CITY OF ATLANTA
DEPARTMENT OF TRANSPORTATION

Project Concept Report

Project Type:	Bicycle Lane Design	County:	Fulton
ATLDOT Project Number:	N/A	NPU(s):	E
Council District(s):	2	Tax Allocation District:	None
Federal Route Number:	N/A	State Route Number:	N/A
Project Name:	Central Midtown Connection Plan		

The project is to provide a protected east-west bicycle connection across the Midtown Improvement District which will connect the existing two-way separated bike lanes on 10th Street with the proposed 10th Street Bridge bicycle lanes along Williams Street.

Submitted for approval:

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Chris Puglisi, P.E. – Toole Design Group — Date: 2/28/2023

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ATLDOT Pre-Construction Director — Date: 2/27/2023

DocuSigned by: Gregory Moore
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ATLDOT Deputy Commissioner – Capital Projects — Date: 4/5/2023

DocuSigned by:
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ATLDOT Deputy Commissioner – Strategy and Planning — Date: 3/1/2023

DocuSigned by: Solomon Caviness, IV
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ATLDOT Commissioner — Date: 3/8/2023

PROJECT LOCATION MAP

PLANNING AND BACKGROUND

Prepared By: *Toole Design Group* **Date:** *9/21/2022*
Project Justification Statement:
The purpose of the Central Midtown Connection project is to provide a safe east-west micromobility connection through the middle of the Midtown district and to improve pedestrian safety. The Central Midtown Connection will extend the existing 10th Street cycle track from its current terminus at Myrtle Street, west to Williams Street. The proposed route would carry the facility west to Crescent Ave where it would turn south and then west on Peachtree Place. It would continue along Peachtree Place to Williams St where the project would connect to the 10th St Bridge Multimodal Connection project.

The 10th Street corridor is identified as one of "top 10" streets on the City's High Injury Network due primarily to its high weighted injury per mile score. The Midtown Transportation Plan (2017) identifies Peachtree Place as the preferred corridor to create a safe, east-west connection for people on bikes and scooters through the central part of the Midtown District. It will link the Georgia Tech campus and Home Park neighborhood with the core of Midtown, Midtown MARTA Station, Piedmont Park, the Garden District, and the Eastside BeltLine. This project is also included in the Atlanta's Transportation Plan (BI-037) and has been awarded funding through TSPLOST 2.0.

Over the course of the last decade the Peachtree Place and 10th Street corridors have seen catalytic change. New multiuse, high-rise developments now line the corridor along with historic condominiums and a very active Midtown MARTA Station. By utilizing the lower volume/lower speed Peachtree Place for part of the bike facility, we can avoid the most vehicular focused section of 10th Street to connect to the 10th Street Cycle Track, the planned north/south bike corridors, the Garden District, and a potentially longer-term connection to Georgia Tech. These connections are critical to protect the most vulnerable users and provide the flexibility needed to respond to Midtown's growth.

The design of this project will follow published City of Atlanta design guidelines.

The performance goals for this project are to reduce the number of crashes and injuries, especially with the most vulnerable users of the corridor and to increase the number of trips made by bike/scooter along this corridor. Secondarily, we expect that this project will help improve curbside operations by dedicating space for delivery of goods and rideshare pickup and dropoff. The project will also maintain existing transit service for the Georgia Tech Stinger and MARTA buses.

Existing conditions:
10th St is comprised of four travel lanes, two eastbound (EB) and two westbound (WB), with a dedicated right turn for EB traffic at Juniper (one-way southbound) and at Peachtree St and dedicated left turn lanes in both directions at Peachtree St. Travel lanes are 10' wide. Sidewalk widths along 10th St range from 5' to 11'. There is a 5' WB bike lane on 10th St between Juniper and Peachtree St. The speed limit of 10th Street is currently posted as 30 MPH.

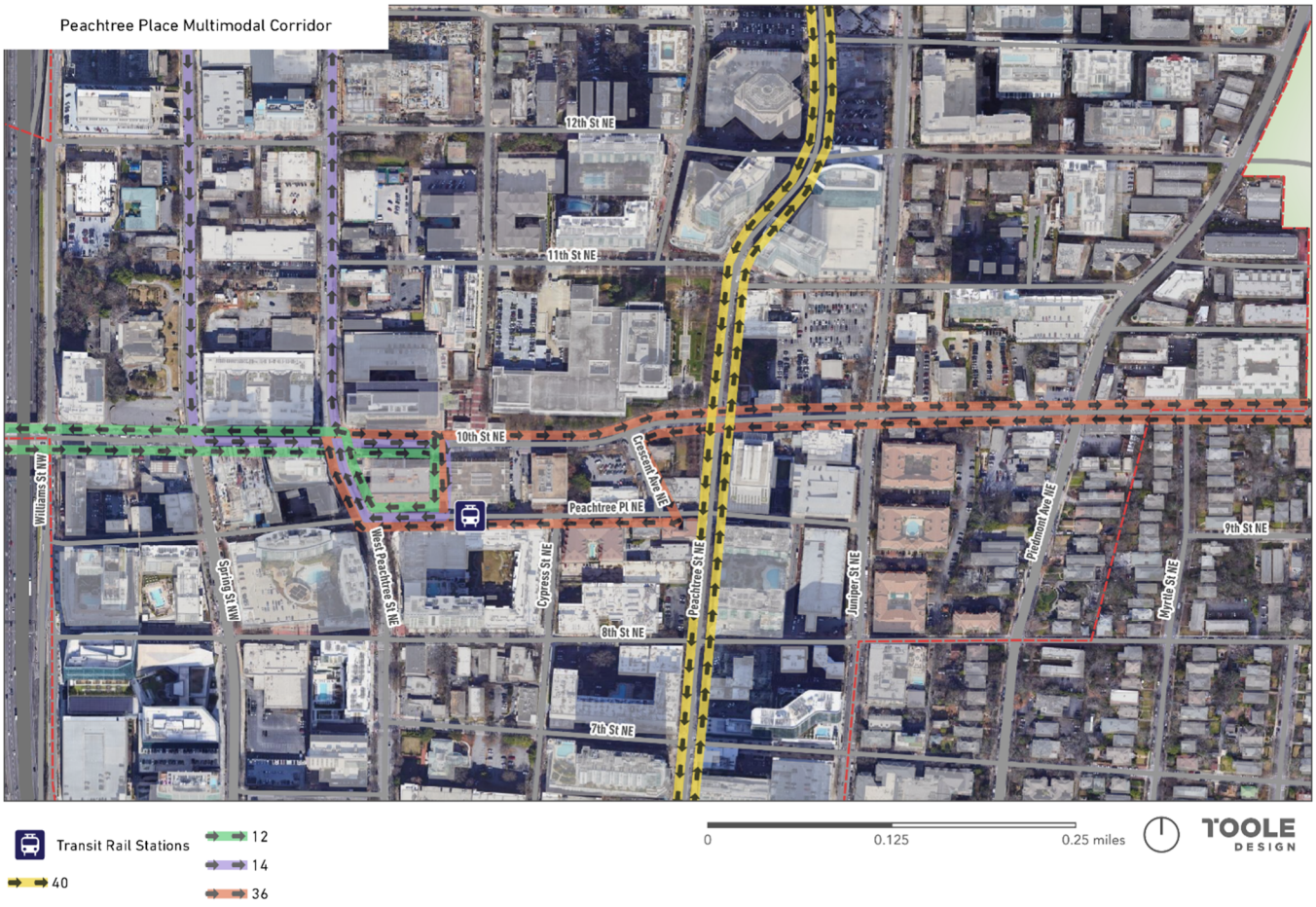
Crescent Ave includes two 10' travel lanes and sidewalks ranging from 5' – 6'. The speed limit of Crescent Avenue is not posted and is assumed to be 25 MPH.

Peachtree Place consists of two travel lanes ranging from 10'-15' and includes on street parking on the south side of the street. A dedicated WB right turn lane exists at West Peachtree St. A Georgia Tech Shuttle stop is located on the north side of the street in front of the Midtown MARTA Station. There are two designated loading zones on the north side of Peachtree Place, between West Peachtree and Spring Street. Sidewalk widths vary from 7' to 11'. Every intersection is currently signalized or will be signalized with the exception of 10th St at Crescent Ave and Peachtree Place at Williams which has a stop sign. The speed limit of Peachtree Place is not posted and is assumed to be 25 MPH.

The project is in a combined sewer area.

Atlanta Fire and Rescue Station 15 is located on 10th Street just east of Juniper Street.

Existing MARTA bus routes are shown in the figure below.



Other projects in the area:

Active Transportation Projects

Project Name: Midtown Art Walk
Description: A public space project stretching 5 blocks between the Midtown MARTA Station and Arts Center MARTA Station, this pedestrian promenade straddles public space and private property to create a ½ mile experience that is equal parts enhanced streetscape and linear park. The project follows the alignment of Peachtree Walk and creates a shared street condition that expands the public realm and creates more space for art and activation.
Phase: CST
Coordination Needed: None

Project Name: Spring Street/West Peachtree Quick-Build Light Individual Transportation (LIT) Lane
Description: Addition of one-way protected bike lanes on each corridor. Spring St bike lane extends from 17th Street to 3rd Street and West Peachtree bike lane will extend from Linden Ave to 17th Street.
Phase: Permitting/Procurement
Coordination Needed: Design is being coordinated with this project

Project Name: Midtown Atlanta Regional Activity Center - Pedestrian Mobility and Safety Improvements
Description: Installation of five new traffic signals at currently unsignalized intersections, two new ped actuated signals, and crosswalk striping and ramps at approximately 15 intersections.
Phase: Procurement
Coordination Needed: Design is being coordinated with this project

Project Name: Piedmont Avenue Complete Street
Description: Addition of a one-way NB protected bike lane from Ponce de Leon Ave to 15th Street. Project also includes sidewalk upgrades, stormwater upgrades, and safe pedestrian crossings.
Phase: Procurement
Coordination Needed: Design is being coordinated with this project

Project Name: Juniper Street Complete Street
Description: Addition of a one-way SB protected bike lane from14th Street to Ponce de Leon Ave. Project also includes streetscape enhancements, stormwater upgrades, and safe pedestrian crossings.
Phase: Procurement
Coordination Needed: Design is being coordinated with this project

Project Name: 10th Street Bridge Enhancement
Description: Addition of a two-way protected cycle track on 10th Street from Techwood Drive to Williams Street as well as a two-way cycle track on Williams St from Peachtree Place to 12th Street.
Phase: Design
Coordination Needed: Design is being coordinated with this project

Federal Oversight: ☐ **PoDI** ☒ **Exempt** ☐ **State Funded** ☐ **Other**

Projected Traffic:
Traffic Projections Performed by: Jacobs
Date approved by the TIM: *11/2/2021*

AASHTO Functional Classification (Peachtree Place): Local Road and Street
AASHTO Functional Classification (10th Street): Minor Arterial
AASHTO Context Classification (Mainline): Urban Core
AASHTO Project Type (Mainline): Construction on existing roads
Is the project located on a NHS roadway? ☒ No ☐ Yes

Atlanta City Design character area: Growth - Core
City of Atlanta Special Streets:

Note: Atlanta classifies Peachtree Place as a Street and 10th Street as a Boulevard as it relates to Street Design Typologies, per the Connect Atlanta Plan Street Design Guide.

Safe Streets - Bicycle, Pedestrian, and/or Transit Standard Warrants:

Warrants met: ☐ None ☒ Bicycle ☒ Pedestrian ☒ Transit

The project was predicated on Cycle Atlanta 1.0 creating a cross-town bicycle connection.

Pavement Evaluation and Recommendations

Pavement condition index has been reviewed ☐ No ☒ Yes

Feasible Pavement Alternatives: ☐ HMA ☐ PCC ☒ HMA & PCC

Is the project located on a Special Roadway or Network? ☐ No ☒ Yes *Statewide Freight Corridor*

- 10th Street (Mainline)
- Piedmont Avenue (Cross-Street)
- Juniper Street (Cross-Street)
- West Peachtree Street (Cross-Street)
- Spring Street (Cross-Street)

  Note: All above streets are classified as City of Atlanta Freight Routes per Cargo Atlanta Study.

Do the limits of the project include one or more signalized intersections? ☐ No ☒ Yes

- 10th Street at Piedmont Avenue
- 10th Street at Juniper Street
- 10th Street at Peachtree Street
- Peachtree Place at West Peachtree Street
- Peachtree Place at Spring Street (Future Signal, Midtown Atlanta Regional Activity Center - Pedestrian Mobility and Safety Improvements aka Last Mile Intersections Project)

  Note: Refer to the Peachtree Place Corridor Plan Alternatives Refinement Report (Appendix 4) for more details on signal modifications.

Is Federal Aviation Administration coordination anticipated? ☒ No ☐ Yes

DESIGN AND STRUCTURAL

Description of the proposed project:

The Central Midtown Connection Project is approximately 0.75 miles within the City of Atlanta in Fulton County. It terminates at the intersection of 10th Street with Myrtle Street to the east and Peachtree Place with Williams Street to the west. The project is to provide a protected east-west bicycle connection across the Midtown Improvement District which will connect the existing two-way separated bike lanes on 10th Street with the proposed 10th Street Bridge bicycle lanes along Williams Street. Therefore, the modal priority for this project is bicycles. This project does not impact any existing structures.

Major Structures: N/A

Mainline Design Features:

Peachtree Place	**Functional Classification:** *Local Road and Street*		
Feature	**Existing**	***Policy**	**Proposed**
Typical Section:			
- Number of Through Lanes	1-2		1-2
- **Lane Width(s) (-ft)**	**10-ft to 20-ft**	**10-ft**	**10-ft**
- **Median Width (-ft) & Type**	**None**	**N/A**	**None**
- **Border Area Width (-ft)**	**Varies**	**17-ft**	**Varies**
- **Cross Slope (%)**	**Varies**	**N/A**	**Match existing**
- **Sidewalks (-ft)**	**5-ft to 30-ft**	**15-ft w/ 8-ft walk zone**	**5-ft to 30-ft**
- Auxiliary Lanes (# LTL, RTL or TWLTL / -ft width)	N/A		N/A
- **Bike Accommodations (-ft) & Type**	**None**	**5-ft if used, else shared lanes**	**4.5-ft to 6-ft**
- On Street Parking Width	**7.5-ft**	**7.5-ft**	**8-ft**
- Green Infrastructure Width	N/A		N/A
- Street Trees/Landscaping Width	5-ft		5-ft
- Streetlights	5-ft		5-ft
Posted Speed (mph)	25 mph		25 mph
Design Speed (mph) AASHTO/City Code	**25 mph**	**25 mph**	**25 mph**
Minimum Horizontal Curve Radius (-ft)	**N/A**	**154-ft**	**Match existing**
Maximum Superelevation Rate (%)	**4%**	**4%**	**Match existing**
Maximum Grade (%)	**Varies**	**8%**	**Match existing**
Access Control	**By Permit**	**By Permit**	**By Permit**
Design Vehicle	SU-40		SU-40
Check Vehicle	CITY-BUS		CITY-BUS
Pavement Type	HMA		HMA

**According to current ATLDOT Design Policy if applicable*

10th Street	**Functional Classification:** *Minor Arterial*		
Feature	**Existing**	***Policy**	**Proposed**
Typical Section:			
- Number of Through Lanes	2		1-2
- **Lane Width(s) (-ft)**	**11-ft**	**10-ft minimum**	**10-ft**
- **Median Width (-ft) & Type**	**None**	**N/A**	**None**
- **Border Area Width (-ft)**	**Varies**	**17-ft**	**Varies**
- **Cross Slope (%)**	**Varies**	**N/A**	**Match existing**
- **Sidewalks (-ft)**	**5-ft to 30-ft**	**15-ft w/ 8-ft walk zone**	**5-ft to 30-ft**
- Auxiliary Lanes (# LTL, RTL or TWLTL / -ft width)	LTL, RTL / 11-ft		LTL, RTL / min. 8.5-ft
- **Bike Accommodations (-ft) & Type**	**Varies: Conventional WB bike lane and shared lanes**	**5-ft lanes**	**5-ft to 7-ft lanes Type varies: separated bike lanes, 2-way cycle track**
- On Street Parking Width	**7.5-ft**	**7.5-ft**	**7-ft**
- Green Infrastructure Width	N/A		N/A
- Street Trees/Landscaping Width	5-ft		5-ft
- Streetlights	5-ft		5-ft
Posted Speed (mph)	30 mph		30 mph
Design Speed (mph) AASHTO/City Code	**30 mph**	**30 mph**	**30 mph**
Minimum Horizontal Curve Radius (-ft)	**320-ft**	**250-ft**	**Match existing**
Maximum Superelevation Rate (%)	**4%**	**4%**	**Match existing**
Maximum Grade (%)	**Varies**	**8%**	**Match existing**
Access Control	**By Permit**	**By Permit**	**By Permit**
Design Vehicle	SU-40		SU-40
Check Vehicle	WB-67†		WB-67†
Pavement Type	HMA		HMA

**According to current ATLDOT Design Policy if applicable*

†*Firetruck used as additional check vehicle for movements to/from Atlanta Fire Rescue Station 15*

Design Exceptions/Design Variances to FHWA/GDOT/ATLDOT Controlling Criteria anticipated:

FHWA or GDOT Controlling Criteria	No	Undetermined	Yes	DE or DV	Approval Date (if applicable)
1. Design Speed	☒	☐	☐		
2. Design Loading Structural Capacity	☒	☐	☐		
3. Stopping Sight Distance	☐	☒	☐		
4. Horizontal Curve Radius	☒	☐	☐		
5. Maximum Grade	☒	☐	☐		
6. Vertical Clearance	☒	☐	☐		
7. Superelevation Rate	☒	☐	☐		
8. Lane Width	☐	☐	☒		
9. Cross Slope	☒	☐	☐		
10. Shoulder Width	☒	☐	☐		

Stopping Sight Distance may require a variance at the intersections of Peachtree Place at Cypress Street, and Piedmont Avenue at 10th Street

Lane width Design Variance attached as Appendix 7.

