



→ Moveable tables and chairs occupied by students during lunch on the greenway.
Photo: LandDesign

SEATING

Seating along the Trail should include formal seating such as benches and chairs, as well as informal seating such as well-positioned boulders and seat walls. The composition of seating should provide a variety of experiences, allowing for solitary seating, encouraging social gatherings and should be located at regular intervals along the Trail.

As a general rule, one bench or seating option should be provided every 500 feet. In urban areas, one bench should be provided every 200 feet. Additional benches and seating options should be provided at trailheads, nodes, connections and destinations.

Safe passage for trail users should be maintained when seating is adjacent to the Trail. Seating should be placed so that when sitting down, peoples' feet are outside of the Trail shy-zone.

A variety of seating options should be provided so that people with all abilities have comfortable seating. Typical benches should match the existing benches along LSCG near Kings Drive, which are constructed of durable, high-quality materials and provide a comfortable place to sit. A variety of manufacturers now produce this bench at different costs.

Alternatives to the standard bench are warranted in certain locations for artistic and character enhancing reasons.



→ Swings provide comfortable seating at destination areas.
Photo left: LandDesign
Photo above: LandDesign



→ The standard bench on LSCG urban section is the recommended bench to be carried throughout the XCLT, in a natural wood finish or black coated metal.
Photo left: Victor Stanley



→ Sources: <http://www.pekinparkfoundation.org/WaterFountains.html>

DRINKING FOUNTAINS

Should be located at trailheads, destinations and gathering areas. Locate to the side of primary pathways to not impede bicycle movements. Drinking fountains should include a water bottle filling station and dog bowl. Fountains, as with other trail side furnishings, should be black. Makes and models should be coordinated with Mecklenburg County Park and Recreation to ensure plumbing maintenance needs can be met.



→ Source: <http://www.victorstanley.com/product/sd-42/>



TRASH RECEPTACLES

Trash receptacles shall be located at trailheads, road crossings and places where people are likely to gather. At a minimum trash receptacles should be located at 1,000 foot intervals, except in urban areas where they should be located every 500 feet. Trash receptacles should be grouped with other site furnishings such as benches, drinking fountains and locations where people may be eating.

Trash receptacles should be located to the side of the primary pathway so they do not impede pedestrian and bicycle movements. Trash receptacles should also be co-located with recycling bins.

Trash receptacles should match the existing receptacles along LSCG, with black slats and options for top openings.

BIKE PARKING

Bike parking should be located at trailheads, where it is appropriate with adjacent development connections and destinations, as well as out of the floodplain. They should be located in a manner that minimizes visual impact but ensures sufficient visibility to discourage theft. Larger racks should be incorporated at destinations and areas of high use. Smaller bike racks should be dispersed along the Trail to meet demand.

Short-term and long-term bicycle parking will be required. Short-term bicycle parking should provide secure and convenient storage that is easy to use. Long term bike parking should be sheltered/covered and provide greater security. Bike parking areas should be well lit. High density short- and long-term bike parking should be provided at transit stations. Charging stations for e-bikes are also encouraged.

Bike corrals should be encouraged near streets and parking lots where heavy bicycle use is expected and trail space is limited. Corrals can generally accommodate eight to 12 bicycles. Integration with public art is encouraged.

Bike racks must be capable of supporting the bicycle's frame and wheels in multiple positions while securely anchored to a fixed, flat surface. Inverted U, Post and Ring racks are examples of bike racks that meet design recommendations, whereas wave style racks do not. Surface mounted bicycle racks are preferred for ease of maintenance and replacement when necessary.



→ Short-term bike racks are conveniently located and covered to support bicycles in multiple locations.



→ San Francisco, CA. Bike Corrals typically take the space of one on-street parking space and incorporate an element of protection.

Source: Tim Papandreou, San Francisco Municipal Transportation Agency



→ Chicago, IL. Long-term, high density, secure bike parking. Source: <http://everydaytourist.ca/blog/2013/12/6/building-a-better-bike-rack>



→ An artistic take on a *Post & Ring* style bike rack. Source: LandDesign



→ Buffalo Bayou Greenway, Houston, TX. Concave guardrail when required next to the Trail (fencing and guardrail should only be right next to the Trail in constrained spaces).
Photo: LandDesign

GUARDRAILS & BRIDGE RAILINGS

Protective railings, fences or barriers shall be provided at all locations where a grade differential of 30 inches or greater occurs, and shall meet or exceed standards outlined in ADA, North Carolina State Building Code, Park and Recreation guidelines and the AASHTO Guide to Bicycle Facilities. Minimum height of protective railings shall be 42 inches high, and heights up to 48 inches high may be appropriate.



→ Buffalo Bayou Greenway, Houston, TX. Fencing between adjacent uses and trail.
Photo: LandDesign

FENCING

Fencing should be used only where required, such as when surrounding the above playground. Fencing should be designed to reflect the character of that destination.

Where fencing is required, it should be designed and constructed of a high, durable quality, and have a unified style that integrates well and can blend into the various character areas.

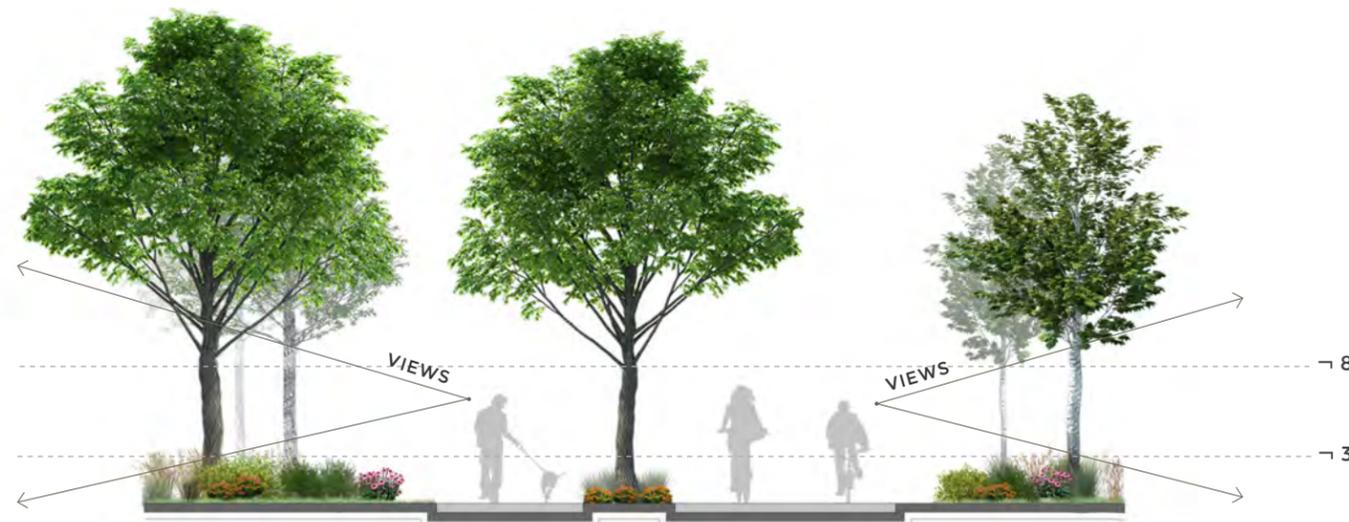
Where space and policy permits, plants should be used in lieu of fencing.

LANDSCAPE PLANTINGS

In addition to an aesthetic benefit, plant material has a functional benefit along the Trail. Much of the trail alignment is located along the LSC and Toby Creek riparian corridor. Plant choice should promote and enhance the natural environment and habitat along these corridors. Plant locations should support a pleasant user experience by screening unsightly views, drawing attention to key focal points of interest and shading gathering areas.

The planting strip specifically refers to the buffer zone between the bike and pedestrian travel ways when the separated bike lane and pedestrian path or the shared-use path with buffered separation facilities are used. In most areas of the path, a 5 foot minimum width is recommended and variation with larger widths is encouraged to support landscape enhancements.

As a rule of thumb, 8 feet is the preferred minimum width for tree planting located between linear hardscape. However, this general guideline should not preclude tree planting in the corridor. Trees that tolerate an urban environment, floodplain conditions and have high branching should be used next to the shared-use path.



CLEAR SIGHT LINES

- Maintain clear sight lines between 3' and 8' height along trail.
- Large trees shall be pruned to prevent obstructions to cyclist.
- Vegetation should be minimum 2' from edge of trail.
- Vegetation along creeks will be more dense. Selective thinning of understory and careful plant material selection should be used to provide views to creek and other key features.



TREES

- Deciduous trees can provide summer shade and allow sun to penetrate in cool seasons.
- Select canopy trees based on adaptability to microclimate, seasonal interest and shade structure.
- Evergreen trees can be added to screen views or provide seasonal interest.



SHRUBS

- Deciduous and evergreen shrubs should not obstruct eye level. Low growing cultivars should be selected.
- Consideration should be given to wildlife habitat benefit, seasonal interest and color.
- As a general rule, formal and high maintenance plants should be avoided.



GRASSES AND PERENNIALS

- The use of large swaths of grasses and perennials will provide continuity along the Trail.
- Perennials and grasses should be hearty and require little maintenance.



→ Buffalo Bayou Greenway, Houston, TX. Landscaping is critical to creating a quality trail experience and should be planned to accentuate the nature of the place. Simplicity in large masses has the strongest effect in corridors.
Photo: LandDesign

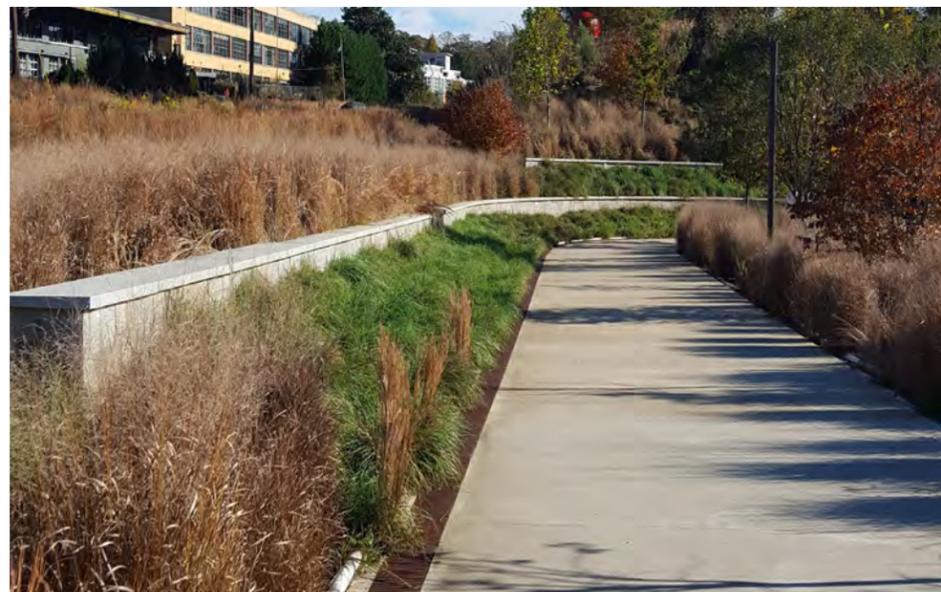


→ Buffalo Bayou Greenway, Houston, TX. Landscape schemes in destinations should provide more variation than in connections between them.
Photo: LandDesign



