March 27, 2024

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Town of Chapel Hill
405 Martin Luther King Jr Boulevard
Chapel Hill, North Carolina 27514

RE: Morgan Creek Greenway East Extension
Feasibility Analysis and Recommendations
TCH22007

EXECUTIVE SUMMARY

This feasibility analysis, including community engagement, explores options and makes recommendations for extending the existing Morgan Creek Trail from its current end point in Merritt's Pasture eastward to Manning Drive. Making this trail connection can:

- Connect destinations like Southern Village to UNC campus, transit and other pedestrian and bike networks.
- Implement recommendations of numerous Town mobility, pedestrian, traffic, and greenway plans.
- Increase bike and pedestrian access to passive recreation and nature at Merritt's Pasture and potentially the NC Botanical Gardens.

The analysis and final recommendations in this report included significant consideration of:

- NCDOT and Town road right-of-way constraints;
- Topographic and environmental constraints;
- Potential Cost;
- Opportunities for public access easements granted by willing property owners;
- Pedestrian Safety; and
- Public input regarding desired connections, user experience and neighborhood character.

While the analysis considered three route alternatives, the final recommendations are for the Town to consider two routes which may be phased. A predominantly neighborhood bike and walking route could be achieved as an exceptionally cost effective first phase of the project. A longer-term goal would be construction of a route that is predominantly a sidepath along Fordham Boulevard to provide a more direct transportation connection.

PROJECT HISTORY

Planning for the project began in 2016 with preliminary community engagement and plans recommending an alignment along Fordham Blvd. to Oteys Road, however funding was not available to complete the project. In 2021, the project was identified as a priority for the Parks, Recreation and Greenway Commission and by the Transportation and Connectivity Advisory Board. This was followed in 2022 by City Council allocation of American

Rescue Plan Act (ARPA) funding to finish planning, community engagement, design, permitting, and construction documents. In 2023 the Parks and Recreation Department awarded a contract to McAdams to assess the feasibility of 3 possible alignments for the greenway to create route for recreation and transportation, with the possibility of extension to Manning Drive.

PLANNING REVIEW

3.a. Summary

In recent years, the Town of Chapel Hill has focused on creating a safe environment for walking and bicycling through the adoption of a Vision Zero initiative and setting a goal of accommodating 35 percent of commuting trips through walking, bicycling, and transit. Key to this effort are new multimodal facilities on Fordham Blvd., including a multiuse path between Merritt's Pasture and Manning Dr. envisioned in the Chapel Hill Mobility and Connectivity Plan. Additional plans were reviewed during the study process, including the Town of Chapel Hill Pedestrian Safety Action Plan, University of North Carolina at Chapel Hill (UNC) Master Plan, Chapel Hill Greenway Master Plan, Chapel Hill Transit Short-Range Transit Plan, NC 54 Safety Study, and North Carolina Department of Transportation (NCDOT) State Transportation Improvement Project (STIP) U-5304. However, recommendations in many of these plans were contingent on development of the Durham-Orange Light Rail, a project which was discontinued in the planning phase in 2019. Notably a Fordham Boulevard crossing at Otey's Dr., mentioned in several studies, was to be implemented with development of pedestrian and bike facilities connecting to the Durham-Orange Light Rail. Other proposed intersection and crossing projects include crossing improvements at Manning Dr., improvements to the interchange of NC-86 and US-15/501, and removing or restricting right-turn-on-red at signalized intersections.

3.b. Plan Review

PLAN/PROJECT	DESCRIPTION	KEY RECOMMENDATIONS RELATED TO MORGAN CREEK GREENWAY
Town of Chapel Hill Mobility and Connectivity Plan (2017, updated 2020)	The Chapel Hill Mobility and Connectivity Plan provides a unified vision for non-automobile transportation and recreation in the Town of Chapel Hill, including bicycle, pedestrian, and transit infrastructure. The plan sets a goal of accommodating 35% of commuting trips in Chapel Hill via walking, bicycling, and transit. Key to the success of this plan is improving mobility on five major corridors, including Fordham Blvd., and providing priority non-motorized corridors to connect	A multiuse path or greenway is proposed parallel to Fordham Blvd. between the existing terminus at Merritt's Pasture and Manning Dr. A new grade-separated crossing is proposed at Oteys Rd. with multiuse path extended to connect to Mason Farm Rd. to the north and Morgan Creek Rd. to the south. Also included is a proposed on-street greenway connector on Morgan Creek Rd., Morgan Creek Ln., Coker Dr., and Woodbine Dr. Crossing improvements are recommended at the intersection of Fordham Blvd. and Manning Dr., connecting to proposed multiuse path and bicycle climbing lanes on Manning Dr. entering the campus of UNC-Chapel Hill. Multiuse path is also proposed on both sides of Fordham Blvd.

	bicycle and pedestrian facilities across the community.	north of Manning Dr., and on the property of the North Carolina Botanical Garden connecting to Old Mason Farm Rd. South of the project corridor, a multiuse path and bridge was proposed over Morgan Creek to connect Ashe Pl. and Arboretum Dr. [Additional considerations since the development of this plan have shifted the proposed bridge location to Bartram Drive due to floodplain concerns.]
Town of Chapel Hill Pedestrian Safety Action Plan (2019)	The Town of Chapel Hill Pedestrian Safety Action Plan builds on Vision Zero efforts to eliminate pedestrian fatalities and serious injuries and includes a collaborative approach to make transportation safer in the community.	Sidewalks and multiuse paths are proposed where feasible on Fordham Blvd., with improvements to pedestrian lighting on the corridor. System-wide safety improvements including traffic calming measures such as curb extensions, roadway narrowing, and raised medians, are proposed on high-speed corridors, while high-visibility pedestrian crossings such as rectangular rapid flashing beacons (RRFB) are proposed at unmarked and unsafe pedestrian crossings. Additional general objectives to help achieve the goals of the Pedestrian Safety Action Plan include removing or controlling right-turn-on-red at signalized intersections, updating municipal design guidelines to meet industry standards, and creating annual reports of pedestrian crash data to identify sites for safety improvements.
University of North Carolina at Chapel Hill Master Plan (2019)	The University of North Carolina at Chapel Hill Master Plan identifies campus needs and priorities for a 15-year planning horizon, including building and transportation infrastructure projects needed to better serve the university community.	The University of North Carolina at Chapel Hill (UNC) owns property on the north side of Fordham Blvd. between Oteys Rd. and Manning Dr. Four single family residences on Mason Farm Rd. are proposed for long-term demolition and mixed-use redevelopment with a parking structure. Pedestrian facilities are proposed to be improved on Mason Farm Rd. to provide an enhanced connection to the southern side of campus. Mason Farm Rd. is identified for sharrows, while proposed multiuse paths would parallel the (now-abandoned) Durham-Orange

		Light Rail alignment and provide a new connection to Manning Dr. [The Durham-Orange Light Rail Project was cancelled in 2019, leaving little mechanism for development of associated projects.]
Chapel Hill Greenway Master Plan (2013)	The Chapel Hill Greenway Master Plan Update builds on previous greenway planning efforts and aims to integrate local and regional plans.	Paved greenways are proposed on the south side of Fordham Blvd. between the current terminus of the Morgan Creek Greenway and Winter Dr., and on the north side between Kings Mill Rd. and Mason Farm Rd. An informal trail created by nearby residents exists along Morgan Creek between Merritt's Pasture and Ashe Pl., with conservation easements in place on many parcels. However, private ownership of the parcels restricts public access, and greenway construction would be difficult due to existing slope and soil conditions. The plan calls for this segment to remain a private, unimproved trail unless adjacent property owners desire to negotiate the creation of a public right-of-way and recommends instead to provide access to the corridor via Mt. Carmel Church Rd. Existing unpaved trails on university property adjacent to "Meeting of the Waters" Creek on the north side of Manning Dr. are proposed to remain unpaved. The plan includes detailed design standards and amenities in the appendix, with a preferred width for paved trails intended for bicycle and pedestrian use of 10 feet or greater, and concrete as the preferred material type. The plan also recommends over and underpasses for crossing roadway corridors carrying more than 20,000 vehicles per day at speeds greater than 35 MPH.
Chapel Hill Transit Short-Range Transit Plan (2020)	The Chapel Hill Transit Short-Range Transit Plan analyzes existing transit system conditions and identifies opportunities for improvement, with recommended	Route B is proposed to be modified to serve the Ronald McDonald House and operate all day, with half-hour frequencies on weekdays. Route B would no longer operate on Fordham Blvd. between Manning Dr. and Raleigh Rd. No alignment changes are proposed on Route FCX,

	modifications to service routes and schedules.	but service would be enhanced by reducing morning peak frequencies to 7 minutes and adding midday service at 15-minute intervals. The plan also calls for better integrating Chapel Hill Transit service with bicycle infrastructure by providing bicycle parking near transit stops, installing on-board bicycle racks on transit vehicles, and installing bikeshare stations near major transit stops.
NC 54 Safety Study (2019)	The NC 54 Study Represents a partnership between NCDOT, the Town of Chapel Hill, the Town of Carrboro and the DCHC MPO to identify comprehensive safety treatments between Manning Drive in Chapel Hill to Old Fayetteville Rd. in Carrboro.	Recommendations include pedestrian safety improvements such as lighting, median crosswalk refuges, traffic signals, access control, and pedestrian signal heads. The plan recommends addition of pedestrian signal heads on the south leg of the intersection of Manning Drive and US 15-501/NC 54. The study did note that Oteys Road could be considered for a future at-grade or grade separated crossing of 15-501, however due to lack of connecting infrastructure at the time of the study, it was recommended to re-evaluate crossing opportunities once a pedestrian or greenway network connection to Oteys Road is established.
STIP Project U-5304B	STIP project U-5304B includes upgrades for the US15-501/NC 54 Corridor from NC 86 to Manning Dr. in Chapel Hill.	This STIP project was part of the Developmental STIP. In 2020, it scored poorly during the SPOT process and was removed from the NCDOT budget. The Town of Chapel Hill would also prefer to avoid a roadway widening on this segment.