Lighting Required: ☒ No ☐ Yes

Off-site Detours Anticipated: ☒ No ☐ Undetermined ☐ Yes

If yes: Roadway type to be closed: ☐ Local Road ☐ State Route
Sidewalk to be closed: ☐ Local Road ☐ State Route
Detour Route selected: ☐ Local Road ☐ State Route
TIM Concurrence w/Detour Route: ☐ No/Pending ☐ Received *Date*

INTERCHANGES AND INTERSECTIONS

Interchanges/Major Intersections:

- 10th Street at Piedmont Avenue: City-maintained signalized intersection. Piedmont Avenue is a one-way northbound minor arterial. Planned complete street project along Piedmont Avenue will repurpose the rightmost lane as a bike lane. 10th Street is a 4-lane minor arterial.
- 10th Street at Juniper Street: City-maintained signalized intersection. Juniper Street is a one-way southbound minor arterial. Planned complete street project along Juniper Street will repurpose the rightmost lane as a bike lane. 10th Street is a 4-lane minor arterial.
- 10th Street at Peachtree Street: City-maintained signalized intersection. Both streets are two-way, five-lane streets with protected-permissive left-turn phases. 10th Street is a 5-lane minor arterial.
- Peachtree Place at West Peachtree Street: City-maintained intersection. West Peachtree Street is a one-way northbound minor arterial. Planned complete street project along West Peachtree Street will repurpose the rightmost lane as a bike lane.
- Peachtree Place at Spring Street: Future city-maintained signalized intersection. Spring Street is a one-way southbound minor arterial. Planned complete street project along Spring Street will repurpose the rightmost lane as a bike lane.

Intersection Control Evaluation (ICE) Required: ☒ No ☐ Yes

Roundabout Concept Validation Required: ☒ No ☐ Yes ☐ Completed *Date*

UTILITY AND PROPERTY

Railroad Involvement: *MARTA – MARTA Midtown Transit station adjacent to project corridor. No impacts anticipated to underground rail.*

Utility Involvements: *MARTA; Georgia Power; Comcast, AT&T; Google Fiber; City of Atlanta Watershed Management, Georgia Natural Gas; Verizon; Atlanta Gas Light (Southern Company)*

SUE Required: ☐ No ☒ Yes ☐ Undetermined

Right-of-Way (ROW): Existing width: 40 – 80 ft. Proposed width: 45 – 80 ft.

Required Right-of-Way anticipated: ☐ None ☐ Yes ☒ Undetermined
Easements anticipated: ☐ None ☐ Temporary ☒ Permanent * ☒ Utility ☐ Other
** Permanent easements include the right to place utilities.*

Anticipated total number of impacted parcels:		9
Displacements anticipated:	Businesses:	0
	Residences:	0
	Other:	0
Total Displacements:		0

Legislation for Right of way approval: ☐ Not Required ☒ Required

Impacts to USACE property anticipated: ☒ No ☐ Yes ☐ Undetermined

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document: *GEPA ~ None*

~~**Level of Environmental Analysis:**~~

~~☐ The environmental considerations noted below are based on preliminary desktop or screening level environmental analysis and are subject to revision after the completion of resource identification, delineation, and agency concurrence.~~

~~☐ The environmental considerations noted below are based on the completion of resource identification, delineation, and agency concurrence.~~

~~**MS4 Permit Compliance – Is the project located in a MS4 area?** ☐ No ☒ Yes~~
~~**If yes, is the MS4 Permit anticipated to apply to all or part of this project?** ☐ No ☒ Yes~~

~~**Will Green Infrastructure (GI) be incorporated into the project?** ☒ No ☐ Yes~~

~~**Environmental Permits/Variances/Commitments/Coordination anticipated:**~~

~~**Permit/Variance/Commitment/ Coordination Anticipated**~~	~~**No**~~	~~**Yes**~~	~~**Remarks**~~
~~1. Forest Service/NPS~~	~~☐~~	~~☐~~	
~~2. CWA Section 404 Permit~~	~~☐~~	~~☐~~	
~~3. USACE Real Estate Outgrant~~	~~☐~~	~~☐~~	
~~4. Buffer Variance~~	~~☐~~	~~☐~~	
~~5. NPDES~~	~~☐~~	~~☐~~	
~~6. FEMA~~	~~☐~~	~~☐~~	
~~7. Cemetery Permit~~	~~☐~~	~~☐~~	
~~8. Other Permits~~	~~☐~~	~~☐~~	
~~9. Other Commitments~~	~~☐~~	~~☐~~	
~~10. Other Coordination~~	~~☐~~	~~☐~~	
~~11. City of Atlanta Tree Permit~~	~~☐~~	~~☐~~	~~*Include number to be removed and proposed recompense.*~~

~~**Is a PAR required?** ☒ No ☐ Yes ☐ Completed *Date*~~

~~**Environmental Comments and Information:**~~
~~**NEPA/GEPA, Ecology, History, Archeology, Noise Effects:** Environmental impacts are anticipated to be minimal and will be evaluated during the next design phase.~~

PUBLIC INVOLVEMENT

Due to the ongoing COVID-19 pandemic, large public engagement events have been held virtually.

Virtual public open house held on May 10, 2022. Public input attached in Appendix 6
Virtual map dot exercise was posted on the project website and those public responses are also attached in Appendix 6

Stakeholder meetings:
- MARTA, 11/19/2021
- Plaza Midtown, 11/8/2021
- Georgia Tech, 12/10/2021
- The Mark, 12/13/2021
- Nine15 Midtown, 12/15/2021
- Stratus Midtown 12/16/2021
- University House, 1/6/2022
- 100 Midtown, 1/11/2022
- The Hub, 1/13/2022
- Palmer Phelan/Cotting Court, 1/26/2022

Major stakeholders: Major stakeholders include adjacent property owners, Midtown Neighbors' Association, NPU E, Council Districts 2 and 6.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: *Coordination with private development could impact construction schedule*

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Team Meeting: *July 29, 2022 10:30 AM*
Concept Team Meeting: *November 8, 2022 10:30 AM*
Other coordination to date: *Bi-weekly meetings to discuss the concept. ATLDOT has been invited and in attendance to all meetings.*

Project Activity	Party Responsible for Performing Task(s)
Concept Development	Toole and Jacobs
Design	Toole and Jacobs
Right-of-Way Acquisition	Midtown Alliance and City of Atlanta
Utility Coordination (Preconstruction)	Midtown Alliance and City of Atlanta
Utility Relocation (Construction)	Utility Owners
Letting to Contract	Midtown Alliance
Construction Supervision	Midtown Alliance
Providing Material Pits	N/A
Providing Detours	Construction contractor, TBD
Environmental Studies, Documents, & Permits	N/A
Environmental Mitigation	N/A
Construction Inspection & Materials Testing	Contractor, TBD

Project Cost Estimate Summary and Funding Responsibilities:						
	PE Activities		ROW	Reimbursable Utilities	CST*	Total Cost
	PE Funding	Section 404 Mitigation				
Date of Estimate:	*9/21/2022*	*Date*	*9/22/2022*	*12/2/2022*	*9/21/2022*	
Funded By:	Midtown Alliance	N/A	TBD	TBD	MAF TSPLOST	
Budgeted Cost:					$2,000.000.00	$2,000,000.00
Estimated Cost:	$190,000.00	N/A	$667,100.00	$177,503**	$2,204,374.00	$3,048,977.00
Total Cost Difference:						$1,048,977

*CST Cost includes: Construction, Engineering and Inspection, Contingencies and Liquid AC Cost Adjustment.
** As the conceptual data is based on aerials and GIS, the proposed reimbursable utility impacts would be difficult to accurately quantify. Utility impacts will be evaluated during the next design phase which will include SUE and Survey

ALTERNATIVES DISCUSSION

Alternative selection: The goal of this project is to provide a connection between the two-way separated bike lanes that currently terminate at 10th Street at Myrtle Street with the proposed two-way separated bike lanes that are planned to terminate at Peachtree Place at Williams Street were evaluated. Five (5) alternatives were considered connecting these two points. The alternatives were evaluated based upon the following criteria:

- Safety: Bicycle-Vehicle Conflicts
- Comfort: Level of Traffic Stress (LTS)
- Connectivity: Bicycle Travel Time
- Directness: Length of bicycle route compared with a direct path down 10th Street (Ratio)

Preferred Alternative (1): 10th Street – Crescent Avenue – Peachtree Place			
Estimated Property Impacts:	**9**	**Estimated Total Cost:**	**$3,048,977**
Estimated ROW Cost:	**$667,100**	**Estimated CST Time:**	**12 months**
Rationale: This route achieved the highest ranking based upon number of vehicle conflicts, level of traffic stress (LTS), bicycle travel time, and directness ratio.			

Alternative 2: 10th Street – Peachtree Street – Peachtree Place			
Estimated Property Impacts:		**Estimated Total Cost:**	
Estimated ROW Cost:		**Estimated CST Time:**	
Rationale: This alternative was not advanced due to a high level of traffic stress (LTS) score for cyclists and bicycle travel time.			

Alternative 3: 10th Street – Juniper Street – Peachtree Place			
Estimated Property Impacts:		**Estimated Total Cost:**	
Estimated ROW Cost:		**Estimated CST Time:**	
Rationale: This alternative was not advanced due to high number of driveway conflicts, bicycle travel time. This alternative also required the construction of a bicycle facility down a privately-owned alley between Juniper Street and Peachtree Street.			

Alternative 4: Myrtle Street – 8th Street – Juniper Street – Peachtree Place			
Estimated Property Impacts:		**Estimated Total Cost:**	
Estimated ROW Cost:		**Estimated CST Time:**	
Rationale: This alternative was not advanced due to a high number of driveway conflicts, level of traffic stress (LTS) score, bicycle travel time, and high directness ratio.			

Alternative 5: Myrtle Street – 8th Street – Cypress Street – Peachtree Place			
Estimated Property Impacts:		**Estimated Total Cost:**	
Estimated ROW Cost:		**Estimated CST Time:**	
Rationale: This alternative was not advanced due to a high number of driveway conflicts, level of traffic stress (LTS) score, bicycle travel time, and high directness ratio.			

Comments: Further analysis of the preferred alternative was also performed to determine the type of bicycle lane (two-way separated bike lane versus conventional bike lanes). This analysis took into account the number of bicycle-vehicle conflicts, bicycle delay, and vehicle delay. Details of all analyses are included in the Peachtree Place Corridor Plan Alternatives Refinement Report (Appendix 4).

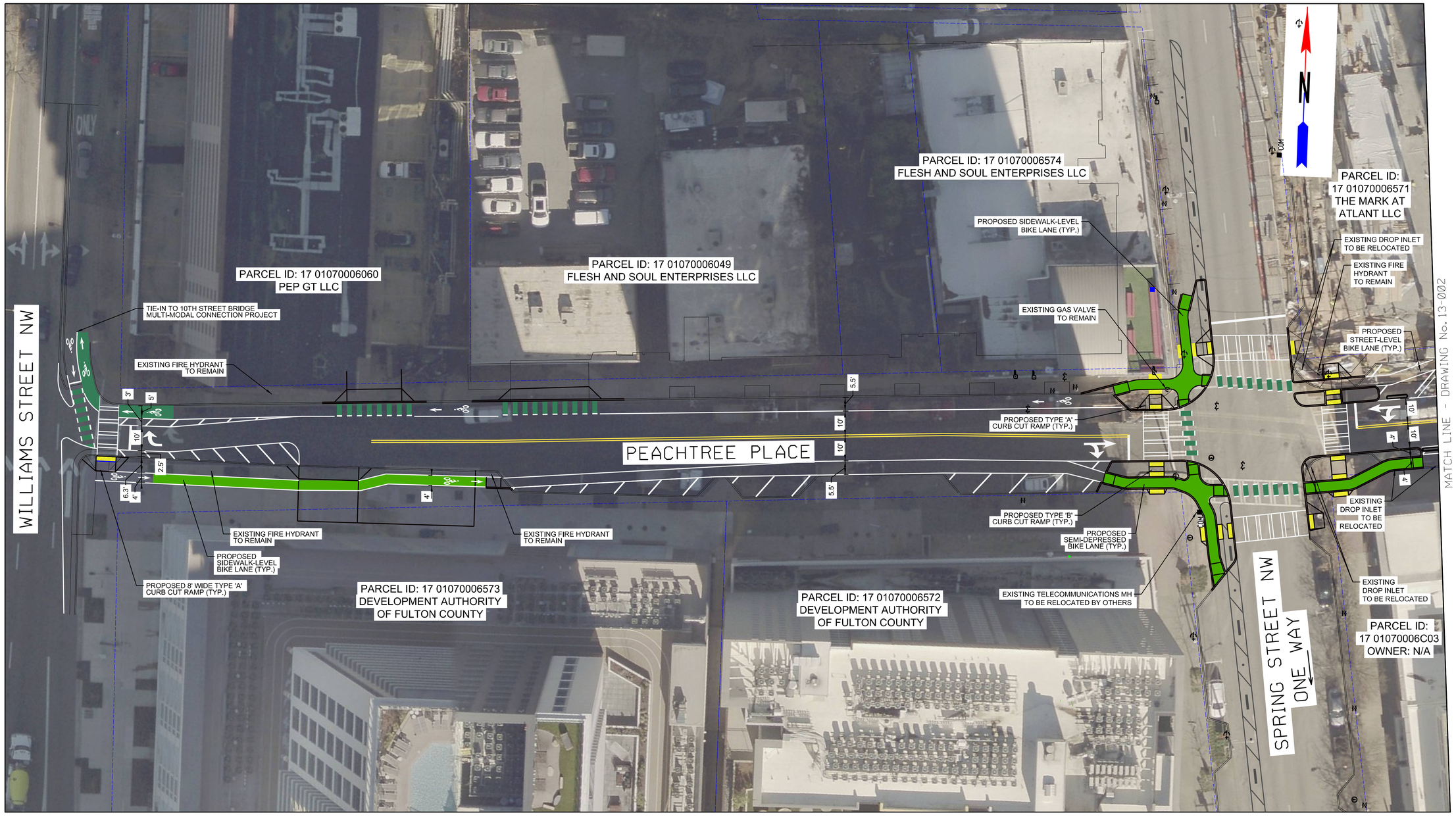
LIST OF ATTACHMENTS/SUPPORTING DATA

1. Concept Layout
2. Typical sections
3. Cost Estimates:
    a. Construction Estimate including Engineering and Inspection and Contingencies
    b. Right-of-Way
    c. Utility
    d. Variance
4. Multimodal Traffic Analysis
    a. Existing Conditions Summary
    b. Crash summaries and diagrams, near-miss video analytics
    c. Traffic Projections by mode and Design Traffic diagrams
    d. Travel time and Capacity analysis summary
    e. Safety Analysis
    f. TE Study and/or Signal Warrant Analysis, Stop Control Evaluation, Pedestrian Crossing Analysis, Traffic Calming Analysis, Bicycle or Transit Analyses, etc.
5. Concept validation – Geometric & Performance checks (Design & OSOW vehicle swept paths, Sight distance checks.)
6. Public Comment
7. Lane Width Design Variance

APPENDIX 1: CONCEPT LAYOUT

DATE$$$ TIME$$$ | $PRF8$ | DGN | P.I. No.

