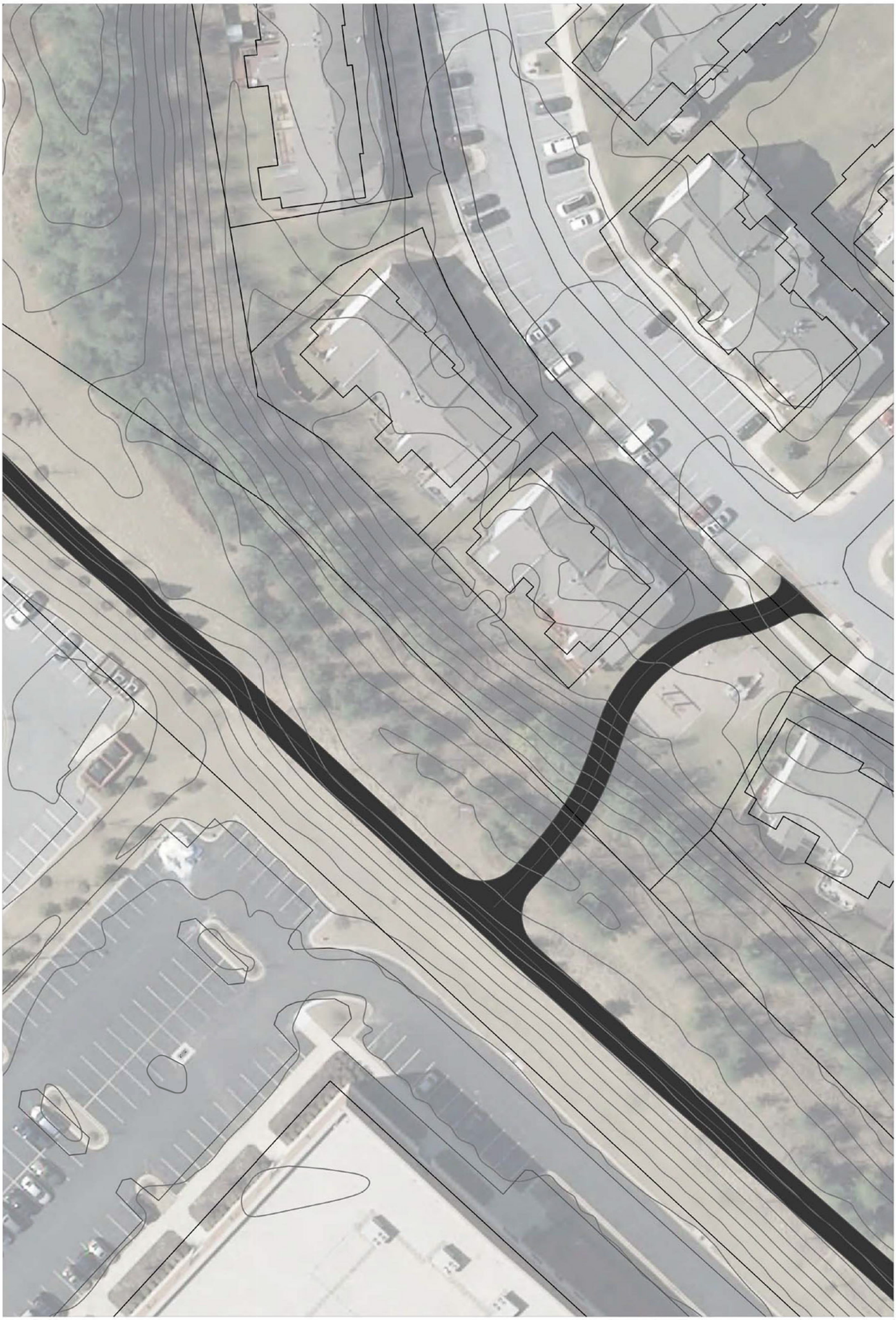
Scale: 1" = 40'-0"

0 10 20 40

N

PA # 2

COLUMBIA GATEWAY: PATH ALIGNMENT #3



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 3

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 4

COLUMBIA GATEWAY: PATH ALIGNMENT #5

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 5

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

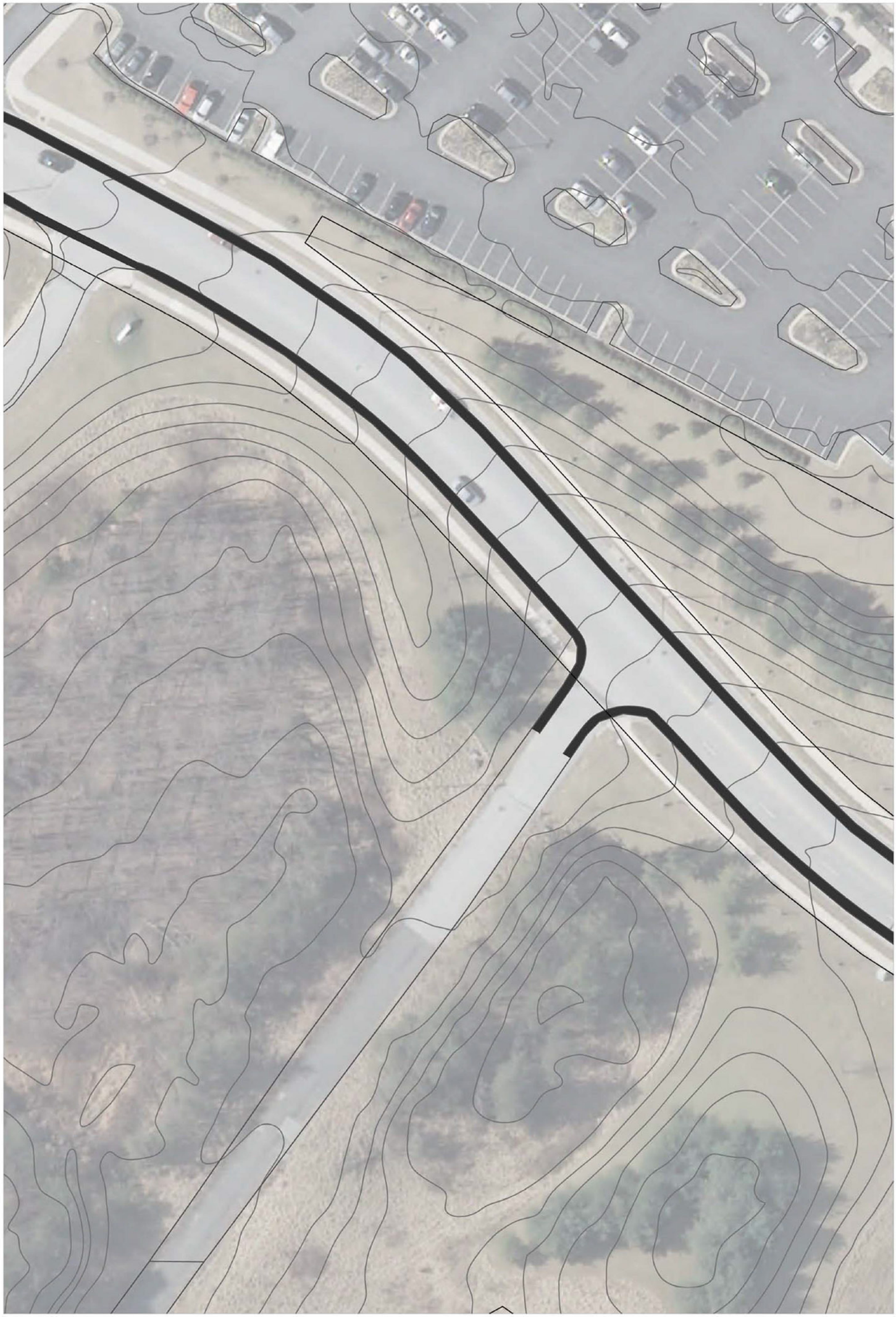
Scale: 1" = 40'-0"

