



# 16<sup>th</sup> Street APPLE Study – DRAFT

Birmingham, AL

*PREPARED FOR:*

Regional Planning Commission of Greater Birmingham

*PREPARED BY:*

**Kimley»Horn**

2 North 20<sup>th</sup> Street, Suite 800

Birmingham, Alabama 35203

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## 1.0 Project Overview

The study was initiated by the City of Birmingham through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham (RPCGB). The city requested professional planning assistance in evaluating the feasibility of improvements for pedestrians, motorists, and cyclists along 16<sup>th</sup> Street from City Walk to Morris Avenue. The 16<sup>th</sup> Street corridor is a prominent historic district in Downtown Birmingham and currently provides connectivity between City Walk and Morris Avenue. A map showing the study area is shown in Error! Reference source not found..

The purpose of this study is to evaluate potential pedestrian, motorist, and cyclist improvements along the 16<sup>th</sup> Street North corridor within the historic district. The resulting recommendations are intended to create stronger connectivity along the entire corridor, provide the opportunity for future connection to Railroad Park, and highlight the unique characteristics of the Civil Rights, Theater, and Innovation districts nearby.



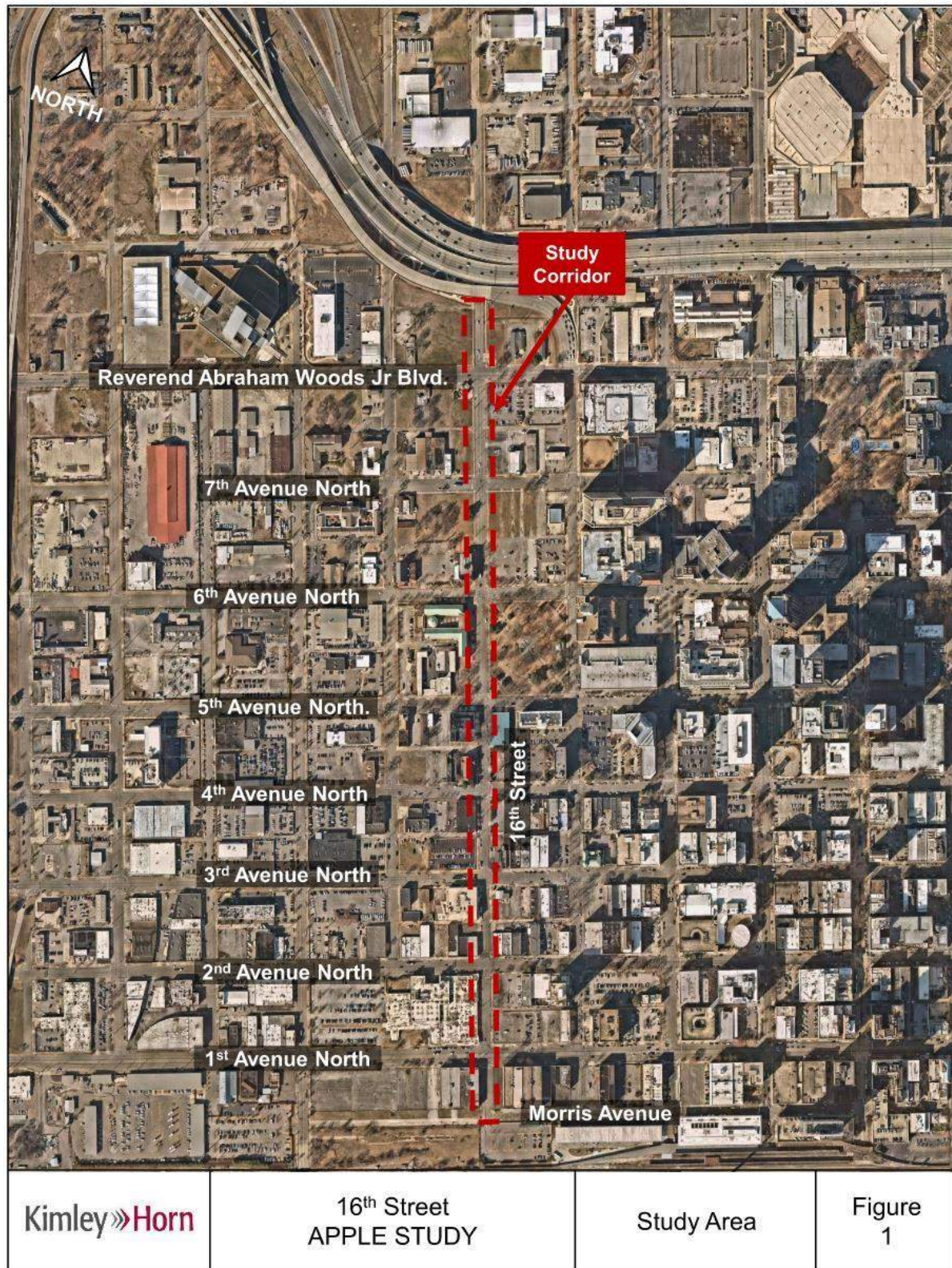


Figure 1 – Study Area



## 2.0 INTRODUCTION

16th Street North played a significant role in the Civil Rights Movement in Birmingham, Alabama. It was the center of African American life and commerce and served as the starting point for many of the marches and demonstrations that took place during the Civil Rights era.

One of the most notable events that took place on 16th Street North was the "Children's March" of 1963, which was a series of peaceful demonstrations organized by the Southern Christian Leadership Conference (SCLC) and led by the Reverend Dr. Martin Luther King Jr. The purpose of these marches was to protest segregation and the treatment of African Americans in Birmingham, and to draw national attention to the Civil Rights Movement. The Children's March, which began on 16th Street North, resulted in the arrests of hundreds of children, and helped to galvanize support for the Civil Rights Movement. A picture demonstrating the march is shown below in **Figure 2**.

16th Street North was also the site of the bombing of 16th Street Baptist Church on September 15, 1963, that killed four African American girls and injured many others. This tragedy, along with the violent response to the Children's March, served to increase national outrage and pressure on the federal government to take action on Civil Rights legislation.



**Figure 2 – Children's March of 1963**

Today, 16th Street North is considered a historic site in the Civil Rights Movement and is remembered as a symbol of the struggle for racial equality and justice in Birmingham and the United States.

The goal of this study is to develop an enhanced streetscape and cycling-friendly corridor from City Walk (9<sup>th</sup> Avenue) to Morris Avenue along 16<sup>th</sup> Street, while maintaining access for passenger car traffic. Furthermore, the objective of the enhanced streetscape is to support the people living and working within the Civil Rights District. The 16<sup>th</sup> Street corridor lies within the Civil Rights District and is home to the historic 16<sup>th</sup> Street Baptist Church, which is registered as a National Monument. The Birmingham Civil Rights Institute, which showcases history from all over the US regarding The Civil Rights movement, is also located on 16<sup>th</sup> Street. The envisioned result of this study is the development of a complete street that is utilized by residents and visitors, is safe for all modes, and provides access while showcasing the corridor's history. It is intended that the proposed design would honor the history along the corridor, seek to restore elements from the Civil Rights time period, and encourage the gathering of visitors to educate and activate future generations.



**Figure 3 - Existing Conditions**

## 3.0 EXISTING CONDITIONS

### 3.1 Study Area

16<sup>th</sup> Street is located entirely within the City of Birmingham. The roadway is 50 feet wide from curb to curb primarily carrying two lanes of traffic and on-street parking. The roadway is centered in the 80' right-of-way. The 0.7-mile study segment has a 30-mph speed limit over the 8-block section. There are sidewalks along both sides of the roadway with widths varying from 5 feet to 12 feet. Each of the 8 intersections within the area is signalized except 16<sup>th</sup> Street at 7<sup>th</sup> Avenue which is all-way stop controlled (AWSC). An assessment of current conditions throughout the study area was conducted to identify existing conditions and areas of priority. Field observations were performed for the study area to gain an understanding for areas of concerns for motorists, cyclist, and pedestrians. The side streets consist of both two-way and one-way streets with Reverend Abraham Woods Jr and 7<sup>th</sup> Avenue North being two-way and 6<sup>th</sup> Avenue to Morris Avenue being alternating one-ways. Vehicular traffic in the study area varies but generally consists of local traffic from nearby businesses. The one-way cross streets serve as commuter routes in and out of downtown. While they are rarely congested, the one-ways consist of two to three lanes in one direction, which encourages high travel speeds and creates a safety concern for users along 16<sup>th</sup> Street North.

The roadway currently passes through a portion of the Civil Rights district. To the north of 6<sup>th</sup> Avenue North, the roadway frontage primarily consists of vacant lots. Connecting at the northern end of the study area is a newly developed area called Citywalk. Citywalk stretches underneath the length of the I-20/59 bridges through downtown and serves as a vibrant public park space within the City. South of 4<sup>th</sup> Avenue North is a more urban frontage with an array of businesses and the addition of a recently renovated mixed used site at 3<sup>rd</sup> Avenue North. Anchoring the southern end of the study area is Innovation Depot at 1<sup>st</sup> Avenue, along with the historic Morris Avenue and Central Station for the Birmingham Jefferson County Transit Authority (BJCTA) system.

### 3.2 Bicycle and Pedestrian Accommodations

16<sup>th</sup> Street North is bordered by existing sidewalks on both sides of the roadway. There are also existing pedestrian features at each intersection along the corridor. The sidewalks vary in width spanning from 5 feet to 12 feet. While the sidewalks are continuous for the length of the corridor, there are segments that have cracks and vertical variations that appear to not meet current standards. Each intersection is outfitted with ramps at all approaches; however, in some instances, proper tactile warning mats are not in place. Finally, there are a number of driveway crossings for the sidewalks, some of which appear to not meet cross-slope minimums. Slopes were not individually measured and inventoried as part of this project, but it was noted that future improvements or modifications may be required.

16<sup>th</sup> Street North is designated as a bicycle route and has existing bike lanes from 1<sup>st</sup> Avenue North to 5<sup>th</sup> Avenue North. The bike lanes are approximately 3 feet wide and adjacent to the on-street parking. This does not meet recommended bike lane width or placement as it puts cyclists in the door zone of parked vehicles. North of 5<sup>th</sup> Avenue North, the street is designated as a shared roadway for cyclists. At the northern end of the study area, 16<sup>th</sup> Street North has existing buffered bike lanes from CityWalk into the Fountain Heights neighborhood.