SITE ANALYSIS AND EXISTING CONDITIONS

4.a. Overview

All recommendations for this technical memo were evaluated using the latest publicly available Global Information Systems (GIS), LiDAR topography data, and aerial imagery, and site visits were performed to capture the current conditions of the study corridor. The corridor and existing conditions for this study varied tremendously and are consistent of distinct challenges, opportunities, and experiences. The three study corridors consist of a route primarily adjacent to US 15-501, a route which takes advantage of neighborhood streets connector route, and a streamside greenway route along Morgan Creek. Maps of the study area are included in the appendix and include:

1) Study Area Map enlargements showing roadways, contours, streams, floodway and floodplain and property lines and 2) topographic heat map.

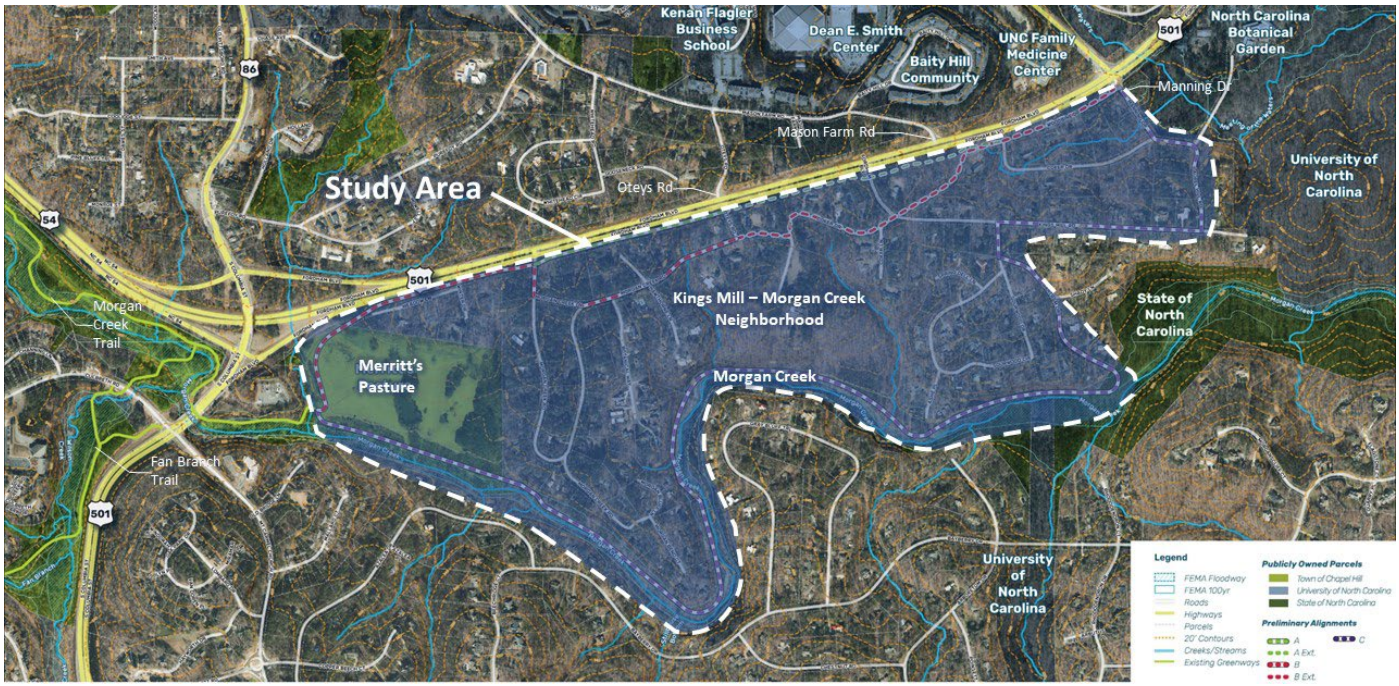


Figure 1 Map of Project Study Area

4.b. Merritt's Pasture

The pasture is a Town owned property also protected by a conservation easement with the NC Botanical Gardens. It is the current terminus of the Morgan Creek Trail. The open space area is uniquely sandwiched between Fordham Boulevard to the north, a Duke Energy substation to the west and Morgan Creek to the south. Merritt's Pasture's is naturalistic, with the main attractions being the existing one-mile natural surface trail loop, a pond, mature trees and an expansive open field. The terrain in the pasture consists of rolling hills. Currently, there is no parking at this site, and users need to travel by foot or bike from the existing greenway network or from a parking area roughly 0.75 miles away on Fordham Boulevard (NC 54 and US 15/501).

Figure 2 View of Merrit's Pasture

4.C. US 15-501/NC 54 (Fordham Blvd.)

Physical Constraints

US 15-501/NC 54 (Fordham Blvd.) is the major highway that divides the University of North Carolina at Chapel Hill from Merritt's Pasture and the residential neighborhoods to the north and south. This divided four lane highway is benched into the landscape and is situated between steep topography on either side. The roadway has a posted speed limit of forty-five miles per hour and consists of guardrail, expansive asphalt shoulders and a wide landscaped center median. The posted speed limit is 45 miles per hour.

Greenway implementation along this corridor is constrained by numerous factors including steep topography, potential environmental impacts including existing drainageways and mature trees, and potential impacts to a limited number of private properties through construction easement or permanent greenway easement acquisition. A recent increase in the average daily traffic count for this stretch of road means that some greenway users may be deterred from using it if a safe and comfortable facility implemented for all ages and abilities is not implemented.

Figure 3 Shoulder and roadside Conditions on the south side of Fordham Boulevard

Potential Oteys Rd. Crossing

This local route ties directly into the Fordham Blvd. arterial and restricts vehicles to right-in right-out turning movements. It has a posted speed limit of twenty-five miles per hour and serves the single-family residences located within the neighborhoods to the south and north of Fordham Blvd. In 2016, plans for the greenway proposed crossing at Oteys Rd. to tie-in to road and pedestrian improvements associated with the Durham and Orange County Light Rail Project. The light rail project was discontinued in April of 2019 and none of the associated road or pedestrian improvements will be pursued. Oteys Rd. north of Fordham Blvd., and Mason Farm Rd. have no existing accommodations for bicyclists or pedestrians, and none are planned in the near term.

An at-grade crossing is unlikely at this location. The North Carolina Department of Transportation (NCDOT) has expressed a preference for greenway users to cross Fordham Boulevard at the Manning Dr. crossing. Manning Dr. is already signalized, includes existing pedestrian crosswalks and timers. Even though some users currently cross Oteys Rd. at grade, it is inherently dangerous as it is unsignalized and it is unlikely to meet the warrants for a stop light for bicycle and pedestrian users alone.

An above grade separated would be technically challenging and costly at this location. The existing grades at the intersection of Fordham Blvd. and Oteys Rd. are extremely steep and the existing state-controlled rights-of-way may not allow sufficient room for a grade separated crossing. A stair tower, bridge, and or other structure would most likely be needed to cross the road above grade. These elements are costly, complex to construct and permit, and provide difficult access for those with mobility impairments.

Potential Manning Dr. Crossing

The intersection of Manning Dr. and Fordham Blvd. is signalized. There is a total of ten vehicular through lanes and turn lanes, making for a very busy intersection. The intersection accommodates a pedestrian crosswalk on the western side and crosses six vehicular turn lanes before reaching a pedestrian refuge island which then navigates past a slip lane and traffic traveling south from Manning Dr. onto Fordham Blvd.

The existing pedestrian crossing location is adequately wide, and appropriately signalized for an intersection of this size. There is an opportunity to improve traffic control features within the existing roadway intersection to provide an enhanced and safer bicycle and pedestrian crossing. Although not part of this study, future improvements at this intersection could prioritize greenway signalization, carve out additional safety islands and refuges to create separation for vehicles, accommodate for drainage, while also accommodating for additional vehicular demand to reach the goal of making future greenway users feel safe while crossing the roadway.

Figure 4 Images of existing conditions at potential Fordham Boulevard crossing locations at Otey's Rd. (above) and at Manning Dr. (below)

4.d Neighborhood Streets

In addition to the Morgan Creek and US 15-501 Corridors, the local neighborhood streets between Merritt's Pasture and Manning Dr. were analyzed for their suitability for a potential route. These streets include Morgan Creek Dr., Morgan Creek Ln., Coker Dr., Woodbine Dr., Kings Mill Rd., Oteys Rd. (south of 15-501), and Manning Dr. (south of Woodbine Dr.). Roadway pavement widths were reviewed, and most of the local Town-maintained streets have a pavement width of around 20 feet. The Town placed Stalker Roadside speed collection devices at various locations within the neighborhood to collect traffic speed and volume data to assist with identification of potential treatments

and routing. Data was collected at various intervals between August 31st and December 6th, 2023. During this time period both UNC-Chapel Hill and Chapel Hill-Carrboro City Schools (CHCCS) were in session. The data collection summary is shown below.

Location	Collection Start	Collection End	Total Vehicles	Average Vehicles Per Day	Peak Hour Peak Direction Volume**	Average Speed (MPH)	85th Percentile Speed (MPH)
Woodbine Dr. west of Manning Dr.	8/31/23	9/7/23	2233	319	21	22.6	28
905 Kings Mill Rd.	9/19/23	10/9/23	5805	291	18	18.7	26
Manning Dr. south of Woodbine Dr.	10/17/23	10/24/23	2508	359	24	23	29
Oteys Rd. south of US 15-501	10/24/23	10/31/23	706	101	8	16.1	25
702 Coker Dr.	11/1/23	11/8/23	1189	170	13	23.9	28
802 Coker Dr.*	11/27/23	12/5/23	38	5	n/a	n/a	n/a
613 Morgan Creek Rd.	11/27/23	12/6/23	1946	217	24	26.7	32
Morgan Creek Rd. @ Morgan Creek Ln.	11/27/23	12/6/23	3271	364	16	19.4	25

*Insufficient sample size - Speed Data Not Valid

**Hourly directional data not provided. 65/35 directional split assumed.

Figure 5 Woodbine Drive

4.d Morgan Creek

The banks of Morgan Creek offer an inviting and wooded natural experience, more typical of what users may imagine when they think of a greenway. The area is rich with natural history as recent work by the NC Botanical gardens which manages conservation easements in the area, have identified rare plant and bat species, as well as more common visitors such as deer, fox, fish and numerous bird species. The creek itself has a rocky bottom with generally steep side slopes and rocky outcrops. However, there are obvious areas of bank erosion and the entire creek and significant areas beyond the top of bank are within the FEMA floodway.