0 10 20 40

N

PA # 6

COLUMBIA GATEWAY: PATH ALIGNMENT #7



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 7

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 8

COLUMBIA GATEWAY: PATH ALIGNMENT #9

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 9

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 10

COLUMBIA GATEWAY: PATH ALIGNMENT #11

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 11

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 12

COLUMBIA GATEWAY: PATH ALIGNMENT

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 13

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 14

COLUMBIA GATEWAY: PATH ALIGNMENT #15

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 15

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 16

COLUMBIA GATEWAY: PATH ALIGNMENT #17

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

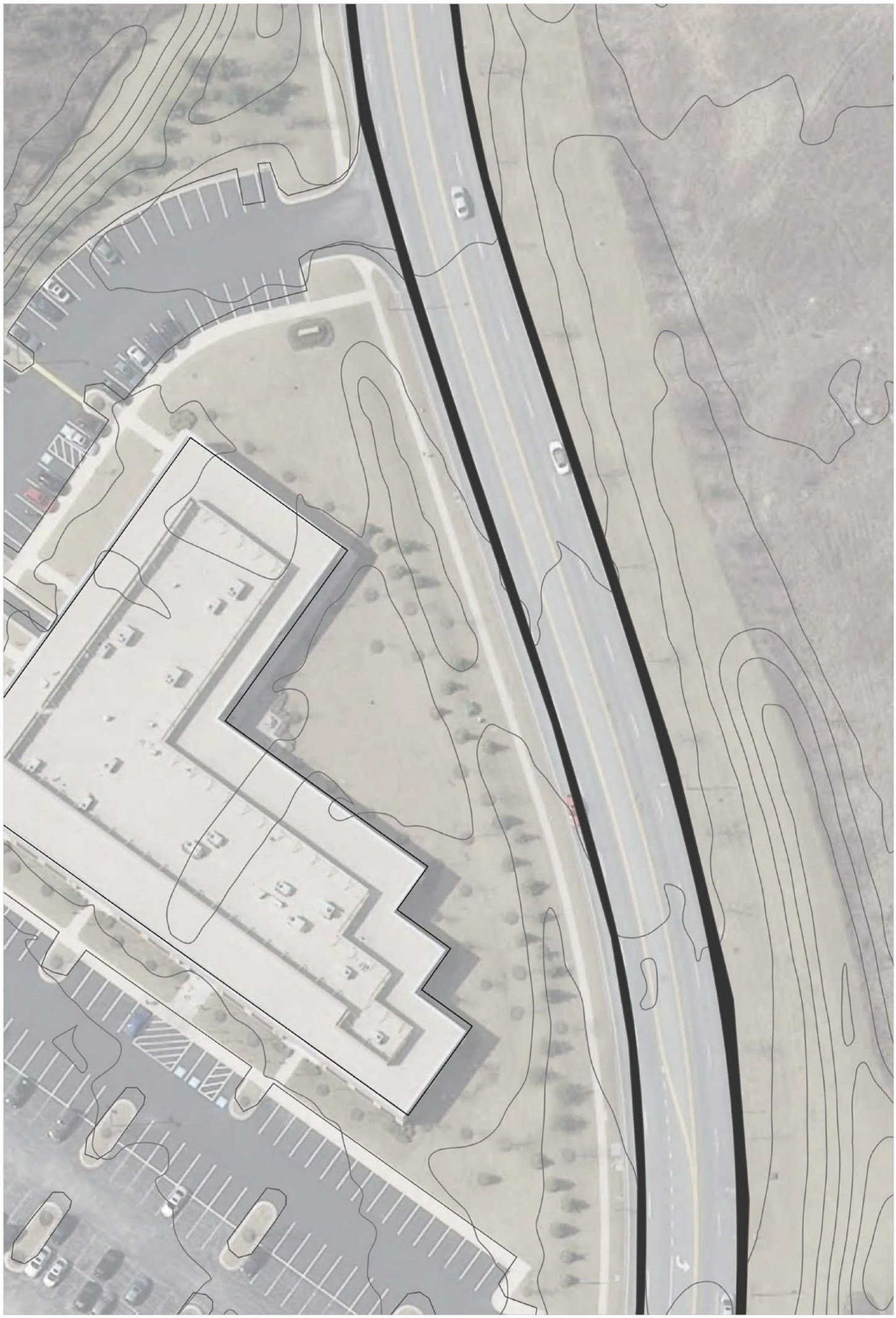
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 17



Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 18

COLUMBIA GATEWAY: PATH ALIGNMENT #19

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 19

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

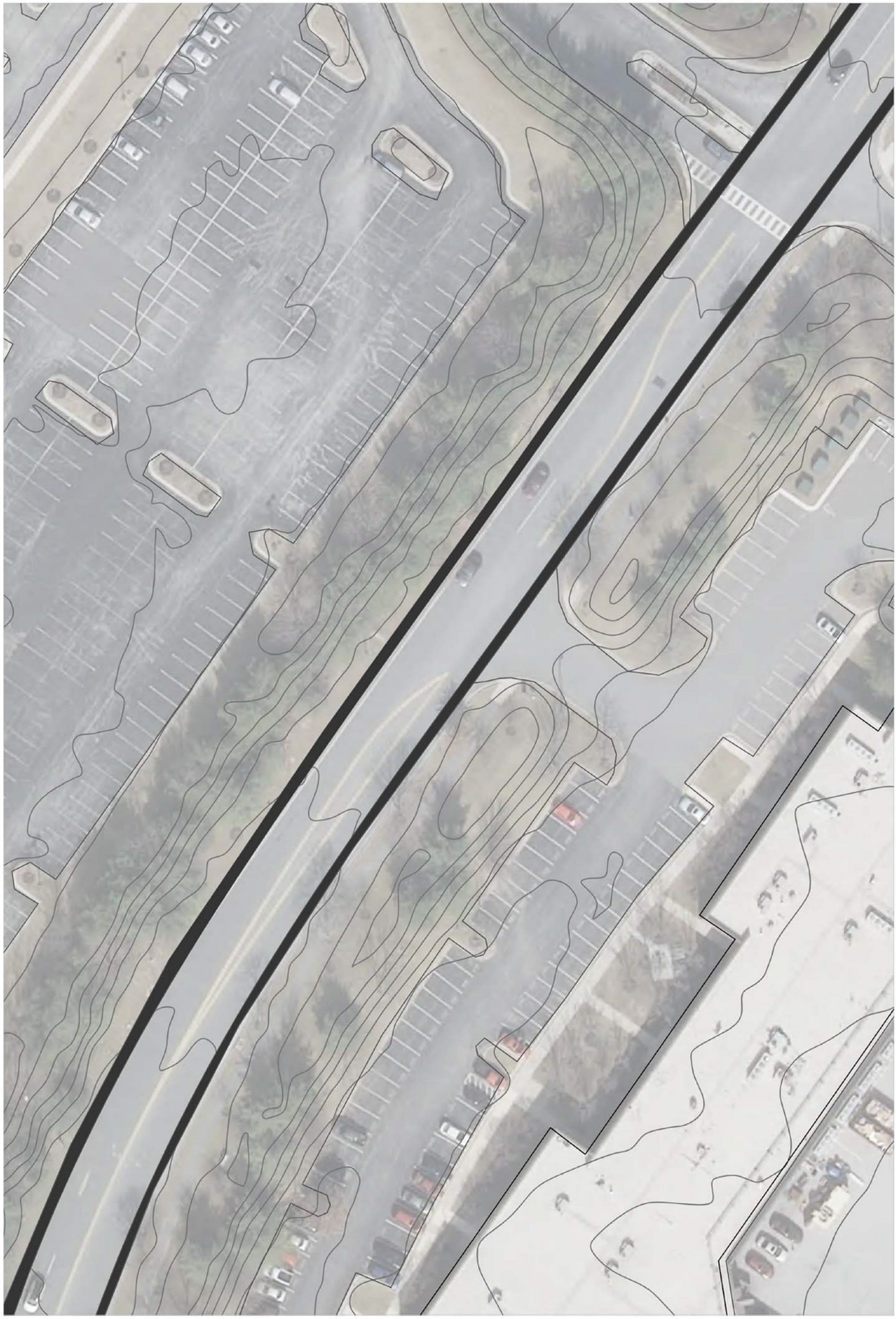
Scale: 1" = 40'-0"