## 4.0 FIELD OBSERVATIONS

Field observations were conducted in order to develop an understanding of the conditions of the infrastructure along the study area and assess any challenges that may be encountered. The pedestrian facilities along the corridor are in adequate condition with the exception of a few locations where deterioration has occurred resulting in uneven or cracked sidewalks. In the southern end of the corridor, there is a lack visibility of the sidewalk because of unkempt landscaping. This could make it difficult to operate a wheelchair, walker, or stroller along the sidewalk. The pavement condition along the corridor is also in decent condition. One of the main challenges regarding the roadway is the severe crown in the road resulting from numerous resurfacing efforts over the years. In many places the center of the roadway is significantly higher than the sidewalk level due to the severe cross slope. Some of those conditions are shown in Figure 4.



Figure 4 - Existing Sidewalk and Roadway Conditions



## 4.1 Case Study

The Indianapolis Cultural Trail may be one of the most successful models for 16<sup>th</sup> Street North to use as inspiration. Although the Cultural Trail is a loop and is longer than the 16<sup>th</sup> Street North study corridor, it accomplishes many of the same goals as 16<sup>th</sup> Street North. With its opening in 2013, the Cultural Trail saw immediate impact in the community.

The goal of the project was to seamlessly connect neighborhoods and cultural districts while also serving the downtown area. Weaving through the cultural districts, the trail was designed to incorporate the historical significance of the route. One of the main features of the trail is the inclusion of a high-quality multi-use path along one side of the existing roadway. Designed as a separated path from the roadway, it creates a high level of comfort for pedestrians and cyclists. The high level of comfort is important as it not only protects more vulnerable users but encourages pedestrian and cyclist use. There are many benefits for a street as pedestrian use increases. People attract people, which in turn serves to increase safety and enjoyment along a street. Studying the Cultural Trail example helped create a vision for the 16<sup>th</sup> Street North project to build upon.



Figure 5 - Indianapolis Cultural Trail

## 4.2 Stakeholder Engagement

An important component of this study process was to gather input and feedback from numerous stakeholders to guide the development of the concepts for 16<sup>th</sup> Street North. In coordination with the City of Birmingham and the Regional Planning Commission of Greater Birmingham, a list of stakeholders was developed which included Civil Rights District Leaders, 16<sup>th</sup> Street Baptist Church, Birmingham Civil Rights Institute, Urban Impact, The Ballard House, NAACP, Fountain Heights Neighborhood, REV Birmingham, Fresh Water Land Trust, City of Birmingham PEP office, Capital Projects Office, City Council, and the Mayor's Office.

## 4.3 Community Meetings

In addition to one-on-one meetings with various stakeholders, three open public meetings were held on the corridor to gain input and feedback. These meetings occurred at the beginning of the project, at the early stages of concept development, and after an early draft of the concept was completed. This final meeting consisted of a corridor walk-through to discuss the draft concept.

Significant feedback was collected from each of the meetings and is summarized below.

- Attendees at the meetings gave input to create a “pedestrian-friendly” street. To them, this meant it would be safe, have good wide sidewalks, and have separation from moving vehicles. The street would be visually appealing and interesting with green spaces, landscaping, and strategically placed trash cans.
- When thinking of what 16<sup>th</sup> Street North could be in the future, attendees responded strongly that having the ability for programming along the street to attract conferences and thought leaders from around the world would be very important in the future. This would allow the corridor to serve as an extension of BCRI, 16th Street Baptist Church, and the National Monument, and would encourage infill of properties to create a more vibrant community. The street would create space for the unhoused and homeless and not just push them away. ADA improvements would be a priority, accommodating users of all abilities and including convenience for them.
- Input on the design stated that it should honor the unseen history of the neighborhood, specifically former residences such as the Ballard House and the 16th Street Baptist Church Parsonage. The design should have an emphasis on restoration vs. all new construction; it should seek to match elements from the historical period. Historical markers and art would highlight historic places and the stories of those that led the Civil Rights movement, especially ones that lost their lives for the cause.
- Overall, the project should connect not only to the Civil Rights District, but also to the surrounding neighborhoods, especially Fountain Heights to the north.



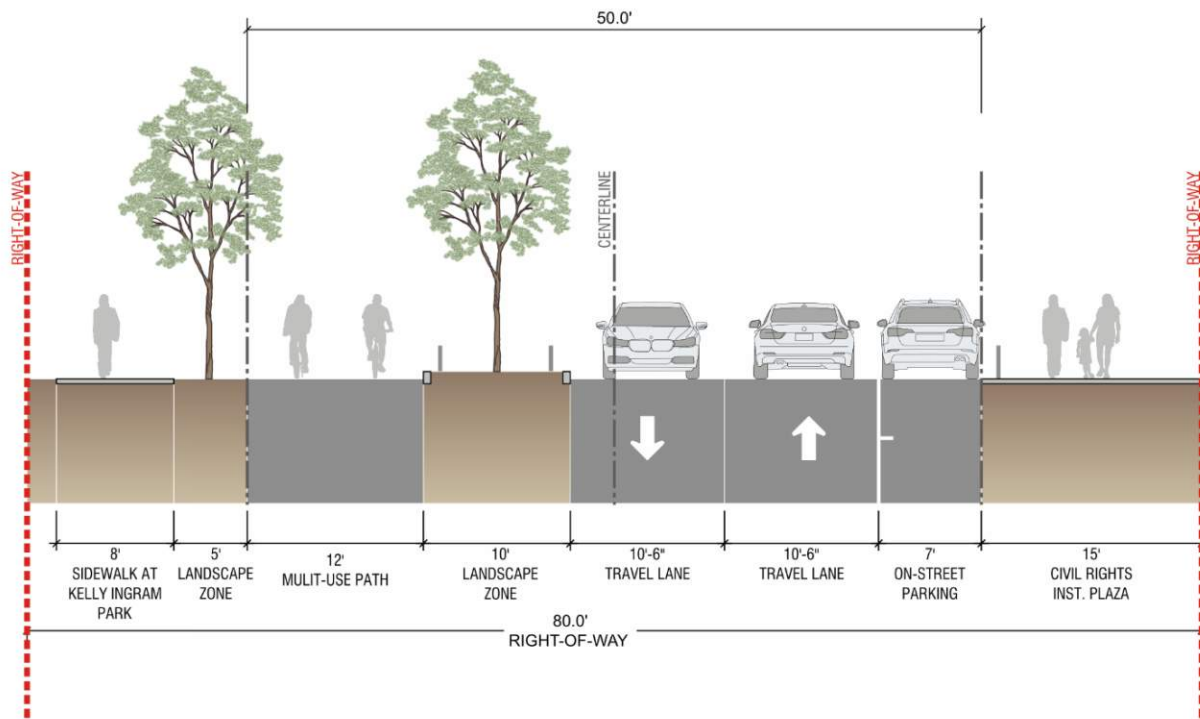
## 5.0 CONCEPTUAL DEVELOPMENT

Combining the input from stakeholders along with the information collected during the existing conditions phase, conceptual plans were developed for the corridor. The focus was on creating a streetscape that promotes 16<sup>th</sup> Street North as a pedestrian attraction in the City of Birmingham, while showcasing the existing history and looking for opportunities to restore portions of the roadway to the historical period. The development of the concepts followed an iterative process, collecting input from stakeholders and adjusting the design to accommodate feedback.

### 5.1 Typical Section

One of the first steps in the conceptual development process was to develop a typical cross-section for the corridor. While widths will vary due to existing conditions or changing goals along the length of the corridor, the typical section will help set the overall guidance of design. Example of a typical section is shown below in **Figure 6**.

As previously stated, one of the primary objectives of the project is to create a comfortable pedestrian and cyclist experience for the length of the study area. Therefore, the application of a multi-use path was selected in lieu of sidewalks and bike lanes alone. A typical section as shown in Figure 6 was developed based on the research of similar projects such as the Indianapolis Cultural Trail.



**Figure 6 - Typical Section**

The east side of the roadway was chosen for the multi-use path based on several factors. CityWalk and Kelly Ingram Park are both on the east side of 16<sup>th</sup> Street North, so the east side is a logical choice for connectivity.

to those locations. More importantly, 16<sup>th</sup> Street Baptist Church is on the west side of the roadway, so placing the path on the east side will help preserve the historic nature of the church's street frontage.

Separating the path from the roadway was important as well. A two-foot minimum concrete buffer is recommended, but the preferred buffer should be wide enough to include landscaping and area for trees to grow and mature. The desirable width for the buffer is 10 feet.

Trees are an important component of this design. They provide an aesthetic element and pedestrian scale to the oversized roadway as well as a traffic calming effect. Additionally, the trees create much needed shade along the pathway. This not only cools the path in the summer months further encouraging pedestrian movement along the corridor, but also promotes a more interesting, comfortable walk. The design of a future project should select native trees that fit in the allotted planting space and be properly installed as not to create maintenance issues in the future from root growth.

The vehicle space in the proposed typical section has been reduced significantly from current conditions. The existing 16<sup>th</sup> Street North has a pavement width of over 50 feet but carries very few cars; this is a poor use of the right-of-way. To accommodate the proposed path, the travel lanes have been shifted to the west. Two 10.5-foot lanes will serve to carry vehicles for the length of the project. This lane width is less than what is commonly seen on major highways, but it is wide enough for passenger vehicles, trucks, and buses. Narrower lane widths have been proven to reduce vehicle speeds along roadways, which will in turn encourage a safer and more comfortable pedestrian environment.