→ Streamside plantings should enhance the natural character as seen along LSCG.
Source: <http://forum.ctc.org.uk/viewtopic.php?f=7&t=47640&start=45>

- Trees and shrubs should not obstruct trail travelway with special attention to intersections and sight lines at bends in the Trail.
- Shade trees should be located at regular and frequent intervals along the Trail.
- Plants should be low maintenance and portray the character of the greenway. The use of formal plants, particularly those requiring pruning, is not recommended.
- The scale of the plants should range from perennials to large maturing trees based on their location and shall meet sight clearance requirements.
- Streamside plantings shall be chosen from the stream Buffer Planting Schedule, Appendix D of the SWIM Buffer ordinance.
- Define/enhance edge relationships to adjacent neighborhoods, developments and open space.
- Plant material shall be used as a buffer between the path and roadway to minimize noise and add separation.
- Remove or control invasive plants along LSC and Toby Creek.
- See Mecklenburg County Storm Water Services “Plant Species” recommended for stormwater management.
- Further coordination with Mecklenburg County Landscape Management team to establish preferred landscape palette.



→ Atlanta Beltline, Atlanta, GA. Formal repetition of native grasses creates a strong visual effect.
Photo: LandDesign



→ Formal planting and bedlines used around trail furnishings.
Photo: LandDesign

PUBLIC ART

Art will enhance places and spaces along the path and increase the overall appeal and user experience. Among the many different types, careful consideration should be given so that art is well integrated into the site and appropriately placed. In some circumstances, artful variation of the standard elements and furnishings may be appropriate and encouraged. The use of alternatives should be evaluated on a case-by-case basis to ensure it adds to the quality and character of the space.

The City of Charlotte is working with the Arts and Science Council to produce a standalone Public Art Framework (Master) Plan for the XCLT. This plan, targeted for completion by the end of 2016, will provide guidance for inclusion of public art along the XCLT corridor. The Framework Plan will identify a phased approach to installation and expand upon the permanent and temporary art locations.

PERMANENT ART OPPORTUNITIES

- New development, blank walls, iconic artwork

STREETScape AND PEDESTRIAN ENHANCEMENTS

- Permanent markers that identify neighborhoods and districts
- Enhancements planned for light rail
- Bike and skateboard racks, and signage
- Professionally designed informational kiosks
- Patterned walkways
- Shade structures and visual screening

TEMPORARY ART AND PERFORMANCE SPACES

- Serial murals
- Artist designed furnishings
- Temporary art displays

→ Opportunities for public art can be found as temporary retrofits, permanent installations or as common infrastructure improvements.



→ Dallas Design Center, Dallas, TX.
Source: <http://fence.photoville.com/about/>



→ Source: <http://fence.photoville.com/about/>



→ Atlanta Beltline, Atlanta, GA.
Source: <http://fence.photoville.com/about/>



→ Buffalo Bayou Greenway, Houston, TX.
Photo: LandDesign



→ Los Angeles, CA.
Source: <http://fence.photoville.com/about/>



→ NYC, New York.
Source: <http://fence.photoville.com/about/>



→ Charlottesville, VA.
Source: <http://fence.photoville.com/about/>



→ Atlanta Beltline, Atlanta, GA.
Photo: LandDesign



→ Atlanta Beltline, Atlanta, GA.
Source: <http://fence.photoville.com/about/>



→ North Hampton, NH.
Source: <http://fence.photoville.com/about/>



→ ModelArt Studio.
Source: <http://fence.photoville.com/about/>



→ Boston, MA.
Source: <http://fence.photoville.com/about/>



CHAPTER THREE

IMPLEMENTATION

With a preferred alignment for the Cross Charlotte Trail (XCLT) chosen, the City will next need to identify how the project is to be phased, funded and governed – key strategic considerations that will be crucial to the future success of the Trail. As depicted in Figure 3.1, the City of Charlotte and Mecklenburg County will each fund pre-determined segments of the

Trail. This chapter provides an implementation framework for the City of Charlotte. It begins by describing potential funding strategies for capital and ongoing operational costs, then discusses possible governance structures to steward the Trail, and concludes by discussing the phasing of the Trail.

" GREAT FOR ALL. HURRY UP AND FINISH IT - WE'RE OLD AND OUR BIKING DAYS ARE NUMBERED!"

- PUBLIC MEETING PARTICIPANT, JULY 15, 2015, PUBLIC MEETING



3.1

FUNDING STRATEGIES

Viable plans for both capital and operating funding are necessary to ensure the Trail reaches its full potential as a community asset. The capital investment will fund the construction of the Trail itself, neighborhood connections such as paths and pedestrian bridges, and a variety of permanent amenities incorporated along the Trail. Operating funding is needed to support maintenance and programming of the Trail, including the governing entity tasked with the management and deployment of these funds. Both components of the funding equation are equally important in creating a world class Trail, and will require targeted and creative applications of resources from public and private partners.



Conceptual vision
for Cordella Park.

Figure 3.2 illustrates the spectrum of capital and operating funding opportunities that exist for the XCLT. These opportunities are discussed in greater detail in this chapter.

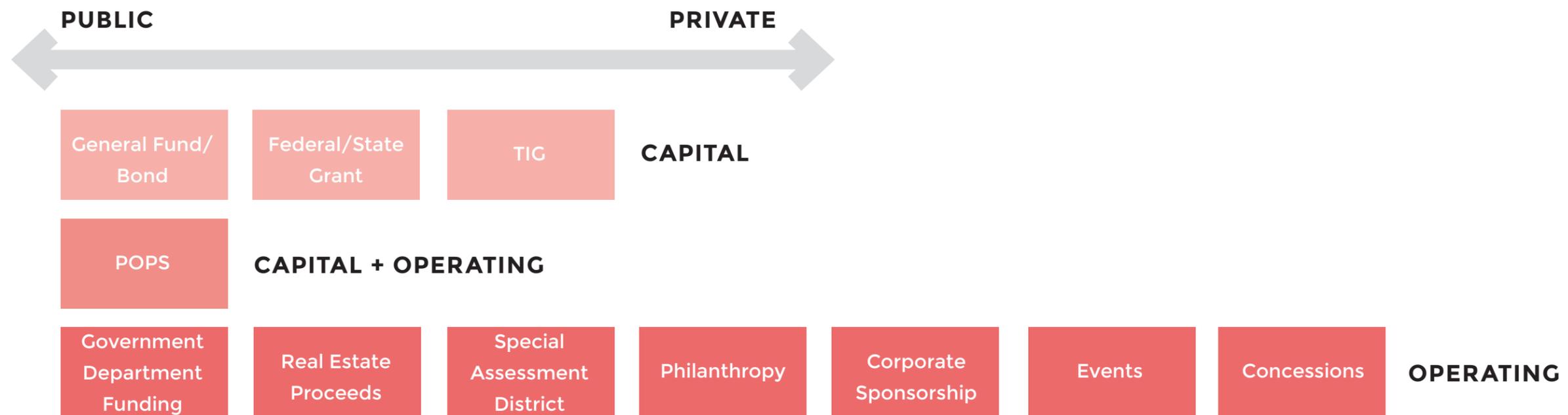


FIGURE 3.2: Public/Private Funding Spectrum for Trail Capital and Operating Costs

CAPITAL FUNDING OPPORTUNITIES

The capital funding strategy should address both major infrastructure moves and small-scale interventions. The capital funding options outlined in the following chapter identify potential resources which can cover the capital costs incurred by the City for building the Trail.

The City of Charlotte has already committed \$5 million from a 2014 bond referendum to construct the Brandywine Road to Tyvola Road segment of the Cross Charlotte Trail and to fund planning of the Cross Charlotte Trail. The City intends to issue a public improvement bond to help fund design and implementation of future segments of the trail. It is anticipated that resources in addition to the bond proceeds will be required to construct and maintain the trail.

As both a city-wide transportation network and an open space amenity, there are several potential funding sources for the capital costs of the XCLT. Generally, it is believed public funding will be necessary for the major infrastructure investments and primary lengths of the Trail, with public-private models leveraged to facilitate connections and specific amenities.



→ Images of Cross Charlotte Trail Workshop Charlotte, North Carolina Source: LandDesign

PUBLIC SOURCES

PUBLIC IMPROVEMENT BONDS

Bonds issued by the City of Charlotte will pay for much of the Trail's capital costs, serving as the foundational funding source for the creation of the Trail. The City of Charlotte has already committed \$5 million from a 2014 bond referendum to finance planning efforts and plans to commit to a \$30 million bond allocation in 2016, subject to a public referendum. The \$30 million bond will be issued as a general obligation bond backed by the full faith and credit of the City of Charlotte. Details regarding conditions or restrictions on uses of funds are still forthcoming. It is anticipated that these proceeds will not be sufficient to fund the total capital costs of the northern, middle and southern segments of the Trail. Successful implementation of the first phases of the Trail using these funds could help build public momentum for future bond issuances as the major funding source to complete the Trail. We recommend that future bond allocations be considered as the primary funding opportunity to pay for large remaining gaps in costs.

FEDERAL AND STATE TRANSPORTATION GRANTS

Charlotte should consider seeking federal and state transportation grants as gap funding sources to supplement public improvement bonds. The XCLT is a recreational amenity, economic development project and transportation alternative. State grant funding could provide a substantial amount of support for the Trail. For instance, last year the North Carolina Department of Transportation (NCDOT) provided a \$3 million grant to help Mecklenburg County fund the extension of the LSCG south of Uptown, which will become part of the southern portion of the XCLT⁵.