$USER$ | $$PENTABLE$$



DRAFT: NOT FOR CONSTRUCTION OR REPRODUCTION

TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
0 20 40 80

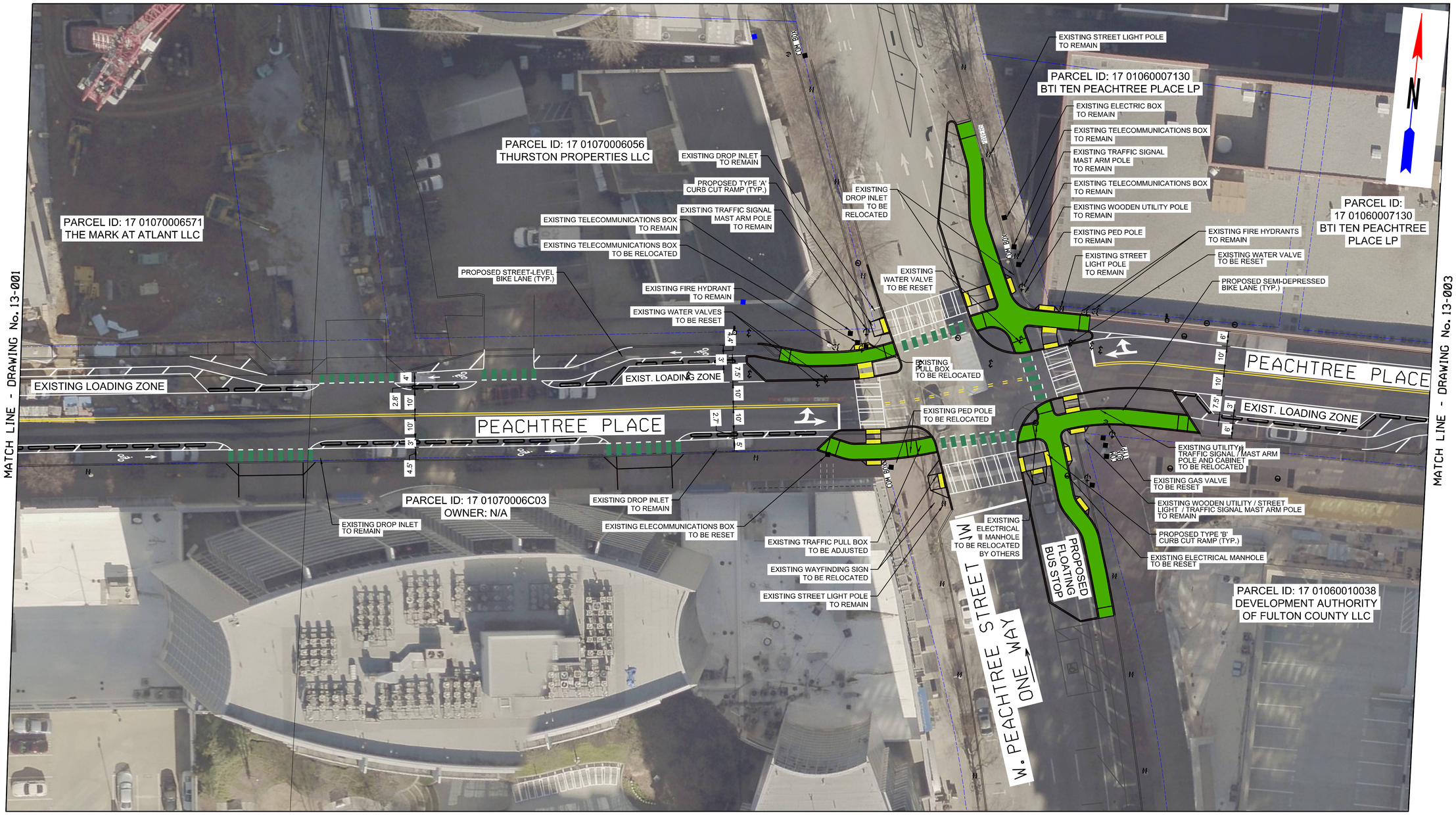
REVISION DATES		

CONSTRUCTION PLAN
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		13-001
CORRECTED:		DATE:		
VERIFIED:		DATE:		

10/23/2015 GPLN

DATE$$$ TIME$$$ $USER$ | $PRF8$ $$PENTABLE$$ | DGN | P.I. No.



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TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
0 20 40 80

REVISION DATES

CONSTRUCTION PLAN
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

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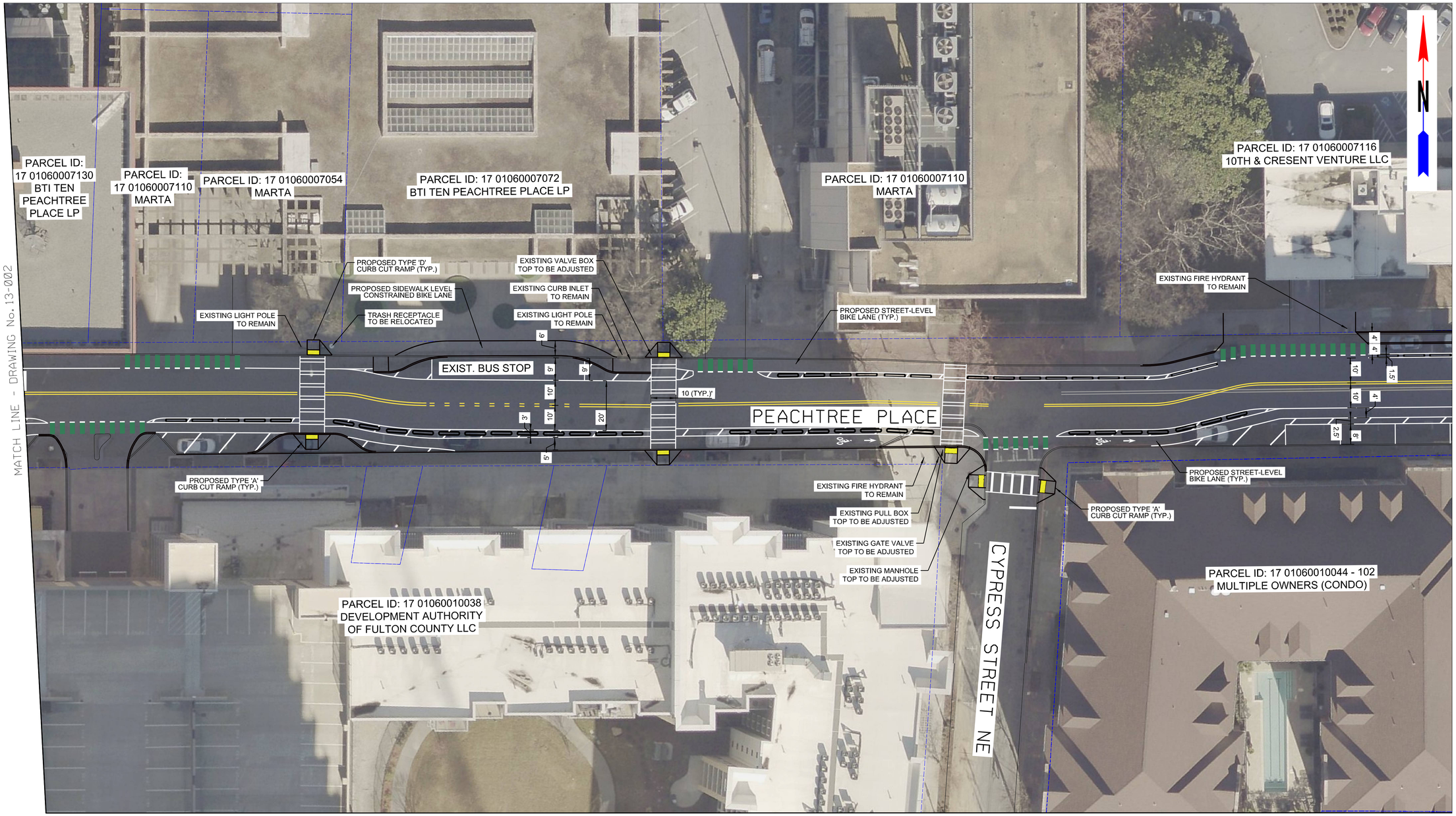
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No. 13-002

10/23/2015 GPLN



DRAFT: NOT FOR CONSTRUCTION OR REPRODUCTION

TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES

CONSTRUCTION PLAN
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		13-003
VERIFIED:		DATE:		

10/23/2015 GPLN

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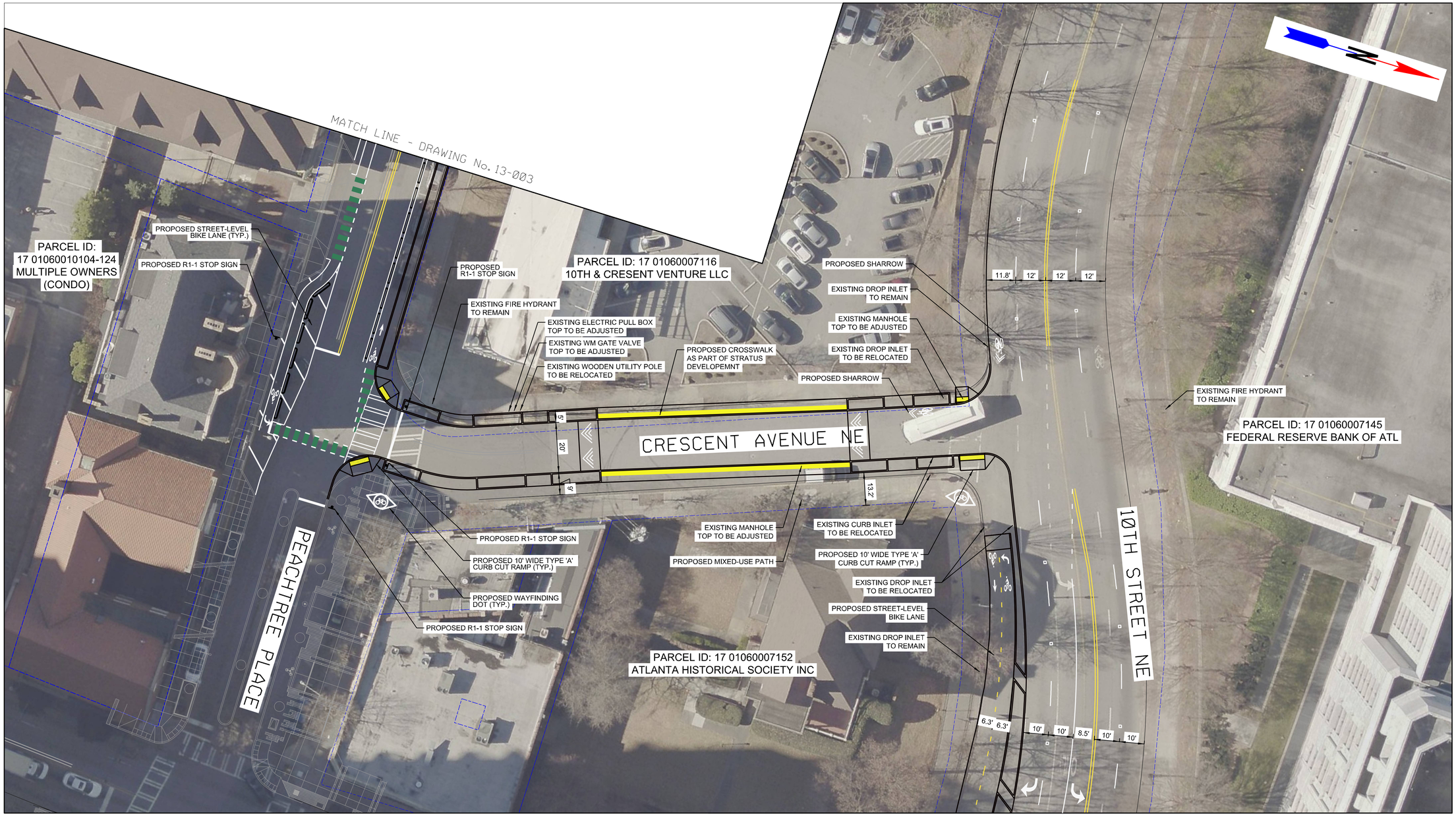

MATCH LINE - DRAWING No. 13-005

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TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
0 20 40 80

REVISION DATES		

CONSTRUCTION PLAN
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

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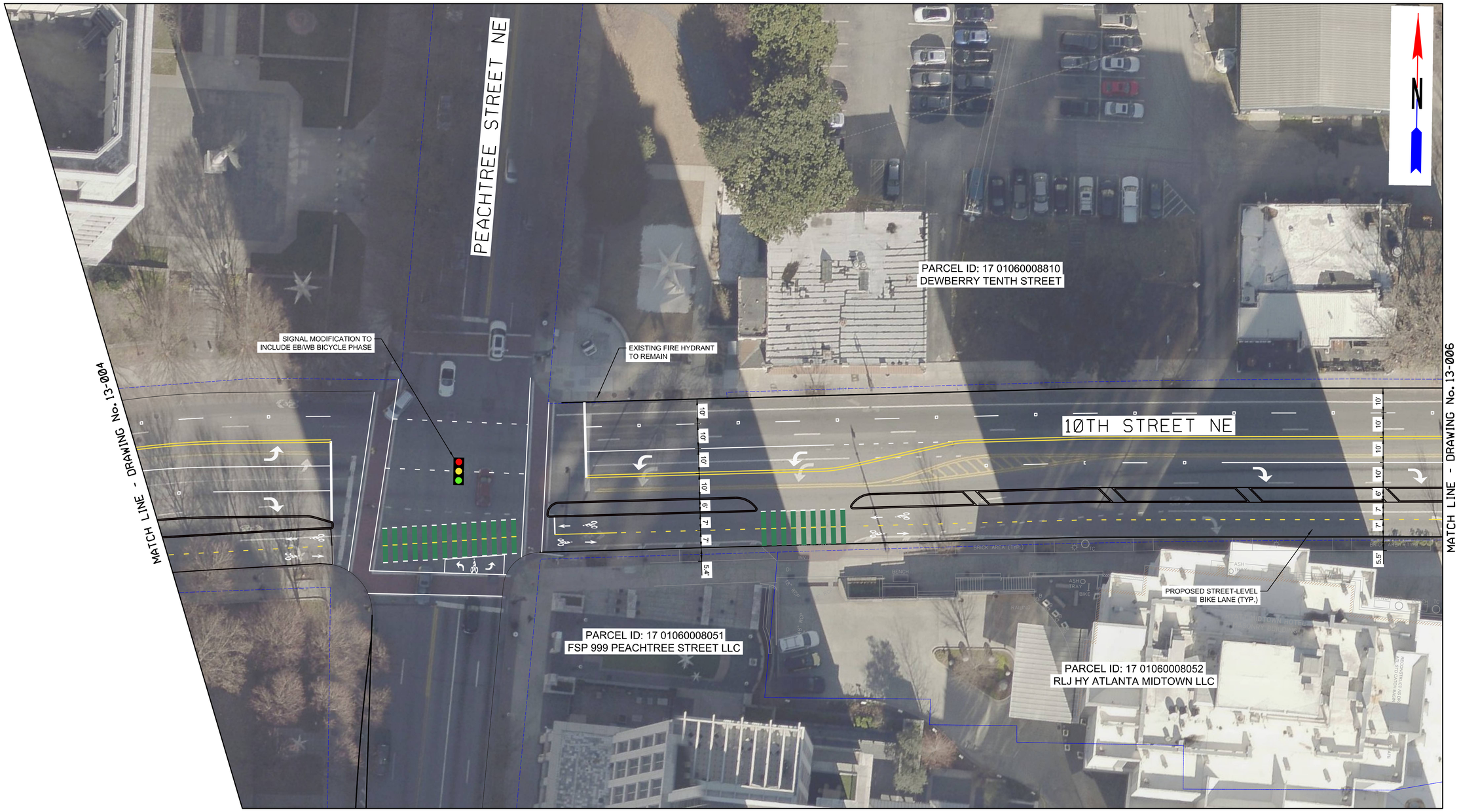

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MIDTOWN Alliance

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REVISION DATES		

CONSTRUCTION PLAN
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CENTRAL MIDTOWN CONNECTION PLAN

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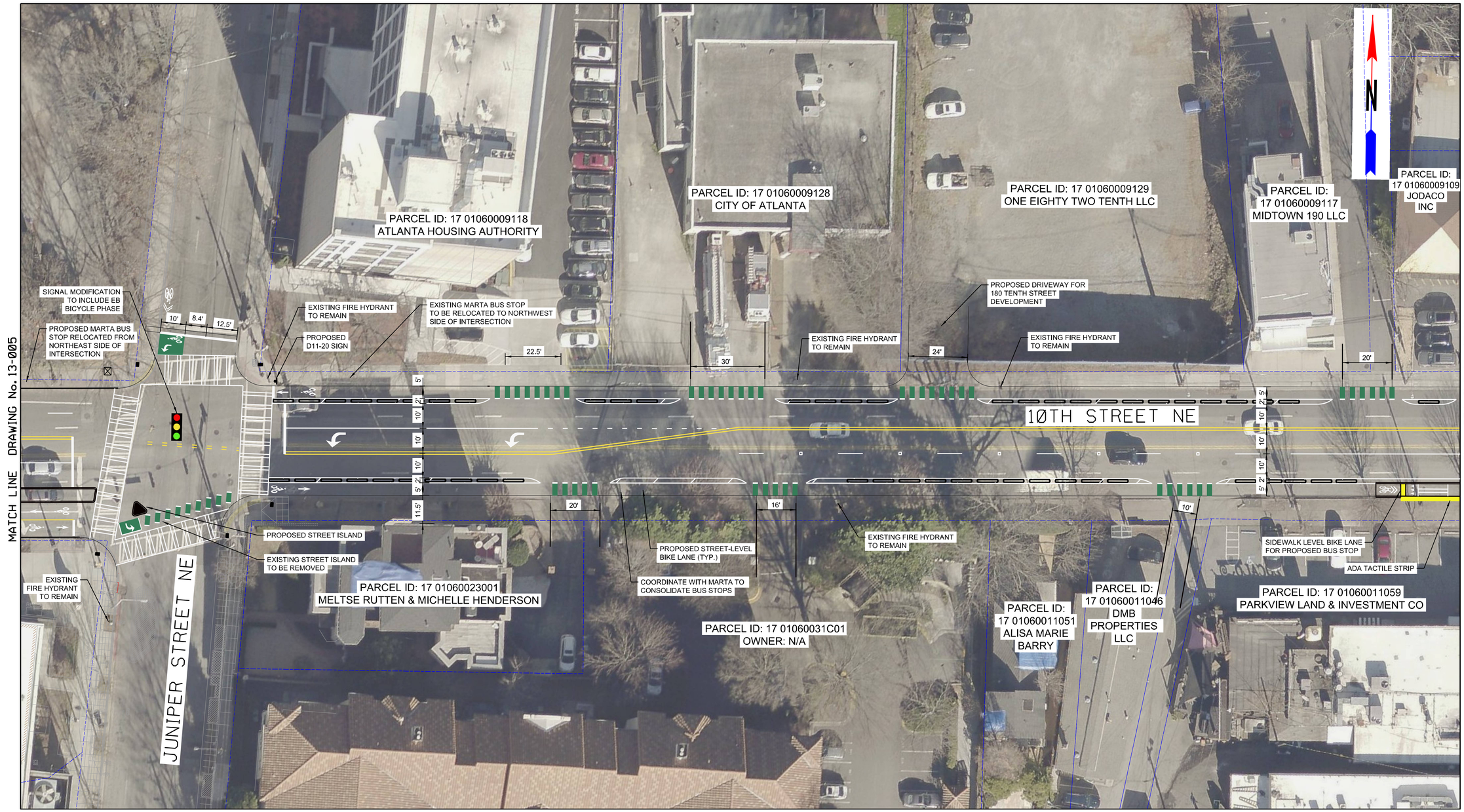