The proposed typical section is designed to be flexible throughout the corridor so that a variety of uses can be accommodated. One important element considered is on-street parking. Most of the corridor today is bordered on both sides by parallel parking spaces. The proposed design seeks to maintain much of this parking, especially within the historic 4<sup>th</sup> Avenue Business district. For some sections, parking is proposed only on one side of the roadway allowing for a wider path buffer and trees; in other sections, parking is maintained on both sides of the roadway. Overall, the area surrounding 16<sup>th</sup> Street has an abundance of parking, both private and public. Each cross street has on-street parking on both sides and there are multiple private surface lots as well. One block from the 16<sup>th</sup> Street Baptist Church and BCRI on the other side of Kelly Ingram Park is the Birmingham Parking Authority Deck 7. This deck has a capacity of approximately 1,600 spaces and at the time of this writing was observed to have daily parking and has availability for monthly parking leases.

## 5.2 Section 1: City Walk to 6<sup>th</sup> Avenue

The proposed improvements for Section 1 seek to create a connection between the Fountain Heights neighborhood and CityWalk to the Civil Rights District at 6<sup>th</sup> Avenue North. Currently, this section is characterized by vacant lots bordering an oversized 2-lane roadway. The current walk feels much longer than it actually is, especially during the hot summer months. In order to better connect the two destinations, the concept proposes to implement a 12-foot multi-use path, 6-foot sidewalks on both sides of the street and added landscape features. The travel lanes and multi-use path are separated by a landscaped median with street trees. The crosswalks at the intersections are a decorative brick pattern using thermoplastic sheeting to bring unique character to the corridor without the maintenance issues associated with pavers. To shorten crossing distances for pedestrians, bump outs are included in the concept for all cross streets. They effectively shorten the crossing distance by nearly half for pedestrians which makes crossing time shorter and gives motorists better sight of pedestrians.

The concept specifies artwork between CityWalk and 16<sup>th</sup> Street Baptist Church. The intention is to create an immersive art concept that pedestrian can move through. While a placeholder design is included in the concept drawings, it is recommended that a design be developed by a local artist to add more character to this stretch of the corridor. The artwork can serve as an attraction for pedestrians who may be at the destinations on either end of this segment, capitalizing on their curiosity and pulling them to explore what lies just over two blocks away.

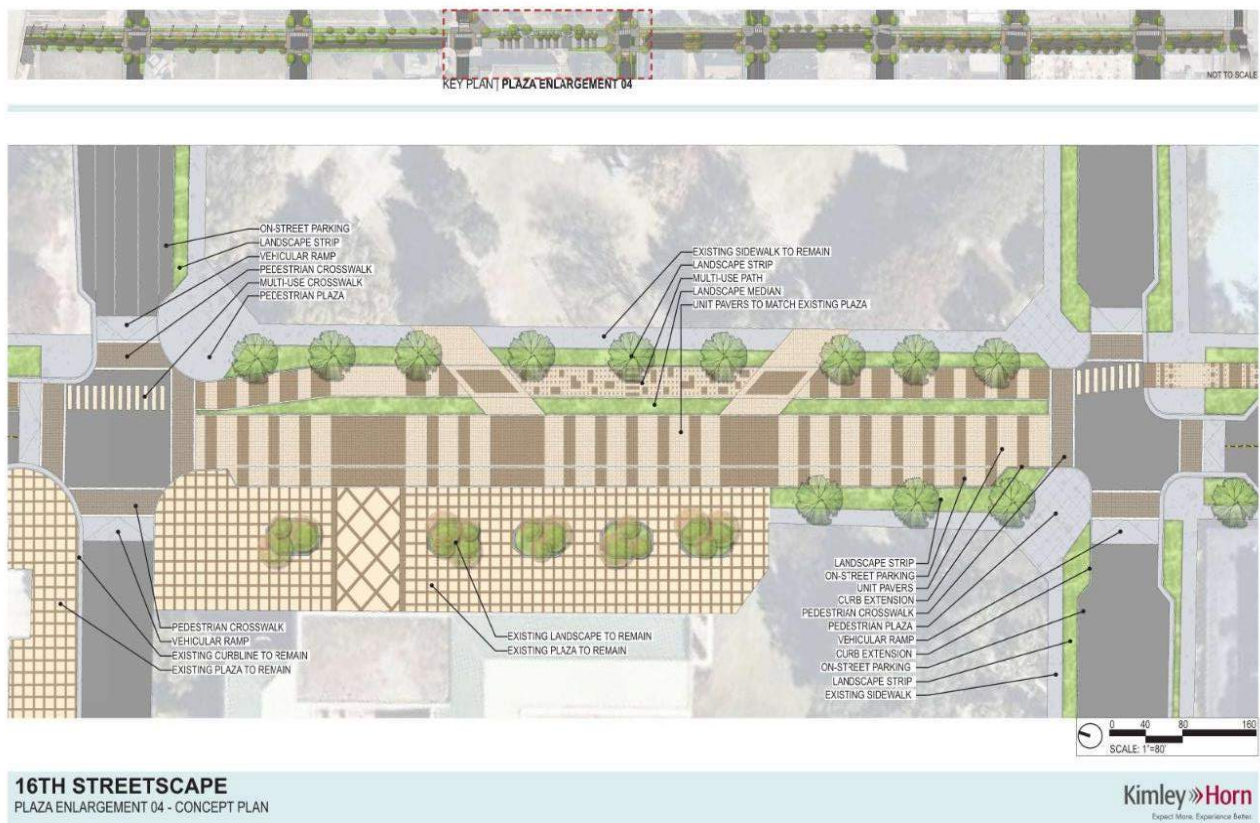


Figure 7 – Typical Section 1 (City Walk to 6<sup>th</sup> Ave)



### 5.3 Section 2: 6<sup>th</sup> Avenue to 4<sup>th</sup> Avenue

Section 2 of the concept serves as the core of the project. Lying in the center of the study area and including 16<sup>th</sup> Street Baptist Church, the Civil Rights Museum, and Kelly Ingram Park, the concept seeks to encompass the rich history and create opportunities for people to gather and connect, much like it did during the Civil Rights movement. The block between 5<sup>th</sup> Avenue North and 6<sup>th</sup> Avenue North is proposed to be elevated to a curbsless streetscape condition. This design decision allows for this section of the roadway to be closed for larger gatherings and creates a flexible space that heightens the awareness of drivers while allowing pedestrians to safely navigate the space. The elevated pavement creates a shared street curbsless environment shifting the priority from vehicles moving through to connectivity between the east and west sides of the road. Elements of the historic street frontage associated with the 16<sup>th</sup> Street Baptist Church and Civil Rights Institute have been used in the streetscape concept to enlarge the presence of that area into the street by incorporating the existing paver color patterns. Added street trees and raised medians clearly define travel ways throughout this area and provide shade and connectivity within the space. On either side of the block the roadway ramps upward to bring the pavement up to the curbsless condition. The vertical deflection this creates has a significant impact on vehicle speeds, reducing them for the pedestrian zone.



**Figure 8 - The Core**

South of the core block is the historic 4<sup>th</sup> Avenue Business district. The multi-use path remains at sidewalk level and on-street parking is introduced on both sides of the street. The existing sidewalks are preserved in

this section with modifications made in cases of disrepair. Bump outs add additional opportunities for planting areas and street trees and serve to create a sense of scale between blocks and at intersections. Within the block between 4<sup>th</sup> Avenue North and 5<sup>th</sup> Avenue North, the concept incorporates the future Smithfield Trail planned to be a part of the Red Rock Trail System in Birmingham. The trail runs along 4<sup>th</sup> Avenue from downtown, then turns up 16<sup>th</sup> Street North before continuing along 5<sup>th</sup> Avenue North to Smithfield.



Figure 9 - Typical Section 2 (6th Ave to 4th Ave)

In the final three blocks of the corridor, the multi-use path transitions from sidewalk level to roadway level with a raised median separator containing street trees. On-street parking, along with bump outs and street trees, are proposed along the western side of 16th Street North. Streetscape enhancements are consistent through this area of the corridor and establish an urban frontage appropriate for the surrounding uses, while also providing an opportunity for unique branding. An enhanced decorative crossing is proposed at the end of the corridor to establish a focus on the connection across Morris Avenue to the adjacent parking area for MAX and Amtrak services. Ultimately, this connection to Railroad Park is intended to be expanded through future studies and projects. A more formal pedestrian and cyclist access is established for Morris Avenue south of 16th Street North with bollards to prohibit vehicular access.



An opinion of probably construction cost (OPCC) was developed for the proposed concepts presented in this report. The OPCC is a planning level cost estimate utilizing assumptions around the construction means and methods for the project. In this current environment of volatile material prices and significantly lower [is this correct to say?] competition among contractors, it is difficult to generate cost estimates with the level of confidence that has previously been achievable. As such, unit costs are available in the Appendix of this study for future adjustment, and a generous contingency of 20% was applied. Furthermore, the estimate was broken



out into segments to help provide better understanding of the varying costs between the outer segments and the core segment.

Unit prices were derived from similar projects in the region and state along with bid tabs from recent ALDOT projects. Effort was made to lean toward the higher end of unit price ranges in order to account for escalating costs and the time period between bid tabs and this project. Finally, it is recommended that as this project is budgeted for implementation, the cost estimate should be revisited to account for the current market conditions and inflation over that time period.

**Table 1** provides a cost summary for each section of improvements. A detailed breakdown of the costs is provided in **Appendix B**.

Table 1 – Opinion of Probable Cost	
Improvement Section	Opinion of Probable Cost
City Walk to 7 <sup>th</sup> Avenue	\$3,800,000
6 <sup>th</sup> Avenue to 4 <sup>th</sup> Avenue	\$5,750,000
3 <sup>rd</sup> Avenue to Morris Avenue	\$2,651,000
Total	\$12,200,000

## 6.0 Spirit Imagery

The following images are a sampling of example implementations that helped provide a small inspiration to elements of the proposed design components. They are included to help communicate how the concept may look as part of the built environment.