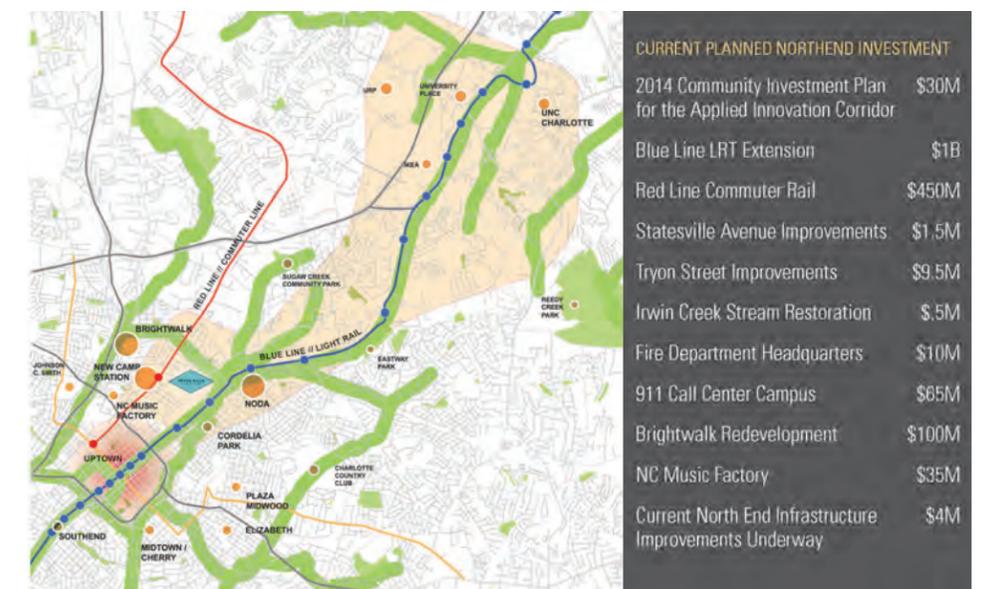
There are two primary sources of federal funding that the City should consider exploring. The first is allocations under the federal transportation bill, which has funded trail projects across the country. In 2015, the State of North Carolina received \$1.6 million for trails projects⁶. In Minnesota, the Hennepin County Regional Railroad Authority utilized federal grants to fund the Midtown Greenway, in addition to its own funds and State and County allocations.

The second federal source that the XCLT may be a strong candidate for is the TIGER Grant Program. While the program is extremely competitive and its future beyond the Obama Presidency is uncertain, across the country there is excellent precedent for TIGER grants contributing to funding the capital construction of recreational trail projects. Examples include a \$17.3 million grant to Philadelphia's Schuylkill River Trail, including pedestrian bridges; an \$18 million grant for Atlanta's BeltLine Corridor Trail; a \$4.6 million grant to Missoula County, Montana for the Missoula to Lolo Trail; and \$10.5 million to the Lee County, Florida Metropolitan Transportation Organization for a Complete Streets Initiative, which included trail projects. The Cultural Trail in Indianapolis utilized federal transportation grant funding to cover more than half of capital costs, about \$35.5 million, including a \$20.5 million TIGER Grant.

In considering state and federal funding sources, it is important to be mindful that federal and state funding would likely impose additional fees, requirements and layers of review on the project that would ultimately serve to extend the project timeline and increase cost, eroding some of the benefit.

APPLIED INNOVATION DISTRICT

The City should consider targeting Applied Innovation Corridor (AIC) funds to concurrently support the creation of the XCLT, as the Trail will bolster the mission of the AIC. Both the geographies and economic development goals of the Applied Innovation Corridor and the XCLT overlap. The Corridor has a dedicated funding source in the form of Public Improvement Bonds: \$12.5 million in bonds passed in 2014; future funding referendums include \$7.7 million on the ballot in 2016 and \$8.7 million on the ballot in 2018⁷. There may be potential to utilize some of these funds to construct connective trail infrastructure that supports the mission of the AIC.



→ Applied Innovation Corridor
Source: LandDesign

⁵ "Mecklenburg County moves to finish LSCG", The Charlotte Observer, 2015.

⁶ Federal Department of Transportation, Federal Highway Administration: Recreational Trails Program Apportionments and Obligations, 2015.

⁷ City of Charlotte, Applied Innovation Corridor (AIC) Program Overview, 2015.

VALUE CAPTURE AND PRIVATE SOURCES

SYNTHETIC TAX INCREMENT FINANCING (TIF) GRANT

Synthetic Tax Increment Financing (TIF) may be useful in filling gaps in financing for crucial infrastructure pieces along the Trail that will enable private development. Under synthetic TIF, the City would implement an installment finance agreement based on incremental tax revenues expected, and pledge the infrastructure improvements themselves as security⁸. Cities in North Carolina, including Charlotte, tend to use Synthetic TIF instead of traditional forms of tax increment financing to bypass the complex public process for establishing a TIF district. The XCLT qualifies as one of the three principal uses for tax increment grants in Charlotte – a new public infrastructure investment that stimulates development that would not have otherwise occurred. This method of financing is likely to be most useful to the XCLT for specific infrastructure required along the Trail, for example; a pedestrian bridge connecting to a major redevelopment site. One challenge to using this synthetic TIF is that the value of property permitted to participate in the program is capped at 3 percent of the City's total property tax levy in any given year.

CONTRIBUTION "MENU" IN EXCHANGE FOR PRIVATE INVESTMENT

It is recommended the City consider establishing a consistent approach to engaging developers of adjacent property in the development of both trail connections to private property and amenities. These improvements would follow the design principles identified for the Trail, including improving connectivity between neighborhoods and the Trail, increasing the overall coherence of the design through wayfinding and visual improvements, and prioritizing trail users by creating safer transitions between the Trail and surrounding street grid.

Rather than negotiating a series of custom, one-off public-private deals with developers in order to build out connections to private development or fund other amenities, a standardized contribution "menu" could be developed to streamline and coordinate the process. Creating a system for partnerships with developers would not only potentially produce capital funds for the Trail, but could also offset future programming and maintenance costs. Local developers HR&A spoke with, including those considering investments along the XCLT, felt the "menu" idea was an intriguing approach, and were interested in exploring the idea further.

There are national precedents for incentive programs under which developers opt to provide funding to support infrastructure or amenities desired by the community from a "menu" of

options. These programs are most successful in strong real estate markets, like Charlotte, where developers are incentivized to obtain regulatory permissions, such as density bonuses, in exchange for contributions for infrastructure and amenities. Two precedent programs are seen in New York and Seattle:

- New York, NY: The City's publically operated private space program has provided over eighty acres of open space in more than 250 plazas since 1961. Under this program, incentives in the zoning code encourage developers, particularly those of commercial office buildings in Manhattan, to create plaza areas accessible to the public in exchange for the ability to develop more densely. On a case by case basis, projects can receive height and setback waivers in exchange for open space.
- Seattle, WA: Since 1966, the City of Seattle, WA has been encouraging the creation of public spaces by providing developers with a set of regulatory incentives. In exchange for additional development rights, or increased height, developers are required to construct and maintain a public space. There are a range of options of space types, including plazas, pocket parks, or rooftop spaces. Downtown Seattle currently has 27 different privately owned public spaces, including Benaroya Hall and the Bank of America Tower.

If implemented along the XCLT, the City would craft an overarching partnership strategy with private developers or institutions by devising a "menu of options" in which developers would fund set portions of connections to the Trail and/or amenities along the Trail in exchange for public contributions to cover the residual costs of connections to their developments, or regulatory incentives such as density bonuses or other permissions. In instances where the public sector is providing funding to support such a connection, a minimum leverage ratio of private investment could be set. In addition to funding immediately adjacent infrastructure and amenities, the private funding contributions received by the City could be used to subsidize the cost of Trail amenities in segments of the Trail with less potential to access private funding, like segment 3.

This strategy could specifically be used to support the City's planned public art program. In this scenario, the developer would have the option to contribute funding to add distinctive artistic elements to the Trail as identified by the City's future Public Art Master Plan. The developer could in turn receive public support for connections to their projects or regulatory permissions.

⁸ Recent Synthetic TIF project issuances for infrastructure in Charlotte include: the Wesley Village Business Corridor and the Charlotte Premium Outlets.

OPERATING FUNDING OPPORTUNITIES

In addition to capital funding, the Trail must have an operational funding strategy. Mecklenburg County will assume responsibility for funding ongoing operations and maintenance⁹. Operating costs may include trail maintenance and repairs, lighting, landscaping, painting, mowing, trash removal, security and programming. As the level of programming on the Trail increases, so do the costs. For example, public art, exercise equipment or seasonal events all increase maintenance and staffing costs, as will marketing efforts.

To operate a world-class trail that includes intensive seasonal programming, a trail may be supported by a “friends group.” The 3.5-mile Katy Trail in Dallas, Texas has an annual operating budget of approximately \$880,000, which supports staffing that manages high quality programming activities, marketing and annual fundraising to cover operational costs and build capital towards future projects. These functions are the heart of a successful, world-class urban trail.

Mecklenburg County estimates that the baseline maintenance cost for the XCLT is \$18,000 per mile annually. For the 26-mile XCLT, this amounts to \$486,000 in minimal annual funding to maintain the Trail in a state-of-good-repair condition. This ignores the cost of programming and enhanced operations. By comparison, the world class, highly

programmed Katy Trail costs \$250,000 per mile to maintain, operate, and program.

We assume that a highly successful XCLT will aspire to the Katy Trail’s level of service, but will cost less to maintain on a per-mile basis because (1) it is unlikely that a trail of regional size would be as intensely programmed for the full length of the Trail and (2) economies of scale in management and operations would be achieved. For the 26-mile XCLT, we assume that a per-mile cost of \$62,500 annually, one-fourth of the Katy Trail’s \$250,000 per mile cost, may be feasible depending upon the level of programming. This would bring total operational costs to around \$1.6 million annually, about \$1.1 million above the baseline maintenance cost.

Success of the Trail depends on its being well-maintained with well-designed and executed programming. It is imperative that any financing plan for the Trail carefully consider ongoing operating funding. When seeking private contributions and philanthropy, the City should target these funds for operating rather than capital expenses because operating funds are generally more difficult to source than capital funding.

PUBLIC FUNDING SOURCES

COUNTY MAINTENANCE FUNDS

Mecklenburg County Park and Recreation will provide annual funding for the Trail’s maintenance and operations. There is recent precedent of the department increasing its operating budget to provide for new and expanded facilities: it increased its operating budget by \$875,000 to cover increased maintenance for Romare Bearden Park, the Regional Sportsplex, Flat Branch Nature Preserve, Evergreen Nature Preserve, Ballantyne Park, Barton Creek Greenway and Wesley Heights Greenway. Given the level of programming envisioned, we do not anticipate public funding will be adequate to also fund the Trail’s programming. As such, a variety of private funding sources should be explored.

⁹ General CIP Projects Referral to Council Committees – XCLT, City of Charlotte and Mecklenburg County Government.

PRIVATE FUNDING SOURCES

ANNUAL PHILANTHROPIC OR CORPORATE CONTRIBUTIONS

We believe that private contributions and philanthropy should be targeted for operating rather than capital expenses because operating funds are generally more difficult to source than capital funding. Philanthropic donations from foundations and individuals can fill critical funding gaps. Charlotte is home to multiple corporations including Bank of America, Duke Energy, Nucor, and Wells Fargo’s East Coast operations. All of these companies have been engaged in civic philanthropy. Corporate sponsorship of events along portions of the Trail and at key nodes could serve as an anchor source of operating funds. Corporate sponsorship generally takes the form of an in-kind or cash contribution from an organization to a park/trail or non-profit partner on behalf of a park/trail, typically in exchange for some form of recognition for the donating organization such as naming rights to a trail facility.