Ownership and easement considerations along the creek are complicated and effectively prohibit development of a paved greenway in the study area. The Orange Water and Sewer Authority maintains numerous easements for aerial

sewer lines along the creek, while the state maintains ownership of significant stretches of the creek bed and banks. To either side the creek is predominantly flanked by single family homes, some quite close to the top of bank or even in the floodplain itself. For the project study areas, a minimum of 20 lots would potentially be involved with development of a greenway. However, for most of these lots, there are conservation easements with the Botanical Garden Foundation with covenants to protect the natural environment that preclude development along the stream.

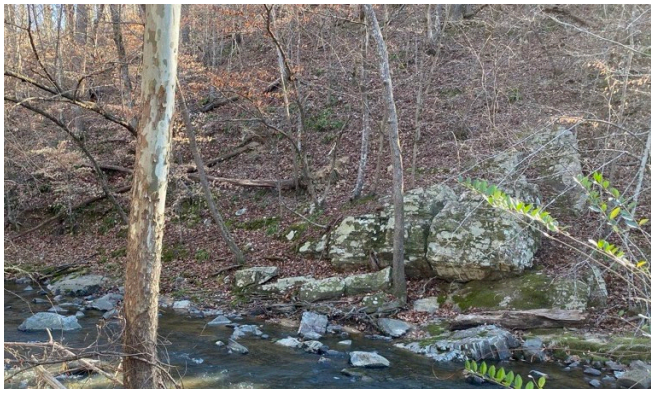


Figure 6 Typical stream bank condition along Morgan Creek

Figure 7 Aerial sewer line crossing Morgan Creek

Figure 8 Home near stream bank

ROUTE ALTERNATIVES

Three preliminary route alternatives were analyzed and are shown in the map below and in greater detail in exhibits in the appendix. Alternate A and Alternate B share the same first segment from Merritt's Pasture to Morgan Creek Road and share the same final segment along Woodbine Dr. Alternative A continues primarily along Fordham Boulevard from Morgan Creek Road where it deviates from Alternative B and is shown in Green below. Alternative B continues along neighborhood streets and is shown in Red Below. Alternative C follows Morgan Creek and is shown in purple.

Figure 9 Preliminary Route Alternatives Map

5.a Alternative A US 15-501 (Fordham Blvd.) Sidepath

A greenway connection on the south side of Fordham Boulevard would provide the most direct path from Merritt's pasture to Manning Dr. The proposed route would wrap north from the existing bridge in Merritt's Pasture towards Fordham Boulevard with a typical paved greenway section. At Fordham Boulevard the trail would be setback from the road a minimum of 8 feet, but generally much farther allowing for a comfortable separation from vehicles with a landscape buffer. Curb and gutter will be required by NCDOT along Fordham boulevard just west of Winter Drive where the trail is within the roadway clear-zone. From Winter Drive to Morgan Creek Road a retaining wall will be required to mitigate the steep slope on the side of the road. From there, four boardwalk sections are required to cross various drainage areas alongside the road. At Woodbine Drive a significant existing retaining wall and guardrails along Fordham Boulevard do not provide enough room for the trail, so the proposed route would utilize a boardwalk to ramp down and away from Fordham Boulevard onto Woodbine Drive. Woodbine Drive would be improved as either a shared road or a one-way design with multi-use path to bring greenway users safely to

Manning Drive. Additional considerations for Woodbine Drive improvements are discussed below under 5.b Alternative B Neighborhood Streets and are illustrated in typical sections in the appendix.

This route alternative would require significant coordination with NCDOT and would be costly due to the number of new structures and roadway improvements it includes. While there would be some tree clearing at the side of Fordham Boulevard, impacts to private property and floodplain are relatively minimal and it offers the shortest connection to Manning Drive at approximately 1.28 miles long.

Figure 10 Route Alternatives Map with Alternative A highlighted

5.b Alternative B Neighborhood Streets

Due to the constraints identified along both the Morgan Creek greenway corridor and the US 15-501 Roadway corridor, the local neighborhood streets were assessed for potential greenway connector routes. The goal of utilizing the neighborhood streets would be to determine an appropriate treatment to create an all ages and abilities greenway connection from the proposed greenway through Merritt's Pasture to the project end point at Manning Drive. The Neighborhood Street alternative diverges from Alternative A, along US 15-501, near Morgan Creek Rd. south of US 15-501. From there it follows Morgan Creek Rd. east to Coker Dr., continuing onto Woodbine Dr. before ending at the south leg of the intersection of Manning Dr. and US 15-501.

5.b.i Identification of On-Road Treatments

Due to the constraints of pavement width, right of way, existing topography and existing tree cover, the treatments assessed for this alignment have been limited to those which can be done with minimal right-of-way acquisition,

which excludes new sidepath construction. Relevant guidance manuals including the MUTCD[1], NACTO documents[2], FHWA's Small Towns and Rural Multimodal Networks Guide[3], and the ITE/FHWA Traffic Calming ePrimer[4] were reviewed to identify applicable treatments while keeping in mind the context of the neighborhood through which this alternative was routed. Additionally, Town collected traffic volume and speed data (see section 4.D) was reviewed to help assess potential treatments. NACTO's Designing for All Ages and Abilities document helps frame potential treatments to create a bicycle facility for all users.

Contextual Guidance for Selecting All Ages & Abilities Bikeways

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		

Figure 11 Selection Criteria from FHWA Small Towns and Rural Multimodal Networks Guide

Three potential treatments were identified and assessed for their feasibility and applicability for creating a greenway connection along neighborhood streets.

Pedestrian Lane / On-Road Multi-Use Path

Due to the interest in creating a separate pedestrian facility within limited right-of-way, a pedestrian lane could create an opportunity to provide a space with minimal construction impacts outside of the existing pavement. This treatment is identified on page 5-8 of the FHWA Small Town and Rural Multimodal Networks

[1] 11th Edition of the Manual for Uniform Traffic Control Devices, United States Department of Transportation, Federal Highway Administration. December 2023. URL: https://mutcd.fhwa.dot.gov/kno_11th_Edition.htm
[2] Urban Bikeway Design Guide, National Association of City Transportation Officials. 2014. URL: https://nacto.org/publication/urban-bikeway-design-guide/
Choosing an All Ages and Abilities Bicycle Facility, National Association of City Transportation Officials URL: https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/choosing-ages-abilities-bicycle-facility/
[3] Small Town and Rural Multimodal Networks Guide, Federal Highway Administration. December 2016. URL: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf
[4] Traffic Calming Measures. Institute of Transportation Engineers. May 2018. URL: https://www.ite.org/technical-resources/traffic-calming/traffic-calming-measures/

Guide (see Endnote iii). With the existing pavement width of 20 feet, a 4-foot pedestrian lane could be considered alongside two 8-foot vehicle lanes. However, the Town's minimum lane width of 9 feet precludes provision of a pedestrian lane within the existing pavement. Due to the need to identify federal funding, the proposed pedestrian route would need to meet the established guidelines in the recent PROWAG (Public Rights-of-Way Accessibility Guidelines) ruling. Unless the town makes an exception to allow an 8' vehicular lane width, then an additional minimum 2' of roadway pavement would need to be added to the road, but there would be additional right-of-way, construction, and grading impacts along all neighborhood streets. Furthermore, passing areas of 5' x 5' would also need to be provided to meet PROWAG requirements.

The Town also expressed interest in the potential to convert Woodbine Dr., and possibly other neighborhood streets, to one-way vehicular traffic and utilize the remaining pavement as a separated on-road Multi-use Path. This can be done by utilizing pavement markings and flexible delineators or other low-cost treatments to provide separation for vulnerable road users. Based on the traffic speed and volumes observed, this would largely be feasible but would result in the diversion of about 150 vehicles per day off Woodbine Dr. and onto Coker Dr. west of its intersection with Manning Dr. There would be minor travel time impacts (<1 min) for the existing residents along Woodbine Dr. if their preferred travel direction was closed, using the alternate route along Manning Dr. and Coker Dr. Additional sections of Morgan Creek Dr. and Coker Dr. could also be considered for conversion to one-way traffic to allow for the creation of an on-road multi-use path along the length of the neighborhood streets.

Advisory Shoulder

One innovative option is to consider an advisory shoulder or edge lane road. This treatment has seen wider use in rural areas where there are fewer access points and limited need for on-street parking. This treatment is identified on page 2-17 of the FHWA Small Town and Rural Multimodal Networks Guide (see Endnote iii). Due to the limited amount of testing performed on this treatment, an approved Request to Experiment is required to implement Advisory Shoulders, called "dashed bicycle lanes" in the FHWA experimentation process. This treatment also possesses challenges with how to best provide guidance through intersections and across driveways, as well as the need to prohibit on-street parking in locations where it is implemented.

Bicycle Boulevard

One viable option for people riding bicycles is a Bicycle Boulevard, which includes the provision of signage and wayfinding along the corridor to prioritize bicycle traffic at intersections where appropriate. This treatment is identified in both the NACTO Urban Bikeway Design Guide (see Endnote ii) and page 2-9 of the FHWA Small Town and Rural Multimodal Networks Guide (see Endnote iii). Traffic calming can also be an integral part of a bicycle boulevard, especially if the traffic speeds and volumes are outside of the preferred operating ranges. The FHWA guide identifies the preferred motor vehicle operating speed (or 85th Percentile Speed) as 20 MPH or less, and the preferred volume as 1500 vehicles per day or less. While the highest volume observed on any of the neighborhood streets was 364 vehicles per day, all locations observed

operating speeds higher than 25 MPH. While this falls within the 'potential' but not the 'preferred' range identified by the FHWA guide, the implementation of traffic calming measures can help reduce operating speeds and create a safe bicycle boulevard with minimal impacts to the neighborhood. The Town's standard wayfinding signage can be easily incorporated into a bicycle boulevard to provide direction for people riding bicycles to navigate through the neighborhood streets.