Figure 11 - Spirit Imagery

## 7.0 Conclusion

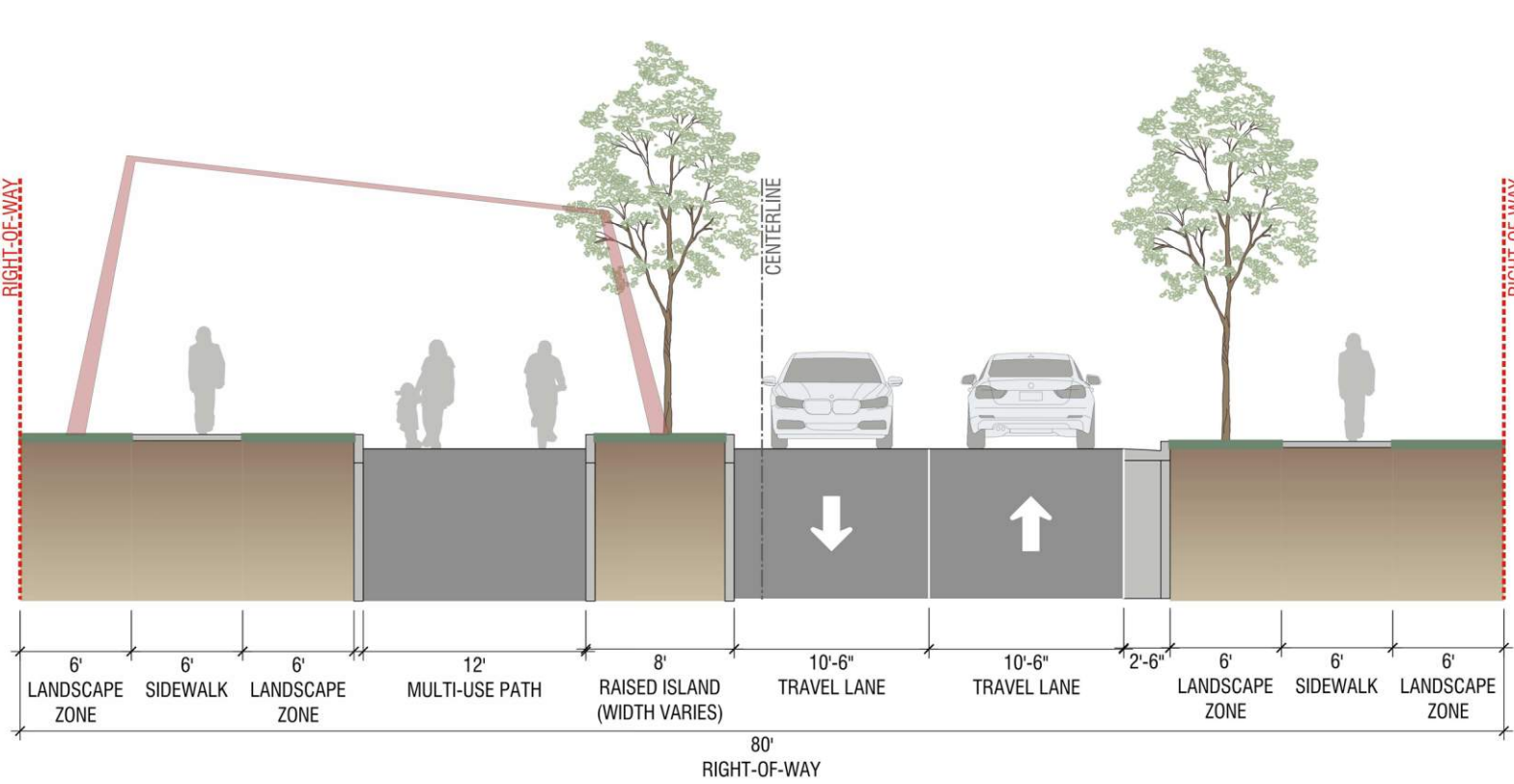
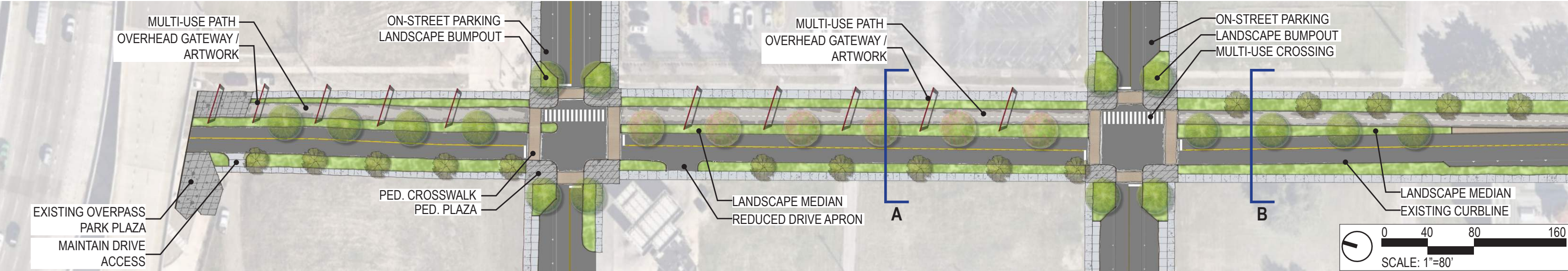
This study should serve as a guide to planning for streetscaping along 16<sup>th</sup> Street North. It is recommended to be adopted by the City of Birmingham and other stakeholders and the unified visions for the street. Next steps in the process involve identifying funding sources to implement the project either holistically or in a phased approach. This may involve capitalizing on grant programs available through the USDOT and other federal agencies and combined with local match funding. The most important component to carry this project through implementation is a unified agreement on the concept and vision. As the design progresses, continued public and stakeholder input should be sought to help ensure all voices are heard.

The concepts presented in this study have been developed through coordination with input from stakeholders and provide the necessary framework for transforming 16<sup>th</sup> Street North to a destination to connect people across the City and to our past. It is imperative the ultimate implementation of the improvements along 16<sup>th</sup> Street North honor the history and courage of those that walked along it 60 years ago. The concept developed within this study is intended to create a place that fosters courage, instills compassion, and unites future generations to collaborate on expanding equity for all.