→ East Coast Greenway Funding Donation.
Source: <http://www.greenway.org/help-make-it-happen>

"FRIENDS OF" GROUP

A “Friends of the XCLT” could solicit contributions in return for membership, typically coming from an individual or family, or from a corporation on behalf of its employees. Often these groups provide exclusive member benefits, such as special access to events or park facilities. The Friends group could also head up annual fundraising efforts to cover improvements to the Trail and its amenities, such as landscaping, furniture and play equipment. Examples of successful “Friends” programs include the Friends of the Katy Trail, Friends of City Park in New Orleans, and the membership program maintained by the Shelby Farms Park Conservancy in Memphis.



→ Cyclist on Katy Trail. Dallas, NC.
Photo: Elizabeth Lavin.
Source: https://pbs.twimg.com/profile_images/1561334075/newkt.png

EARNED INCOME

The City should investigate how earned income sources could be integrated into the funding structure for trail infrastructure and annual programming. Earned income can take the form of food and beverage vending, perhaps at key destinations along the Trail. Holding events or promotions can also serve as an annual source of income; given the length of the Trail, it is possible to hold various sporting events, including races, walkathons and bicycling events. The Trail’s planned length of 26 miles may lend itself well to holding a marathon, which could serve as a signature annual fundraising and awareness event. There is also potential to use rents or leases on land surrounding the Trail to generate revenue. For instance, amenitized locations along the Trail could support events that build social cohesion and build a sense of community ownership, such as weddings and parties.

The Katy Trail in Dallas, Texas, successfully utilizes several private funding mechanisms to fund its annual operations, totaling nearly \$900,000 in 2014¹⁰. These contributions are broken down in Figure 3.3. Notably, a single major event and annual membership dues fund over 60% of the Trail’s annual operating budget.

¹⁰ Friends of Katy Trail, Annual Report, 2014.

FUNDING SOURCE	FUNDING AMOUNT	FUNDING PERCENTAGE
MICHELOB ULTRA 5K	\$354,325	40%
MEMBERSHIP DUES	\$192,683	22%
ANNUAL SUPPORT CAMPAIGN	\$180,636	21%
GENERAL DONATIONS	\$106,433	12%
OTHER EVENTS	\$34,036	4%
INTEREST AND DIVIDENDS	\$11,461	1%

→ Figure 3.3: Katy Trail Operating Funding Sources, 2014

VALUE CAPTURE FUNDING SOURCES

SPECIAL ASSESSMENT DISTRICT

A special assessment district could be considered to enable the County to capture a small incremental assessment on top of existing City-County taxes to fund adjacent programming. As discussed in more detail in Chapter 1, the implementation of the Trail will both increase the value of existing adjacent and nearby properties and generate additional development activity in certain neighborhoods. The logic of a special assessment district is that a small incremental assessment on only nearby properties concentrates the funding responsibility on parties benefitting from property value increases catalyzed by the Trail. The amount of the special assessment should be set such that the additional taxes due are less than the anticipated increases in property value.

Successful special assessment districts include the Bryant Park Corporation in New York, which was founded to restore the park using private dollars and private management. The restoration of the park resulted in a 63% increase in rent for office space immediately adjacent to the park¹¹. A 2015 study commissioned by the Bryant Park BID found that buildings on the perimeter of the park commanded rents 12.5% higher than similar buildings a few blocks away, translating into 20% to 25% higher property values, on average¹². Justified by these value increases, an extra property tax assessment levied on properties immediately adjacent to the park helps fund operations and maintenance, in addition to fees from concessions and event revenues¹³.

The special assessment would be an incremental addition to the annual property tax total paid on the assessed

value of a property. For example, a property assessed at \$200,000 currently pays approximately \$2,600 in City and County property taxes annually. Given the value premium of 5% expected to accrue to nearby properties owing to the Trail, a special assessment levied at between 1-2% of the property tax payable would yield approximately \$27-\$54 in funds from that property annually.

The boundaries of the special assessment district should carefully consider the segmented nature of the Trail - there are significantly more value capture opportunities in Segments 1 and 2, where the development pipeline is saturated with projects, than Segments 3 and 4, where the preferred alignment passes through neighborhoods less likely to be redeveloped and/or contribute a significant tax increment to the Trail's development. Establishing a special assessment district requires agreement that there will be enough existing value and anticipated new development to generate a meaningful contribution to funding, and that the assessment can be levied fairly, taking into account the number of low income areas along the corridor. The assessed area may need to adhere to custom boundaries in order to ensure that neighborhoods of lower socio-economic standing do not experience an increased tax burden.

Figure 3.5 demonstrates that a special assessment levied at one or two percent of the City-County tax bill on existing property and future development located within a quarter mile of the preferred alignment could raise roughly \$277,000 to \$554,000 annually to fund operations.

VALUE CAPTURE ANALYSIS	TODAY	FUTURE WITH TRAIL (5% VALUE PREMIUM)
ASSESSED VALUE	\$200,000	\$210,000
CITY AND COUNTY TAX AT 1.2944%	\$2,588	\$2,718
ANNUAL SPECIAL ASSESSMENT AT 1% OF CURRENT TAX BILL	\$25	\$27
ANNUAL SPECIAL ASSESSMENT AT 2% OF CURRENT TAX BILL	\$51	\$54

FIGURE 3.4: Tax Increment Value Capture Analysis

¹¹ CBRE Inc., Research Study: "Premiums on the Park," 2012.
¹² Bryant Park Corporation, Bryant Park Blog, 2015.
¹³ Bryant Park Corporation, 2015 BID Membership Registration, 2015.

	SEGMENT 1	SEGMENT 1	SEGMENT 1	SEGMENT 1	SEGMENT 1
TOTAL EXISTING AND NEW PROPERTY VALUE	\$1,200 Million	\$750 Million	\$150 Million	\$50 Million	\$2,150 Million
1% SPECIAL ASSESSMENT	\$155,000	\$97,000	\$19,000	\$6,000	\$277,000
2% SPECIAL ASSESSMENT	\$310,000	\$194,000	\$38,000	\$12,000	\$554,000

→ FIGURE 3.5: Fiscal Impact and Potential Assessment Reviews (Millions)

REAL ESTATE DISPOSITION

Depending on the opinion of legal counsel, future real estate value could be leveraged to create an operating reserve for the Trail. While the Trail will require a certain baseline amount of land acquisition for the right-of-way, an opportunity exists for the City of Charlotte to purchase more than this baseline amount in neighborhoods that have current or near-term development potential and in which the City would like to influence neighborhood outcomes. The City could then devise a disposition strategy for either

selling or ground leasing the land in either individual development deals or to one developer as part of a master development strategy. Proceeds from future sales could then be used in part to capitalize a reserve fund to offset the County's cost for the operations of the Trail. At Brooklyn Bridge Park in New York, 95% of the park's annual operations are funded through ground lease fees and property taxes.

"IT IS GOING TO BE OUTSTANDING! THE BIKEWAY WILL OFFER MORE THAN RECREATIONAL RIDING, IT WILL HELP MAKE CONNECTIONS THROUGHOUT OUR CITY (AND) WILL BE A GREAT TOOL TO GET FROM PLACE TO PLACE."

- JANE CACCHIONE, EXECUTIVE DIRECTOR OF THE CHARLOTTE AREA BICYCLE ALLIANCE



3.2

GOVERNANCE + PHASING

Implementing the XCLT will require a range of capacities over time, from construction and design, to routine maintenance and management of fundraising and programming. A sound governance structure is necessary to ensure that these capacities are in place as the Trail is implemented.

The sheer length of the Trail and funding gaps will necessitate a phased approach to Trail implementation. Demonstration of early success is critical to eventually achieving the full scale of the vision and keeping momentum behind the project. Successful implementation of the first phase will help to catalyze both community support and demonstrate positive impacts on surrounding land values to the local real estate community, garnering enthusiasm and support for subsequent phases, and associated public funding asks. The City will need to strategically focus on implementing priority segments of the alignment to build this momentum.



Conceptual vision for Asian Corners.

GOVERNANCE

The Trail's funding structure will inform the type of governance needed to guide the Trail from initial implementation to stabilized operations. Effective governance models reflect funders' interest, capacities and relative level of support. A significant portion of the capital funding for the XCLT will be provided by the public sector, and ongoing maintenance and operations will be managed by the Mecklenburg County Park and Recreation Department.

The table on the following page summarizes the relationship between public capital funding and the eventual governance structure for relevant precedent projects. The Midtown Greenway in Minneapolis, Minnesota is likely the most apt comparison. The Greenway was constructed with public funds and is owned by the Hennepin County Regional Railroad Authority, with the City of Minneapolis serving as the principal operator. The Trail's primary partner - the Midtown Greenway Coalition, is a member-based citizen group which advocates for trail improvements and runs a volunteer-based nighttime patrol. The other three precedents, by comparison, are owned by their respective cities but are primarily operated by a sophisticated non-profit entity.



→ Images of Midtown Greenway, Minneapolis, Minnesota. Source: <http://www.yelp.com/biz/midtown-greenway-minneapolis>



Informed by the funding strategies used for the Trail, the consulting team recommends that a 501(c)(3) “Friends Of” group complement Mecklenburg County’s operational leadership by taking charge of annual fundraising activities, programming and associated marketing. However, it is essential that this non-profit have strong, committed local leadership in order to build momentum for implementation and establish a network of local partners to support the Trail.

	KATY TRAIL	HIGH LINE	BELTLINE	MIDTOWN GREENWAY
				
LOCATION	DALLAS, TX	NEW YORK, NY	ATLANTA, GA	MINNEAPOLIS, MN
OWNER	CITY OF DALLAS	CITY OF NEW YORK	CITY OF ATLANTA	HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
PRINCIPAL OPERATOR	501c3 - FRIENDS OF THE KATY TRAIL	501c3 - FRIENDS OF THE HIGH LINE	501c3 - ATLANTA BELTLINE, INC.	CITY OF MINNEAPOLIS
OTHER KEY PARTNERS			INVEST ATLANTA ATLANTA REGIONAL COMMISSION TRUST FOR PUBLIC LAND	501c3 - MIDTOWN GREENWAY COALITION
% OF PRIVATE FUNDING FOR CAPITAL COSTS	26% +	25%	10%	0%

→ Sources: Friends of the Katy Trail; Friends of the High Line; Midtown Community Works; Atlanta Beltline Inc.