0 10 20 40

N

PA # 20

COLUMBIA GATEWAY: PATH ALIGNMENT #21



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 21

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 22

COLUMBIA GATEWAY: PATH ALIGNMENT #23

GUILFORD GATEWAY TRAIL

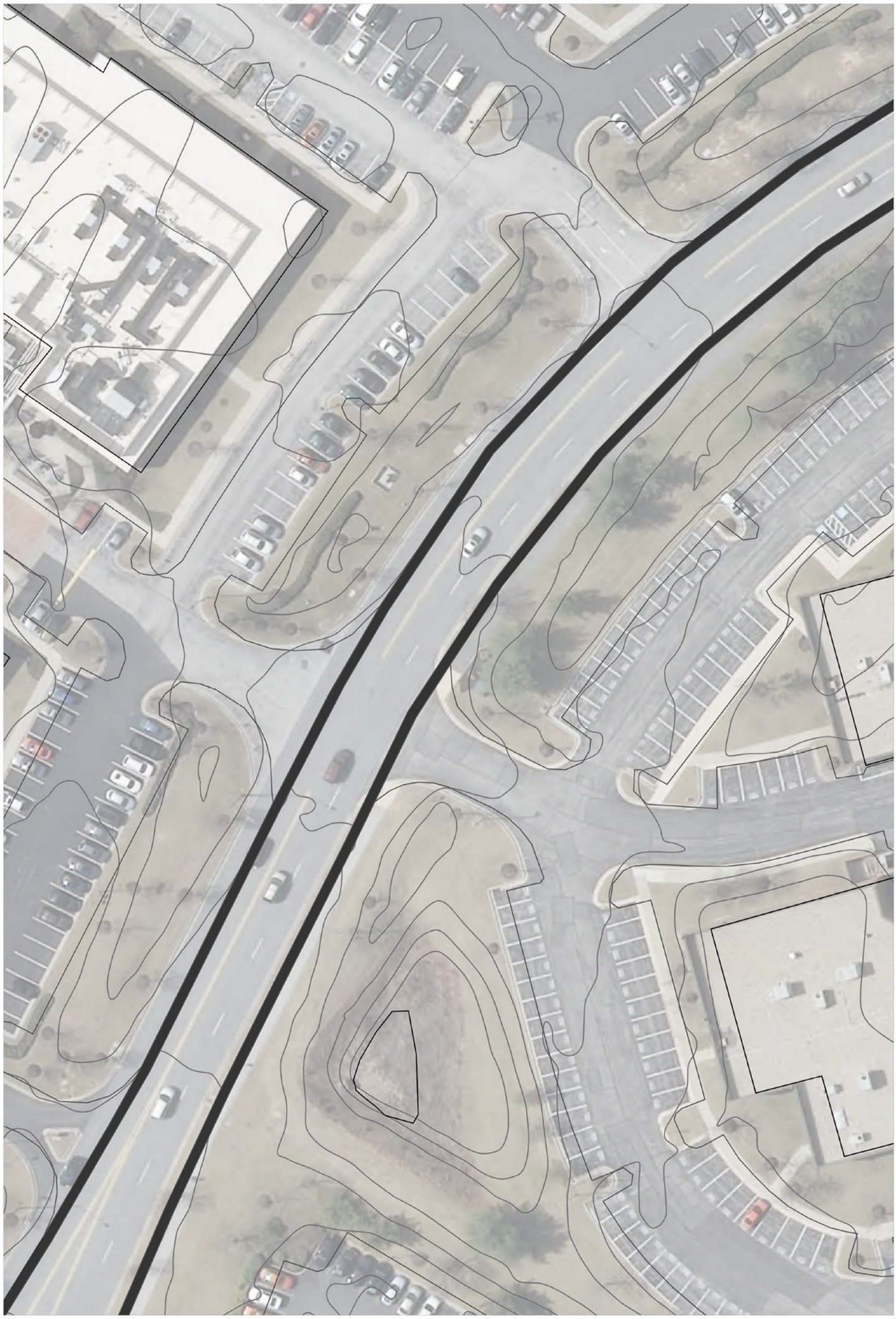
Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 23



Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 24

COLUMBIA GATEWAY: PATH ALIGNMENT #25

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

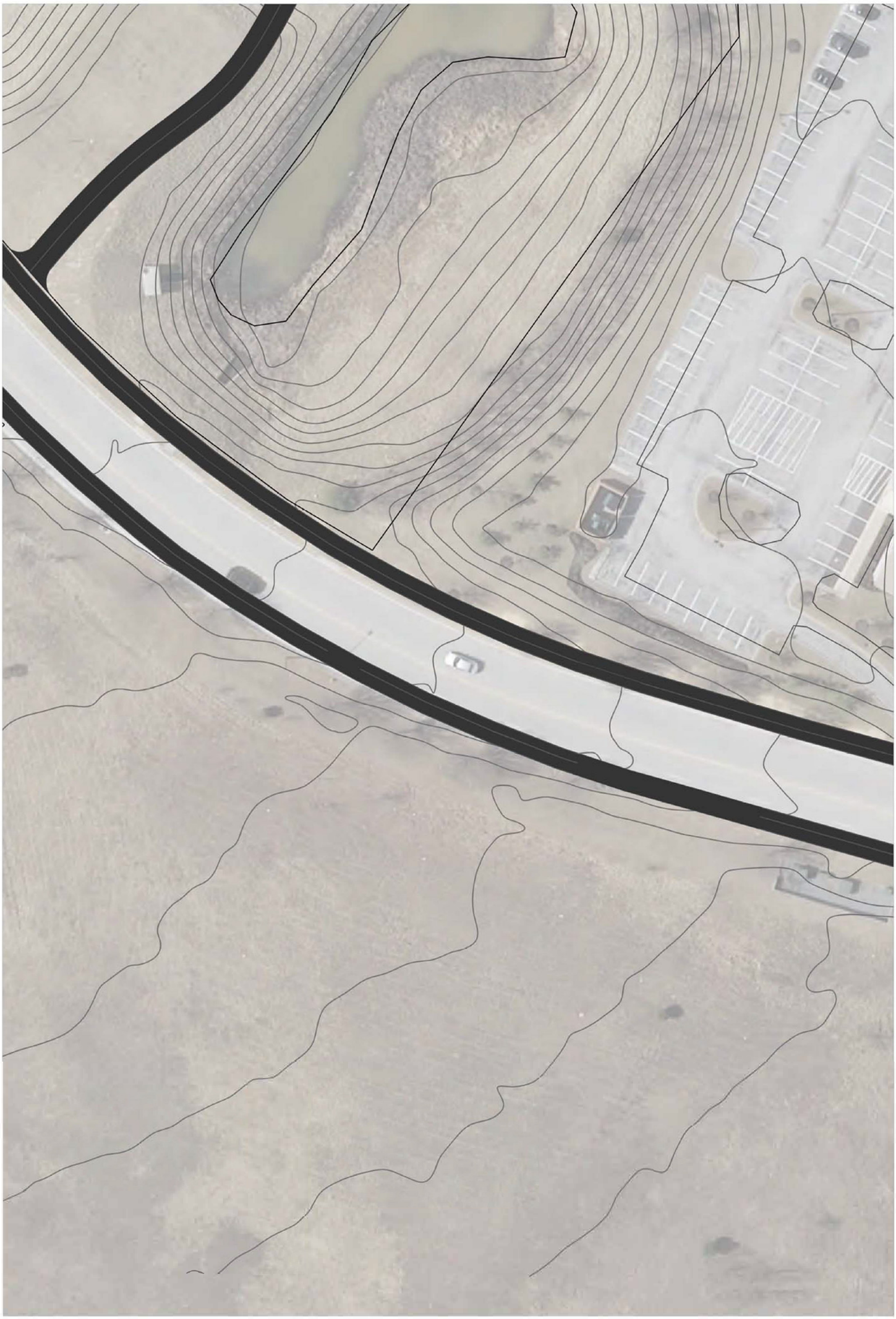
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 25