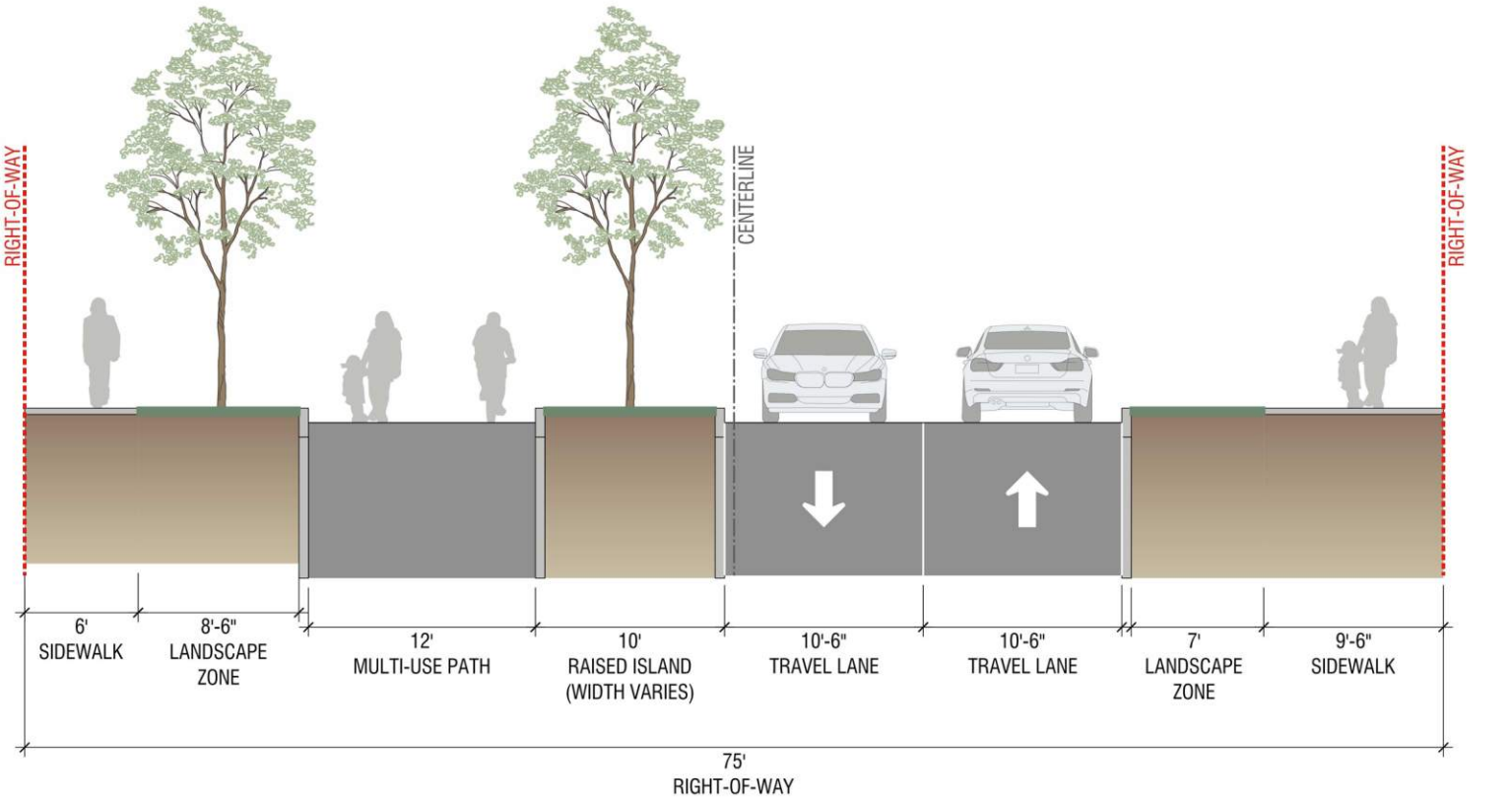


## Appendix A

### Conceptual Development Sheets

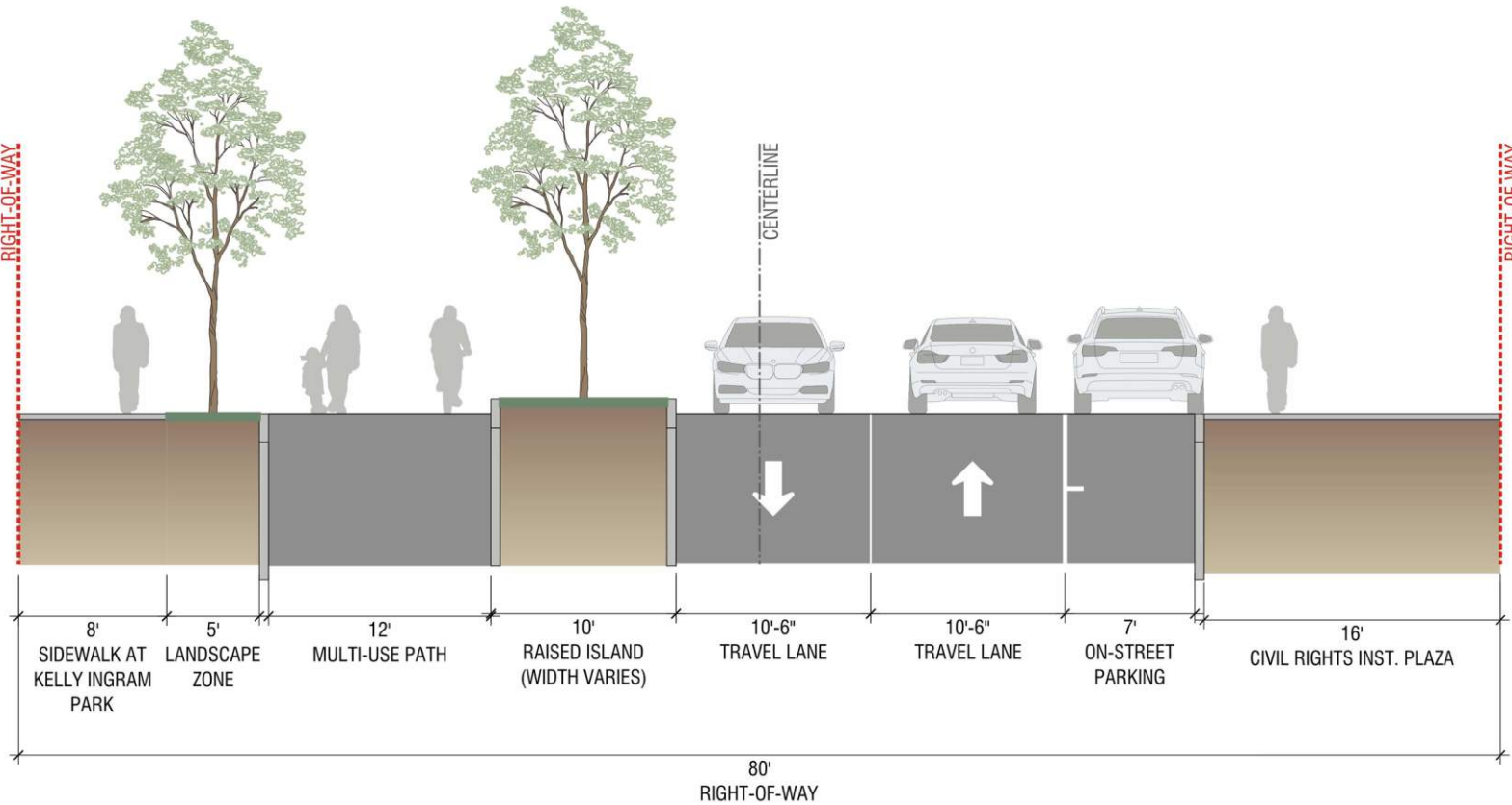
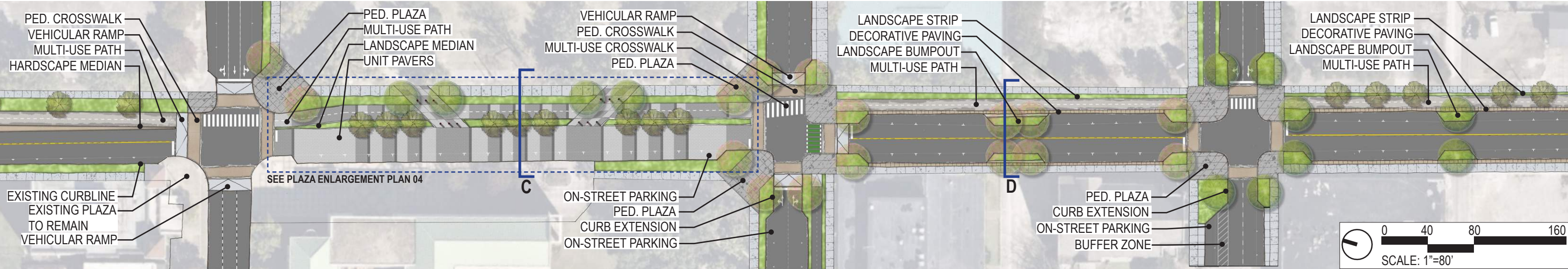