PHASING

The middle section of the Trail corridor has been divided into four segments, each with different real estate characteristics. Early introduction of the Trail in segments with strong development potential will enhance funding streams directly tied to real estate values and/or private participation, such as tax increment grants, developer contributions to privately-owned public spaces and special assessment districts.

The economic development analysis in Chapter 1 found:

- Segments 1 and 2 have the highest potential for future development (discussed in more detail in Chapter 1).
- Segments 3 and 4 are less likely to experience new development in the intermediate term.

Focusing implementation efforts on segments 1 and 2 provides an opportunity to demonstrate proof-of-concept that gives developers greater confidence to undertake similar developments in later phases of the Trail, even in less tested markets. A similar process played out in Charlotte on the LYNX Blue Line, where the light rail's promotion of transit-oriented development in South End prompted many developers to consider similar projects along the Blue Line Extension (BLE).

There will be tremendous value in establishing an early connection of the XCLT into Uptown Charlotte. Uptown is the City's central business district, and an increasingly vibrant residential zone. Facilitating trail connections into Uptown will enhance the value of the Trail to a multitude of users. These connections can be created by implementation of the Uptown Loop in at least two ways, both of which should be prioritized in early phases. The first connection parallels North Brevard Street along a 10'-wide sidewalk adjacent to the Blue Line with an eventual connection to a proposed cycle track along 12th Street and into Center City. A second connection to Uptown is planned to follow Trinity Passage - beneath I-277 - that will complete the east side of the Uptown Loop as shown in Chapter 2. The Uptown Loop will link North Charlotte to the activity in Uptown as well as recent mixed-use developments along the Greenway, such as the Metropolitan.

Of course, the potential to capture real estate value is only one consideration in the Trail's phasing; community engagement and pride of ownership are essential. Public-private opportunities for near-term build out are generally concentrated in more wealthy areas of the Trail. An approach that prioritizes only the segments closest to Uptown (Segments 1 and 2) will likely be at odds with an equitable approach to trail development that favors building out trail segments serving more socioeconomically challenged areas. To take affirmative steps in encouraging equitable trail development, we recommend that the implementation of segment 3 also be prioritized in early phases. As discussed in the funding opportunities section, this could be accomplished by using a portion of funding raised through value-capture or private sources to construct Trail enhancements in lower-income areas.

Early completion of the South section, Brandywine to Tyvola portion, is also of great symbolic and functional significance. One of the central goals of the Trail is to create a recreational and transportation resource that will span the City and connect to South Carolina. Completing this connection quickly, combined with the existing greenway and the County's investments, will create a length of Trail stretching from South Carolina to the Matheson Bridge. The functionality of this completed segment will incite further public support for the completion of the Trail to Cabarrus County.

Establishing coordination with the North Tryon Applied Innovation Corridor (AIC) also offers an opportunity to build on existing momentum and stated City goals.

There are several significant reasons for the Corridor to coordinate with the Trail:

- The geographies of the Corridor and Trail overlap: The AIC extends from Uptown to the University of North Carolina at Charlotte campus - right along the XCLT's future corridor. Building on the development momentum that exists in Uptown, the Corridor is modeled on an "innovation district" concept in which Charlotte would link academic and research capital with its business assets, emerging industries, and governmental support¹⁴. Appropriate links to the XCLT could facilitate access to the Corridor and enhance its vibrancy.
- Funding sources should be evaluated to determine ability to advance shared goals: As discussed above, the AIC has secured dedicated funding in the form of Public Improvement Bonds. Voters approved \$12.5 million in 2014; future funding referendums include \$7.7 million on the ballot in 2016 and \$8.7 million on the ballot in 2018.

¹⁴ Urban Land Institute, Charlotte's North End: Applied Innovation Corridor, 2014

SEGMENT 1

7th Street to Matheson

SEGMENT 2

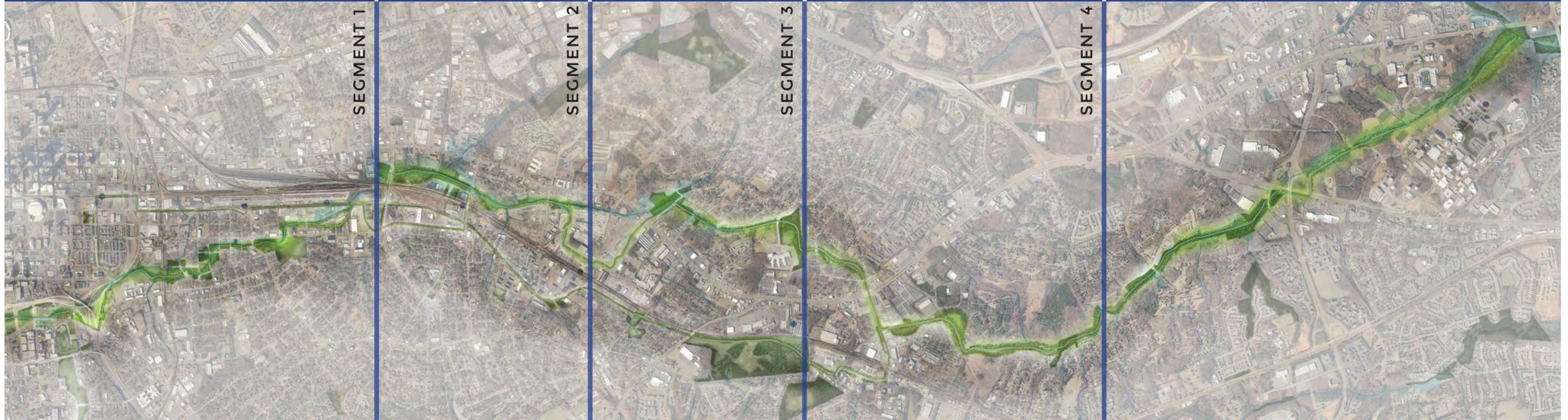
Matheson to Sugar
Creek

SEGMENT 3

Sugar Creek Road
to Old Concord
Road

SEGMENT 4

Old Concord Road to Toby
Creek Greenway



→ Cross Charlotte Illustrative Master Plan (Middle Section)



APPENDIX

This appendix provides additional information gathered throughout the course of the project to help inform the recommended trail alignment. This information is intended to supplement existing conditions findings and analysis shown in Chapters 1 and 2, as well as provide additional background to the focus study areas of Central Avenue, Optimist Park and Sugar Creek.

Additional design considerations are outlined in this appendix and should be acknowledge and referenced in the design and implementation of the Cross Charlotte Trail (XCLT).

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A.1

CENTRAL AVENUE STUDY AREA

CENTRAL AVENUE STUDY AREA

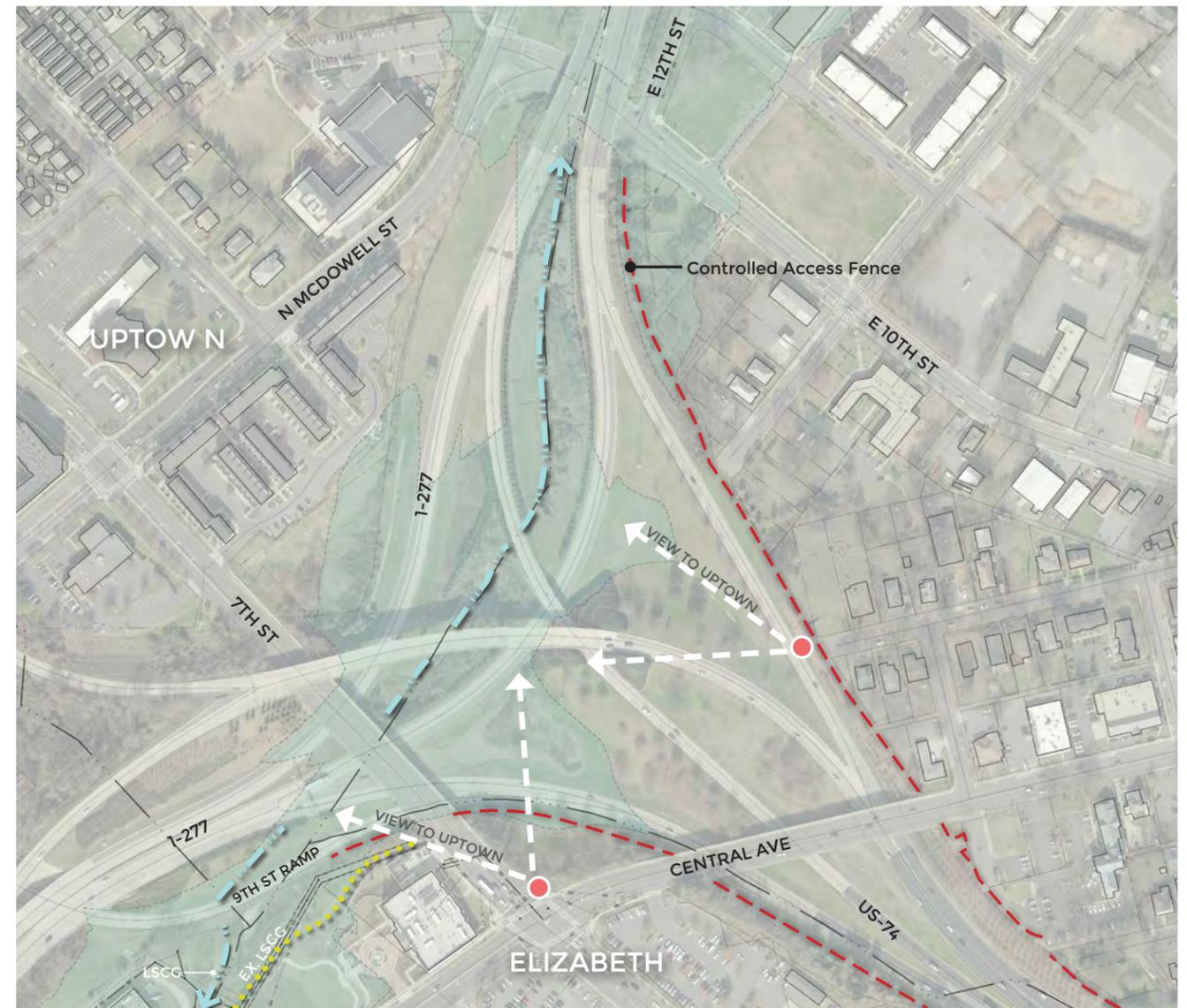
The I-277 loop creates a major gap in the XCLT alignment between Central Piedmont Community College (CPCC) Culinary Arts Facility and where existing Little Sugar Creek Greenway (LSCG) ends at 12th Street. Making this connection is critical to link the north and south segments of the XCLT and 6 miles of existing trail, including the urban section of LSCG: a 1.25-mile linear park through Midtown Charlotte and home to The Metropolitan mixed-use center. Furthermore, the alignment of the Trail in this area is critical in making a connection to the urban core of uptown Charlotte.