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

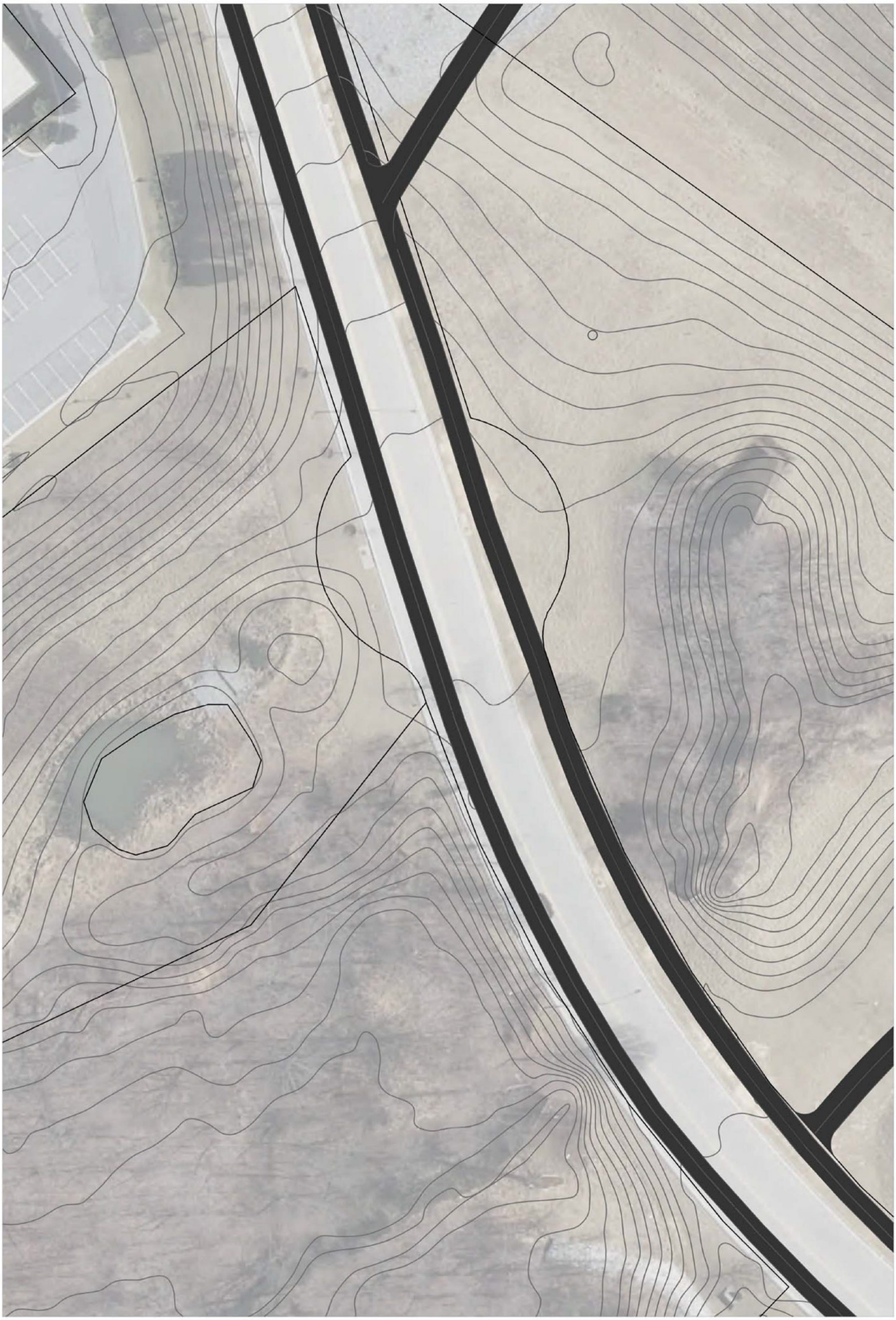
Scale: 1" = 40'-0"

0 10 20 40

N

PA # 26

COLUMBIA GATEWAY: PATH ALIGNMENT #27



GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 27

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

GUILFORD GATEWAY TRAIL

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 28

COLUMBIA GATEWAY: PATH ALIGNMENT #27

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 29

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 30

COLUMBIA GATEWAY: PATH ALIGNMENT #31

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 31

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 32

COLUMBIA GATEWAY: PATH ALIGNMENT #33

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture
LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"
0 10 20 40

N

PA # 33

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 34

COLUMBIA GATEWAY: PATH ALIGNMENT #35

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 35

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 36

COLUMBIA GATEWAY: PATH ALIGNMENT #37

GUILFORD GATEWAY TRAIL

Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

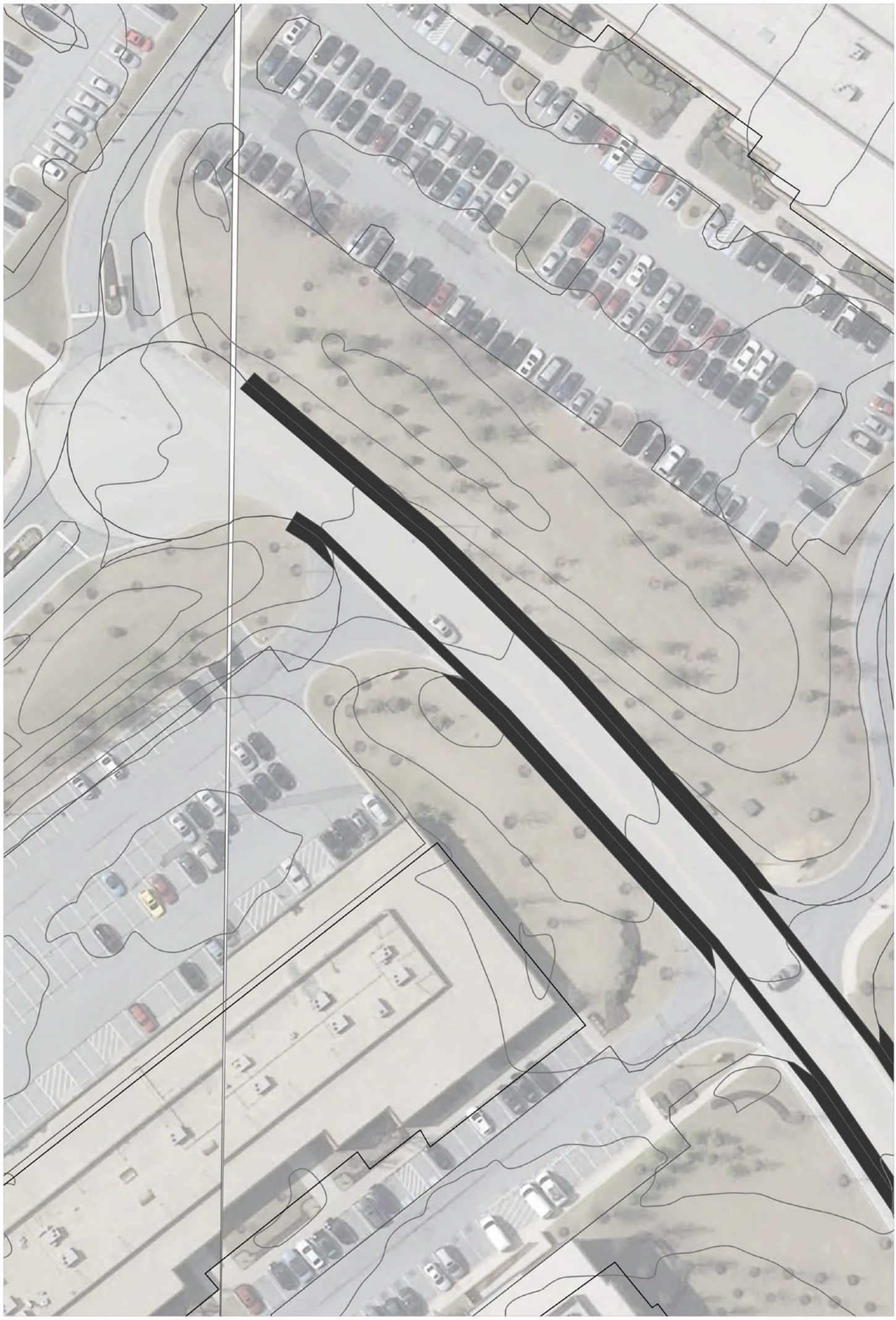
Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 37



Columbia Gateway

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Hyungjoon Choi, Chung Hoon Lee, Stefan Smith

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 38

Mission Lake

Mission Lake

Figure 132. Site Plan

Introduction

Mission Lake is the proposed pathway design from the existing Savage Stone granite quarry. The lake is set between two residential neighborhoods and has the ability of becoming a beautiful recreational amenity to its occupants. Similar to Lake Elkhorn, further north of the site, Mission Lake can serve as a place to fish, exercise, enjoy nature, and more for residents of all ages.

The proposed design features just under three miles of shared use pathway for bikers, runners, and commuters as well as a deck. The deck will serve as a resting area and lookout station.

The proposed Mission Lake trail will connect to the Guilford Gateway Trail in 3 locations that will allow its users optimal access and easy transfer to their designed sections.

Key

- GUILFORD GATEWAY MAIN STEM
- PROPOSED TRAILS
- EXISTING TRAILS
- FLOODPLAIN

Precedents

Context

Figure 133. Context

Goals

- Create a community trail for two existing neighborhoods
- Provide educational opportunities during educational experiences
- Increase accessibility to Guilford Gateway Trail

Mission Lake

Perspective Images

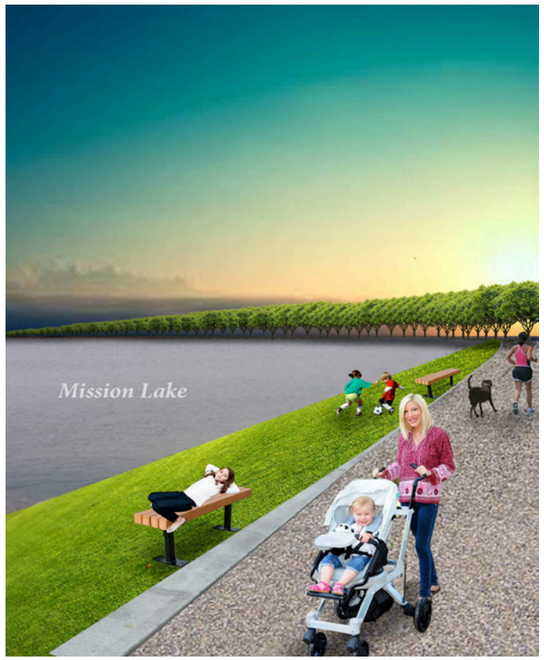


Figure 134. Lake-side Trail

Figure 135. Shared-Use Path

Figure 136. Bike Path

Performance Metrics

Two performance metrics were analyzed for the Mission Lake site. The first was the amount of pathway directly accessible to the lake as opposed to the rest of the trail that connected to other amenities such as the community center, residential neighborhoods, or Washigton Blvd.