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REVISION DATES

CONSTRUCTION PLAN
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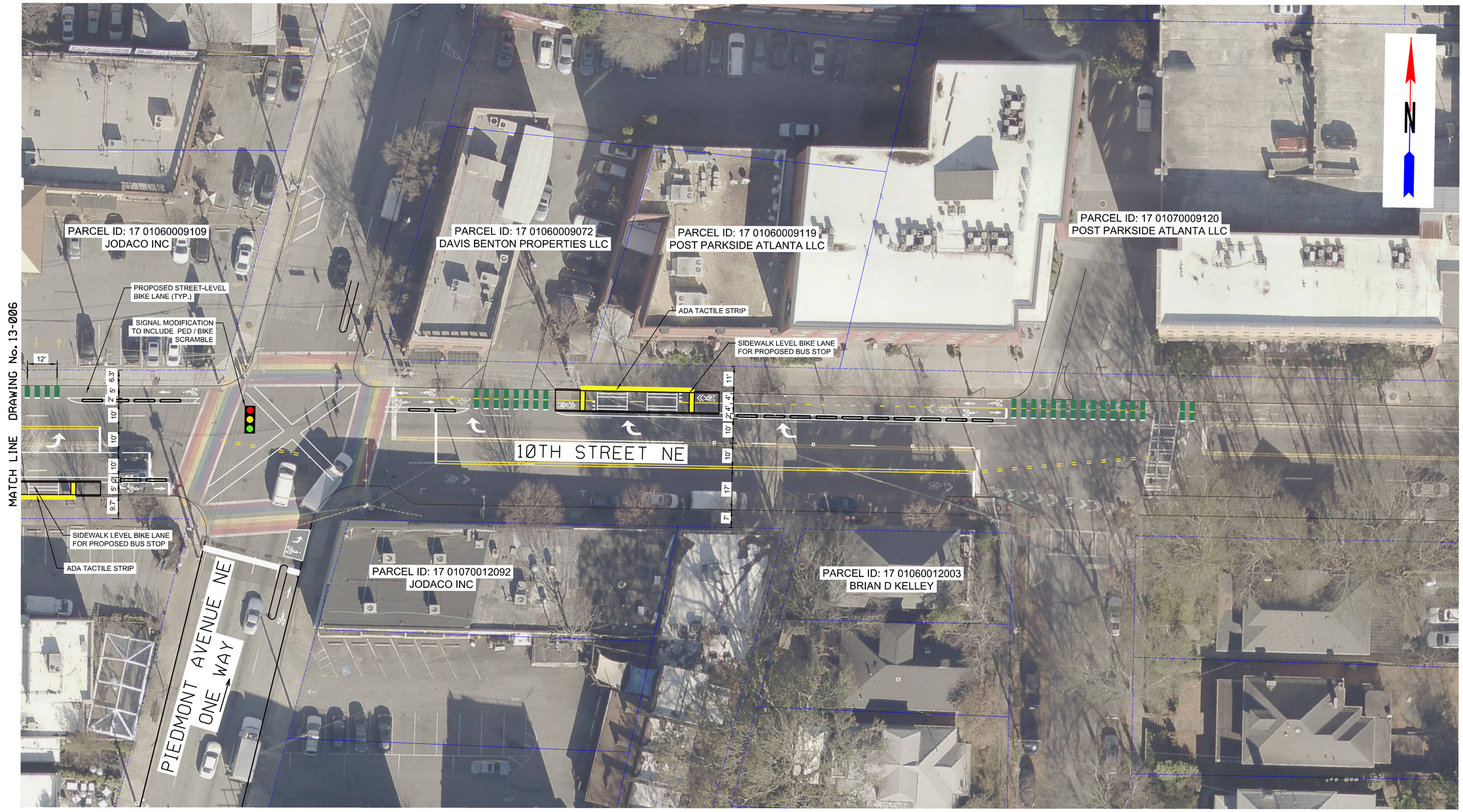

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REVISION DATES		

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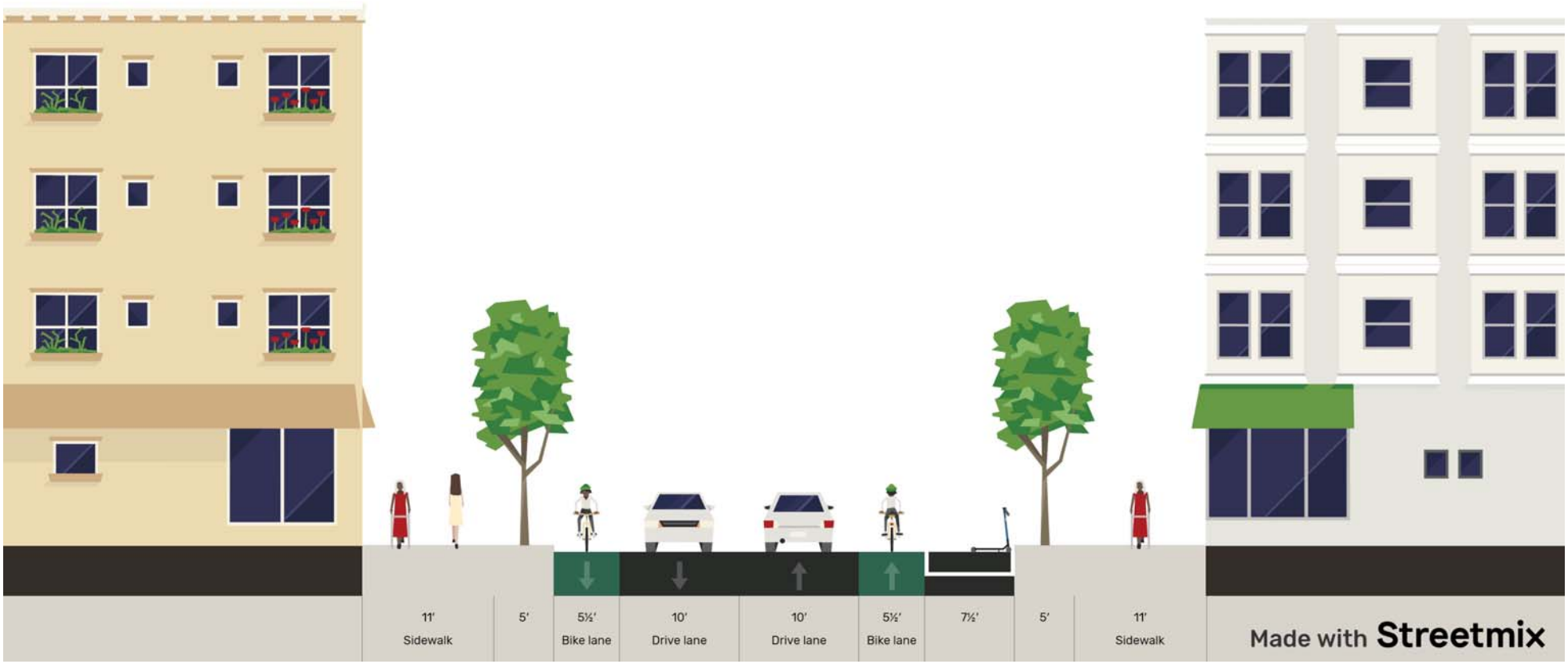
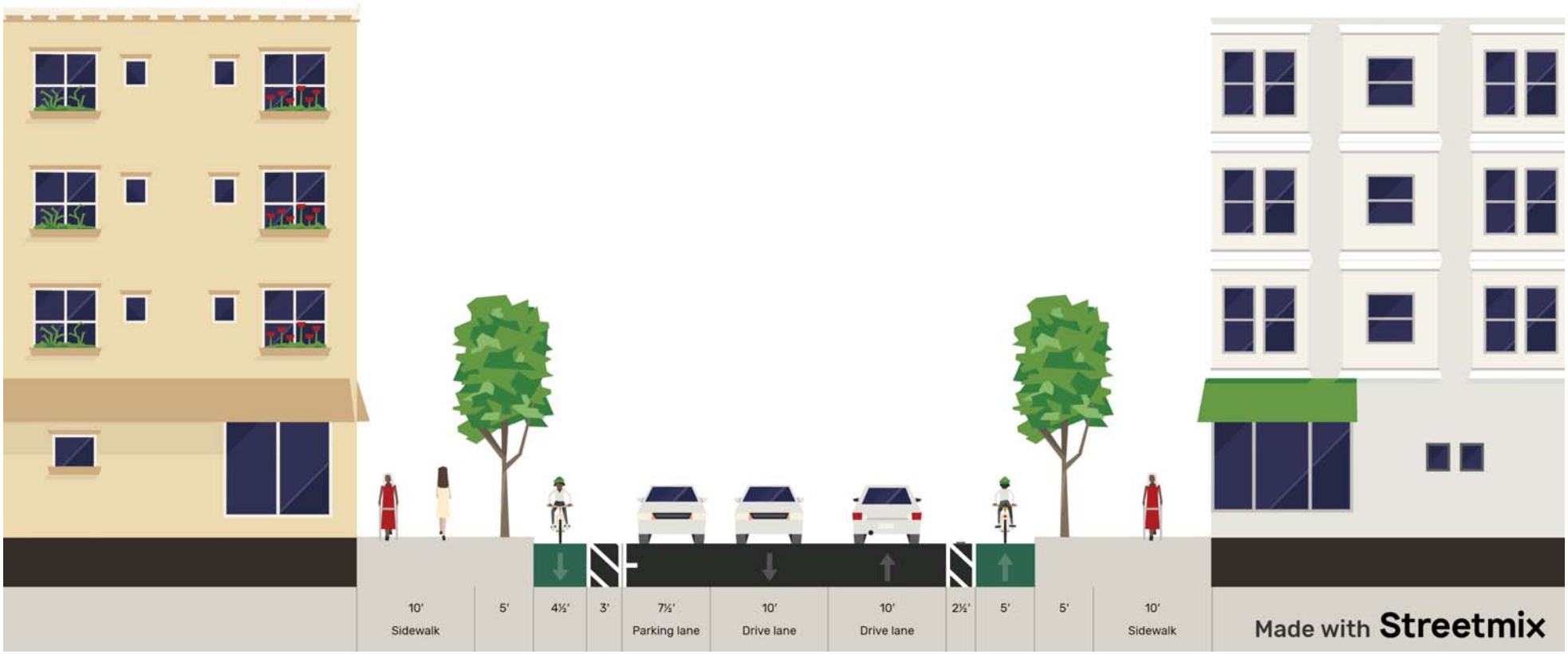
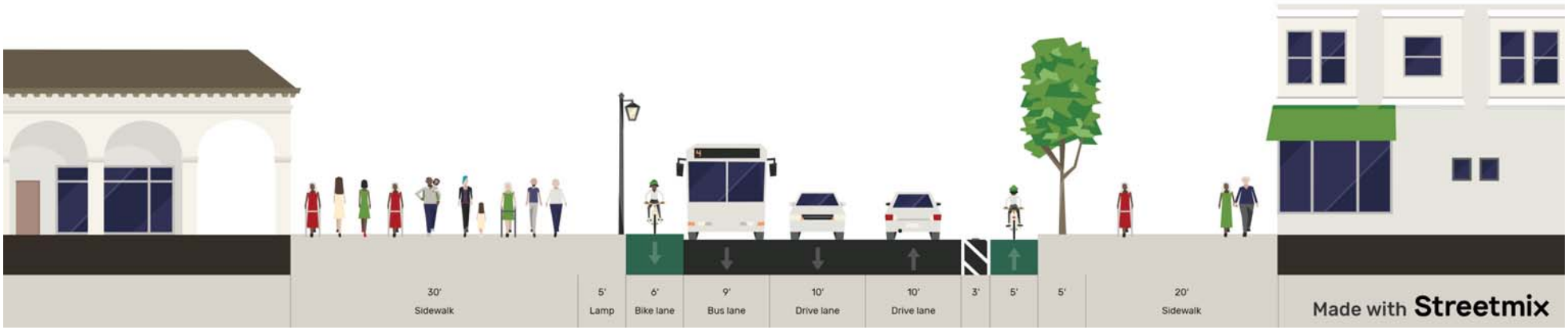
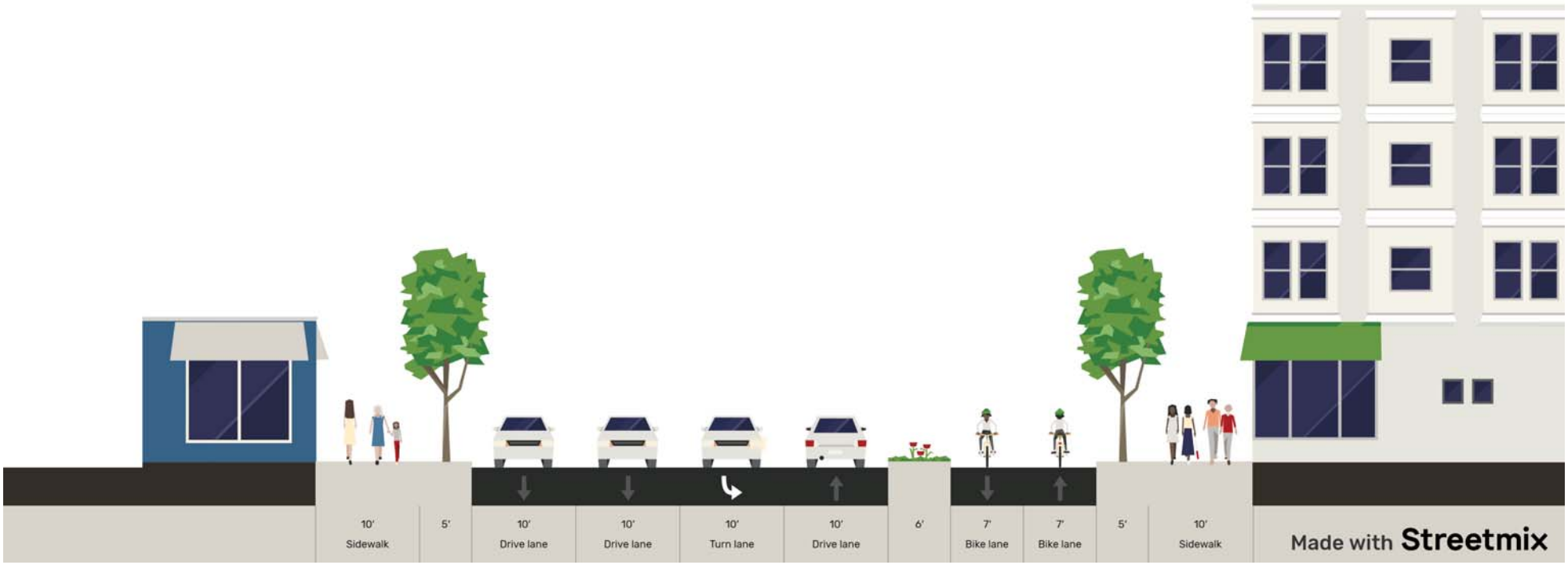
APPENDIX 2: TYPICAL SECTIONS


11'
Sidewalk
5'
5½'
Bike lane
10'
Drive lane
10'
Drive lane
5½'
Bike lane
7½'
5'
11'
Sidewalk
Made with Streetmix


10'
Sidewalk
5'
4½'
3'
7½'
Parking lane
10'
Drive lane
10'
Drive lane
2½'
5'
5'
10'
Sidewalk
Made with Streetmix


30'
Sidewalk
5'
Lamp
6'
Bike lane
9'
Bus lane
10'
Drive lane
10'
Drive lane
3'
5'
5'
20'
Sidewalk
Made with Streetmix


10'
Sidewalk
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10'
Drive lane
10'
Drive lane
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Turn lane
10'
Drive lane
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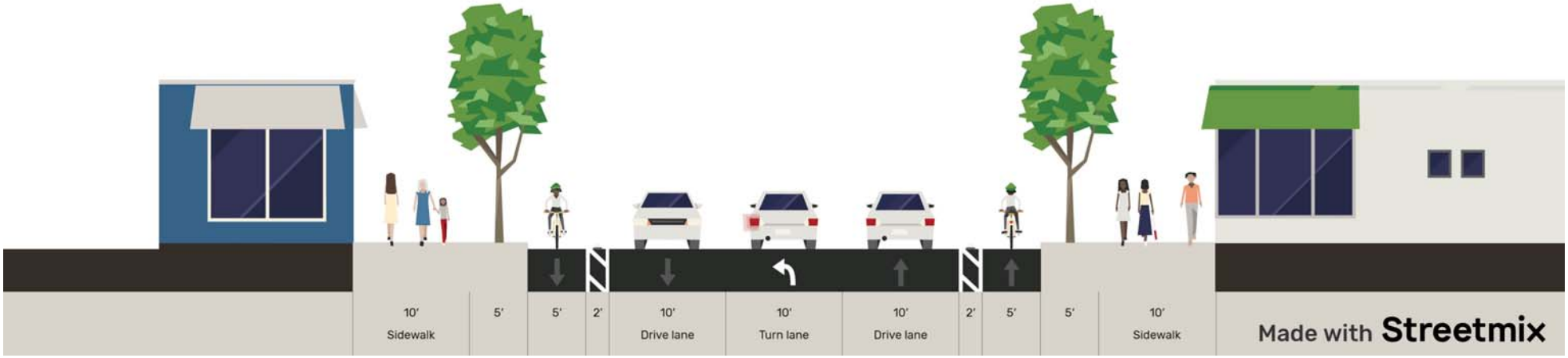
Bike lane
7'
Bike lane
5'
10'
Sidewalk
Made with Streetmix