Traffic Calming

Traffic Calming measures are physical modifications to a roadway to reduce the operating speeds of motor vehicles and improve the safety of the roadway for vulnerable users. These can be vertical deflections such as speed tables, horizontal shifts such as chicanes, or traffic closures such as diagonal diverters. These treatments have been identified from the ITE Traffic Calming Measures (see Endnote iv). Due to the low volume nature of the neighborhood streets, a traffic diversion would be out of scale with the existing neighborhood travel patterns, and as the Town's Fire Department does not approve speed tables, only horizontal shifts are under consideration. Traffic calming treatments that can be considered are:

Intersection Treatments	Mid-Block Treatments
Curb Extension / Corner Bulb-Out	Choker / Neckdown
Mini Traffic Circle	Chicane

Yield Roadway

As the least invasive treatment, a yield roadway would clearly identify, using signage (such as MUTCD W11-2 with custom "On Roadway" plaque), that pedestrians are expected to walk within the roadway. As identified on page 2-3 of the FHWA Small Town and Rural Multimodal Networks Guide (see Endnote iii), a yield roadway is designed to serve all users within one, slow speed travel area. As such, the preferred speed and volume for a yield roadway is <500 vehicles per day and <20 MPH. While traffic volumes meet these criteria, much like a bicycle boulevard, traffic calming can be considered to bring the operating speed (85th Percentile) down to create a safe environment for people walking within the roadway.

Figure 12 Route alternatives map with Alternative B highlighted

5.c Alternative C Morgan Creek Greenway

This route is shown as Alternative C in attached maps and tables. From the existing bridge at Merritt's Pasture, this route would follow the stream bank as a paved path south and east to Bartram Dr. and then utilize neighborhood streets to reach Manning Dr. Within the pasture the terrain is relatively level, and the existing dirt path approximates a possible greenway location. However east of Merrit's pasture, the conditions along Morgan Creek would warrant extensive environmental and hydraulic analysis to develop a combination of boardwalks, bridges, walls, and potentially switchback sections to create reasonable grades, to minimize environmental impacts and to maintain no-rise conditions on properties with structures. This route would be almost a mile longer than other options at approximately 2.27 miles including greenway and roadway improvements, require at least 20 private property negotiations, and likely have the most impact to floodplain and existing tree cover in the area when compared to other route alternatives. Furthermore, some sections of this route would likely be considered too steep to be comfortable for the typical greenway user. While the technical challenges could be overcome, ultimately, this route must be removed from consideration due to conservation easements held by the NC Botanical Garden that prohibit development along the stream bank.

Figure 13 Route Alternatives Map with Alternative C highlighted

Route Alternative Comparisons

	Alternative A *Merritt's Pasture to Fordham to Woodbine to Manning*	Alternative B *Merritt's Pasture to Neighborhood Streets to Manning*	Alternative C *Merritt's Pasture to Stream to Neighborood Streets to Manning*
Total Length (miles)	1.28 (miles)	1.41 (miles)	2.27 (miles)
Segment Length (miles)	To Otey's Road: 0.71 (miles) Otey's Road to Manning Drive : 0.57 (miles)	To Otey's Rd.: 0.79 (miles) Otey's Rd. to Manning Dr.: 0.62 (miles)	2.27
Slope / Topography	Moderate	Moderate - Difficult	Difficult
User Experience	Roadside (15-501) & Neighborhood Street	Neighborhood Street & Roadside (15-501)	Stream & Neighborhood Street
Private Property Impacts	3 lots	1 lot	min. 20 Lots (17 owners) with conservation easements prohibitting development
Estimated Floodplain Impacts (Linear Feet)	150 LF	150 LF	8,590 LF
Estimated Vegetation Clearing (Acres)	4.60	1.35	7.92
NCDOT Coordination	High	Moderate	Minimal
Potential Relative Construction Cost	High	Moderate	Very High

Figure 14 Table of key opportunities and constraints

COMMUNITY ENGAGEMENT

6.a. General Summary

The Morgan Creek Greenway Feasibility Study involved extensive coordination with landowners, stakeholders, greenway users, and the general public. The following community engagement activities took place:

- Community Survey (Web-based, with paper copies available);
- Public Meetings (1 in person, 2 virtual);
- Site Walks (2);
- Stakeholder Engagement;
    - NCDOT;
    - NC Botanical Garden;

- Town Transportation Planning and Public Works Department Staff;
- King's Mill Morgan Creek Residents including Cyclists; and
- Chapel Hill Parks Recreation and Greenway Commission.

6.b Public and Resident Feedback

Feedback received was generally positive. Community members expressed a desire to access nature and avoid Fordham Blvd. wherever possible on the corridor. Some residents saw the potential for a greenway to address issues with people trespassing on private property to access Morgan Creek or Merritt's Pasture, and for the presence of greenway users to slow down automotive traffic within the neighborhood. Fordham Blvd. is seen as a major barrier to travel in the area, and many community members would like to see crossing improvements to support walking and biking to the UNC campus and downtown Chapel Hill. Community members would also like to see greater connectivity to neighborhoods south of Morgan Creek and to be able to access Merritt's Pasture from the east. Concerns shared by residents with the project team include impacts to neighborhood safety from more people visiting and traveling through the community, and the safety of greenway users on proposed on-street segments.

Additional findings from community engagement efforts are included in greater detail in the appendix.

Stakeholder Coordination

Meetings were held with key stakeholders to review project scope, their project requirements and concerns.

6.c NCDOT

The NCDOT Division 7 engineer and the division programs manager met with the consultant and Town, to review Alternative A, a sidepath primarily along 15-501 Fordham Boulevard and advised of the following:

1. NCDOT has no major improvements planned to this area of Fordham Boulevard for the near future.
2. The route would require NCDOT encroachment agreements.
3. Curb and gutter would be required where the trail is within the clear zone.
4. Guardrail is typically only allowed where warranted for motor vehicle safety and new guardrail sections would not be warranted along the length of the proposed greenway.
5. Crossing is preferred at Manning Dr.
6. Boardwalk and other design features should keep in mind access for maintenance of drainage.

6.d NC Botanical Garden

Key staff, including the Director, from the botanical garden met with the project team to review the route alternatives and advised of the following;

1. Limitations of conservation easements along Morgan Creek that prohibit development.
2. Presence of rare plant and animal species
3. Overall support for the project and excitement about providing better access to the Gardens.

6.e Transportation Planning and Public Works Department Staff

Town staff from transportation and public works have been involved throughout the development of the project through multiple meetings, site walks, community meetings, and email correspondence. Thes staff have offered key feedback and critical direction on the following:

1. Design must be responsive to neighborhood concerns.
2. The need for pedestrian accommodations with the project to improve access and funding opportunities.
3. Technical requirements for the streets including minimum travel lane widths for emergency vehicles and provision of traffic data.
4. Considerations for changes to traffic patterns, traffic calming and pavement marking.
5. Narrowing travel lanes long term to provide a pedestrian lane is not preferred but could be considered as an interim or pilot project.

6.f Kings Mill Morgan Creek Neighborhood Residents and Cyclists

Residents who are regular cyclists met with the project team and Town staff to discuss the project and their current cycling habits and considerations relative to the proposed greenway extension. Key takeaways are:

1. A connection along Fordham Boulevard would be the most direct route and much flatter than riding through the neighborhood but not as pleasant.
2. Many cyclists already cut across Fordham Boulevard at Otey's Rd.
3. Connecting to Manning Dr. would be a safer connection.
4. Making a key connection from Southern Village, the pasture, the Morgan Creek and Kings Mill Neighborhood to campus and beyond (Trader Joe's was mentioned several times) would greatly increase the livability of neighborhoods along the route.
5. Routes through the neighborhood would be less inviting because they are steeper.
6. Consider screening where there are impacts to vegetation that buffers the neighborhood from 15-501.

6.g Chapel Hill Parks Recreation and Greenway Commission

The project team presented the preliminary feasibility analysis to the Chapel Hill Parks, Recreation and Greenway Commission in November of 2023. The commission's initial concerns were around potential environmental impacts of development along the stream bank at Morgan Creek, general impacts to tree cover and floodplain, and about providing access to users with a wide range of abilities. A follow-up presentation to the commission in March of 2024 presented the results of community and stakeholder engagement, estimates of tree cover and floodplain impacts which were also presented at public meetings, additional considerations for the development of neighborhood streets as a pilot project and estimated project construction costs. The commission's concerns during this meeting were that neighborhood streets did not seem safe and that the anticipated project costs were very high. There were also general questions asked about impacts to vegetation and wildlife which appeared to be adequately addressed during the conversation.

RECOMMENDED ROUTES COST SUMMARY

A key consideration in making recommendations for any project is understanding potential anticipated costs.

- For Alternative A, primarily along Fordham Boulevard, the opinion of cost below assumes a minimum 14' paved concrete trail (asphalt may be used as an alternate), 14' concrete deck boardwalks, retaining walls, curb and gutter, drainage and other roadway improvements. Because the cost of this alternative is significant the Town should consider developing it as a Long-Term Project.

- For Alternative B, using neighborhood streets, the cost estimate assumes a short greenway path from Merritt's Pasture to Morgan Creek Road along Fordham Boulevard, one retaining wall along Fordham Boulevard, traffic calming measures, and a linear foot cost for signage and pavement marking associated with a bicycle boulevard with a dedicated pedestrian lane. Because the cost of this alternative is much lower than Alternative A the Town should consider developing it as a Near Term Project.

- Alternative C, predominantly along the stream bank at Morgan Creek, was removed from consideration and not priced.

- A Potential Pedestrian Lane Pilot Project was priced and is shown on the map below. Pricing and description of this option are provided in the Recommendations section of the report.