The second performance metric shows all of the important conections throughout the trail. These connections were split into three categories: the lake, Guilford Gateway Trail, and the residents. In total there are nine connections and three connections in each category.

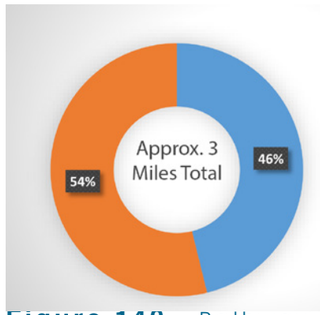


Figure 140. Pathway

Figure 137. Lake-side Trail

Figure 138. Bike path beneath

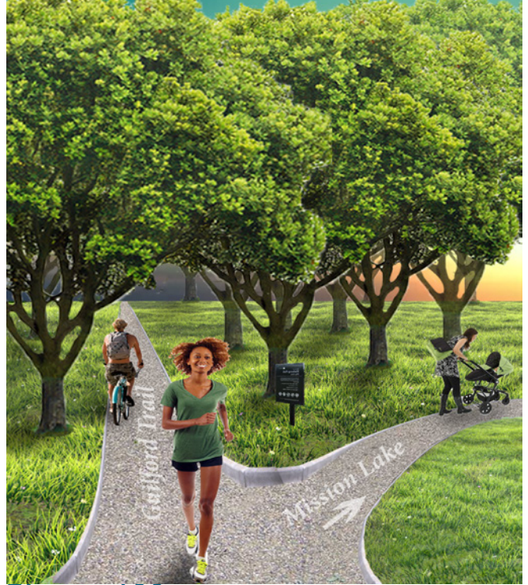


Figure 139. Trail towards Mission

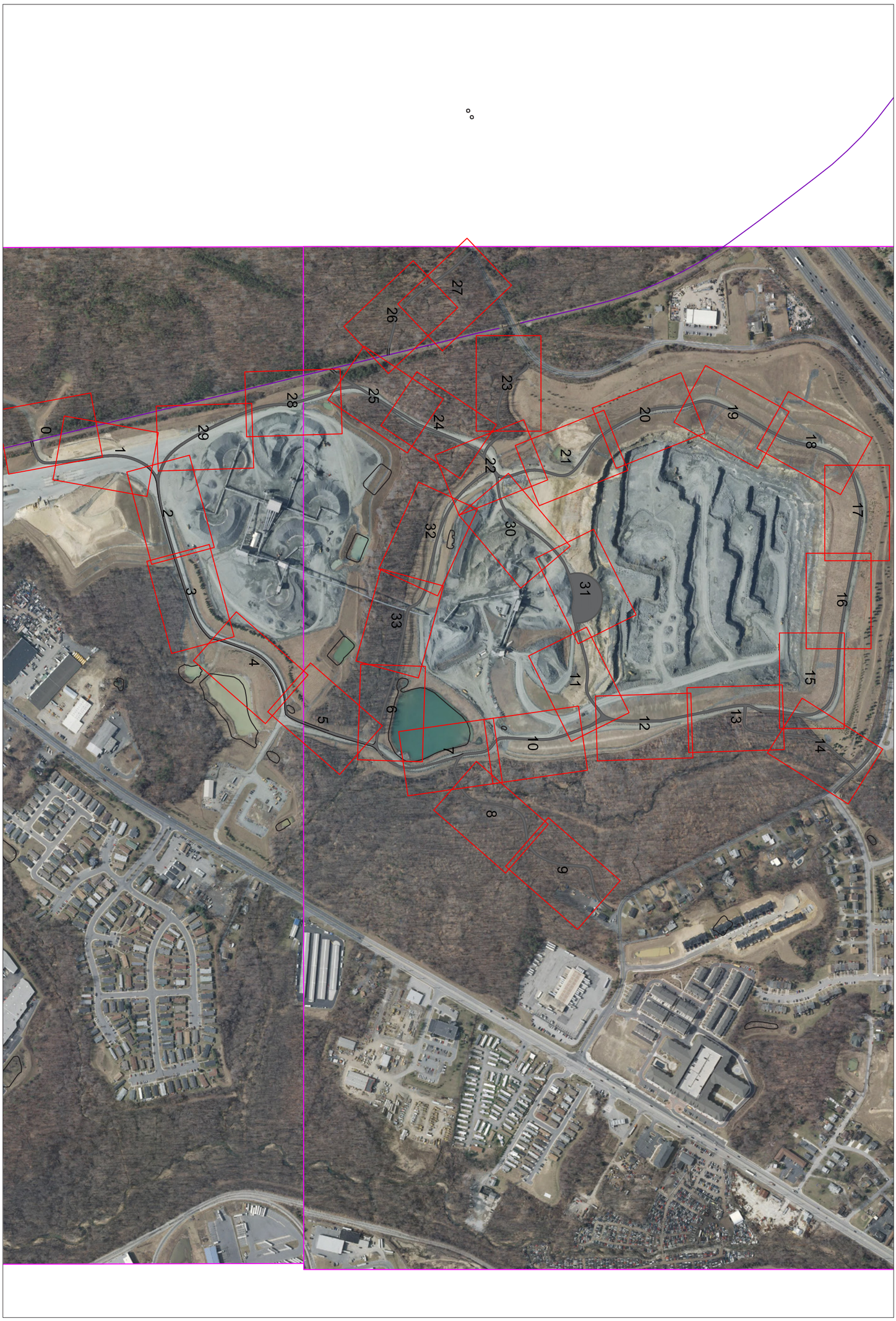
SIGNIFICANT CONNECTIONS

LAKE CONNECTIONS

MAIN TRAIL CONNECTIONS

RESIDENTIAL CONNECTIONS

MISSION LAKE: PATH ALIGNMENT MASTER



GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 550'-0"

0 225 550 1100

N

PA Master

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 0

MISSION LAKE: PATH ALIGNMENT #1

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 1

GUILFORD GATEWAY TRAIL

Mission Lake

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LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 2

MISSION LAKE: PATH ALIGNMENT #3

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 3

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 4

MISSION LAKE: PATH ALIGNMENT #5

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 5

GUILFORD GATEWAY TRAIL

Mission Lake

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LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 6

MISSION LAKE: PATH ALIGNMENT #7

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 7

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 8

MISSION LAKE: PATH ALIGNMENT #9

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 9

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 10

MISSION LAKE: PATH ALIGNMENT #11

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 11

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 12

MISSION LAKE: PATH ALIGNMENT #13

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 13

GUILFORD GATEWAY TRAIL

Mission Lake

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LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 14

MISSION LAKE: PATH ALIGNMENT #15

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 15

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 16

MISSION LAKE: PATH ALIGNMENT #17

GUILFORD GATEWAY TRAIL

Mission Lake

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 17

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 18

MISSION LAKE: PATH ALIGNMENT #19

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 19

GUILFORD GATEWAY TRAIL

Mission Lake

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

PA # 20

MISSION LAKE: PATH ALIGNMENT #21

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 21

GUILFORD GATEWAY TRAIL

Mission Lake

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

PA # 22

MISSION LAKE: PATH ALIGNMENT #23

GUILFORD GATEWAY TRAIL

Mission Lake

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LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 23

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 24

MISSION LAKE: PATH ALIGNMENT #25

GUILFORD GATEWAY TRAIL

Mission Lake

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0 10 20 40

N

PA # 25

GUILFORD GATEWAY TRAIL

Mission Lake

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 26

MISSION LAKE: PATH ALIGNMENT #27

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 27

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 28

MISSION LAKE: PATH ALIGNMENT #29

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 29

GUILFORD GATEWAY TRAIL

Mission Lake

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Scale: 1" = 40'-0"