See Chapter 2.1 Segment Descriptions + Opportunities for further information on the study area.



→ View of I-277 & US74 Interchange from Central Avenue Bridge.

Photo: LandDesign/Nancy Pierce



→ Site analysis diagram for Central Avenue study area within segment 1.

ALIGNMENT ANALYSIS FOR I-277 GAP

A Feasibility Study is currently underway to evaluate and make additional recommendations for crossing I-277. As part of the master plan effort, two alternatives were studied to cross I-277: Central Avenue Bridge and East 7th Street Bridge. Both scenarios require the use of land on the northeast quadrant of the East 7th Street and Central Avenue intersection. First, the team looked at the extension of the existing LSCG to the Northeast quadrant of Central Avenue and East 7th Street (alternatives A and B on this page). Second, the team studied a trail alignment from the northeast quadrant to existing LSCG at 12th Street (alternatives A and B on following page).



→ Alternative A: Northeast quadrant to existing LSCG at 12th Street

Beginning at the southern LSCG termini, utilizing inbound East 7th Street bridge for a distance until a new path is created utilizing green space between North McDowell Street and Brookshire Freeway. The proposed trail would extend toward the North McDowell Street/East 11th Street/East 10th Street intersection. The path would continue on East 10th Street and turn on to East 12th Street, connecting to the northern LSCG termini. The approximate distance is 0.49 Miles.



→ Alternative B: Northeast quadrant to existing LSCG at 12th Street

Beginning at the southern LSCG termini, utilizing outbound East 7th Street for a short distance to intersect outbound Central Avenue. The path then turns north utilizing Prospect Street and Jackson Avenue to access land adjacent to the Brookshire Freeway. The proposed trail would follow the Brookshire Freeway to its intersecting point of East 10th Street/East 12th Street. The proposed trail crosses East 10th Street to East 12th Street connecting to the northern LSCG termini. The approximate distance is 0.58 Miles.

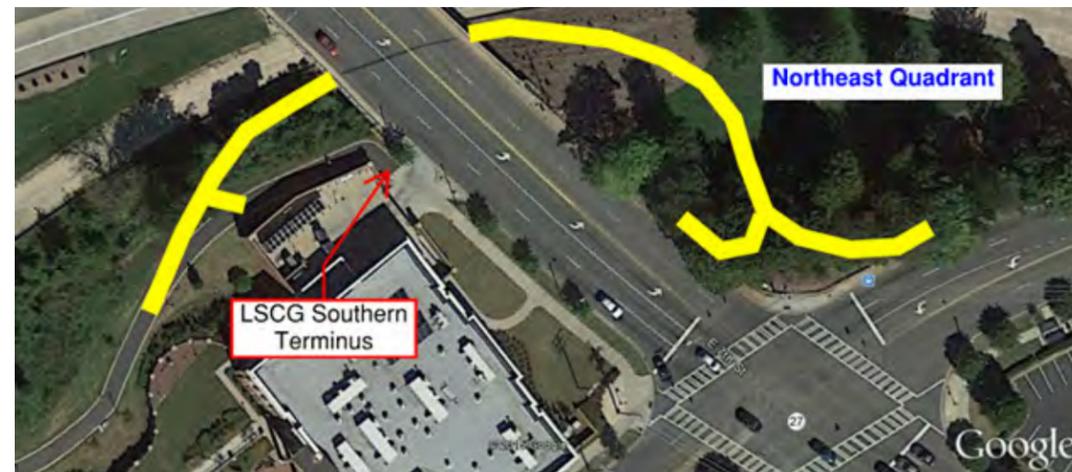
EXISTING LSCG AT CPCC TO NORTHEAST QUADRANT OF EAST 7TH STREET AND CENTRAL AVENUE

The urban section of LSCG ends at a service entrance driveway, located at the rear of a building, on the northwest corner of East 7th Street and North Kings Drive. This connection is at street level where the sidewalk allows pedestrians to disperse and enter into the existing sidewalk network via the East 7th Street Bridge and the East 7th Street/North Kings Drive/Central Avenue signalized intersection. Few options are available for bicyclists to legally and safely enter travel lanes to continue their on-pavement travel, especially if their destination is Uptown. The existing East 7th Street bridge has a 5-lane section with minimum width sidewalk that creates a very constrained pedestrian experience; however, wide outside lanes exist that could accommodate bicyclists. This bridge has a two way left turn lane (TWLTL) that serves no driveways, but provides vehicular storage for left turn lanes located at adjacent intersections.



→ Alternative A: Existing LSCG to Northeast quadrant

This route uses existing sidewalk and pedestrian signals to cross East 7th Street for either East 7th Street or Central Avenue options. In this alternative, users cross using a push button activated crossing. A plaza should be constructed on the northeast corner of East 7th Street/Central Avenue (similar to what exists on the southeast corner) to accommodate user queuing. Enhanced crosswalk striping is recommended to improve safe bicycle and pedestrian crossing of the intersection.



→ Alternative B: Existing LSCG to Northeast quadrant

This route is completely separated from vehicular traffic and provides a seamless transition to the NE quadrant for either East 7th Street or Central Avenue alternatives. This scenario utilizes space under the East 7th Street Bridge but also encroaches within NCDOT's Control of Access (CA) and will require changes to the bridge slope protection and adjustments to the CA limits. This option allows for easy access to the existing sidewalk network, on road bike facilities and provides for a seamless transition to the greenway.

TRAFFIC DATA

Average Annual Daily Traffic (AADT) and Turning Movement Counts (TMCs) were obtained from public agencies. This data was used to help understand the current roadway vehicular demand, gauge intersection turning movement priorities and determine if lane reduction techniques were feasible.

7TH STREET

AADT: 21,000 (NCDOT 2014 Count Map)
K factor: ~12%
AM Directional Split: 62% inbound
PM Directional Split: 75% outbound

CENTRAL AVENUE

AADT: 18,600 (Google GIS Data Map)
K factor: ~10%
AM Directional Split: 77% inbound
PM Directional Split: 70% outbound

7TH STREET BRIDGE

Existing Pavement: ~64ft (15-11-13-11-14) (outside lanes go to face of curb, typically would have 2' c&g)

- 10 foot Travel Lane Reduction: 50ft (10-14ft remaining pavement) Once off the bridge deck, additional widening would need to occur so intersection alignment is not affected.
- Widen bridge to the east: There is a bridge pier in the way due to an overhead bridge structure.
- Controlled Access issues at North McDowell Street/ 11th Street/10th Street intersections.
- Very constrained under I-277 overpass

CENTRAL AVENUE BRIDGE

- Existing Pavement: ~52ft (14-12-12-14) (outside lanes go to face of curb, typically would have 2' curb and gutter)
- 10ft Travel Lane Reduction: 40ft (8-12ft remaining pavement) Once off the bridge deck, additional widening would need to occur so intersection alignment is not affected.
- Widen bridge to the north to accommodate ultimate cross section: no foreseen restriction preventing this
- Controlled Access Issues
- County and City owned land.

I-277 ALTERNATIVE BRIDGE RECOMMENDATIONS

Both options require using existing bridges to connect the LSCG termini. Early discussion revolved around reducing existing lanes on the bridge deck to accommodate a separated bike/ pedestrian path. The reduction of lanes has a cascading effect on upstream and downstream traffic flow for this entire area. Due to the importance of both East 7th Street and Central Avenue as major radial roadways for entering and exiting Uptown with very few overflow alternatives, traffic volumes are so great that lane reductions would likely place an undue stress on the street network. Existing AADT for both roadways are at or have exceeded two-lane roadway carrying capacities.

The Central Avenue Bridge provides the best opportunity to make this critical connection. By reducing vehicular lane width across the bridge travel way, sufficient room is created that will accommodate the placement of a separated use path. Utilizing Central Avenue provides a gateway to other areas of Charlotte by extending connection towards Belmont, Plaza Midwood, Elizabeth and Commonwealth neighborhoods.

Completing this East-West connection south of Uptown will also provide bicyclists and pedestrians safe crossings of East 7th Street, East 10th Street, East 12th Street, North McDowell Street, and Central Avenue at a relatively low cost. These roads currently form major barriers to active transportation to, and from, Uptown Charlotte. Pedestrians and bicyclists will be able to cross North McDowell Street at the existing signal, which will lead them to low-volume, low-speed streets of First Ward Neighborhood. The effectiveness of this connection is leveraged by its connection to LSCG and the existing path between North McDowell Street and Garden District Drive. This will provide many residents of Charlotte who live outside of the urban core a safe connection to Blue Line transit stations, the recently-opened First Ward Park and all of Uptown Charlotte's offerings.

→ Traffic data for the two study areas and alternatives was used to further influence the design recommendation for crossing I-277 and connecting the existing LSCG from East 7th Street/ North Kings Drive to East 12th Street.

A.2 OPTIMIST PARK STUDY AREA

Section A.2 provides additional information to support the Optimist Park Study area located in Chapter 2, Section 2.1 Segment Descriptions + Opportunities.

For the Optimist Park study area, both sides of the creek were evaluated for trail placement. Existing utilities, infrastructure, points of connectivity and place-making opportunities were considered.