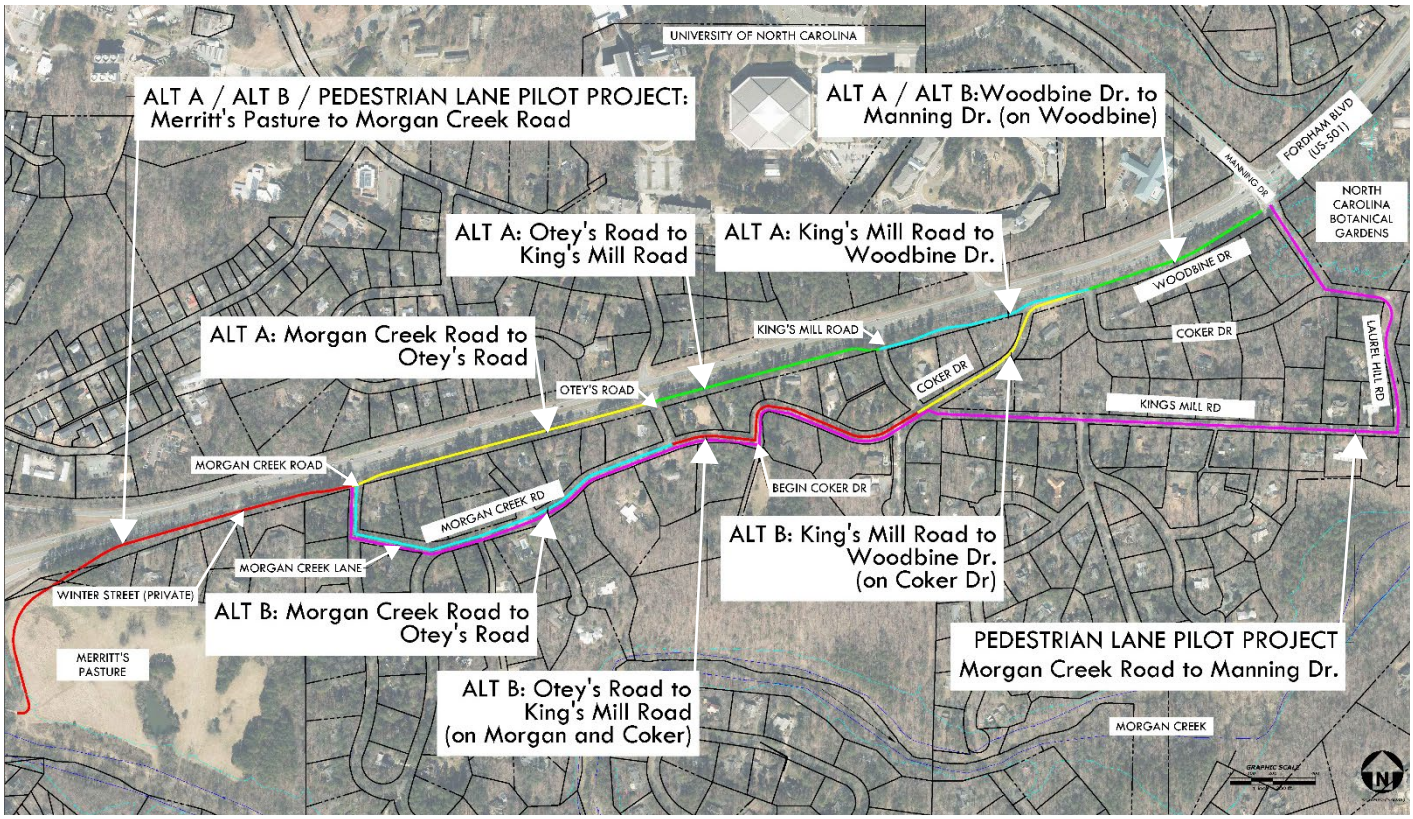


Figure 15 Map of trail segments for Alternative A, Alternative B, and a potential Pedestrian Lane Pilot Project. Note that the Pedestrian Lane Pilot shown above is discussed in further detail in the recommendations section of the report and not included in the opinion of cost noted below.

OPPINION OF PROBABLE COST OF CONSTRUCTION **ALTERNATIVE A – Long Term** Merritt's Pasture to Fordham Blvd. to Woodbine Drive to Manning Drive (1.25 mi)		
Segment Description	**Segment Length (mi)**	**Cost**
Merritt's Pasture to Morgan Creek Road	0.42	$1,249,000
Morgan Creek Road to Otey's Road (on Fordham Blvd.)	0.27	$1,363,000
Otey's Road to King's Mill Road (on Fordham Blvd.)	0.20	$706,000
King's Mill Road to Woodbine Dr. (on Fordham Blvd.)	0.19	$1,335,000
Woodbine Dr. To Manning Dr. (on Woodbine Dr.)	0.17	$77,000
TOTAL CONSTRUCTION COSTS		**$4,730,000**
CONTINGENCY 25%		**$1,190,000**
TOTAL		**$5,920,000**

OPINION OF PROBABLE COST OF CONSTRUCTION **ALTERNATIVE B – Near Term Pilot Project** Merritt's Pasture to Fordham Blvd. to Morgan Creek Lane to Manning Drive (1.39 mi)		
Segment Description	**Segment Length (mi)**	**Cost**
Merritt's Pasture to Morgan Creek Road	0.42	$1,249,000
Morgan Creek Road to Otey's Road (on Morgan Creek Lane and Road)	0.35	$194,000
Otey's Road to King's Mill Road (on Morgan Creek Road and Coker Dr.)	0.25	$114,000
King's Mill Road to Woodbine Dr. (on Coker Dr.)	0.20	$133,000
Woodbine Dr. To Manning Dr. (on Woodbine Dr.)	0.17	$77,000
TOTAL CONSTRUCTION COSTS		**$1,770,000**
CONTINGENCY 25%		**$443,000**
TOTAL		**$2,213,000**

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotechnical services, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated February 2024 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

RECOMMENDATIONS

A near-term solution and a long-term solution are recommended for this project due to the anticipated costs described above.

Near-Term Project Recommendations: Alternate B as Pilot Project

Alternative B, which relies on Neighborhood Streets to connect to Manning Dr., is recommended as an interim or near-term phase of the project. This route may be more readily achievable because community feedback showed this as preferred over a sidepath along 15-501, costs associated with trail development in the US 15-501 roadway

corridor are greatly reduced, there are no conflicts with conservation easements and there are few if any private property impacts. A demonstration may prove helpful in building neighborhood support for more permanent improvements.

- Demonstration Project Considerations: The Town could deploy short term demonstration projects with traffic cones, temporary signage and Town staff on site to present various options to the neighborhood. A variety of treatments could be considered in combination including: a pedestrian lane only, traffic calming measures, bicycle boulevard / yield roadway signage and one-way vehicular traffic. Depending on the results of these demonstrations, additional mid-term testing could be initiated to allow driver behavior to normalize for collection of traffic data and for people walking and biking along the proposed treatment to form their own opinions.

- Pilot Project / Near Term Project Considerations:
    - Design and construct the greenway segment from Merritt's Pasture to Morgan Creek Road along 15-501 / Fordham Boulevard.
    - Design and construct an interim pilot project or near-term route using neighborhood streets connecting the greenway to Manning Dr. This route could follow Alternative B or an alternate route along Kings Mill Lane and Laurel Hill Rd. suggested by residents. This alternate route appears to be longer but less steep than Route B, explored in this analysis.

- For development of a temporary or near-term pilot project the FHWA Small Town and Rural Multimodal Networks Guide would be a key reference and the following components should be considered:
  - Dedicated 4’ pedestrian lane, with painted stripe within the existing roadway pavement;
    - Requires temporarily reducing vehicular travel lanes to 8’ width;
  - Multi-Use path, a 10’ path using pavement marking within the existing roadway pavement;
    - Requires One-way vehicular travel on neighborhood streets;
  - Chicanes for traffic calming or other measures;
  - Public art within pedestrian path to engage neighbors;
  - Traffic and wayfinding signage; and
  - Ability of town staff to manufacture signs or install measures as cost savings.

Comparable Images of Suggested Pilot Project Improvements

Figure 16 Pedestrian Lane Pilot in Chapel Hill

Figure 17 Chicanes on a neighborhood street in Chapel Hill

Figure 18 Public art painted in crosswalk in Chapel Hill

Figure 19 Public art, flexible posts, and pavement markings used to highlight traffic calming (radius reduction) at a roadway intersection with a pedestrian lane.

Figure 20 Example of a shared (multi-use) path installation on existing one-way road

- The costs of developing a slightly longer Alternate Route along neighborhood streets for Alternative B is anticipated to be only slightly higher than costs for the shorter route described earlier in this report. Converting the neighborhood streets to One-way utilizing signage, pavement markers and some traffic calming is not anticipated to significantly affect the construction cost of this alternative.

OPINION OF PROBABLE COST OF CONSTRUCTION **ALTERNATIVE B ALTERNATE ROUTE AND PILOT PROJECT – Near Term** Merritt's Pasture to Fordham Blvd. to Morgan Creek Road & Lane to King's Mill Road to Laurel Hill to Manning (1.71 mi)		
Segment Description	**Segment Length (mi)**	**Cost**
Merritt's Pasture to Morgan Creek Road	0.42	$1,249,000
Pedestrian Pilot Project on Neighborhood Streets	1.29	$602,220
TOTAL CONSTRUCTION COSTS		**$1,851,200**
CONTINGENCY 25%		**$463,000**
TOTAL		**$2,314,000**

Long Term Project Recommendation Alternate A

Construction of Alternate B with an initial greenway segment to Morgan Creek Road and demonstration or pilot project improvements on the neighborhood streets will set the stage for eventual construction of Alternate A. Alternate A, primarily a sidepath along 15-501 / Fordham Boulevard, is recommended as a long-term project for the town. This route provides the most direct connection to Manning Drive, more accessible slopes for users of differing abilities, and places pedestrians and cyclists in a dedicated facility separate from vehicles.

Appendix Contents:

Preliminary Alternatives Alignment Overview Map

Preliminary Alternatives Alignment Enlargement – Merritts Pasture to Oteys Rd.

Preliminary Alternatives Alignment Enlargement – Oteys Rd. to Manning Dr.

Slope Map – From Public Meeting

Typical Greenway Sections and Comparable Images – From Public Meeting

Typical Boardwalk and Bridge Sections and Comparable images – From Public Meeting

Shared Roadway Typical Section and Comparable Images – From Public Meeting

Community Engagement Notes

McAdams

McAdams

Morgan Creek Greenway East Extension

Preliminary Alignment Alternatives Overall Map

Morgan Creek Greenway East Extension

Preliminary Alignment Alternatives Enlargement - Merritt's Pasture to Otey's Rd

Legend

- FEMA Floodway
- FEMA 100yr
- Roads
- Highways
- Parcels
- 20' Contours
- Creeks/Streams
- Existing Greenways

Publicly Owned Parcels

- Town of Chapel Hill
- University of North Carolina
- State of North Carolina

Preliminary Alignments

- A
- A Ext.
- B
- B Ext.
- C

Alignment C may be located on either or both sides of the creek, depending on site constraints and availability of easements.