0 10 20 40

N

PA # 30

MISSION LAKE: PATH ALIGNMENT #31

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

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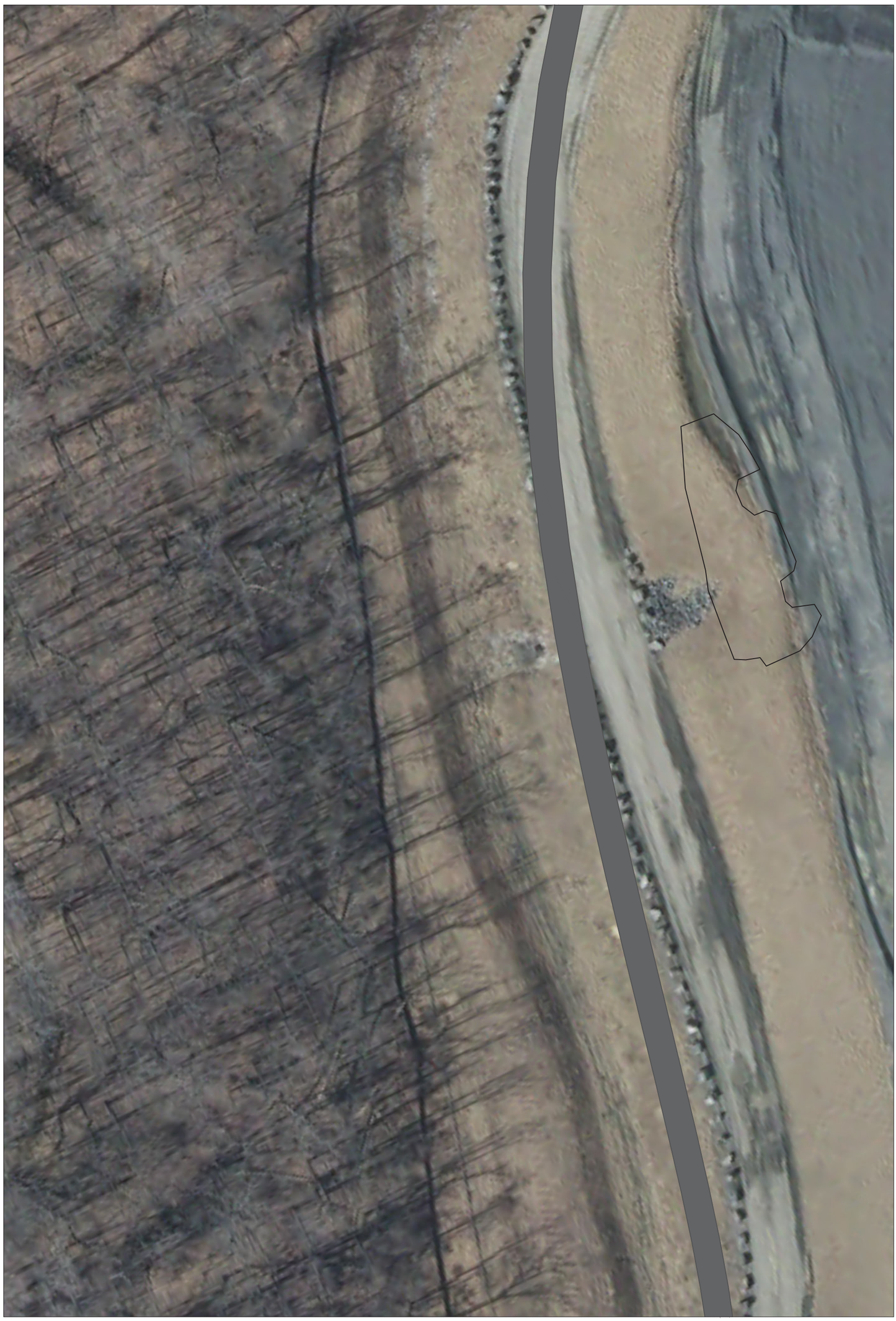
Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 31



GUILFORD GATEWAY TRAIL

Mission Lake

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Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 32

MISSION LAKE: PATH ALIGNMENT #33

GUILFORD GATEWAY TRAIL

Mission Lake

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Sasha Hayes, Kontessa Roebuck, Delath Mendis

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 33

Guilford Gateway Trailhead

Guilford Gateway Trailhead

Introduction

Figure 142. Guilford Gateway Trailhead Plan

The Guilford Gateway Trailhead is an integral part of the Guilford Gateway Trail System. The trailhead, located along Washington Blvd, signifies both the beginning and end of the trail system. Directly adjacent to the primary industrial district, this site serves multiple purposes including access to the main trail, parking opportunities, drop-off availability, and mixed-use prospects.

When faced with designing our portion of the trail we decided to create a trailhead setting with a park-like atmosphere that elevates the visibility of the trail system. Our goals for the trailhead aspect were to provide a drop-off area for cars and buses while also having adequate parking for both. We also wanted to provide bike parking with covered and uncovered options. When designing the park setting we decided to create a space where kids could play and parents could sit and watch. We chose not to have programmed play space because we wanted individuals to be able to create their own spaces. Creating a pavilion was vital for shelter and seating occasions. Beautifying beneath the bridge was essential to make this an inviting park.

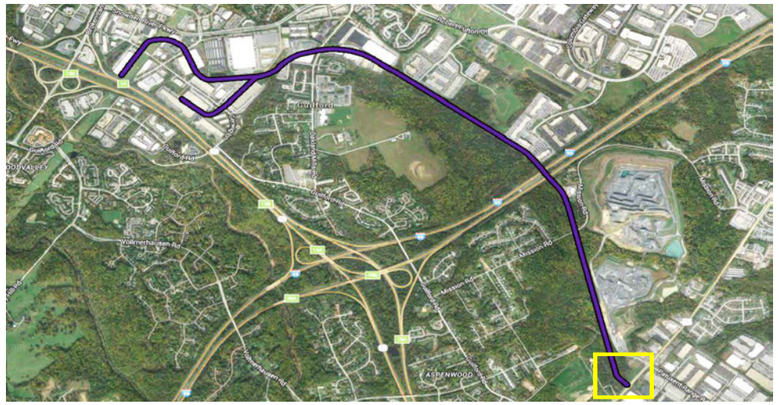


Figure 143. Context Site Map

Precedents

Figure 144. DuBose Conference Center, Monteagle, TN

A 30'x50' pavilion quickly became a necessity to our park setting. The shelter will provide adequate seating and eating opportunities with an extension to contain restrooms for visitors to use during their visit. The pavilion is angled and centered in a manner that allows parents to view the park from all angles.

Figure 145. St. Clair Street Bridge, Eaton, OH

With the structural and unappealing current bridge at Washington Blvd, the redesign of this site provides an opportunity to turn this space into a friendlier area, potentially notifying visitors of the history of Howard County and past railroad operations. An outdoor museum or research center is a possible incorporation.

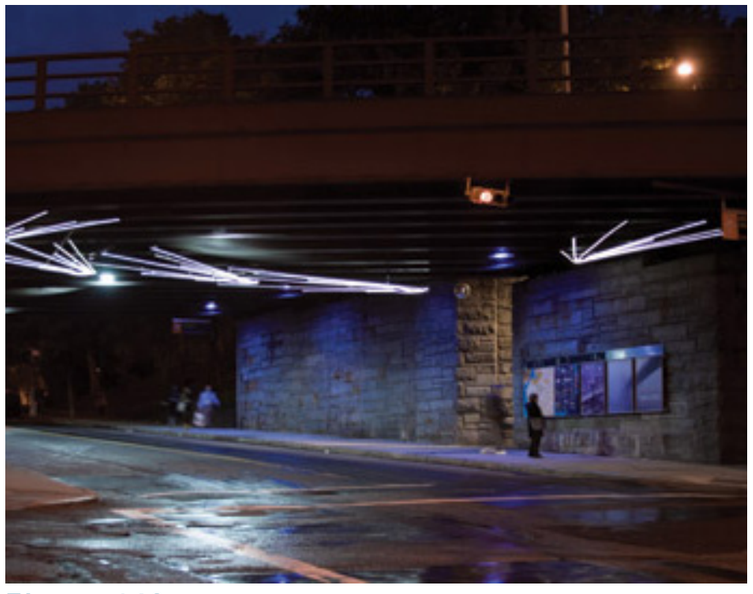


Figure 146. Brooklyn Bridge, Manhattan, NY

The existing bridge below Washington Blvd is inhospitable, and poor in appearance. A stringent beautification process should take place to make this portion of the site more aesthetically acceptable. Lighting can be incorporated to deter unwanted visitors while making a structural area more aesthetically valuable.

Figure 147. Lombard Street, San Francisco, CA

With the variety of topographic variations on this site, significant trail and path design has to be considered. With over 20 feet in vertical drop at the main trail valley, substantial trail organization will have to take place but this provides opportunities for creative planting areas and focal points along the main trail.