STREETSCAPE SECTION A

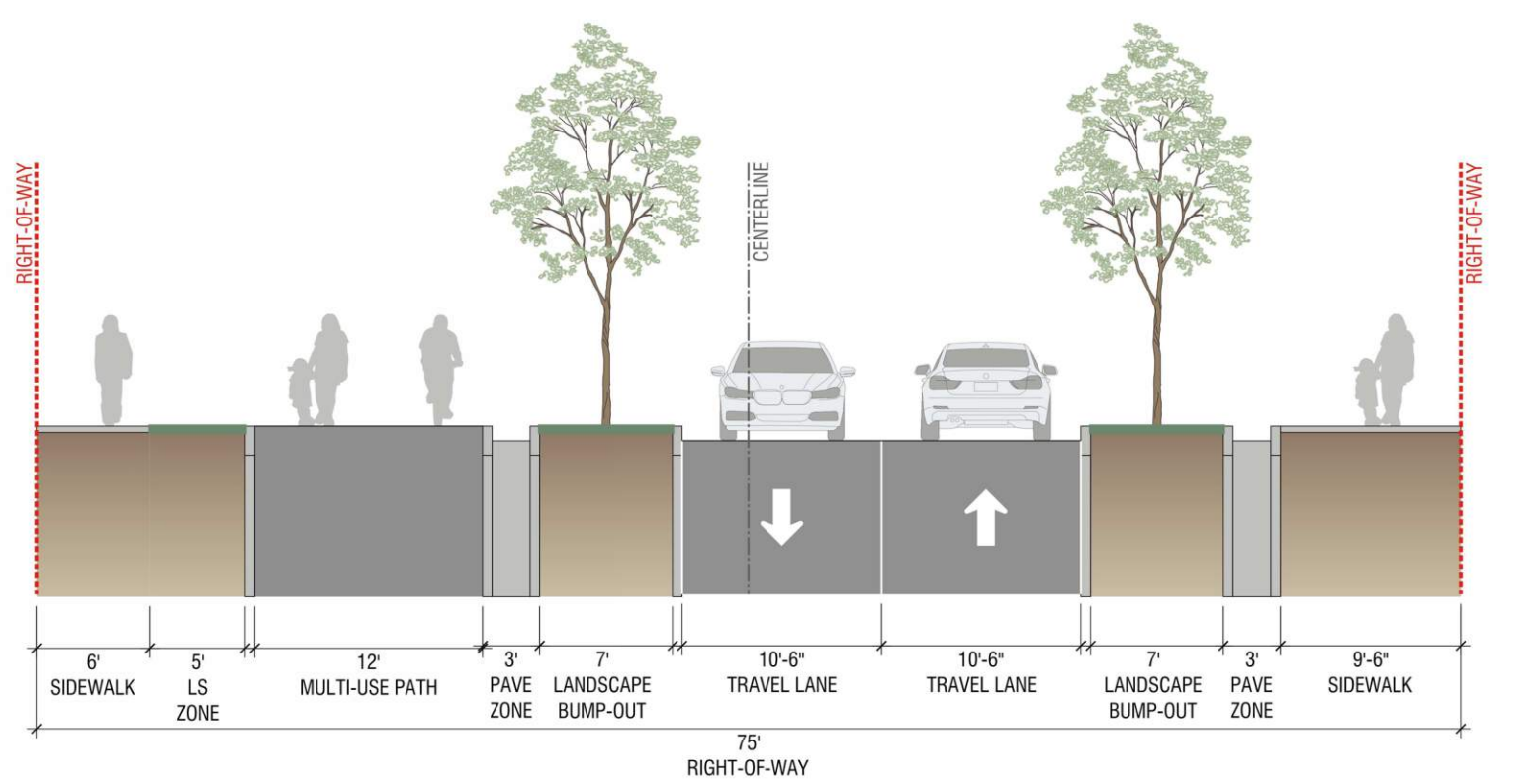


STREETSCAPE SECTION B



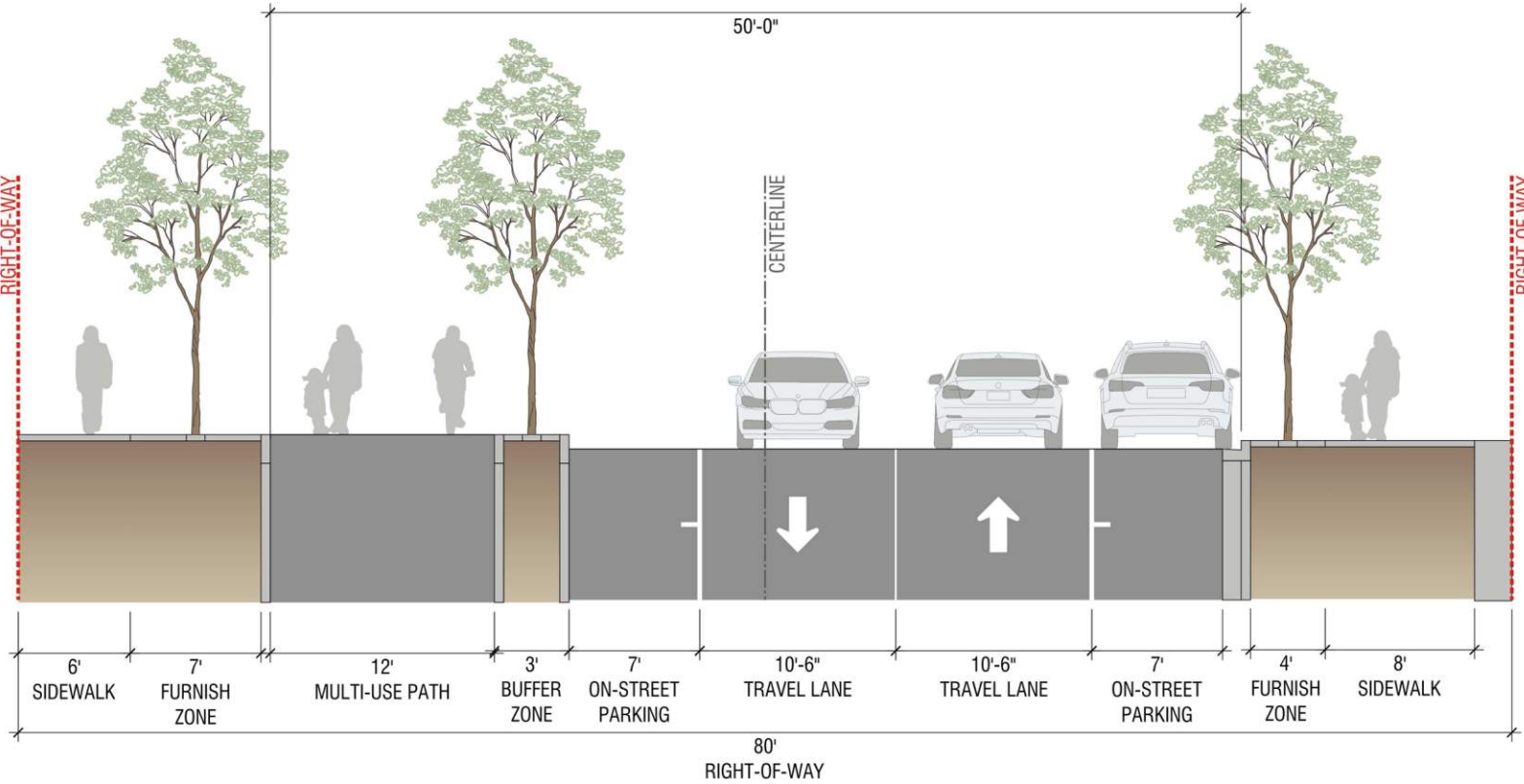
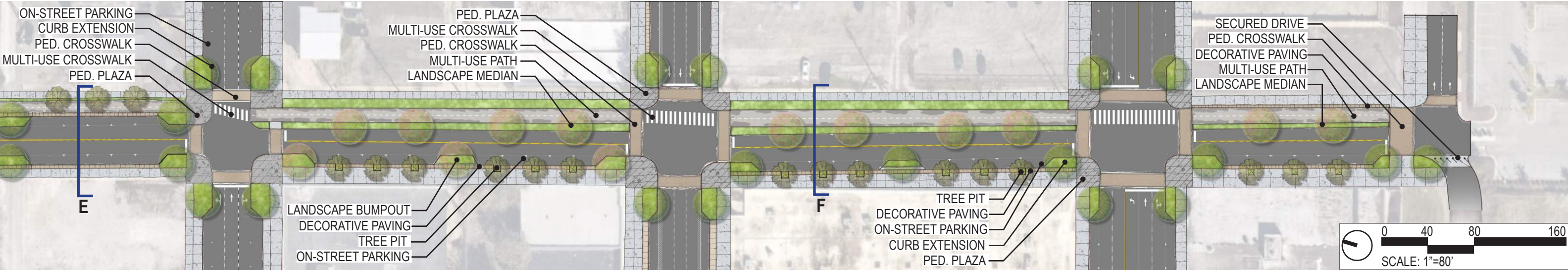


STREETSCAPE SECTION C

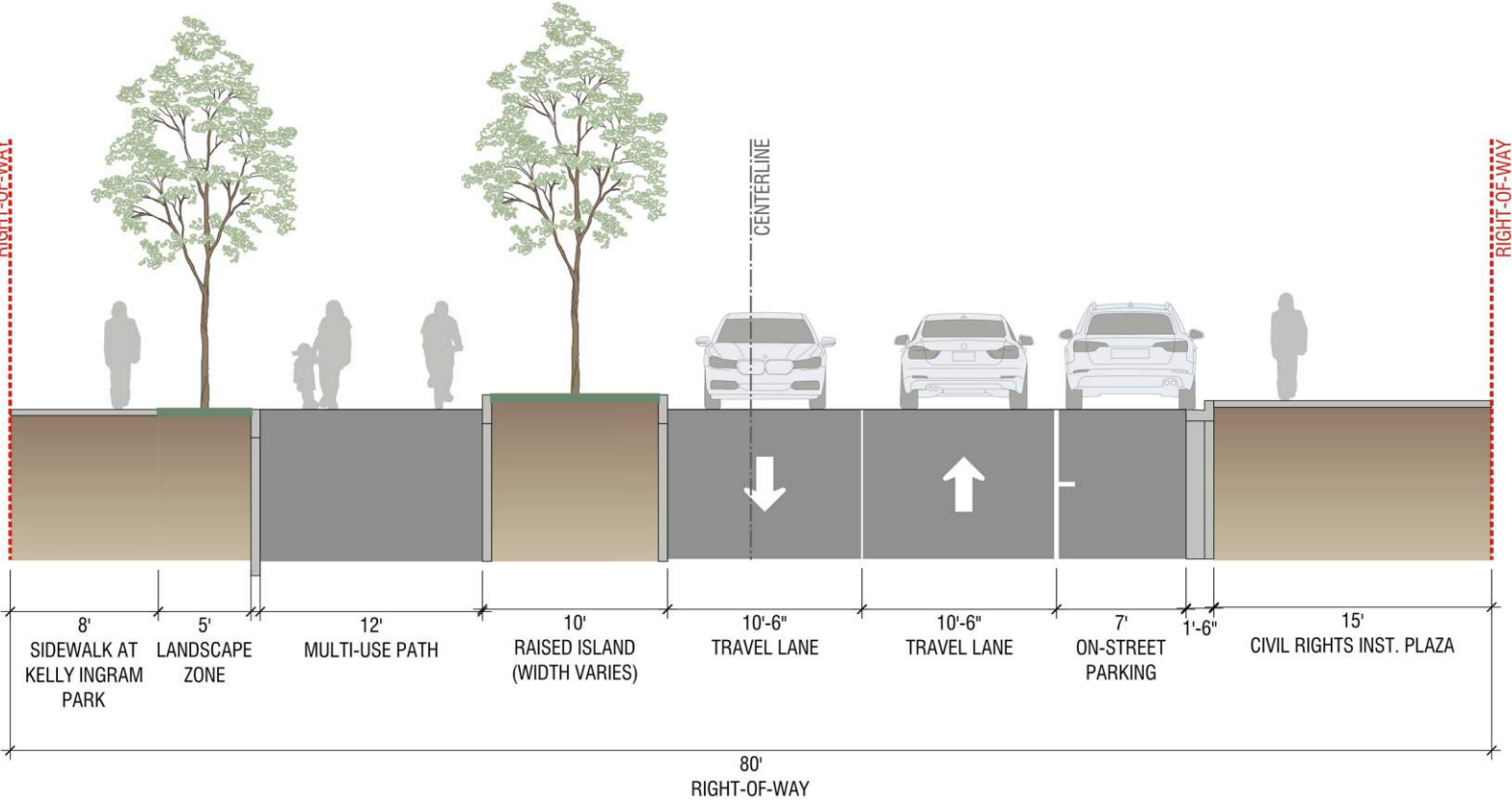


STREETSCAPE SECTION D



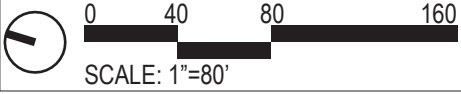
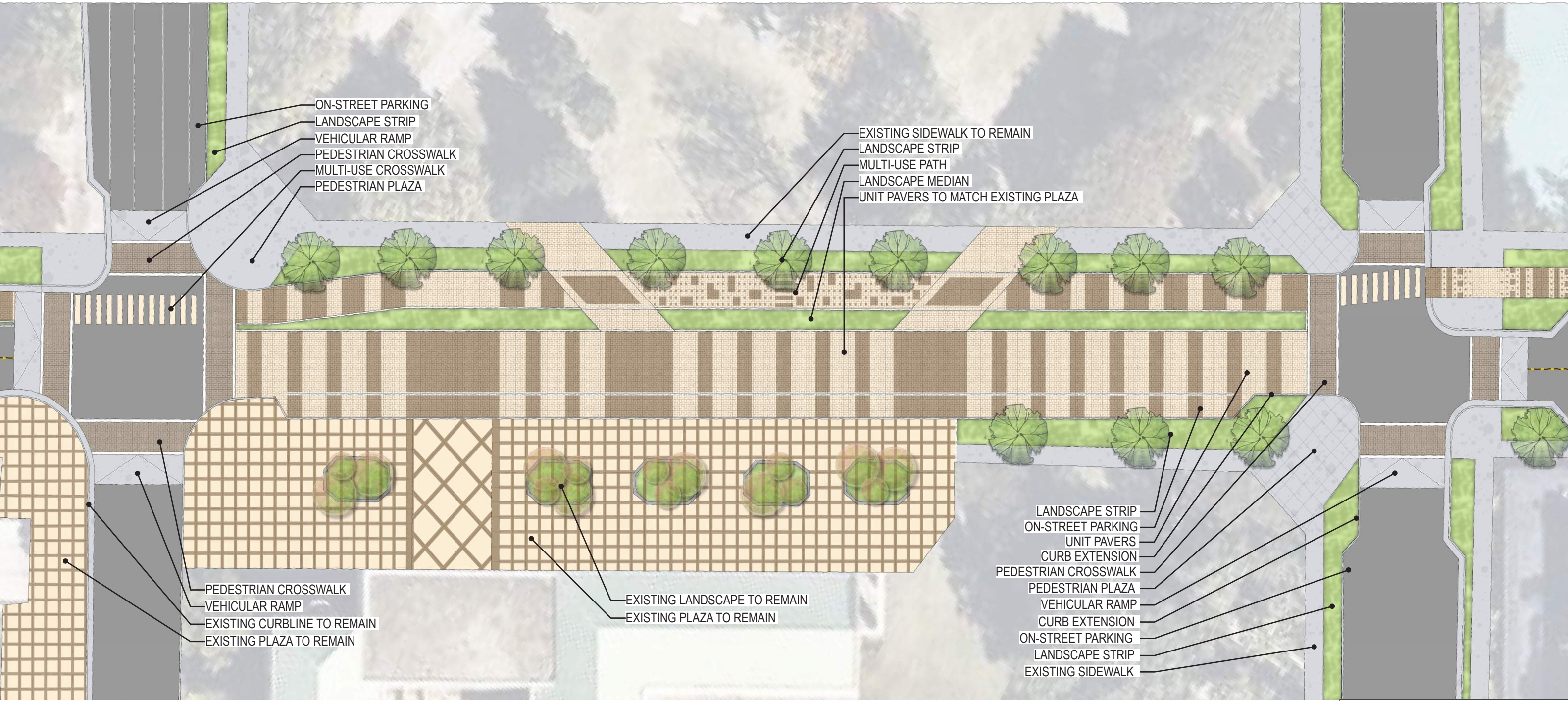