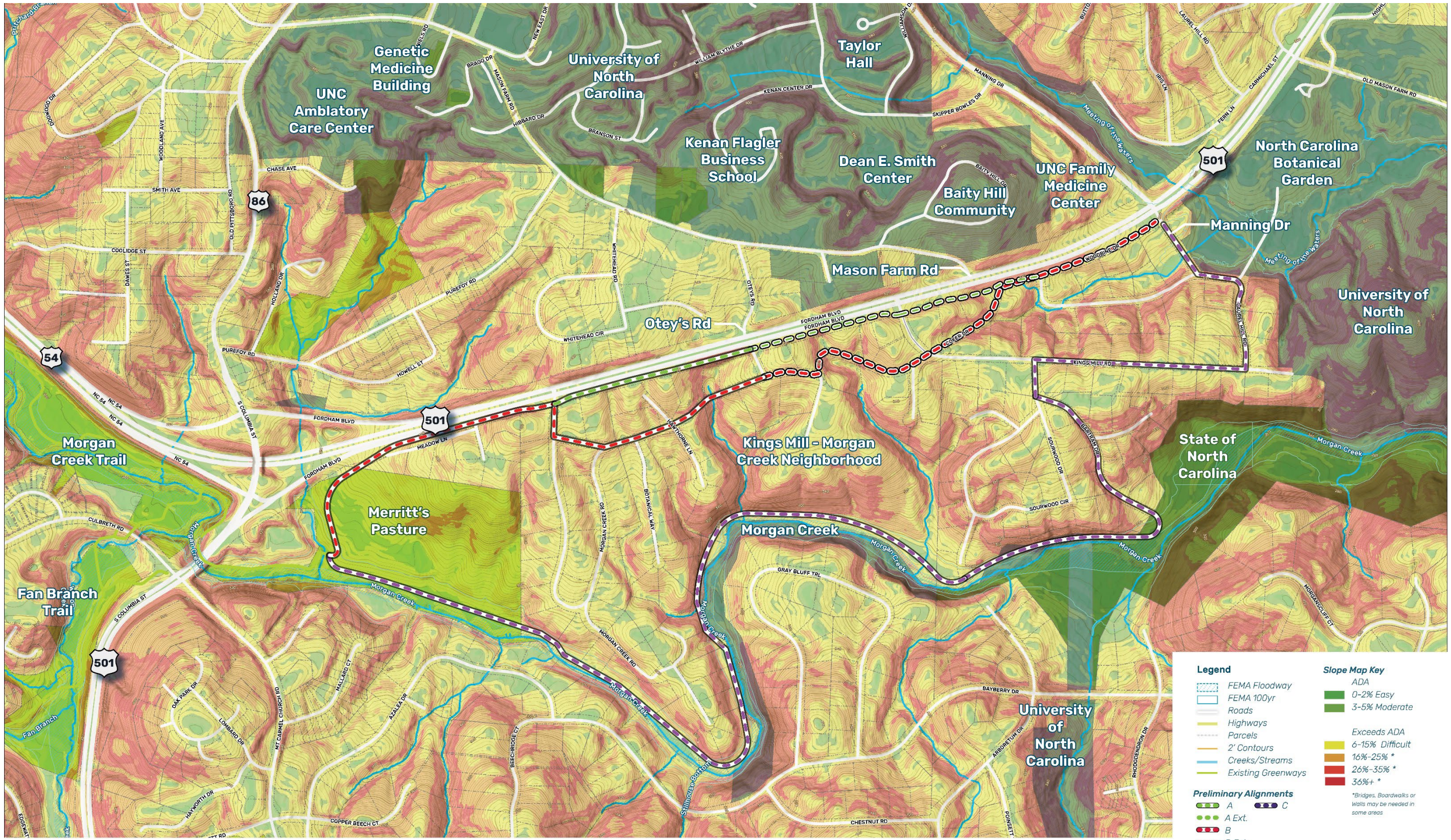
0' 150'
SCALE: 1" = 150'

12. 07. 2023

McAdams

Morgan Creek Greenway East Extension

Preliminary Alignment Alternatives Enlargement Otey's Rd to Manning Dr.



McAdams

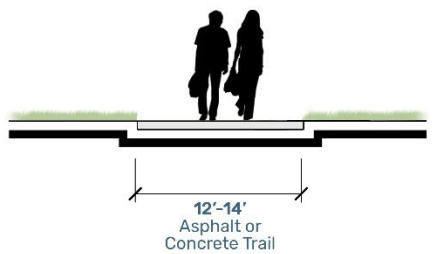
Morgan Creek Greenway East Extension

Slope Map

SCALE: 1" = 300' 12. 07. 2023

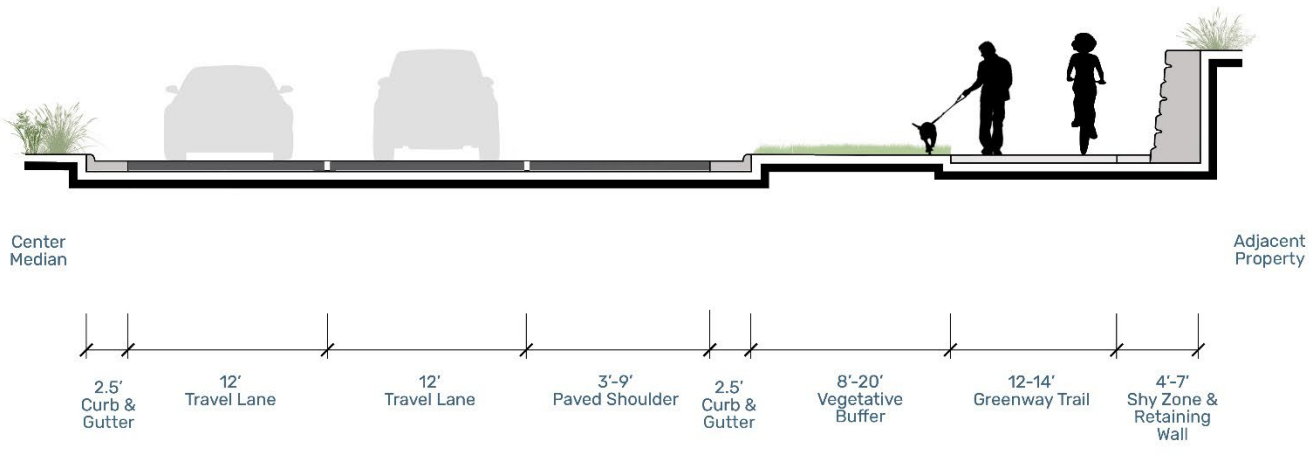
Trail on Grade: Merritt's Pasture Morgan Creek

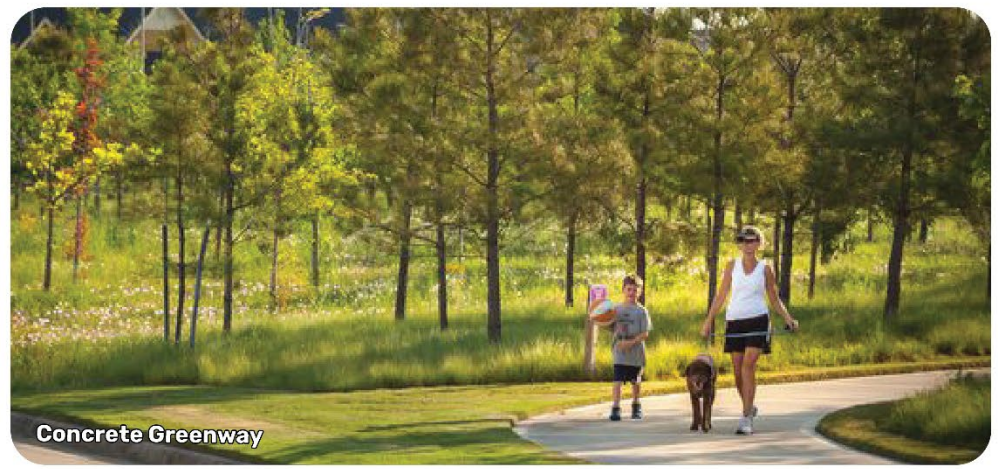
Scale: 1"=5'

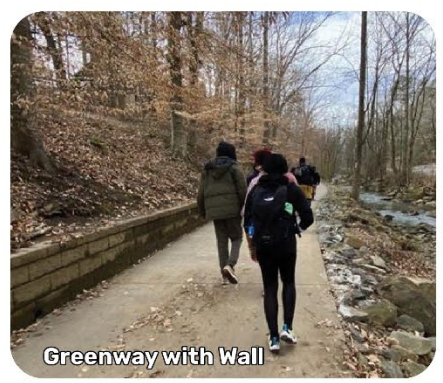


Sidepath at Fordham Boulevard

Scale: 1"=5'





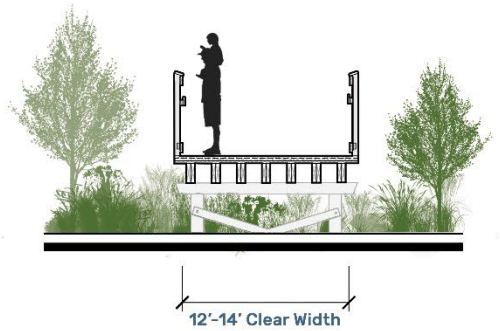


Pavement Considerations

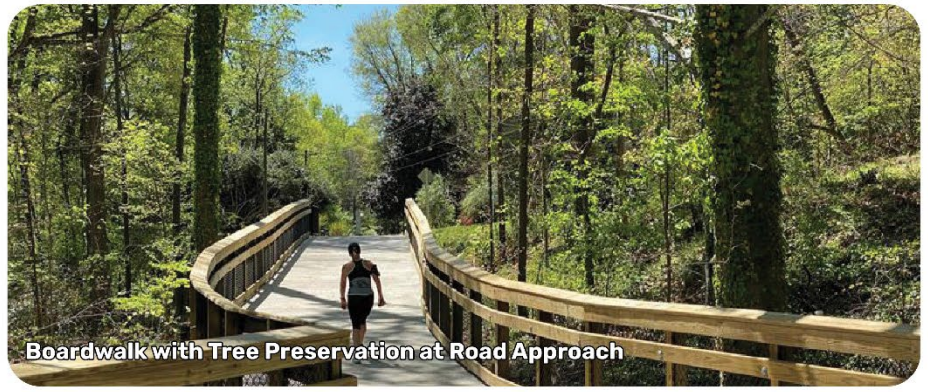
Paved trail surfaces such as asphalt or concrete offer great accessibility to accommodate users of all ages and abilities. Asphalt pavement tends to be the most popular and cost effective for paved trails. Concrete pavement is more durable, but costs more than asphalt pavement. As such, concrete trails are typically more common in urban settings (where projected user volumes are high or the trail may be subject to vehicular loading more often) or in areas subject to heavy flooding forces that may cause damage to the trail.