10′
Sidewalk
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Drive lane
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Turn lane
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Drive lane
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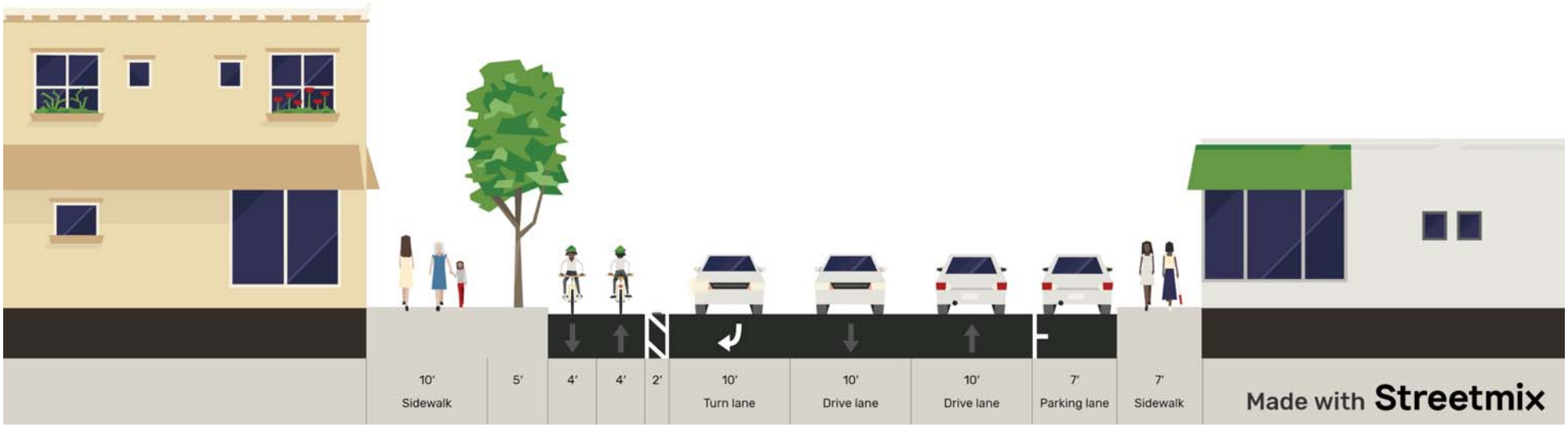
5′
5′
10′
Sidewalk
Made with Streetmix


10'
Sidewalk
5'
4'
4'
2'
10'
Turn lane
10'
Drive lane
10'
Drive lane
7'
Parking lane
7'
Sidewalk
Made with Streetmix

APPENDIX 3: COST ESTIMATES

Preliminary Opinion of Probable Construction

Midtown Alliance
Central Midtown Connection Plan
30% Concept Schematic

Prepared By: *CMP*
Date: *9/21/2022*

PAY ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
210-0100	GRADING COMPLETE	1	LS	$ 5,000.00	$ 5,000.00
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	858	TN	$ 130.00	$ 111,540.00
413-0750	TACK COAT	515	GL	$ 1.93	$ 994.53
432-5010	MILL ASPH CONC PVMT, VARIABLE DEPTH	5153	SY	$ 9.62	$ 49,571.86
437-1300	STRAIGHT GRANITE CURB, 5 IN X 16 IN, TP A	3193	LF	$ 85.00	$ 271,405.00
437-2600	CIRCULAR GRANITE CURB, 5 IN X 16 IN, TP A	696	LF	$ 110.00	$ 76,560.00
441-0104	CONC SIDEWALK, 4 IN	798	SY	$ 120.00	$ 95,760.00
441-0748	CONCRETE MEDIAN, 6 IN	1549	SY	$ 120.00	$ 185,880.00
611-3010	RECONSTR DROP INLET	8	EA	$ 2,500.00	$ 20,000.00
636-1036	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 11	25	SF	$ 50.00	$ 1,250.00
636-2070	GALV STEEL POSTS, TP 7	52	LF	$ 36.00	$ 1,872.00
647-3000	PEACHTREE STREET AT 10TH STREET SIGNAL MODIFICATION	1	LS	$ 80,000.00	$ 80,000.00
647-4000	JUNIPER STREET AT 10TH STREET SIGNAL MODIFICATION	1	LS	$ 80,000.00	$ 80,000.00
647-5000	PIEDMONT AVENUE AT 10TH STREET SIGNAL MODIFICATION	1	LS	$ 80,000.00	$ 80,000.00
652-0105	THERMOPLASTIC MARKING, SHARROW	5	EA	$ 500.00	$ 2,500.00
653-0110	THERMOPLASTIC PAVEMENT MARKING ARROW, TYPE 1	31	EA	$ 175.00	$ 5,425.00
653-0120	THERMOPLASTIC PAVEMENT MARKING ARROW, TYPE 2	22	EA	$ 175.00	$ 3,850.00
653-0320	THERMOPLASTIC PVMT MARKING, SYMBOL, TP 4	38	EA	$ 325.00	$ 12,350.00
653-1500	THERMOPLASTIC SOLID TRAFFIC STRIPE, 5", WHITE	9625	LF	$ 2.25	$ 21,656.25
653-1502	THERMOPLASTIC SOLID TRAFFIC STRIPE, 5", YELLOW	5628	LF	$ 2.25	$ 12,663.00
653-1504	THERMOPLASTIC SOLID TRAFFIC STRIPE, 12", WHITE	774	LF	$ 4.50	$ 3,483.00
653-1704	THERMOPLASTIC SOLID TRAFFIC STRIPE, 24", WHITE	369	LF	$ 7.50	$ 2,767.50
653-1804	THERMOPLASTIC SOLID TRAFFIC STRIPE, 8", WHITE	3479	LF	$ 3.50	$ 12,176.50
653-3501	THERMOPLASTIC SKIP TRAFFIC STRIPE, 5", WHITE (2' SKIP, 4' GAP)	322	GLF	$ 3.50	$ 1,127.00
653-3501	THERMOPLASTIC SKIP TRAFFIC STRIPE, 5", WHITE (10' SKIP, 30' GAP)	1448	GLF	$ 3.50	$ 5,068.00
653-3502	THERMOPLASTIC SKIP TRAFFIC STRIPE, 5", YELLOW (2' SKIP, 4' GAP)	969	GLF	$ 3.50	$ 3,391.50
653-9999	GREEN MMA	957	SY	$ 150.00	$ 143,475.00
657-5001	PREFORMED PLASTIC PAVEMENT MARKING, WHITE	15	SY	$ 300.00	$ 4,500.00
900-0039	CONCRETE PAVERS	1124	SF	$ 30.00	$ 33,720.00
	Mobilization (5%)	1	LS	$66,399.31	$66,399
	Maintenance of Traffic (10%)	1	LS	$132,798.61	$132,799
	Erosion and Sediment Control (2%)	1	LS	$26,559.72	$26,560
				SUBTOTAL =	$1,553,744

CONTINGENCIES	
25% CONTINGENCY =	$388,436
TOTAL =	$1,942,180

ESCALATION	
YEARS UNTIL CONSTRUCTION =	3
ESCALATION (4.5%/YEAR) =	$262,194
GRAND TOTAL COST =	**$2,204,374**

General Assumptions and Esclusions:

1. Unit prices are based on GDOT Item Mean Summary and costs provided by ATLDOT, using the most recent available
2. The opinion does not include environmental permitting, easement, or property acquisition.
3. The opinion does not include construction administration and inspection services.
4. The opinion does not include public outreach, funding planning, or client management services.

This opinion of probable construction cost was developed by identifying pay items and establishing quantities based on the current 30% construction documents. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Preliminary cost opinions include a 25% contingency to cover items that are undefined or are typically unknown prior to final design. Unit costs are based on 2019-2020 dollars and were assigned based on historical cost data from GDOT Item Mean Summary and ATLDOT. This cost opinion does not include easement and right-of-way acquisition; permitting, inspection, or construction management; or the cost for ongoing maintenance. This cost opinion is provided for the Client's information, and is based on the design professional's recent experience, adjusted for factors known at the time of preparation. Toole Design Group, LLC has no control over the cost of labor and material, competitive bidding, or market conditions; and makes no warranties, expressed or implied, concerning the accuracy of the opinion as compared to actual bids or cost to the Client.

PARCEL	PERMANENT EASEMENT (Sq. Ft.)	CONSTRUCTION EASEMENT (Sq. Ft.)	TOTAL (Sq. Ft.)
17 01070006572	85		85
17 01070006574		33	33
17 01070006C03	462	842	1,304
17 01070006056	37		37
17 01060007130		17	17
17 01060007054	91		91
17 01060007072		235	235
17 01060007110		21	21
17 01060010038		83	83
TOTAL	**675**	**1,231**	1,906
Unit Cost/SF	$ 350.00	$ 350.00	-
TOTAL COST	**$ 236,250.00**	**$ 430,850.00**	**$ 667,100.00**

Preliminary Opinion of Probable Construction

Midtown Alliance
Central Midtown Connection Plan
30% Concept Schematic

Prepared By: *PV*
Date: *12/2/2022*

PAY ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
611-8140	ADJUST WATER COVER VALVE TO GRADE	4	EA	$ 1,500.00	$ 6,000.00
611-8140	ADJUST GAS VALVE	1	EA	$ 1,500.00	$ 1,500.00
611-8040	ADJUST DROP INLET TO GRADE	7	EA	$ 2,500.00	$ 17,500.00
611-8050	ADJUST MANHOLE TO GRADE	10	EA	$ 2,500.00	$ 25,000.00
	MISC STREET FURNITURE RELOCATION	2	EA	$ 150.00	$ 300.00
639-4014	ADJUST SIGNAL POLE	1	EA	$ 50,000.00	$ 50,000.00
	RELOCATE SIGNAL CABINENT	1	EA	$ 20,000.00	$ 20,000.00
				SUBTOTAL =	$120,300

CONTINGENCIES	
30% CONTINGENCY =	$36,090
TOTAL =	$156,390

ESCALATION	
YEARS UNTIL CONSTRUCTION =	3
ESCALATION (4.5% /YEAR) =	$21,113
GRAND TOTAL COST =	**$177,503**

General Assumptions and Esclusions:

1. Unit prices are based on GDOT Item Mean Summary and costs provided by ATLDOT, using the most recent available data from 2022.
2. The opinion does not include environmental permitting, easement, or property acquisition.
3. The opinion does not include construction administration and inspection services.
4. The opinion does not include public outreach, funding planning, or client management services.

This opinion of probable construction cost was developed by identifying pay items and establishing quantities based on the current 30% construction documents. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Preliminary cost opinions include a 30% contingency to cover items that are undefined or are typically unknown prior to final design. Unit costs are based on 2022 dollars and were assigned based on historical cost data from GDOT Item Mean Summary and ATLDOT. This cost opinion does not include easement and right-of-way acquisition; permitting, inspection, or construction management; or the cost for ongoing maintenance. This cost opinion is provided for the Client's information, and is based on the design professional's recent experience, adjusted for factors known at the time of preparation. Toole Design Group, LLC has no control over the cost of labor and material, competitive bidding, or market conditions; and makes no warranties, expressed or implied, concerning the accuracy of the opinion as compared to actual bids or cost to the Client.

APPENDIX 4: MULTIMODAL TRAFFIC ANALYSIS

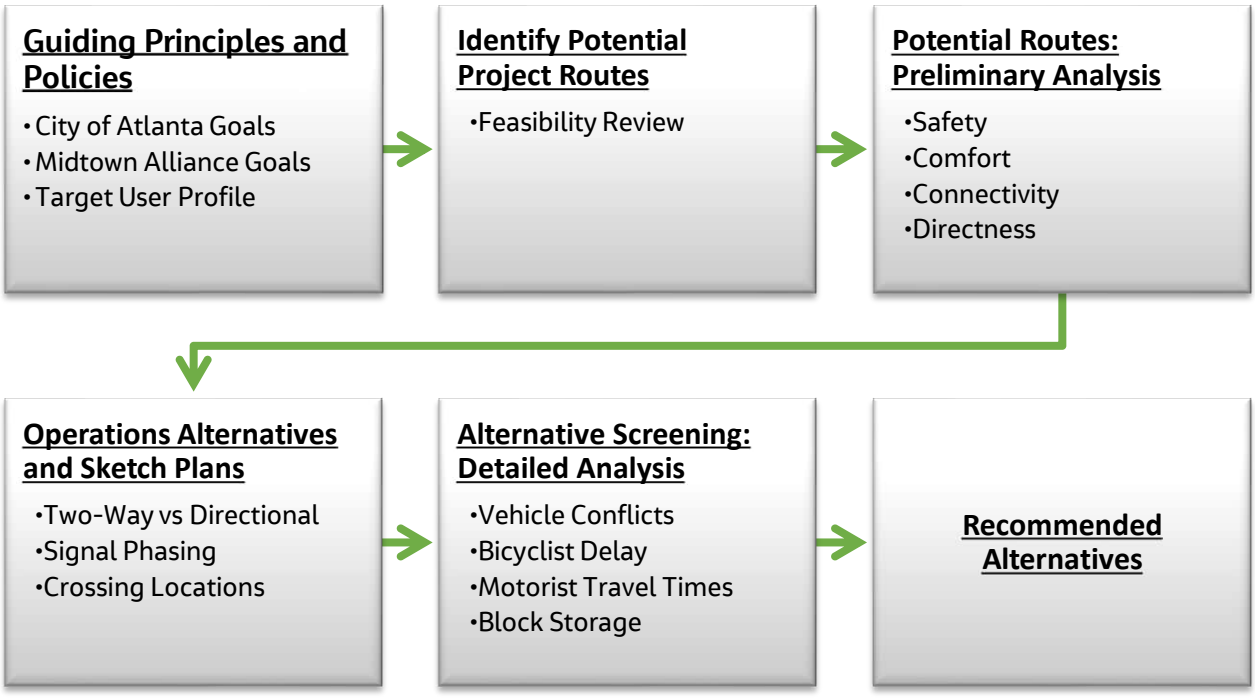
Subject	Alternatives Refinement	**Project Name**	Peachtree Place Corridor Plan
Date	November 2, 2021	**Project No.**	EEXK2701

Introduction

The *Midtown Transportation Plan* (2017) identifies Peachtree Place as the preferred corridor to create a safe, east-west connection for people on bikes and scooters through the central part of the Midtown District. It will link the Georgia Tech campus and Home Park neighborhood with the core of Midtown, Midtown MARTA Station, Piedmont Park, the Garden District, and the Eastside BeltLine. The purpose of this memo is to define several routing alternatives, assess them against a set of criteria, and recommend the best option(s) to develop concepts for further refinement.

The layout of this document follows the steps in the Alternatives Development Methodology shown in Figure 1. Routes for the LIT lanes were developed from a feasibility review of potential alternatives and an understanding of the project goals and target users. These routes were then screened against FHWA guidelines for bicycle network design. The top ranking routes were then refined into alternatives that considered directionality, signal phasing, and crossing opportunities. Alternatives were ranked through a detailed analysis of performance and safety measures. The top three recommended alternatives will be taken to the next phase of development.

Figure 1: Alternatives Development Methodology

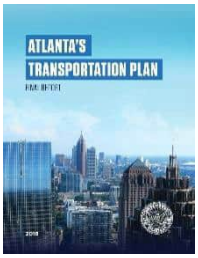


Guiding Principles and Policies

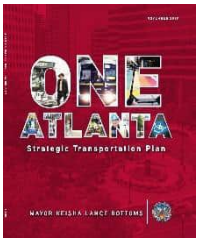
The following policies and design guidance established by the City of Atlanta, Midtown Alliance, and national associations framed the analysis of the potential LIT routes for the Peachtree Place corridor LIT facility.

City of Atlanta Policy

In April 2020, the City of Atlanta adopted a Vision Zero policy into ordinance. The policy identifies safety as the top priority, ensuring city streets are safe for everyone. In keeping with this policy, the Atlanta Department of Transportation (ATLDOT) is focused on eliminating crashes that result in serious injuries and fatalities.



Atlanta's Transportation Plan was adopted in 2018 to serve as the blueprint for, "**a transportation network that reduces automobile reliance and offers alternative travel solutions that are convenient, affordable and safe**". Several technical memorandums relevant to expanding and maintaining safe bicycle infrastructure were adopted as part of Atlanta's Transportation Plan, including: Asset management, Bicycle Facilities, Safer Streets, Streets Atlanta, and Map Book and Project List.



The One Atlanta Strategic Plan (2019) was organized around the Mayor's One Atlanta pillars, explains the City's goals and strategies, and outlines milestones for each strategy. One of the benchmark goals of this plan is to **"Make bicycling and micromobility a safe transportation option for more Atlantans"**. Relevant strategies listed in this plan include:

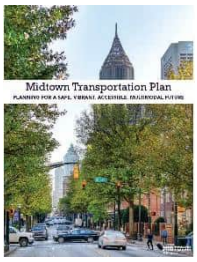
- Expand the on-street bike lane network
- Improve livability and mobility through more multimodal streets
- Set and track goals for increasing walking, biking, and transit use

Midtown Policy

As stated in the *Midtown Transportation Plan* (2017),

> **Bicycling in Midtown has increased over the last decade despite the lack of new infrastructure. The growth in cycling reflects changes in travel preferences, interest in "active living," and the trend in in-town living. Cities that have experienced a significant mode shift from driving to bicycling have invested in bicycling infrastructure that is safe, connected, and convenient. Midtown has an opportunity to create a "low stress" bike network that would appeal to the vast "interested but concerned" cohort and become a bicycling mecca.**

Midtown Alliance's goals for the Peachtree Place Corridor Plan are to:



- Develop a safe east-west connection for cyclists/scooter riders
- Identify opportunities for placemaking
- Consider stormwater and landscaping issues
- Further enhance the pedestrian and ground floor retail experience

The corridor plan's design shall improve safety, particularly for those traveling by foot, bike, or scooter in support of the City's Vision Zero policy.