STREETSCAPE SECTION E



STREETSCAPE SECTION F











## Appendix B

### Opinion of Probable Cost Details





# 16th Street APPLE Study - Opinion of Probable Construction Costs

Erosion Control and Layout	Quantity	Unit	Unit Cost	Total
Construction Layout	1	LS	\$ 12,000.00	\$ 12,000.00
Erosion Control	1	LS	\$ 16,500.00	\$ 16,500.00
				<b>\$ 28,500.00</b>

Demolition	Quantity	Unit	Unit Cost	Total
Removing Curb	4900	LF	\$ 6.50	\$ 31,850.00
Concrete Removal	6500	SF	\$ 20.00	\$ 130,000.00
Asphalt Pavement Removal	7800	SY	\$ 30.00	\$ 234,000.00
				<b>\$ 395,850.00</b>

Traffic/Roadway	Quantity	Unit	Unit Cost	Total
Traffic Control	1	LS	\$ 45,000.00	\$ 45,000.00
Traffic Signage	1	LS	\$ 15,000.00	\$ 15,000.00
Traffic Signal Modifications (per intersection)	7	LS	\$ 70,000.00	\$ 490,000.00
Roadway and Parking Striping	1	LS	\$ 15,000.00	\$ 15,000.00
Multi Use Path (Asphalt)	3270	SY	\$ 43.00	\$ 140,610.00
Decorative Crosswalk	9100	SF	\$ 15.00	\$ 136,500.00
Asphalt Mill - includes leveling of crown	13700	SY	\$ 9.00	\$ 123,300.00
Asphalt Overlay	1170	TON	\$ 120.00	\$ 140,400.00
Asphaly Leveling	117	TON	\$ 150.00	\$ 17,550.00
				<b>\$ 1,123,360.00</b>

Streetscape Hardscape	Quantity	Unit	Unit Cost	Total
Flush Concrete Band 12"	900	LF	\$ 15.00	\$ 13,500.00
Wayfinding Signage	1	LS	\$ 45,000.00	\$ 45,000.00
Vehicular Bollards (removeable)	8	EA	\$ 3,000.00	\$ 24,000.00
Bollard	69	EA	\$ 2,500.00	\$ 172,500.00
Curb (Goes Around Landscape Buffer)	4950	LF	\$ 45.00	\$ 222,750.00
Concrete Curb and Gutter	8200	LF	\$ 35.00	\$ 287,000.00
Pavers	22120	SF	\$ 50.00	\$ 1,106,000.00
Standard 4" Concrete Sidewalk	49500	SF	\$ 10.00	\$ 495,000.00
Decorative Concrete	18000	SF	\$ 13.00	\$ 234,000.00
Bench	20	EA	\$ 6,000.00	\$ 120,000.00
Trash Receptacle	16	EA	\$ 1,800.00	\$ 28,800.00
Artistic Gateway Elements	1	LS	\$ 750,000.00	\$ 750,000.00
Drive Apron, 8" Heavy Duty Concrete	6	EA	\$ 9,000.00	\$ 54,000.00
Vertical Curb	1010	LF	\$ 30.00	\$ 30,300.00
Vehicle Ramp	6	LF	\$ 15,000.00	\$ 90,000.00
Detectable Warning Pavers	1708	SF	\$ 40.00	\$ 68,320.00
Earthwork for Expanded Streetscape (Fill)	3100	CY	\$ 30.00	\$ 93,000.00
				<b>\$ 3,820,670.00</b>

Lighting	Quantity	Unit	Unit Cost	Total
Pedestrian Pole Lights	112	EA	\$ 12,000.00	\$ 1,344,000.00
Misc Electrical	1	LS	\$ 60,000.00	\$ 60,000.00
				<b>\$ 1,404,000.00</b>

Drainage	Quantity	Unit	Unit Cost	Total
Drainage Modifications (Existing Curb)	12	EA	\$ 7,000.00	\$ 84,000.00
Drainage Modifications (Proposed Curb)	16	EA	\$ 10,000.00	\$ 160,000.00
Multi-Path Drainage	12	EA	\$ 7,000.00	\$ 84,000.00
				<b>\$ 328,000.00</b>

Landscape	Quantity	Unit	Unit Cost	Total
Street Tree	133	EA	\$ 750.00	\$ 99,750.00
Enhanced Landscape Area	21050	SF	\$ 25.00	\$ 526,250.00
Turf Area	1950	SY	\$ 3.50	\$ 6,825.00
Irrigation	3	LS	\$ 50,000.00	\$ 150,000.00
				<b>\$ 782,825.00</b>

Utilities	Quantity	Unit	Unit Cost	Total
Utility Coordination	1	LS	\$ 75,000.00	\$ 75,000.00
				<b>\$ 75,000.00</b>

Subtotal				\$ 7,958,205.00
Mobilization/Contractor OH&P (7%)				\$ 557,074.35
Contingency (20%)				\$ 1,591,641.00
Utility Relocations (7%)				\$ 557,074.35
CE&I (9%)				\$ 716,238.45
Survey and Design (12%)				\$ 954,984.60
<b>Total Opinion of Probable Construction Costs</b>				<b>\$ 12,335,217.75</b>



16th Street -Quantities - Section 1 - City Walk to 7th Ave

Erosion Control and Layout	Quantity	Unit	Unit Cost	Total
Construction Layout	1	LS	\$ 4,000.00	\$ 4,000.00
Erosion Control	1	LS	\$ 5,500.00	\$ 5,500.00
				\$ 9,500.00

Demolition	Quantity	Unit	Unit Cost	Total
Concrete Removal	1200	SF	\$ 6.50	\$ 7,800.00
Removing Curb	2300	LF	\$ 20.00	\$ 46,000.00
Asphalt Pavement Removal	2000	SY	\$ 30.00	\$ 60,000.00
				\$ 113,800.00

Traffic/Roadway	Quantity	Unit	Unit Cost	Total
Temporary Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
Traffic Signage	1	LS	\$ 5,000.00	\$ 5,000.00
Traffic Signal Modifications (per intersection)	1	LS	\$ 70,000.00	\$ 70,000.00
Roadway and Parking Striping	1	LS	\$ 5,000.00	\$ 5,000.00
Multi Use Path	1,250	SY	\$ 43.00	\$ 53,750.00
Decorative Crosswalk	3,600	SF	\$ 15.00	\$ 54,000.00
Asphalt Mill - includes leveling of crown	3500	SY	\$ 9.00	\$ 31,500.00
Asphalt Overlay	300	TON	\$ 120.00	\$ 36,000.00
Asphalt Leveling	30	TON	\$ 150.00	\$ 4,500.00
				\$ 274,750.00

Streetscape Hardscape	Quantity	Unit	Unit Cost	Total
Flush Concrete Band 12"		LF	\$ 15.00	\$ -
Wayfinding Signage	1	LS	\$ 15,000.00	\$ 15,000.00
Vehicular Bollards (removeable)			\$ 3,000.00	\$ -
Bollards	4	EA	\$ 2,500.00	\$ 10,000.00
Curb (Goes Around Landscape Buffer)	2000	LF	\$ 45.00	\$ 90,000.00
Concrete Curb and Gutter	2400	LF	\$ 35.00	\$ 84,000.00
Pavers		SF	\$ 50.00	\$ -
Standard 4" Concrete Sidewalk	13,500	SF	\$ 10.00	\$ 135,000.00
Decorative Concrete (at intersections)	3,600	SF	\$ 13.00	\$ 46,800.00
Bench	8	SF	\$ 6,000.00	\$ 48,000.00
Trash Receptacle	4	EA	\$ 1,800.00	\$ 7,200.00
Artistic Gateway Elements	1	LS	\$ 750,000.00	\$ 750,000.00
Drive Apron, 8" Heavy Duty Concrete	6	EA	\$ 9,000.00	\$ 54,000.00
Vertical Curb		LF	\$ 30.00	\$ -
Vehicle Ramp		EA	\$ 15,000.00	\$ -
Detectable Warning Pavers	464	SF	\$ 40.00	\$ 18,560.00
Earthwork for Expanded Streetscape (Fill)	1100	CY	\$ 30.00	\$ 33,000.00
				\$ 1,291,560.00

Lighting	Quantity	Unit	Unit Cost	Total
Pedestrian Pole Lights	40	EA	\$ 12,000.00	\$ 480,000.00
Misc Electrical	1	LS	\$ 20,000.00	\$ 20,000.00
				\$ 500,000.00

Drainage	Quantity	Unit	Unit Cost	Total
Drainage Modifications (Existing Curb)	5	EA	\$ 7,000.00	\$ 35,000.00
Drainage Modifications (Proposed Curb)	8	EA	\$ 10,000.00	\$ 80,000.00
Multi-Path Drainage	5	EA	\$ 7,000.00	\$ 35,000.00
				\$ 150,000.00

Landscape	Quantity	Unit	Unit Cost	Total
Street Tree	37	EA	\$ 750.00	\$ 27,750.00
Enhanced Landscape Area	1400	SF	\$ 25.00	\$ 35,000.00
Turf Area	1400	SY	\$ 3.50	\$ 4,900.00
Irrigation	1	LS	\$ 20,000.00	\$ 20,000.00
				\$ 87,650.00