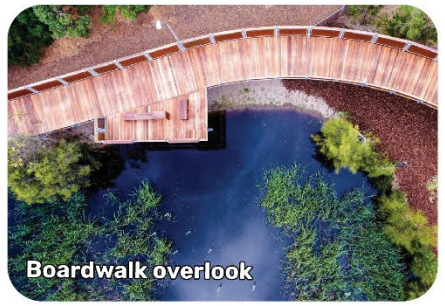
Boardwalks:
Fordham Boulevard
Morgan Creek

Scale: 1"=5'



A minimum 10' clear width elevated boardwalk is recommended in areas where the trail crosses wetlands or in areas of steep cross slope topography to limit grading and need for retaining walls. Boardwalks can also help preserve mature trees. The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Timber safety rails and hand rails are shown with a timber pile substructure system. Boardwalk substructure design and materials may vary depending upon specific site conditions and geotechnical recommendations.


Boardwalk with Tree Preservation at Road Approach


Boardwalk overlook

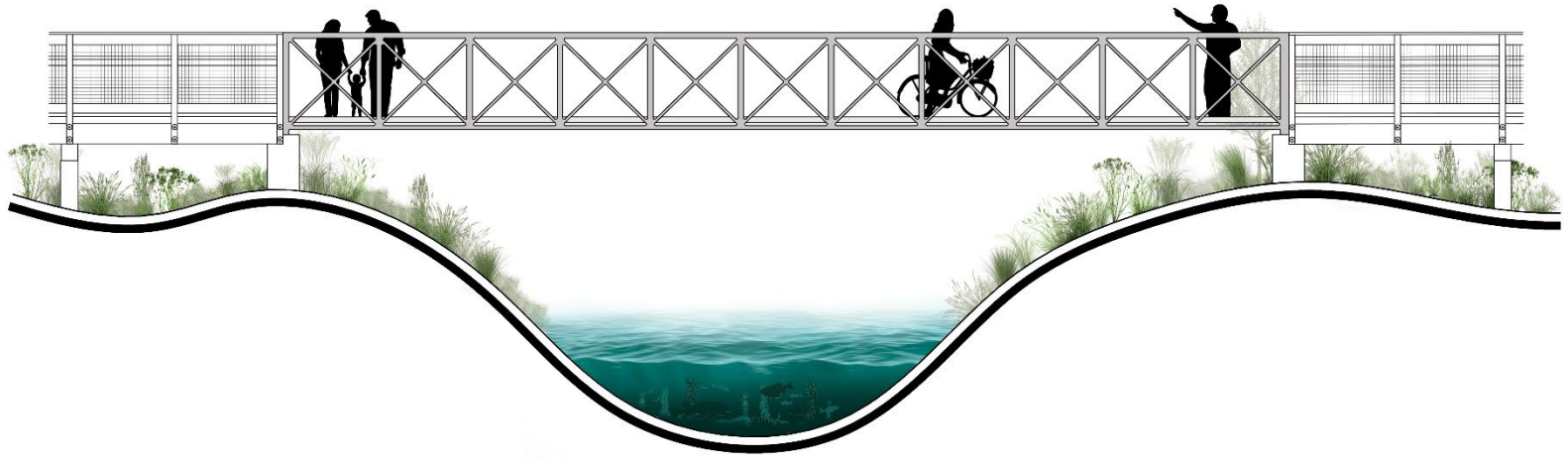

Boardwalk Substructure

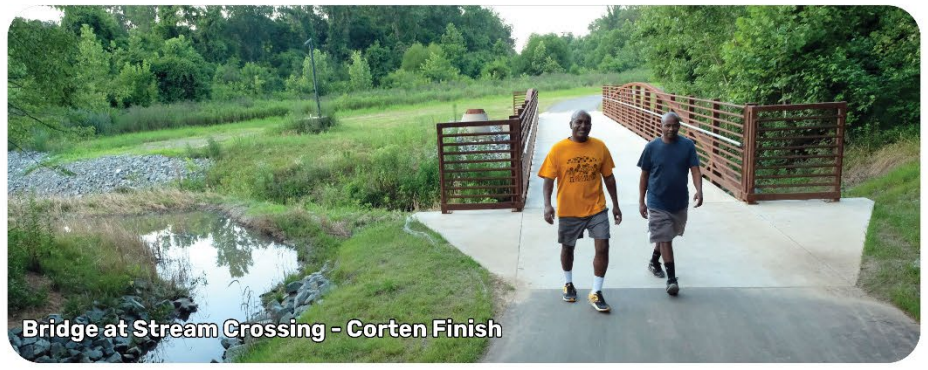
Bridges:
Morgan Creek

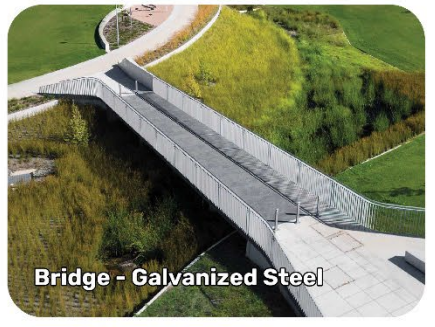
Scale: 1"=5'

A minimum 10' clear width bridge is recommended in where the trail crosses Mogan Creek or streams. Prefabricated steel truss bridges are a common, cost-effective bridge type in this application and are the recommended bridge type for this typical section. Corten / weathering steel is a finish which should be considered for its ability to blend well with natural surroundings and its minimal maintenance requirements as compared to those for painted finishes.

The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Bridge substructure design and materials may vary depending upon bridge design type, specific site conditions, and geotechnical recommendations.




Bridge at Stream Crossing - Corten Finish


Bridge - Galvanized Steel

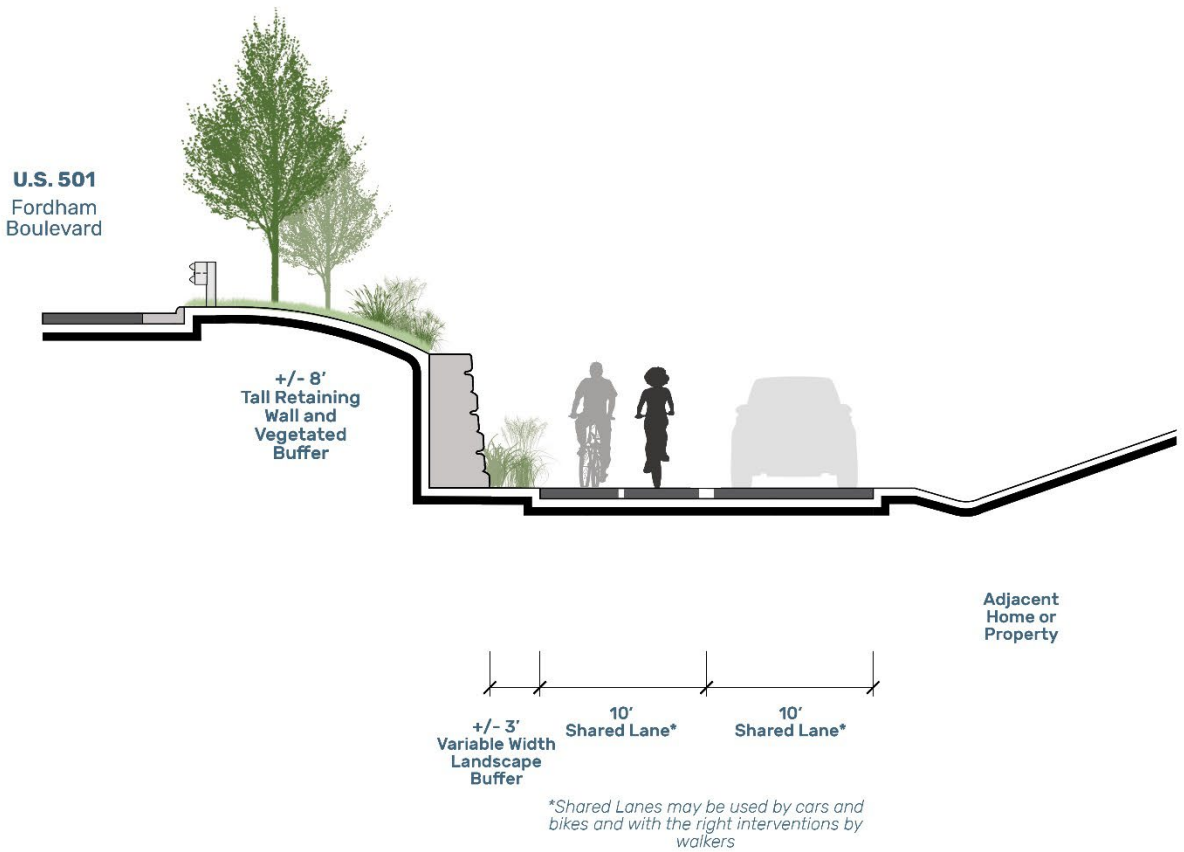

Art Railing - Tanyard Branch

Neighborhood Streets

Scale: 1"=5'

Using Neighborhood Streets for the Greenway offers an opportunity to utilize existing infrastructure and potentially reduce project costs. Traffic analysis and coordination with neighbors can help determine specific interventions that can maintain neighborhood character and provide safe options for pedestrians and cyclists.