WEST SIDE OF CREEK

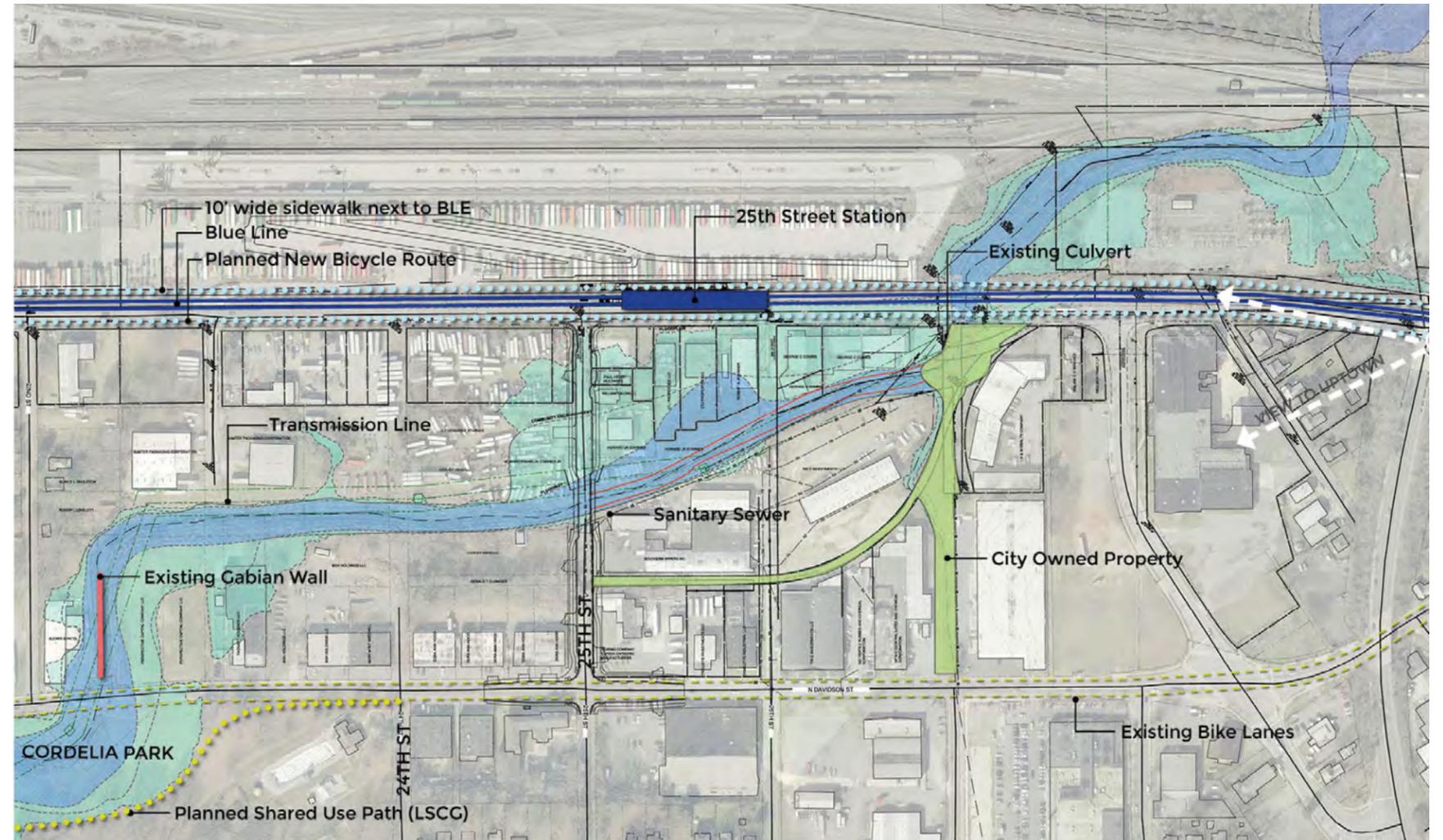
The route on the west side of the Trail would avoid the transmission tower and 30" sanitary sewer line. The wider floodplain and floodway between 25th and 26th Streets would limit development close to the creek, allowing more room for the Trail. However, this could also be seen as a negative because it would lose the opportunity for trail oriented development. The proposed connection points of the XCLT in Cordelia Park is on the east side of the creek to the south, and eventual connection to Matheson Avenue Bridge to the north. Placing the Trail on the west side would require crossing the creek in two different locations; one near North Davidson Street and an eventual crossing near North Brevard Street or an extension of the existing North Brevard Street culvert.

- Floodplain and floodway generally narrow but wider between 25th and 26th Street
- North and south connection points on east side of creek
- Gabion Walls upstream of North Davidson Street
- Constrained at North Brevard Street culvert

EAST SIDE OF CREEK

The east side of the creek provides better connectivity to the north and south XCLT alignment. While the transmission tower and sanitary sewer present challenges, these should not prohibit the Trail being located here. An example of this can be seen in the urban section of LSCG in a constrained cross section where the design professional working with the utility agency to achieve the best outcome for both parties. Placement of the Trail should be strategic to limit conflict with sanitary sewer manholes and ensure the trail does not intersect manholes.

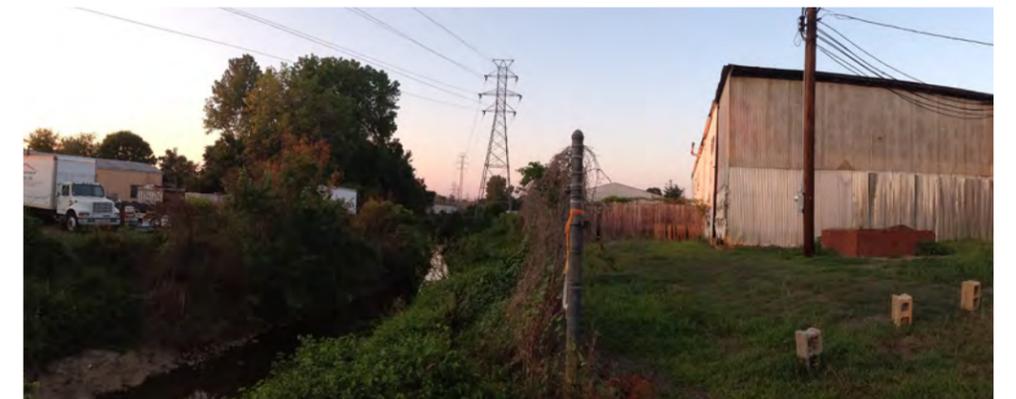
- Overhead Transmission line and transmission towers
- 30" sanitary sewer line
- Floodplain and floodway generally narrow
- North and south connection points on east side of creek
- City owned property



Optimist Park study area existing conditions map.



View of Spur Line at Optimist Park Study Area.
Photo: LandDesign



View of Little Sugar Creek at Optimist Park Study Area.
Photo: LandDesign

KEY FEATURES AND OPPORTUNITIES

TRANSPORTATION

One factor that lends this area of Charlotte prime for future growth is its proximity to existing and proposed transportation choices. The focus of this study area is the parcels bounded by North Davidson, North Brevard, 23rd and Matheson Avenue that are situated in an area soon to be a nexus of connectivity and alternative transportation choices. The NECI plan proposes a cycle track along North Brevard Street that leads into Uptown, a 10' wide sidewalk is planned next to the Blue Line, North Davidson Street has inbound and outbound bike lanes, the Blue Line Extension 25th Street Transit Station is under construction, and the City of Charlotte has invested in a bridge over Little Sugar Creek at 25th Street - all increasing connectivity in this area. Mecklenburg County and the City of Charlotte are partnering to extend LSCG from Parkwood Avenue to 24th Street at North Davidson Street. This significant amount of bicycle, pedestrian and transit infrastructure combined with the XCLT provides enormous opportunity for Charlotte residents to live a car-lite lifestyle.

PROPERTY

During the planning of the Blue Line extension, the City of Charlotte acquired the 20'-wide rail spur line that extends from North Brevard Street to 25th Street on the east side of LSC. The City also owns partial spur and right-of-way in the area of former 26th and 27th Streets between North Davidson and North Brevard Streets. These rail spurs add value as a possible location for the Trail alignment or to leverage for 'land-swap' if the Trail alignment is located next to the creek.

NATURAL AMENITY

LSC is one of Charlotte's most treasured natural features and amenities. During the community input phase, placing the Trail next to the creek was the preferred option through Optimist Park mainly due to the natural experience of the Trail next to the creek. Greenway trails typically follow creeks but can also be a valuable amenity when development is oriented towards the greenway versus 'backed-up' to. The Metropolitan development along the urban section of LSCG is a notable example of the relationship between the creek and trail; trail oriented development captures the value of the natural feature and an alternative transportation corridor.

CHALLENGES

HYDROLOGY

Trails located adjacent to streams come with the challenges of working within the floodplain and hydrology of the creek, and many utilities that often follow stream corridors. Many of the existing land uses along the creek in this location are light industrial where buildings and parking lots have been constructed within the floodplain. Much of the vegetative buffer has been removed over the years eliminating the SWIM buffer. As a result of development within the floodplain and the urban land uses within the watershed, LSC is considered "flashy" and can rise 6' within a matter of minutes during storm events. This presents challenges where the Trail passes under bridges and through culverts and is why at grade exits are also critical to allow people to safely exit the Trail during storm events.

OVERHEAD UTILITIES

An overhead Duke Energy transmission line originates at the Duke Energy substation near North Brevard Street and follows the general alignment of LSC to the south. A steel lattice tower exists north of 25th Street, on the east side of the creek. A second tower in this area is located on the west side of the creek at the bend near North Davidson Street. The location of the Trail should be closely coordinated with Duke Energy during the design and implementation phase of the project to ensure easement requirements are followed. A good example of an urban trail located within Duke Energy easement is along the Urban Section of LSCG.

BURIED UTILITIES

A 30" sanitary sewer parallels the east side of the creek from North Brevard Street to North Davidson Street and manholes and manhole vent pipes will require further coordination in locating the Trail to avoid conflict. Trails are allowed within Charlotte Water easements but structures are not. As development occurs in this area and the Trail location finalized, close coordination will be required with Charlotte Water.

Gabion Baskets exist on the south stream bank just upstream of the North Davidson Street culvert creating a constrained condition that would prohibit a trail location there. The north side of the stream is relatively free of obstruction.

A.3 SUGAR CREEK STUDY AREA

Section A.3 provides additional information to support the Sugar Creek Study area located in Chapter 2, Section 2.1 Segment Descriptions + Opportunities.

The Blue Line Transit Station Area Plan promotes a mixture of transit-supportive uses through redevelopment of this area consisting of residential, office, retail, and park and opens space. Development and redevelopment is likely to be intense, high density. The plan calls for active ground floor non-residential uses within the development area that front on and connect to sidewalks.

The North End continues to see significant investment from the City as part of the NECI and Applied Innovation Corridor Plan. North-South connections from Tryon to the Blue Line Station will be imperative to strengthen the fabric of redevelopment in the Sugar Creek area.