Target User Profile

The design user profile is used to select a preferred type of bikeway treatment for different contexts. Research often uses the three following types of potential and existing bicyclists (see Table 1). Additionally, some people may not be interested in bicycling regardless of available facilities or context.

Table 1: Bicycle User Profiles

Profile	*Description*
Highly Confident	The smallest group identified by research, they prefer direct routes and do not avoid operating in mixed traffic – even on roadways with higher speeds and volumes. They may avoid bikeways they perceive to be less safe or too crowded with pedestrians or slower moving vehicles.
Somewhat Confident	Also known as enthused and confident, they are comfortable on most types of facilities. They have lower tolerance for traffic stress and generally prefer low-volume residential streets and striped or separated bike lanes on major streets, but they are willing to tolerate higher levels of stress for short distances to complete trips or avoid out-of-direction travel.
Interested but Concerned	The largest group identified by research, they tend to avoid bicycling except where they have access to networks of separated bikeways or very low-volume streets with safe crossings. This is generally the recommended design user profile.

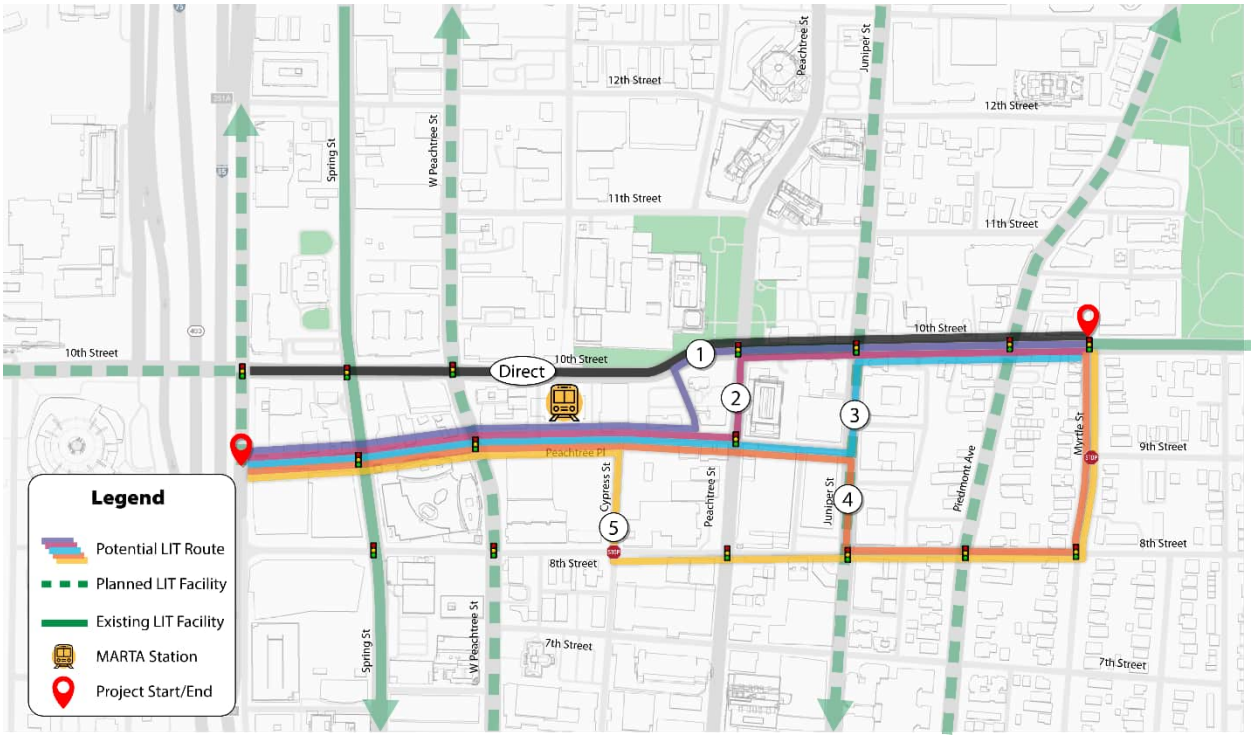
The Midtown Transportation Plan cites the goal of creating a "low stress" bike network that would appeal to the vast "interested but concerned" cohort and would help Midtown become a bicycling mecca. A Low-Stress Bicycle Network is one that is designed to be safe and comfortable for all users with an emphasis on the quality of the bikeway, not just the presence. These low-stress networks rely on separating bicyclists from traffic using physical barriers to separate bike lane and/or shared-use paths. Streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority (also known as "bicycle boulevards") are also supported if safe crossings are provided. This is different than a Basic Bike Network (primarily bicycle lanes and shoulders) or Traffic-Tolerant Bicycle Network (roadways without bicycle improvements).

Potential LIT Routes

The following potential LIT routes were considered to create a continuous east-west LIT facility for cyclists and scooter riders. These potential routes are illustrated in Figure 2.

- Alternative 1: 10th Street – Crescent Avenue – Peachtree Place
- Alternative 2: 10th Street – Peachtree Street – Peachtree Place
- Alternative 3: 10th Street – Juniper Street – Peachtree Place
- Alternative 4: Myrtle Street – 8th Street – Juniper Street – Peachtree Place
- Alternative 5: Myrtle Street – 8th Street – Cypress Street– Peachtree Place

Figure 2: Project Location Map



A direct connection along 10th Street was ruled out in discussions with the City of Atlanta due to the following constraints:

- Adding a separated bike lane on 10th St west of Peachtree St would require a separate LIT facility that would involve the repurposing of multiple vehicular travel lanes. This would cause gridlock conditions due to the high volume of traffic (>20,000 AADT).
- The *Cycle Atlanta 1.0 Plan* (2011) omitted bike facilities on 10th Street from Williams Street to Peachtree Street and relied on 8th Street and 12th Street as the primary east-west connections.
- Fitting bike lanes on 10th Street in this section would require a major capital project to address the grading, drainage, landscaping, and utility issues.

Bikeway Performance Criteria – Preliminary Ranking

FHWA's *Bikeway Selection Guide* (FHWA-SA018-007, 2019) identifies seven principles of bicycle network design (listed below in Table 2):

Table 2: FHWA Seven Principles of Bicycle Network Design

Safety	Frequency and severity of crashes are minimized, and conflicts with vehicles are limited
Comfort	Conditions that do not deter bicycling due to stress, anxiety, or concerns over safety
Connectivity	All destinations can be accessed using the network and there are no gaps or missing links
Directness	Bicycling distances and trip times are minimized
Cohesion	Distances between parallel and intersecting bike routes are minimized
Attractiveness	Routes direct bicyclists through lively areas and personal safety is prioritized
Unbroken Flow	Stops, such as long waits at traffic lights, are limited and street lighting is consistent

FHWA guidelines say the first three (Safety, Comfort, and Connectivity) have particular importance in guiding bikeway selection; therefore, they are given the highest priority. Measures based on these categories have been developed for the evaluation of the Peachtree Place alternatives (listed below in Table 3). Some of the more detailed measures (intersection bike delays and motorist impacts) were used to assess and refine intersection level design after the preliminary screening of the overall routing.

Table 3: Selected Performance Measures

Principle	*Measure of Effectiveness*	
Safety	Number of Bicycle-Vehicle Conflicts	
Comfort	Level of Traffic Stress (LTS)	
Connectivity	Travel Time	
Directness	Directness Ratio	
Cohesion	*Not evaluated (similar for all alternatives)*	Preliminary Screening
Attractiveness	*Not evaluated (similar for all alternatives)*	
Unbroken Flow	Intersection bicycle delays	Detailed Analysis
Motorist Impacts	Total Added Vehicle Delay and Block Storage Ratios	

Potential Routes: Preliminary Analysis

Each of the potential LIT routes was analyzed to consider potential conflict points, crash histories, rider comfort, travel times, and directness. Preliminary rankings were then assigned to each route.

Safety: Bicycle-Vehicle Conflicts

Almost 60 percent of cyclist fatalities occur at non-intersections, likely related to higher speeds. However, the same study found that a larger number of injury crashes occur at intersections. Conflicting traffic patterns and behavioral factors such as lack of driver scanning for bicyclists, may be factors in these types of crashes.

A roadway and bikeway design should be selected to reduce the frequency and severity of crashes and minimize conflicts between all types of users. As stated in the Federal Highway Administration's *Separated Bike Lane Planning and Design Guide* (FHWA, 2015):

> "Driveways that intersect with separated bike lanes create a potential crash risk due to the conflict between turning motor vehicles and through bicyclists. The risk is increased at locations where there is poor sight distance due to parked cars, landscaping, and other obstructions, or where the design may result in unexpected movements such as the contra-flow direction of travel that occurs on two-way separated bike lanes. Many of these conflicts can be mitigated through good design that improves visibility and expected behaviors. An additional measure beyond separated bike lane design is to consolidate or relocate driveways and access to minimize the number of conflict points along the corridor."

Driveway conflict points were tallied along the potential routes. Low conflict locations were defined as having fewer than an estimated 10 vehicles per peak hour (e.g., residences with fewer than 5 units). Medium conflict locations were estimated to have 10-50 vehicles per peak hour, and High conflict locations were estimated to have over 50 vehicles per peak hour. Driveways for the MARTA Station and fire station were considered to be high conflict locations.

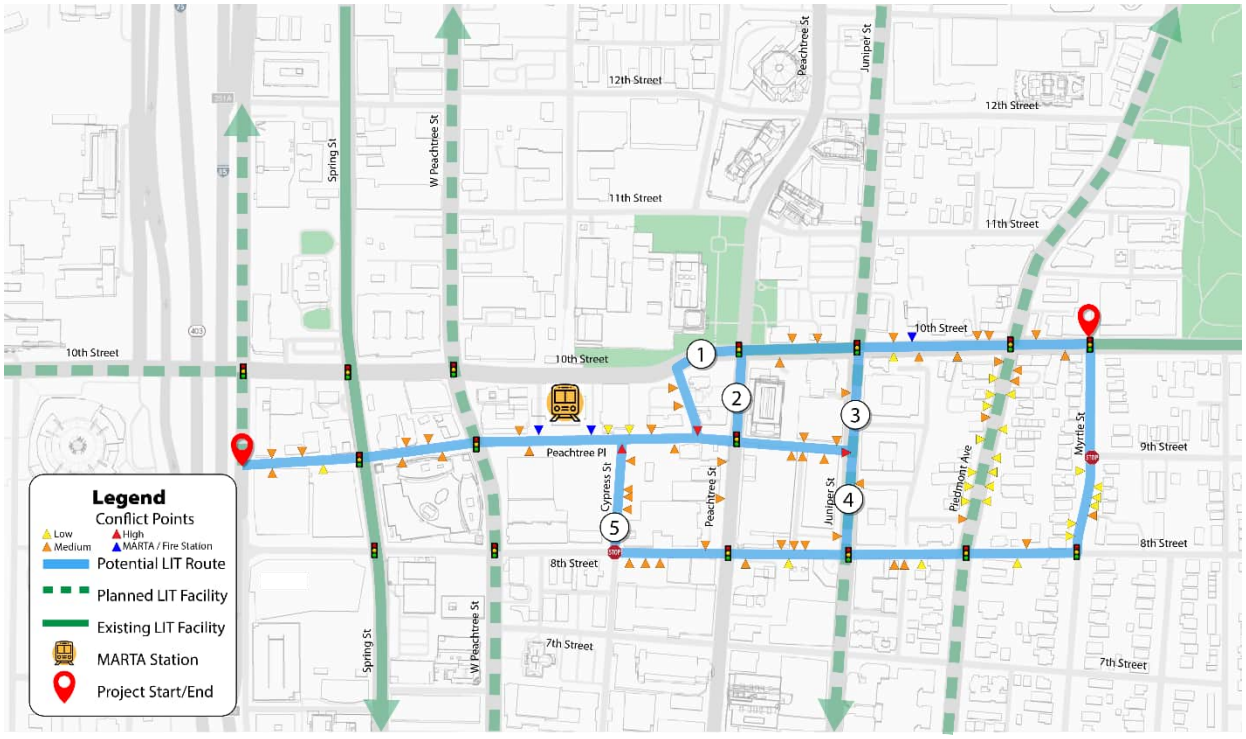
For alternatives where the proposed design is a two-way cycle track, as identified on 10th Street or Crescent Avenue, the side with fewest conflict points was assessed. Roadways with directional facilities include conflicts on both sides. As we aim to mitigate conflicts at signalized and all-way stop intersections through signal timing and engineered solutions, these have not been included in the tally. A summary of the number of conflict points by route is provided in Table 4. The weighting performed used: low conflict = 1, medium conflict = 2, high conflict = 4.

Table 4: Bicycle-Vehicle Conflicts

Route	*Low*	*Medium*	*High*	*Total*	*Weighted*	*Rank (1-5)*
Alternative 1: 10th – Crescent – Peachtree Pl	4	15	4	19	50	1
Alternative 2: 10th – Peachtree – Peachtree Pl	4	15	4	23	50	1
Alternative 3: 10th – Juniper – Peachtree Pl	4	20	5	29	64	3
Alternative 4: Myrtle – 8th – Juniper – Peachtree Pl	11	21	5	37	73	5
Alternative 5: Myrtle – 8th – Cypress – Peachtree Pl	11	25	3	39	73	5

Driveways conflict points identified for the Peachtree Place potential LIT routes are shown in Figure 3.

Figure 3: Conflict Point Locations



Bicyclist comfort and safety are impacted by how well potential conflicts with motor vehicles are managed and design recommendations for the selected route will include strategies to improve conditions at these conflict points. For example, some traffic signal phasing plans are able to manage traffic flow by allocating time and separating conflicting movements through intersections. Some unsignalized design treatments improve visibility of cyclists in the absence of a traffic signal and raise awareness of potential conflicts.

Safety: Multimodal Crash Analysis

Intersection multimodal crash histories were also examined for the study area. The following figures indicate that intersections with Peachtree Street had the most bicycle collisions in the past five years , including the intersections at 10th Street and Peachtree Place. 10th Street at Piedmont Avenue saw the most pedestrian crashes. Crash data shows that bicycles, scooters, and pedestrians have higher injury rates than vehicle crashes in the project area. Specific bicycle and pedestrian crash locations are shown in Figures 5 and 6.

Figure 4: Study Area Crash Severity by Mode (January 1, 2016 – January 1, 2021)

Bike Crashes
13 Total
46% Injury

Ped Crashes
57 Total
32% Injury

Car Crashes
2,220 Total
12% Injury

Figure 5: Bicycle Crashes (January 1, 2016 – January 1, 2021)

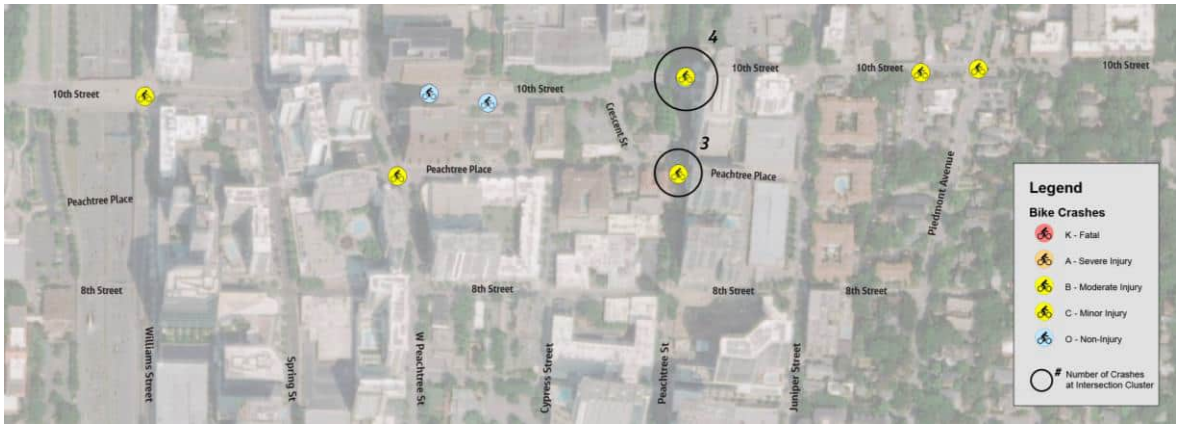
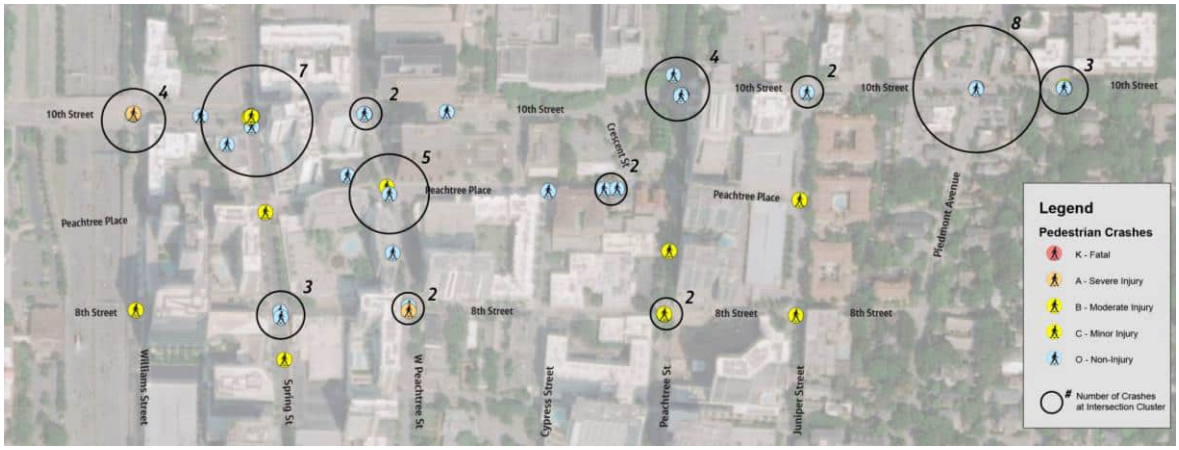


Figure 6: Pedestrian Crashes (January 1, 2016 – January 1, 2021)



Comfort: Level of Traffic Stress (LTS)

Anticipated bicyclist comfort was measured using the Level of Traffic Stress (LTS) metric. FHWA's *Guidebook for Developing Pedestrian and Bicycle Performance Measures* (2016) cites LTS as a way to track several performance measures, including level of service, network completeness, and user perceptions. Classification by level of tolerance for traffic stress is consistent with studies that show people's increasing affinity for lower-stress bicycling environments and indicate that traffic danger is the chief impediment to bicycling.