Types of interventions may include:
- Traffic Calming
- Traffic Signage
- Wayinding Signage
- Pavement marking



*Shared Lanes may be used by cars and bikes and with the right interventions by walkers


Shared Street with Pavement Markings

Example - Wayfinding

Example - Pavement Marking

Example - Traffic Signage


Example - Pavement Marking


Example - Traffic Calming

MCADAMS

Morgan Creek Greenway East Extension

Shared Roadway Typical Section

12. 07. 2023

ADDITIONAL COMMUNITY ENGAGEMENT

General Summary

The Morgan Creek Greenway Feasibility Study involved extensive coordination with landowners, stakeholders, greenway users, and the general public. In addition to the project and engagement opportunities were advertised in the following channels:

- Kings Mill Morgan Creek Neighborhood Listserv – 297 members;
- Tarwheels Newsletter - 525 members;
- TOWNnews –7555 subscribers;
- Parks and Recreation eNews - 2551 subscribers;
- Social Media (Town of Chapel Hill);
    - Facebook - 13,000 followers;
    - Twitter - 20,000 followers;
    - Social Media (Parks and Recreation Department);
    - Facebook - 13,000 followers;
    - Twitter - 751 followers; and
    - Signicades – 3 Town of Chapel Hill locations.

Web Survey

A community survey was conducted from November 13 through December 20, 2023 through PublicInput.com, with paper copies available. Recognizing the diversity of Chapel Hill, the survey was provided in five languages, including English, Spanish, Chinese, Karen, and Burmese, reaching 1,514 people. Respondents left 2,409 comments providing feedback on a number of topics influencing greenway design.

Key findings included the following:

- **Existing Trail Use**
    - Ninety percent (90%) of respondents reported use greenways for health and exercise and 79 percent for recreation, but a full quarter (25%) use greenways to run errands or reach essential services and 20 percent use greenways to commute. Only one percent of survey respondents do not use greenways and trails in Chapel Hill.
    - Greenways and trails in Chapel Hill are popular, with the largest group of respondents (41%) reporting they use greenways a few times a week, and an additional 31 percent using greenways a few times a month. Eighteen percent (18%) of respondents use greenways daily.
    - Participants primarily use greenways for walking (93%) and biking (55%).
    - A lack of safe biking and walking connections to and from greenways and trails is the greatest barrier to greenway use in Chapel Hill, selected by 66% of respondents. Other barriers include unsafe street crossings and intersections (43%) and motor vehicle traffic and/or speed (29%). Some respondents reported a lack of parking and issues with car break-ins at the Morgan Creek Greenway trailhead on NC 54 as barriers, as well as having to drive from their home in order to use the greenway.
- **Future Trail Use**
    - Thirty-six percent (36%) of respondents plan to use the proposed segment of the Morgan Creek Greenway a few times a month when it is constructed, while an additional 31 percent will use it a few times a week. Eleven percent (11%) of respondents will use the greenway daily.
    - Respondents plan to use the proposed greenway segment primarily for walking (88% of respondents) and biking (58%), with others planning to use it to view nature (43%), run or jog (42%), hike (39%), or do activities with children and family (38%). Nineteen percent (19%) of respondents plan to use the greenway for commuting.
- **Trail Route Priorities**
    - Routing along or providing access to Morgan Creek is important, with 70 percent of respondents selecting it as their top routing preference. Other priorities of the community include a route that provides connections to neighborhood streets (ranked 2nd) and to existing sidewalks (3rd), but routing options that are the most cost-effective or most direct are lower priorities, ranking sixth and eighth, respectively.
- **Respondent Travel Habits**
    - Forty percent (40%) of respondents currently commute via car and 28 percent work from home, but many respondents commute via bicycle (13%), walking (9%), or transit (4%).
    - In the future, 55 percent of respondents would like to commute by bicycle and 41 percent would like to walk. Thirty-one percent (31%) of respondents would like to work from home and 27% would like to use transit, while only 19 percent would like to commute by car, indicating significant potential for commuting on the proposed segment of the Morgan Creek Greenway.
- **Other Comments**
    - Respondents emphasized the need for greater connectivity in the study area, with many citing Fordham Blvd. as a major barrier for walking and biking. Written comments expressed a desire for crossing improvements at Manning Dr. and greater physical separation for people walking and biking across the NC-86 bridge. Additionally, respondents expressed frustration with being unable to access Merritt's Pasture from the east or cross Morgan Creek and reach neighborhoods to the south.
    - Respondents would like to be able to connect to other greenways and trails in Chapel Hill, enabling longer trips to additional destinations. Gaps in the network received many comments from respondents who use greenways, and residents desire design of greenways to make these connections and to their neighborhoods.
    - Survey respondents requested greenway amenities including lighting, trash and pet waste receptacles, rest areas, emergency call boxes, and expanded parking at trailheads.
    - Property owners adjacent to the proposed greenway extension have concerns regarding property impacts from trail users related to noise, trespassing, and property values. A route using Meadow Ln. and Winter Rd. may endanger trail users crossing Winter Rd. at its intersection with Fordham Blvd. near the base of an exit ramp.
    - Where possible, respondents would like a trail that follows Morgan Creek to provide a more scenic route, but respondents raised concerns about topography, erosion, flood risk, and use of permeable materials. Many comments suggested an unpaved trail surface in areas near Morgan Creek to reduce environmental impact.
    - Some comments suggested using an existing Orange Water and Sewer Authority (OWASA) easement along Morgan Creek as a greenway route.

- Some residents alleged in written comments that private property owners have placed signs warning of a venomous snake habitat as a deterrent to trespassers.
- Existing aboveground sewer pipes cross Morgan Creek and are used by some area residents to cross the creek in the absence of a bridge, raising safety concerns.
- Several residents wrote that a greenway bridge across Morgan Creek between Ashe Pl. and Arboretum Dr. should be retained in the greenway design to provide a safe and legal connection between neighborhoods on either side of the creek. I
- A connection to trails at the North Carolina Botanical Garden is desired, but signage restricting bicycle use may be necessary.
- Respondents have safety concerns with greenway sections that use a shared street design through the Morgan Creek neighborhood, preferring to incorporate physical separation between the greenway and roadway.
- Respondents are frustrated waiting for trails that have been promised for years to begin construction, and that many residents have to drive to access a greenway that is within walking distance but unreachable due to private property and a lack of connections.
- A route along Morgan Creek is desired for user experience, but respondents recognized that sections of this alternative may be impractical for construction.

Public Meeting

A drop-in style public meeting was conducted on December 9, 2023, at the Chapel Hill Public Library to allow the public to review maps and information boards about the project at their own pace. Town and consultant design staff were available to guide participants through the materials and answer questions. Paper copies of the web survey were available as well as a general meeting comment form. The meeting was advertised on the Town's website and social media sites, through emails from the Town to local advocacy organizations, through emails to property owners, and with physical flyers.

Presentation materials included alignment maps, site analysis maps, typical sections and comparable images.

Feedback:

- Residents suggested placing the trail on the north side of Fordham Blvd.
- Residents have concerns with a greenway crossing at Morgan Creek Rd. and Fordham Blvd., and at Winter Dr.
- The greenway should avoid routing along Fordham Blvd. east of Morgan Creek Rd.
- Additional parking should be provided, potentially at the west side of Merritt's Pasture.
- A route along Morgan Creek would be more scenic and safe for recreational users, but less desirable for commuters.
- There is an empty lot on Morgan Creek Rd. that could potentially provide an easement connecting the greenway to the neighborhood.
- Two attendees completed comment forms indicating a preference for Alternative B as it provides a more pleasant user experience than routing along Fordham Blvd. and minimizes impacts to private property and the environment.

Public Meetings and walks by Town

- November 21, 2023. The project team presented an update on the project and preliminary route alternatives to the Chapel Hill Parks, Greenways, & Recreation Commission.
- December 14, 2023, from 12:30 – 3:30 p.m. At the Morgan Creek Greenway parking lot approximately 16 people were on site to find out more about the project, some of which participated in a walk to review the connection from the existing trail to the new extension.
- December 14, 2023, from 4:00 – 5:00 p.m. A virtual meeting was held, with five participants.
- December 15, 2023, from 9:30 – 11:30 a.m. A virtual meeting was held, with one participant.
- January 30, 2024, from 1:30-4:00 p.m. At Merritt's Pasture the project team met with neighborhood residents to discuss alignment and design alternatives.

Other Resident Feedback (to the Town of Chapel Hill)

A virtual meeting with Kings Mill Morgan Creek residents and cyclists was held on August 1, 2023 to gain an understanding of resident concerns at the neighborhood level. Key points were raised, including:

- Residents of the neighborhood who bike across Fordham Blvd. usually choose to cross at Oteys Rd. and continue north toward the UNC campus as it offers a flatter biking experience than Mason Farm Rd. Grades of existing roads should be considered as part of the route alternatives to provide a route with the fewest grade changes.
- On-road sections on Morgan Creek Rd. are acceptable for biking, but will likely encounter opposition from some residents.
- The project team should identify potential screening treatments to address privacy concerns from adjacent property owners.
- This project will fill a major gap between bicycle and pedestrian facilities in Chapel Hill and help improve connectivity between parks. Providing adequate separation or screening from Fordham Blvd. is important to ensuring a comfortable user experience.

Additional feedback was obtained from neighborhood residents:

- There has been previous controversy within the Morgan Creek and Kings Mill neighborhoods over painting center line stripes on the streets, resulting in stripes not being added to Morgan Creek Rd. and Kings Mill Rd. Neighbors may oppose additional striping to add bike lanes, or instead prefer bike route signage.
- Cyclists traveling east on Morgan Creek Rd. have two options: to use Woodbine Dr. which offers more variation in topography before transitioning to a sidewalk on Fordham Blvd. between Manning Dr. and Old Mason Farm Rd., or to use Kings Mill Rd. which is more level before transitioning to dirt paths within the North Carolina Botanical Garden.
- A new neighborhood resident expressed concerns about representation within the survey and at public events for the greenway and opposes the greenway routing in front of their residence.