Performance Metrics

AVAILABLE PARKING	QUANTITY
Bus	3
Car	20
Bicycle (Covered)	24
Bicycle (Open)	24

Table 3. Parking Breakdown by type

Since this portion of the trail will be utilized as a meeting point and beginning to the trail, a variety of visitors will access it with different transportation methods. We need to prepare for all options with a variety of parking opportunities.

2 Main Trail Intersections

1 Road Connection

Creating opportunities to connect to the main trail is essential since the majority of vistors will be utilizing the trailhead as an access point for biking, walking and running through Howard County.

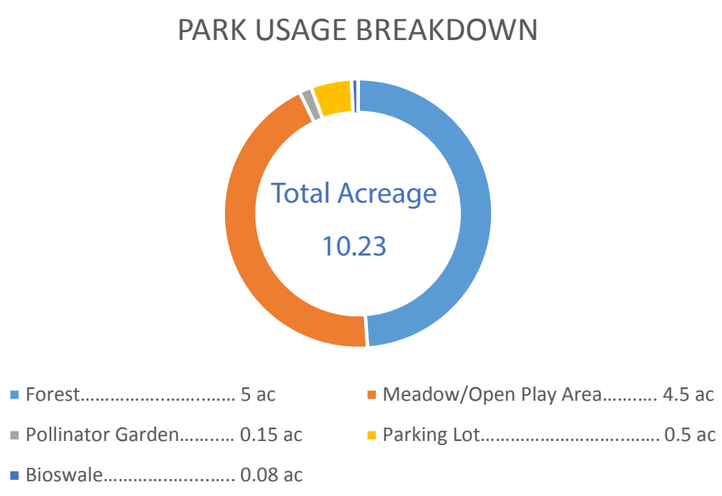


Figure 148. Trailhead Landuse Breakdown

In order to assess the scope of this project, a park usage breakdown map provides some context for the extent of the design and potential implementations across the entire site. Without altering the majority of the existing forest, there is still ample space to create a park atmosphere.

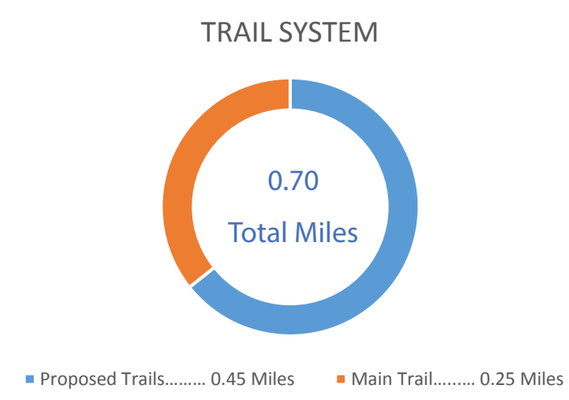


Figure 149. Main Trail and Spur Trail

The trail system map identifies the extent of this portion of the project, proposing .45 miles of new trails throughout the park and .25 miles of trail along the main railroad corridor.

Perspectives

Figure 150. Vehicular Entry to Trailhead

This view depicts the vehicular entry to the park location. Access is provided from Patuxent Range Rd where buses and cars can drop visitors off and park as they desire. The pavilion and bike parking can be seen in relation to the parking area as well.

Perspectives

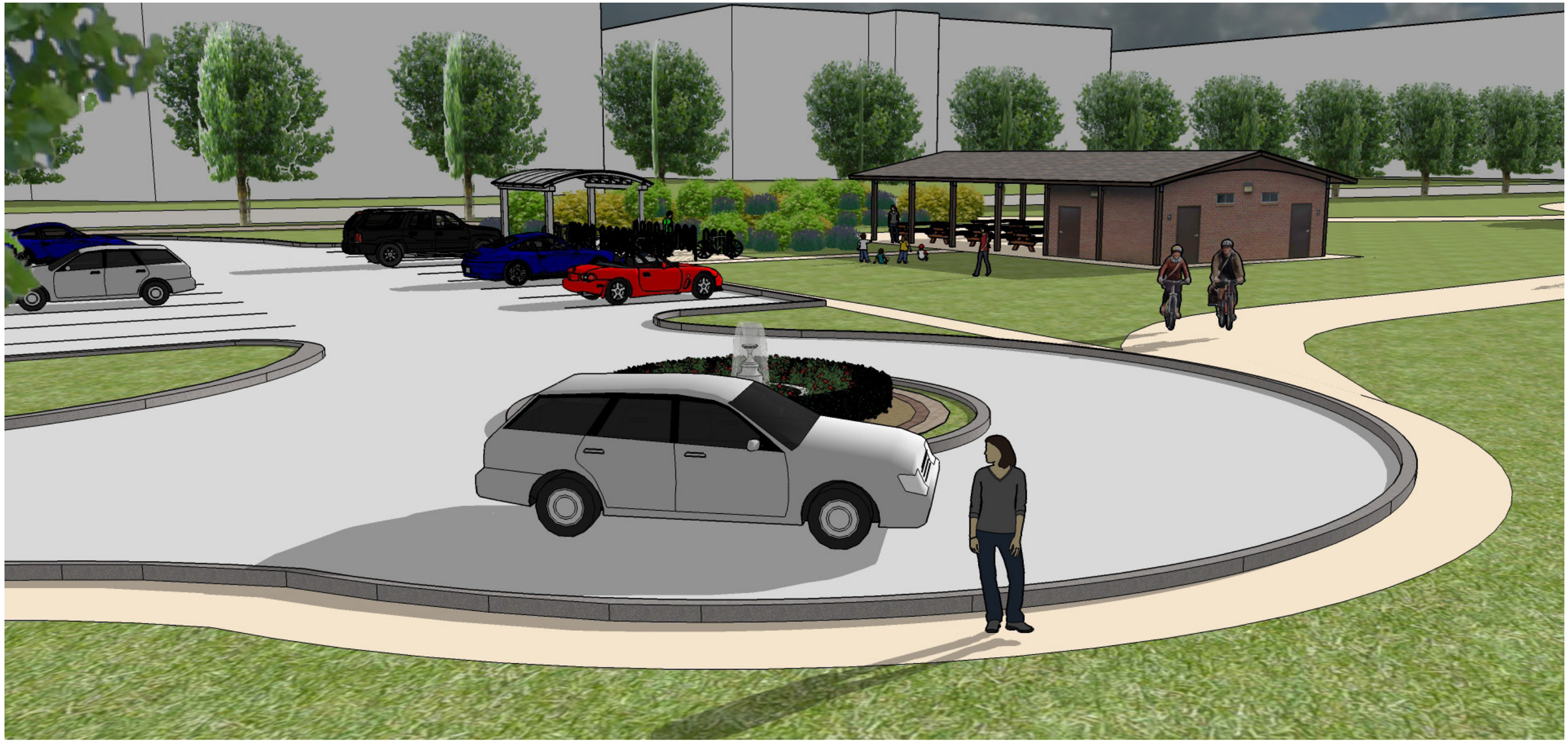


Figure 151. Drop-off circle

This perspective delineates the drop-off circle and how the trail directly connects to it. With this design, visitors can begin their bike ride or run immediately following their arrival. The restroom access is in close proximity to the parking lot and trail for convenience.

Perspectives

Figure 152. View of Trailhead from Main Trail Connection

This perspective delineates the drop-off circle and how the trail directly connects to it. With this design, visitors can begin their bike ride or run immediately following their arrival. The restroom access is in close proximity to the parking lot and trail for convenience.

Perspectives

Figure 153. Pavilion

This angle is from beneath the pavilion where a plethora of picnic tables are located with viewing opportunities of the pollinator garden, trail and open space. The seating options allow parents to watch over their children and people to escape harsh weather conditions.

Perspectives

Figure 154. Perspective of 5% slope trail

The existing site topography has a steep drop to the existing railroad track. In order to get a trail from the park to the main trail, serious consideration and manipulation of contours had to be done. This image exemplifies the initial drop, keeping a 5% slope for ease of travel up and down the ramp.

Perspectives

Figure 155. View of Trail Spur to Trailhead from Main Trail

This perspective view from the main trail shows where the bridge is located and how the trail uses the existing contours to get up to the park atmosphere. Retaining walls will be necessary to minimize disturbance of untouched forest. This unique space provides opportunity for creative plantings along the trail system.

Perspectives

Figure 156. Overpass Concept 1

The first bridge concept shows an outdoor museum scenario where the previously unwelcoming bridge area is transformed into an educational landmark, potentially explaining the history of the Howard County railroad system.