Utilities	Quantity	Unit	Unit Cost	Total
Utility Coordination	1	LS	\$ 25,000.00	\$ 25,000.00
				\$ 25,000.00

Subtotal	\$ 2,452,260.00
Mobilization/Contractor OH&P	\$ 171,658.20
Contingency (20%)	\$ 490,452.00
Utility Relocations (7%)	\$ 171,658.20
CE&I (9%)	\$ 220,703.40
Survey and Design (12%)	\$ 294,271.20
<b>Total Opinion of Probable Construction Costs</b>	<b>\$ 3,801,003.00</b>



16th Street -Quantities - Section 2 - 6th Ave to 4th Ave

Erosion Control and Layout	Quantity	Unit	Unit Cost	Total
Construction Layout	1	LS	\$ 4,000.00	\$ 4,000.00
Silt Fence	3000	LF		\$ -
Erosion Control	1	LS	\$ 5,500.00	\$ 5,500.00
				\$ 9,500.00

Demolition	Quantity	Unit	Unit Cost	Total
Concrete Removal	1500	SF	\$ 6.50	\$ 9,750.00
Removing Curb	3000	LF	\$ 20.00	\$ 60,000.00
Asphalt Pavement Removal	4200	SY	\$ 30.00	\$ 126,000.00
				\$ 195,750.00

Traffic/Roadway	Quantity	Unit	Unit Cost	Total
Temporary Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
Traffic Signage	1	LS	\$ 5,000.00	\$ 5,000.00
Traffic Signal Modifications (per intersection)	3	LS	\$ 70,000.00	\$ 210,000.00
Roadway and Parking Striping	1	LS	\$ 5,000.00	\$ 5,000.00
Multi Use Path	920	SY	\$ 43.00	\$ 39,560.00
Decorative Crosswalk	4,000	SF	\$ 15.00	\$ 60,000.00
Asphalt Mill - includes leveling of crown	5200	SY	\$ 9.00	\$ 46,800.00
Asphalt Overlay	450	TON	\$ 120.00	\$ 54,000.00
Asphalt Leveling	45	TON	\$ 150.00	\$ 6,750.00
				\$ 442,110.00

Streetscape Hardscape	Quantity	Unit	Unit Cost	Total
Flush Concrete Band 12"	900	LF	\$ 15.00	\$ 13,500.00
Wayfinding Signage	1	LS	\$ 15,000.00	\$ 15,000.00
Vehicular Bollards (removeable)	8	EA	\$ 3,000.00	\$ 24,000.00
Bollards	53	EA	\$ 2,500.00	\$ 132,500.00
Curb (Goes Around Landscape Buffer)	950	LF	\$ 45.00	\$ 42,750.00
Concrete Curb and Gutter	3900	LF	\$ 35.00	\$ 136,500.00
Pavers	20,670	SF	\$ 50.00	\$ 1,033,500.00
Standard 4" Concrete Sidewalk	19,800	SF	\$ 10.00	\$ 198,000.00
Decorative Concrete (at intersections)	9,900	SF	\$ 13.00	\$ 128,700.00
Bench	6	EA	\$ 6,000.00	\$ 36,000.00
Trash Receptacle	6	EA	\$ 1,800.00	\$ 10,800.00
Artistic Gateway Elements		LS	\$ 750,000.00	\$ -
Drive Apron, 8" Heavy Duty Concrete		EA	\$ 9,000.00	\$ -
Vertical Curb	810	LF	\$ 30.00	\$ 24,300.00
Vehicle Ramp	6	EA	\$ 15,000.00	\$ 90,000.00
Detectable Warning Pavers	624	SF	\$ 40.00	\$ 24,960.00
Earthwork for Expanded Streetscape (Fill)	800	CY	\$ 30.00	\$ 24,000.00
				\$ 1,934,510.00

Lighting	Quantity	Unit	Unit Cost	Total
Pedestrian Pole Lights	40	EA	\$ 12,000.00	\$ 480,000.00
Misc Electrical	1	LS	\$ 20,000.00	\$ 20,000.00
				\$ 500,000.00

Drainage	Quantity	Unit	Unit Cost	Total
Drainage Modifications (Existing Curb)	3	EA	\$ 7,000.00	\$ 21,000.00
Drainage Modifications (Proposed Curb)	4	EA	\$ 10,000.00	\$ 40,000.00
Multi-Path Drainage	3	EA	\$ 7,000.00	\$ 21,000.00
				\$ 82,000.00

Landscape	Quantity	Unit	Unit Cost	Total
Street Tree	43	EA	\$ 750.00	\$ 32,250.00
Enhanced Landscape Area	18900	SF	\$ 25.00	\$ 472,500.00
Turf Area		SY	\$ 3.50	\$ -
Irrigation	1	LS	\$ 15,000.00	\$ 15,000.00
				\$ 519,750.00

Utilities	Quantity	Unit	Unit Cost	Total
Utility Coordination	1	LS	\$ 25,000.00	\$ 25,000.00
				\$ 25,000.00

Subtotal	\$ 3,708,620.00
Mobilization/Contractor OH&P	\$ 259,603.40
Contingency (20%)	\$ 741,724.00
Utility Relocations (7%)	\$ 259,603.40
CE&I (9%)	\$ 333,775.80
Survey and Design (12%)	\$ 445,034.40
<b>Total Opinion of Probable Construction Costs</b>	<b>\$ 5,748,361.00</b>





16th Street -Quantities - Section 3 - 3rd Ave to Morris

Erosion Control and Layout	Quantity	Unit	Unit Cost	Total
Construction Layout	1	LS	\$ 4,000.00	\$ 4,000.00
Silt Fence	2200	LF		\$ -
Erosion Control	1	LS	\$ 5,500.00	\$ 5,500.00
				\$ 9,500.00

Demolition	Quantity	Unit	Unit Cost	Total
Removing Curb	2200	LF	\$ 6.50	\$ 14,300.00
Concrete Removal	1200	SF	\$ 20.00	\$ 24,000.00
Asphalt Pavement Removal	1600	SY	\$ 30.00	\$ 48,000.00
				\$ 86,300.00

Traffic/Roadway	Quantity	Unit	Unit Cost	Total
Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
Traffic Signage	1	LS	\$ 5,000.00	\$ 5,000.00
Traffic Signal Modifications (per intersection)	3	LS	\$ 70,000.00	\$ 210,000.00
Roadway and Parking Striping	1	LS	\$ 5,000.00	\$ 5,000.00
Multi Use Path (Asphalt)	1,100	SY	\$ 43.00	\$ 47,300.00
Decorative Crosswalk	1,500	SF	\$ 15.00	\$ 22,500.00
Asphalt Mill - includes leveling of crown	5000	SY	\$ 9.00	\$ 45,000.00
Asphalt Overlay	420	TON	\$ 120.00	\$ 50,400.00
Asphaly Leveling	42	TON	\$ 150.00	\$ 6,300.00
				\$ 406,500.00

Streetscape Hardscape	Quantity	Unit	Unit Cost	Total
Flush Concrete Band 12"		LF	\$ 15.00	\$ -
Wayfinding Signage	1	LS	\$ 15,000.00	\$ 15,000.00
Vehicular Bollards (removeable)			\$ 3,000.00	
Bollard	12	EA	\$ 2,500.00	\$ 30,000.00
Curb (Goes Around Landscape Buffer)	2000	LF	\$ 45.00	\$ 90,000.00
Concrete Curb and Gutter	1900	LF	\$ 35.00	\$ 66,500.00
Pavers	1450	SF	\$ 50.00	\$ 72,500.00
Standard 4" Concrete Sidewalk	16,200	SF	\$ 10.00	\$ 162,000.00
Decorative Concrete	4,500	SF	\$ 13.00	\$ 58,500.00
Bench	6	EA	\$ 6,000.00	\$ 36,000.00
Trash Receptacle	6	EA	\$ 1,800.00	\$ 10,800.00
Artistic Gateway Elements		LS	\$ 750,000.00	\$ -
Drive Apron, 8" Heavy Duty Concrete		EA	\$ 9,000.00	\$ -
Vertical Curb	200	LF	\$ 30.00	\$ 6,000.00
Vehicle Ramp		LF	\$ 15,000.00	\$ -
Detectable Warning Pavers	620	SF	\$ 40.00	\$ 24,800.00
Earthwork for Expanded Streetscape (Fill)	1200	CY	\$ 30.00	\$ 36,000.00
				\$ 608,100.00

Lighting	Quantity	Unit	Unit Cost	Total
Pedestrian Pole Lights	32	EA	\$ 12,000.00	\$ 384,000.00
Misc Electrical	1	LS	\$ 20,000.00	\$ 20,000.00
				\$ 404,000.00

Drainage	Quantity	Unit	Unit Cost	Total
Drainage Modifications (Existing Curb)	4	EA	\$ 7,000.00	\$ 28,000.00
Drainage Modifications (Proposed Curb)	4	EA	\$ 10,000.00	\$ 40,000.00
Multi-Path Drainage	4	EA	\$ 7,000.00	\$ 28,000.00
				\$ 96,000.00

Landscape	Quantity	Unit	Unit Cost	Total
Street Tree	53	EA	\$ 750.00	\$ 39,750.00
Enhanced Landscape Area	750	SF	\$ 25.00	\$ 18,750.00
Turf Area	550	SY	\$ 3.50	\$ 1,925.00
Irrigation	1	LS	\$ 15,000.00	\$ 15,000.00
				\$ 75,425.00

Utilities	Quantity	Unit	Unit Cost	Total
Utility Coordination	1	LS	\$ 25,000.00	\$ 25,000.00
				\$ 25,000.00

Subtotal	\$ 1,710,825.00
Mobilization/Contractor OH&P	\$ 119,757.75
Contingency (20%)	\$ 342,165.00
Utility Relocations (7%)	\$ 119,757.75
CE&I (9%)	\$ 153,974.25
Survey and Design (12%)	\$ 205,299.00
<b>Total Opinion of Probable Construction Costs</b>	<b>\$ 2,651,778.75</b>