The LTS method of classifying road segments and bicycle facility networks uses information about speed, on-street parking, LIT facility type, widths, and separation to determine how comfortable people are likely to feel in a given context with different confidence levels when bicycling and interacting with motorists. It was developed by Maaza C. Mekuria, Peter G. Furth, and Hilary Nixon in their 2012 research report, Low-Stress Bicycling and Network Connectivity to address deficiencies in HCM Bicycle Level of Service (BLOS). Updated criteria for road segments issued in 2017 by Peter Furth is used in this report as it also accounts for vehicle traffic volumes. Some measures that are still not included in LTS methodology but have an impact on bicyclist experience are topography (steep hills), pavement condition, delays, or driveway density. These are included in this report as separate measures for consideration.

In order to develop LTS scores for the proposed routes, an assessment was made of what type of bicycle facility each segment would most likely support considering right-of-way, number of existing lanes, available widths, and American Association of State Highway and Transportation Officials (AASHTO) Guidelines for speed and average daily traffic (ADT). It was assumed that all unbuffered directional bike lanes would be ≥6 ft wide (≥15 ft, if including adjacent parking width). ADT volumes were determined using Streetlight data averaged from all Tuesdays, Wednesdays, and Thursdays in the year 2019. This information is shown below in Figure 7. The associated LTS scores for the potential LIT route segments are shown in Figure 8. More details on the LTS inputs are provided in Appendix A.

Why not BLOS?

Bicycle Level of Service (BLOS) is an alternative metric for bicyclist comfort that was not calculated as part of this analysis.

- BLOS models have been criticized as resulting in questionable results, not accounting for the full range of treatments, and are difficult to explain to the public and policymakers.
- Intersection BLOS is a relatively simple calculation that only considers three things: the width of the cross-street, the width of bicyclist's operating space, and vehicle volumes per through lane.
- Intersection BLOS is indifferent to whether operating space comes in the form of a bike lane or outside through lane. If a bike lane is added by restriping excess width in a through lane, intersection BLOS does not change. Intersection BLOS is indifferent to intersection treatments such as bicycle boxes, striping through intersections, and bicycle-only signal phases. Also, the HCM does not give a methodology for BLOS at two-way stop controlled intersections.
- Segment BLOS is indifferent to physical separation between bicyclists and vehicles; it cannot distinguish between bike lane striping, buffered lanes, and a cycle track.
- Segment BLOS places the greatest importance on traffic volumes per lane (especially trucks) and speeds; analysis of proposed changes to the roadway requires predicting how volumes and speeds will change (if at all).

Figure 7: Facility Types and ADT by Road Segment

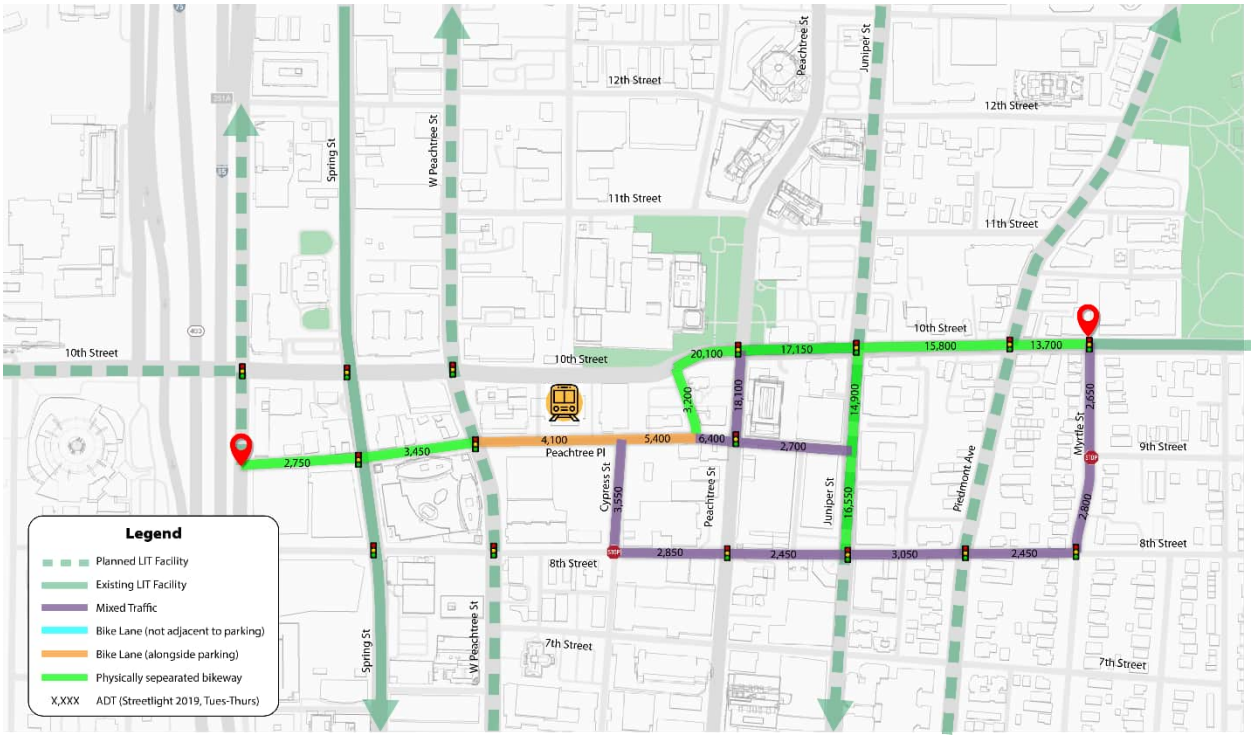
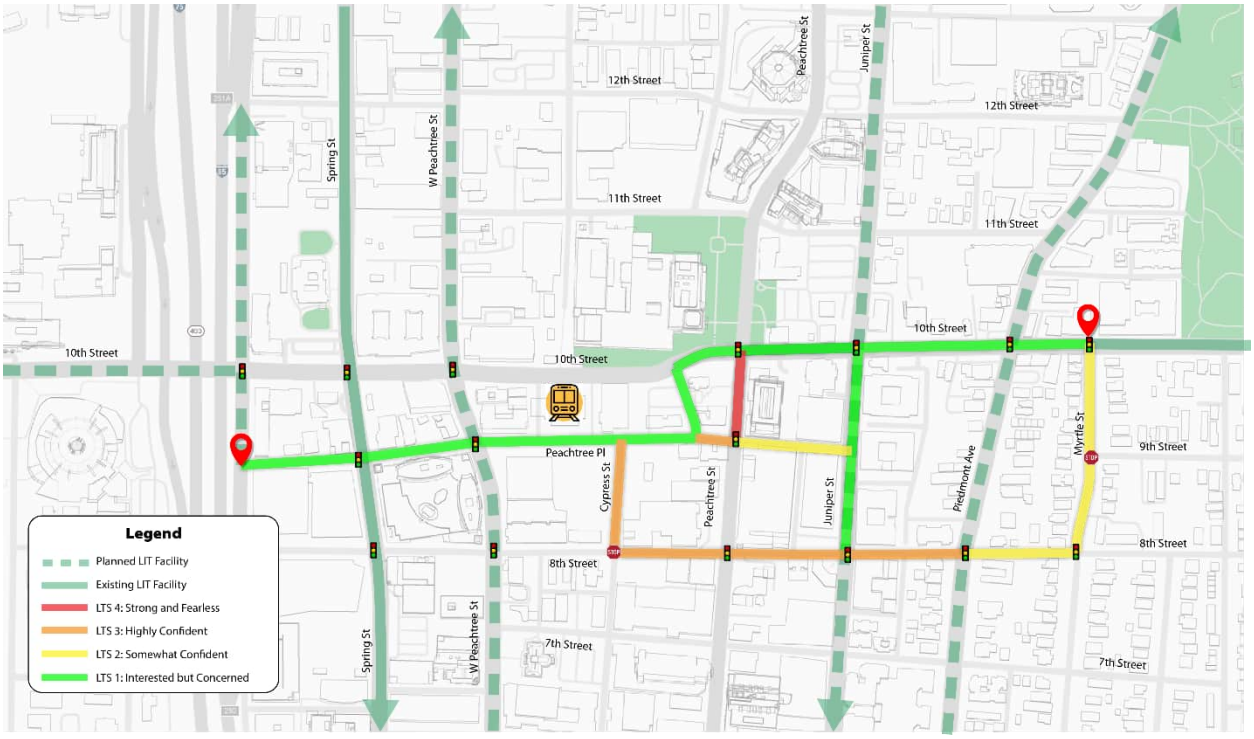


Figure 8: Build Condition Level of Traffic Stress (LTS) Score by Road Segment



Connectivity: Travel Time

AASHTO's *Guide for the Development of Bicycle Facilities* (2012) cites an 8-15 mph speed for the average adult bicyclist on flat terrain, 5-12 mph on uphill terrain, and 20-30 mph on downhill terrain. The Minnesota Department of Transportation (MnDOT) *Bicycle Facility Manual* (2020) recommends a design speed of 15 mph on level terrain with 0.5 mph increases for every 1% downhill grade and 1 mph decreases for every 1% uphill grade. Crossing speeds are cited by MnDOT as being 8 mph (11.8 ft/s). Travel times in this report are calculated using the MnDOT speeds based on road profile data with assumed average bicyclist delays of 30 seconds at signals and 25 seconds at stop signs (similair to HCM LOS C thresholds). A summary of the resulting travel times by route is provided in Table 5. All travel time routes extend between the intersections of 10th Street at Williams Street and 10th Street at Myrtle Street (see Figure 2).

Table 5: Travel Time by Route

Route	*Estimated Travel Time*	*Added Route Time*	*Rank (1-5)*
Baseline: 10th Street Direct	6 min 18 sec	-	-
Alternative 1: 10th – Crescent – Peachtree Pl	6 min 53 sec	+0 min 35 sec	1
Alternative 2: 10th – Peachtree – Peachtree Pl	7 min 21 sec	+1 min 02 sec	3
Alternative 3: 10th – Juniper – Peachtree Pl	7 min 23 sec	+1 min 05 sec	3
Alternative 4: Myrtle – 8th – Juniper – Peachtree Pl	9 min 01 sec	+2 min 43 sec	5
Alternative 5: Myrtle – 8th – Cypress – Peachtree Pl	9 min 03 sec	+2 min 45 sec	5

Directness: Directness Ratio

Since active transporation relies on physical exertion, indirect travel negatively impacts the user's experience. Ideally, walking and biking routes should be as short and direct as possible without sacrificing user comfort. As outlined in FHWA's *Guidebook for Developing Pedestrian and Bicycle Performance Measures*, the directness can be expressed as a ratio of route distance to straight-line distance. One study of nonrecreational cyclists in Vancouver, B.C. found that 75 percent of cyclist trips were within 10 percent of the shortest distance possible on the road network and 90 percent were within 25 percent. Other guidance adds that, for short trips, the criterion is that a lower-stress route should be no more than 0.33 miles (approximately 2 minutes at relaxed pace of 10 mph) longer than the shortest route.

Table 6: Travel Time by Route

Route	*Directness Ratio*	*Distance*	*Added Distance*	*Rank (1-5)*
Baseline: 10th Street Direct	1.00	0.64 mi	-	-
Alternative 1: 10th – Crescent – Peachtree Pl	1.21	0.78 mi	0.14 mi	1
Alternative 2: 10th – Peachtree – Peachtree Pl	1.20	0.77 mi	0.13 mi	1
Alternative 3: 10th – Juniper – Peachtree Pl	1.21	0.78 mi	0.14 mi	1
Alternative 4: Myrtle – 8th – Juniper – Peachtree Pl	1.46	0.94 mi	0.30 mi	5
Alternative 5: Myrtle – 8th – Cypress – Peachtree Pl	1.46	0.94 mi	0.30 mi	5

Preliminary Ranking

A preliminary ranking was developed using the preceding criteria (vehicle conflicts, level of traffic stress, travel time, and directness ratio). Table 7 (below) shows a 1-5 ranking for each criterion. Similar values with nominal differences between alternatives were given the same (tie) rankings.

Table 7: Preliminary Ranking: Rank (Value)

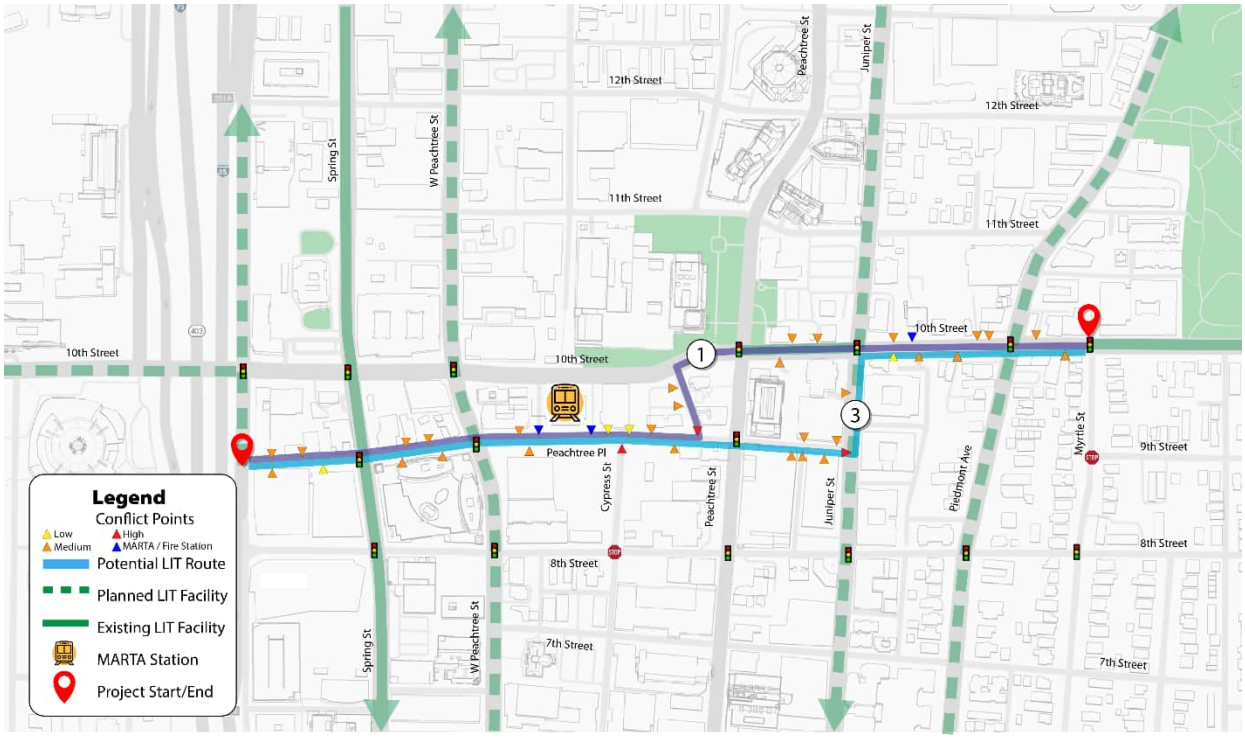
	Route	*Vehicle Conflicts*	*Level of Traffic Stress*	*Travel Time*	*Directness Ratio*
Alternative 1	10th – Crescent – Peachtree Pl	1 (19)	1 (LTS 1)	1 (6.9')	1 (1.2)
Alternative 2	10th – Peachtree – Peachtree Pl	1 (23)	5 (LTS 4)	3 (7.4')	1 (1.2)
Alternative 3	10th – Juniper – Peachtree Pl	3 (29)	1 (LTS 2)	3 (7.4')	1 (1.2)
Alternative 4	Myrtle – 8th – Juniper – Peachtree Pl	5 (37)	3 (LTS 3)	5 (9.0')	5 (1.5)
Alternative 5	Myrtle – 8th – Cypress – Peachtree Pl	5 (39)	3 (LTS 3)	5 (9.1')	5 (1.5)

Alternatives 1 and 3 were the only routes that achieved the project goal of providing a comfortable network that would appeal most to the vast "interested but concerned" user group, with no LTS 4 segments (shown in Figure 8). Alternative 2 is a close third, except that the mixed traffic facility along a short segment of Peachtree Street had a score of LTS 4 (for "strong and fearless" users). Alternatives 4 and 5 are removed from further consideration due to significant increases in travel times, indirect routing, and an LTS score of 2-3 (for "somewhat confident" to "highly confident" users) for a large portion of the route.