Perspectives

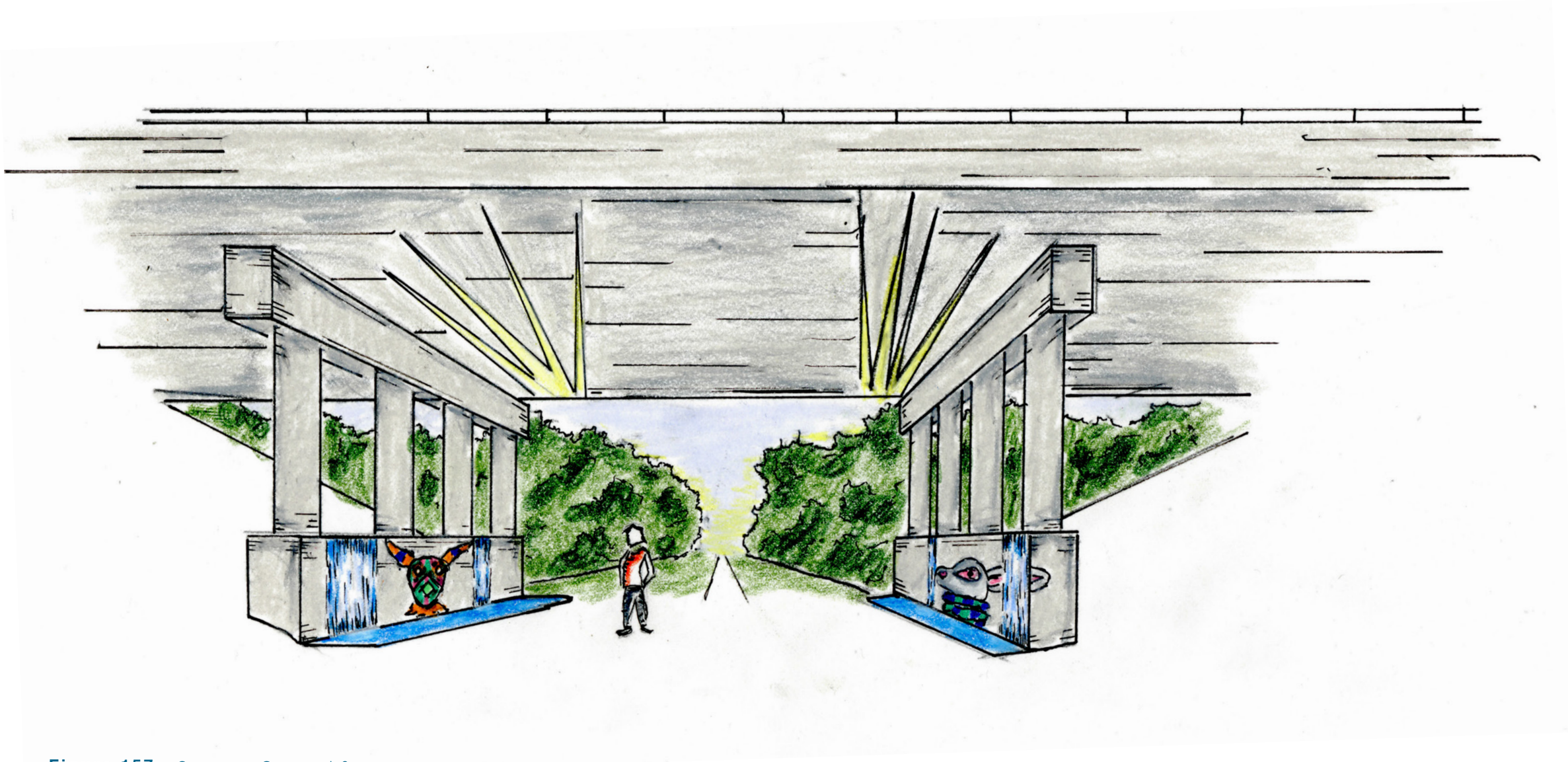
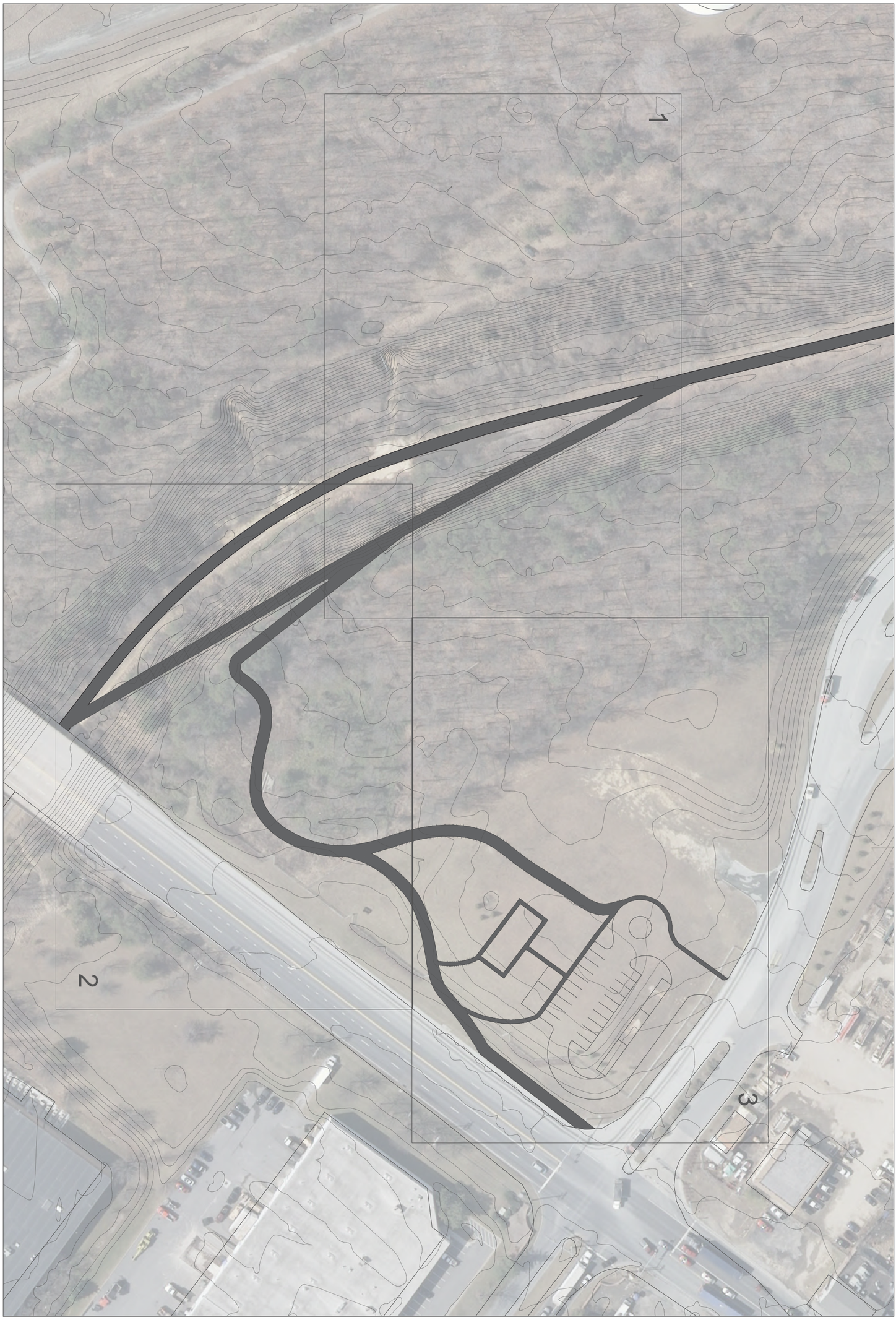


Figure 157. Overpass Concept 2

The second bridge concept utilizes artistic design through lighting, murals, and water fountains to beautify the location and make it more welcoming for visitors of the park and trail.



Guilford Gateway Trailhead

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Ryan Brown, Edy Ruano, Marc Wolfe

Scale: 1" = 100'-0"

0 25 50 100

N

Path Alignment MASTER

GUILFORD GATEWAY TRAILHEAD: PATH ALIGNMENT 1

GUILFORD GATEWAY TRAIL

Guilford Gateway Trailhead

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Ryan Brown, Edy Ruano, Marc Wolfe

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 1

Guilford Gateway Trailhead

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Ryan Brown, Edy Ruano, Marc Wolfe

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 2

GUILFORD GATEWAY TRAILHEAD: PATH ALIGNMENT 3

Guilford Gateway Trailhead

University of Maryland College Park Department of Plant Science and Landscape Architecture

LARC341 Studio Instructor: Christopher D. Ellis, Ph.D, PLA

Design Team: Ryan Brown, Edy Ruano, Marc Wolfe

Scale: 1" = 40'-0"

0 10 20 40

N

PA # 3

References

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Landscape Architecture

DEPARTMENT OF PLANT SCIENCE AND LANDSCAPE ARCHITECTURE