→ Proposed Sugar Creek Road Grade Separation Visualization, NCDOT



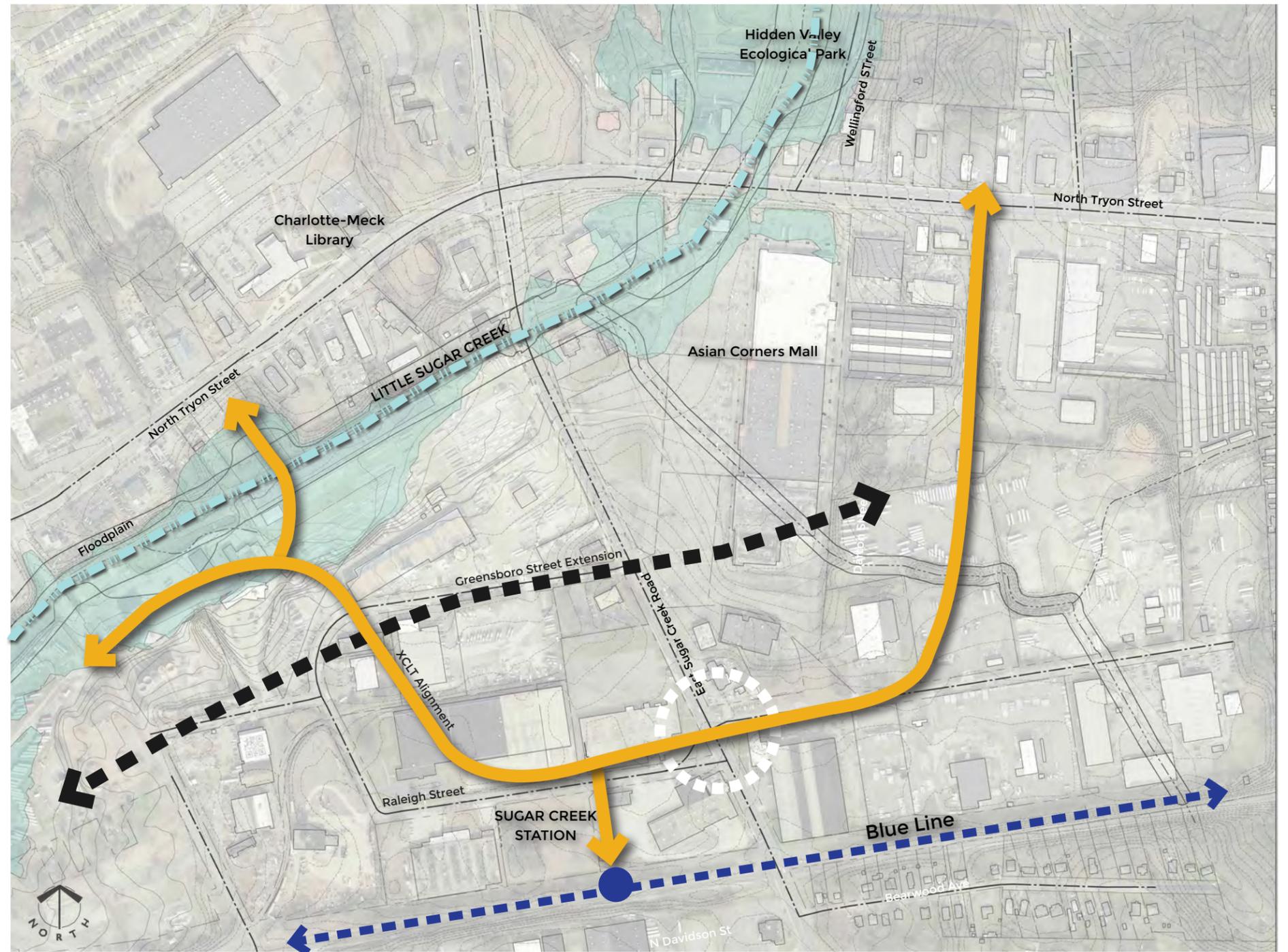
→ Blue Line Transit Station Area Plan



→ Existing Little Sugar Creek culvert in Asian Corner Mall parking lot.



→ Existing N Tryon Street and E Sugar Creek Road intersection.



→ E Sugar Creek Road existing conditions.

A.4

DESIGN CONSIDERATIONS

Appendix A.4 provides additional information in support Chapter 2.2 Facilities and 2.4 Placemaking + Trailside Amenities. These items reference standards and practices for consideration during design and implementation phases of the XCLT.

TRAILSIDE UTILITIES

Utility boxes and equipment should be located away from the Trail where possible. Otherwise, they should be low and unobtrusive to public view and kept free of graffiti. Where applicable, consider utility conflicts with flood plain.

During planning and design, the utility needs for programming and maintenance should be coordinated with Mecklenburg County Park and Recreation. In public gathering areas along the Trail that are intended to support events or large gatherings, the incorporation of electrical receptacles and potable water connections should be provided to meet the demands and program of the space.

→ Example of a shared lane marking damaged by utility or road maintenance work.
Source: LandDesign



→ Cuts should be made perpendicular to the Trail.
Source: <http://qprusa.com/wp-content/uploads/2014/04/>

TRAIL REPAIRS

When utility cuts are made on the XCLT, it is critically important that repairs be made in a timely fashion to restore the Trail's surface to its previous condition. Failure to repair these sections, any remaining surface irregularities and damage to pavement markings can present serious hazards to trail users. Efforts must be made to place utility cuts in areas that will not interfere with pedestrian and bicycle travel. During repairs, the Trail should not be closed, or an alternate route should be provided. Cuts should be made perpendicular to bicycle travel so that uneven ridges are not left parallel to the direction of bicycle travel. Cuts must be filled and appropriately compacted to a level equal with the surrounding trail. Ongoing maintenance will be completed by the County therefore County staff will need to be notified of any planned cuts prior to commencement of work.

CLEARING + DEMOLITION

- Tree protection fencing and limits of disturbance shall be set and inspected prior to any clearing or demolition activities along the Trail.
- All existing natural and man-made cultural assets such as (but not limited to) natural heritage inventory sites, quality floodplains, historic sites, cultural landmarks and significant views shall be identified during the design process and protected during construction activities.
- Compliance with all governing regulations regarding environmental protection shall be required. This includes erosion control, water quality, NC DEQ requirements, and others depending on the location along the corridor.
- All riparian buffers shall be accommodated per ordinance.
- Clearing standards shall be determined on a case-by-case basis.
- All debris, creek obstructions, garbage, hazardous materials, dumped items and unneeded or abandoned structures shall be removed.
- Clearing width shall be the width of the preferred trail facility (shared-use path with buffered separation, shared-use path with separation of uses, separated bike line and pedestrian path or minimum trail types) with an additional 5 feet on either side of the Trail for the frontage zone. Some areas may require additional grading and clearing where steep topography exists.
- Where possible, an additional 6 feet of selective clearing and thinning of wooded areas is ideal.
- All pruning is to be done in accordance with the National Arborist Association and ANSI A300-1995 standards. No topping off, rounding over, stub, or flush cuts to trees shall be permitted.
- Where possible, invasive species shall be removed, and species known to have invasive growth habits shall not be planted along the greenway.

GRADING, EARTHWORK + DRAINAGE

To protect the natural environment around the Trail system, it is important that construction activities be kept to a minimum. Grading and earthwork will only occur in the areas necessary to construct the Trails, trail connections and associated amenities. General guidelines concerning grading, earthwork and drainage as follows:

- All grading activities along creeks and greenways shall follow the guidelines and regulations of all permitting and jurisdictional authorities within the specific section of trail construction.
- Where the Trail is located within a riparian corridor, all efforts should be made to limit land disturbing activities and removal of existing vegetation.
- When the Trail is located within a creek channel, banks of the creek shall be regraded to a 3 to 1 slope and vegetated with native and deep rooted plantings to stabilize the creek bank.
- Filling of the floodplain or wetlands associated with this project will not be permitted unless doing so provides the best alternative for the Trail in terms of safety, water quality and stream bank restoration activities. In all cases, placing fill in the floodplain shall be conducted in strict compliance with local, state and federal regulations and procedures.



→ The development of trails through urban environments is fraught with obstacles, but perseverance of the ultimate vision in mind will help ensure the creation of a community treasure.

Photo: LandDesign

COMMON CONSTRAINTS

Constraints are numerous and common in the development of trails in the urban environment. Coordination between public and private sectors is often time consuming and with many decision points. Many regulations and guidelines make the feasibility of the projects seem difficult to achieve.

In implementing the vision of XCLT, the path may be a hard road, but the goals of the project should always lead the decision making. There are many conversations to be had and many methods to successfully meet all goals and ensure a quality trail experience for everyone.



→ Weaving a trail through a built environment often uncovers regulations and guidelines that conflict with one another. Working closely with stakeholders and permitting agencies to provide an understanding of the project goals and community value was the key to success. Conflicts between regulations and guidelines were numerous and constant, and will appear again as the Trail is extended.

Photo: LandDesign

GOALS FOR THE TRAIL

Transportation

To provide a facility entirely separated from vehicle traffic, that accommodates commuter and recreational users. A direct and accessible route that connects to larger trail and transportation networks while minimizing conflicts with other modes of transportation is a primary goal of the final trail alignment.

Economic Development

To identify areas for, and encourage trail-oriented development within the study area. Property near the Trail alignment will see increased real estate value by linking residents to jobs and employment centers.

Placemaking

To promote community gathering by creating places along the Trail that are destinations. Destinations that have high draw will also form a connected network of user experiences via the XCLT.

Access for All

To provide access to a diverse group of people, specifically existing neighborhoods who utilize public transportation and households without access to vehicle ownership. Provide a facility where all user age groups feel comfortable from 8-years-old to 80-years-old (8 to 80).

PERMITTING AND REGULATORY APPROVAL

Below is a list of common permits that will need to be considered during the design process listed by the title of permit or regulation and the governing body. This list is not all inclusive and each section or project will need to verify the required regulations and permits.

Charlotte-Mecklenburg Post Construction Storm Water Ordinance (PCSO), **City of Charlotte**

Surface Water Improvement and Management (SWIM) Stream Buffer Ordinance, **City of Charlotte**

Section 404 Permit, **US Army Corps of Engineers (USACE)**

Section 401 Water Quality Certification, **NC Division of Water Resources (DWR)**

NPDES Permit (National Pollutant Discharge Elimination System), **NC Division of Water Quality (DWQ) Department of Environment and Natural Resources (DENR)**

Flood Impact Assessment, **Mecklenburg County Storm Water Floodplain Administrator**

Floodlands Development Permit, **Mecklenburg County Storm Water Floodplain Administrator**

Soil Erosion & Sedimentation Control, **NC DEQ**

Commercial Site Plan Review (Site Plan Review & Zoning Ordinance Compliance), **City of Charlotte**

Building Permit, **Mecklenburg County Land Use and Environmental Services**

NCDOT Approval (Break in Controlled Access), **North Carolina Department of Transportation**

CDOT Approval (Street Crossings, ROW Encroachment), **Charlotte Department of Transportation**

Water and Sewer Permitting, **Charlotte Water**

Duke Energy Review and Approval for improvements within their right of way; **Duke Energy**

Land Development Permit, **LUESA**

Piedmont Natural Gas Approval, **Piedmont Natural Gas**

Charlotte-Mecklenburg Storm Water Sustainability Guidelines

Permits for working in the railroad right-of-ways

US Forest Service Trail Accessibility Guidelines

DESIGN STANDARDS AND GUIDELINES

ADA; Americans with Disabilities Act, **United States Department of Justice, Civil Rights Division**

AASHTO Guide for the Development of Bicycle Facilities, **AASHTO**

ABA Accessibility Guidelines; Outdoor Developed Areas, **Architectural and Transportation Barriers Compliance Board**

NACTO Urban Bikeway Design Guide, **National Association of City Transportation Officials**

Mecklenburg County Park and Recreation Greenway Design Standards

Mecklenburg County Park and Recreation 2014 Comprehensive Master Plan Update

Mecklenburg County Park and Recreation 2004 Little Sugar Creek Master Plan