Operations Alternatives and Sketch Plans

Based on the analysis in the preliminary rankings, the top two alternatives (Alternative 1: 10th – Crescent – Peachtree Place and Alternative 3: 10th – Juniper – Peachtree Place) were examined further for intersection level operations. These routes are shown in Figure 9.

Figure 9: Selected Routes for Detailed Analysis



Both selected alternatives use a segment of 10th Street between Myrtle Street and Juniper Street. To compare these alternatives, an analysis of how bicycles will be crossing intersections and whether dedicated bicycle phases will be included was performed. Options to transition the two-way cycle track from the north side of the street on the east end (near Myrtle Street) to the south side of the street on the west end (near Juniper Street) explored transitions at Piedmont Avenue and Juniper Street, with several design options for each location. Crossing 10th Street at the Peachtree Street signal was ruled out for the following reasons:

- LIT lane crossings at either Juniper Street or Piedmont Avenue would tie into other planned LIT lanes that cross 10th Street.
- Peachtree Street being a two-way roadway would have more complicated timing changes required to safety cross users in the LIT lanes, some of which would be less intuitive to unfamiliar drivers. To reduce vehicle conflicts, at least four turning movements would require time-separated phases at the signal, adding substantial delays for all users.

Figure 10 and Figure 11 show the various crossing alternatives and signal phasing schemes considered at Juniper Street and Piedmont Avenue. Detailed results for these crossing types are provided in Appendix B.

Figure 10: Intersection configuration alternatives for Piedmont Avenue Crossings

No-Build Condition	Two Stage Crossing	Bike Only Scramble
		
Ped and Bike Scramble	**Protected EBL/WBR with NBR lane (No Transition)**	**Protected EBL/WBR with NBL lane (No Transition)**
		

EBL = Eastbound Left, WBR = Westbound Right, NBR = Northbound Right

Figure 11: Intersection configuration alternatives for Juniper Street Crossings

No-Build Condition	South Leg Crossing (1 WB / 2 EB)	Two Stage Crossing (1 WB / 2 EB)
		
South Leg Crossing (2 WB / 1 EB)	**Two Stage Crossing (2 WB / 1 EB)**	
		

EBL = Eastbound Left, WBR = Westbound Right, NBR = Northbound Right

Based on the Piedmont Avenue and Juniper Street crossing evaluations (Appendix B), three variations were selected for Alternatives 1 and 3. Descriptions for these variations are provided in the following sections.

Table 8: Alternative Variations for Detailed Analysis

	LIT Route 1 (10th – Crescent – Peachtree Pl)	*LIT Route 3 (10th – Juniper – Peachtree Pl)*
Two-way cycle track that crosses 10th Street at Piedmont Avenue via Two-Stage Crossing	Alternative 1A	Alternative 3A
Two-way cycle track that crosses 10th Street at Juniper Street via Two-Stage Crossing	Alternative 1B	Alternative 3B
Directional (one-way) LIT lanes along both sides of 10th Street	Alternative 1C	Alternative 3C

Alternatives 1A and 3A (Transitioning at Piedmont Avenue)

Based on the Piedmont Avenue and Juniper Street crossing evaluations (Appendix B), these alternatives propose a two-stage crossing at the intersection of Piedmont Avenue with a dedicated bike phase at Juniper Street, supported by dedicated westbound left and eastbound right turn bays and phases. These alternatives offer the following benefits:

- The two-stage option at Piedmont Avenue would cross bicycles parallel to pedestrians, which would likely be more intuitive to users than a scramble or diagonal crossing. It also makes use of the south leg of the intersection, where there are no conflicting turns from 10th Street motorists.
- The two-stage option at Piedmont Avenue would also provide protection for the planned one-way LIT facility on Piedmont Avenue by providing a protected-only right-turn bay on the northbound approach to the intersection. The design would also provide additional room for staging in the northeast corner.
- Providing dedicated left-turn and right-turn bays at Juniper Street would allow bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts. The eastbound right at Juniper would be a protected only phase, which is prohibited during the south leg bike phase.
- There are fewer driveway conflicts with the two-way bike facility on the south side of 10th Street.

Figure 12: Alternative 1A – Crescent Bike Connection with Piedmont Avenue Crossing

Figure 13: Alternative 3A – Juniper Bike Connection with Piedmont Avenue Crossing

Alternatives 1B and 3B (Transitioning at Juniper Street)

Based on the Piedmont Avenue and Juniper Street crossing evaluations (Appendix B), these alternatives propose a dedicated bike phase at Piedmont Avenue (supported by dedicated left and right turn bays and phases) with a two-stage crossing at Juniper Street. These alternatives offer the following benefits:

- Providing dedicated eastbound left-turn and westbound right-turn bays at Piedmont Avenue would allow bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts.
- Less restriping is required on the block of 10th Street between Juniper Street and Piedmont Avenue.
- By providing two eastbound through lanes at Juniper Street, it is less likely that eastbound vehicle queues will block the upstream signal at Peachtree Street.

Figure 14: Alternative 1B – Crescent Bike Connection with Juniper Street Crossing

Figure 15: Alternative 3B – Juniper Bike Connection with Juniper Street Crossing

Alternatives 1C and 3C (Directional Bike Lanes)

These alternatives combine the crossing strategies at Piedmont Avenue and Juniper Street but applies them to directional bike lanes on either side of 10th Street. These alternatives offer the following benefits:

- All driveway intersections are simplified through one-way bike lanes, removing the need for vehicles to anticipate potentially unexpected contraflow bike movements.
- Providing dedicated left-turn and right-turn bays at both intersections allows bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts.
- Directional bike lanes make transitioning from / to the Piedmont and Juniper bicycle facilities more intuitive.
- Providing dedicated left-turn and right-turn bays at Juniper Street would allow bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts. The eastbound right at Juniper would be a protected only phase, which is prohibited during the south leg bike phase.

Figure 16: Alternative 1C – Crescent Bike Connection with Directional Bike Lanes

Figure 17: Alternative 3C – Juniper Bike Connection with Directional Bike Lanes

Alternatives Screening: Detailed Analysis

Each of the alternative layouts was analyzed to consider reassess potential conflict points, rider travel times, and traffic impacts. A summary of these criteria is provided at the end of this report, which includes recommendations for the concept design.

Safety: Bicycle-Vehicle Conflicts

Driveway conflicts were recalculated based on the routing options selected for Alternatives 1 and 3. As in the preliminary screening, the weighting performed used: low conflict = 1 point, medium conflict = 2 points, high conflict = 4 points. Two-way bike conflicts were weighted three times higher (less desirable) than a one-way bike lane conflict (3, 6, and 12 points, respectively). Table 9 includes the number of driveway conflict rankings for the segment between Peachtree Place at Crescent Avenue and 10th Street at Myrtle Street.

Table 9: Bicycle-Vehicle Conflicts (between Crescent Avenue and Myrtle Street)

Route	*1-way Conflicts*			*2-Way Conflicts*				*Weighted*	
	L	*M*	*H*	*L*	*M*	*H*	*TOTAL*	*Total*	*Rank*
Alternative 1A: Crescent w/ Piedmont Crossing	0	0	0	1	4	0	5	27	1
Alternative 1B: Crescent w/ Juniper Crossing	0	0	0	0	5	1	6	42	3
Alternative 1C: Crescent w/ Directional Bikes	1	8	1	0	1	0	11	27	1
Alternative 3A: Juniper w/ Piedmont Crossing	0	5	1	1	4	0	11	41	3
Alternative 3B: Juniper w/ Juniper Crossing	0	5	1	0	5	1	12	56	5
Alternative 3C: Juniper w/ Directional Bikes	1	10	2	0	2	0	15	41	3

Unbroken Flow: Intersection Bicycle Delays

Bicycle delays result from signal delay, congestion-based delay, indirectness of routes, and traffic gap acceptance. Delays for bicyclists at an intersection were calculated using methodologies from the most recent version of the *Highway Capacity Manual* (HCM6), assuming random arrivals, cycle length, and time allocated to the desired movement. For this report, estimated delays are reported as the sum of the delay at intersections or crossings along the route assuming random arrivals at the intersection. In general, cyclists become impatient when they experience delays in excess of 30 seconds, and there is a high likelihood they will not comply with the signal indication. In contrast, they are very likely to comply with the signal indication if their expected delay is less than 10 seconds. Tables 10 and 11 show the estimated bicyclist delay for AM and PM peak hours by route.

Table 10: AM Peak Hour Bike Delay by Route

Route	*Crossing Time in Seconds*			*Total Time*	*# >30s*	*Rank*
	Peachtree	Juniper	Piedmont			
Alternative 1A: Crescent w/ Piedmont Crossing	20	27	(9+32)	**1' 30"**	**1**	**1**
Alternative 1B: Crescent w/ Juniper Crossing	18	(8+31)	23	**1' 18"**	**1**	**1**
Alternative 1C: Crescent w/ Directional (EB/WB)	19 / 19	38 / (8+34)	(9+32) / 26	**1' 36" / 1' 30"**	**2 / 1**	**3**
Alternative 3A: Juniper w/ Piedmont Crossing	46	27	(9+32)	**1' 54"**	**2**	**4**
Alternative 3B: Juniper w/ Juniper Crossing	46	(8+31)	23	**1' 48"**	**2**	**4**
Alternative 3C: Juniper w/ Directional (EB/WB)	46	38 / (8+34)	(9+32) / 26	**2' 06" / 1' 54"**	**3**	**6**

*Two stage crossings report separately: (crossing 1 + crossing 2); Crossings ≥30 s in red; Crossings ≤ 10 s seconds in green

Table 11: PM Peak Hour Bike Delay by Route

Route	*Crossing Time in Seconds*			*Total Time*	*# >30s*	*Rank*
	Peachtree	Juniper	Piedmont			
Alternative 1A: Crescent w/ Piedmont Crossing	18	40	(8+34)	**1' 42"**	**2**	**3**
Alternative 1B: Crescent w/ Juniper Crossing	21	(14+25)	25	**1' 24"**	**1**	**1**
Alternative 1C: Crescent w/ Directional (EB/WB)	18 / 18	40 / (10+27)	(5+41) / 21	**1' 42" / 1' 18"**	**2 / 0**	**3**
Alternative 3A: Juniper w/ Piedmont Crossing	38	40	(8+34)	**2' 0"**	**3**	**6**
Alternative 3B: Juniper w/ Juniper Crossing	38	(14+25)	25	**1' 42"**	**1**	**1**
Alternative 3C: Juniper w/ Directional (EB/WB)	38	40 / (10+27)	(5+41) / 21	**2' 6" / 1' 36"**	**3**	**5**

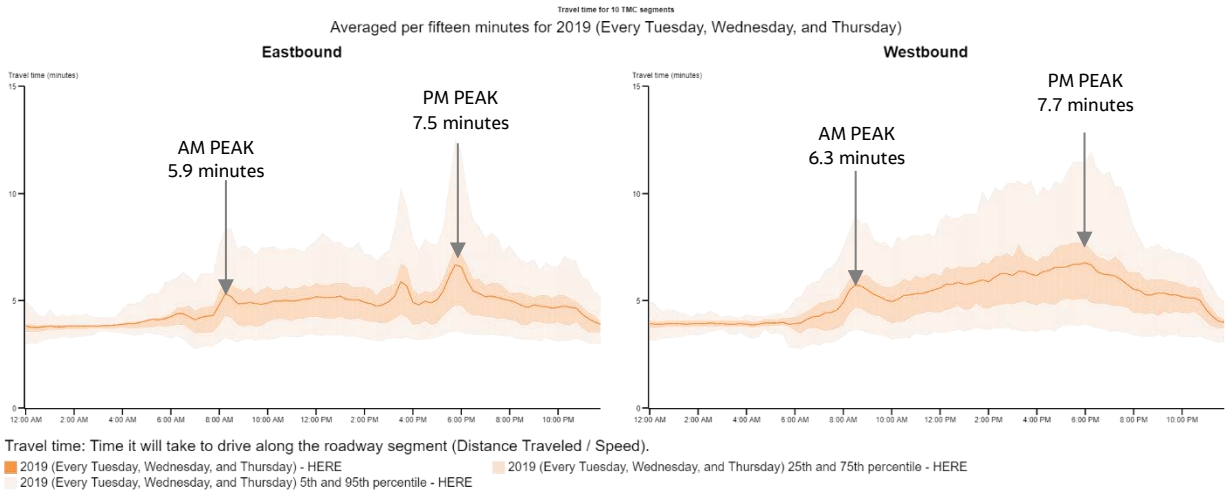
*Two stage crossings report separately: (crossing 1 + crossing 2); Crossings ≥30 s in red; Crossings ≤ 10 s seconds in green

Detailed calculations are shown in Appendix D. Phasing diagrams utilized for these calculations are provided in Appendix E.

Motorist Impacts: Travel Time and Block Storage Ratio

All routes include crossings at roadways identified as "minor arterials" by the state functional classification map: 10th Street, Spring Street, West Peachtree Street, Peachtree Street, and Juniper Street. As such, vehicle progression on these routes should be weighted in the consideration of potential alternatives. The traditional focus on intersection vehicle delays, using Level of Service (LOS), as a perfomance measure can exaggerate the severity of a project's effect on congestion. For example, an intersection delay increase from 35 seconds (LOS "C") to 80 seconds (LOS "F") may only represent an additional 45 seconds along a 10-minute trip. Therefore, this study used a 95th percentile queue to evaluate block storage ratios, which considers if cars are likely to fill-up a given block through the next upstream intersection. Additionally, increased travel times along 10th Street (from Monroe Drive to Williams Street) will be reported as a function of added signal delays. A 75th percentile was used to measure the travel times at or below which 75 percent of drivers experienced (removing the highest 25 percent of travel times). The 75th percentile travel time for of all Tuesdays, Wednesdays, and Thursdays in 2019 was 6.3 minutes in the AM peak direction (westbound) and 7.5 minutes in the PM peak direction (eastbound).

Figure 18: HERE 2019 Travel Time Data for 10th Street between Williams Street and Monroe Drive



The following tables show the amounts of added vehicle delay for each of the alternative routes. The no-build scenario assumes adjacent projects (Piedmont Avenue and Juniper Street transformation) have been constructed. The build scenario includes bike phasing that seperates cyclists from both left-turn and right-turn conflicts at signalized intersections.

Table 12: AM Peak Hour 10th Street 95th Percentile Queue Storage Ratio by Route (EB / WB)

Route	*Peachtree*	*Juniper*	*Piedmont*	*Rank*
Storage	1050' / 375'	375' / 525'	525' / 750'	-
Alternative 1A: Crescent w/ Piedmont Crossing	0.5 / 0.9	0.3 / 1.1	0.1 / 0.6	3
Alternative 1B: Crescent w/ Juniper Crossing	0.2 / 0.5	0.5 / 2.2	0.3 / 0.6	5
Alternative 1C: Crescent w/ Directional	0.4 / 0.9	0.2 / 0.9	0.4 / 0.7	1
Alternative 3A: Juniper w/ Piedmont Crossing	0.1 / 0.1	0.5 / 1.1	0.1 / 0.6	3
Alternative 3B: Juniper w/ Juniper Crossing	0.1 / 0.1	0.5 / 2.2	0.3 / 0.6	5
Alternative 3C: Juniper w/ Directional Bikes	0.1 / 0.1	0.5 / 0.9	0.4 / 0.7	1

NOTE: A ratio of 1.0 or greater (in red) means anticipated vehicle stacking exceeds block length

Table 13: AM Peak Hour Added 10th Street Motorist Delay (seconds) by Route (EBT / WBT)

	Avg Motorist Delay in Seconds				
Route	Peachtree	Juniper	Piedmont	*Total Added Delay*	*Rank*
No-Build	12.4 / 6.3	15.3 / 25.4	8.1 / 22.6	**0' 36" / 0' 54"**	-
Alternative 1A: Crescent w/ Piedmont Crossing	47.7 / 28.5	12.7 / 19.5	5.0 / 25.0	**0' 30" / 0' 18"**	1
Alternative 1B: Crescent w/ Juniper Crossing	12.5 / 28.4	42.0 / 63.9	9.9 / 29.9	**0' 30" / 1' 06"**	4
Alternative 1C: Crescent w/ Directional	18.2 / 39.5	10.2 / 14.5	13.0 / 124.9	**0' 06" / 2' 06"**	6
Alternative 3A: Juniper w/ Piedmont Crossing	-	21.2 / 19.5	5.1 / 25.0	**0' 00" / -0' 06"**	1
Alternative 3B: Juniper w/ Juniper Crossing	-	35.8 / 40.6	9.9 / 29.9	**0' 24" / 0' 24"**	1
Alternative 3C: Juniper w/ Directional Bikes	-	21.2 / 14.5	13.6 / 124.9	**0' 12" / 1' 30"**	4

Table 14: PM Peak Hour Added 10th Street Motorist Delay (seconds) by Route (EBT / WBT)

	Avg Motorist Delay in Seconds				
Route	Peachtree	Juniper	Piedmont	*Total Added Delay*	*Rank*
No-Build	22.1 / 25.1	34.0 / 26.5	9.0 / 29.9	**1' 05" / 1' 22"**	-
Alternative 1A: Crescent w/ Piedmont Crossing	94.0 / 9.7	147.3 / 11.0	5.6 / 16.6	**3' 00" / -0' 42"**	5
Alternative 1B: Crescent w/ Juniper Crossing	164.6 / 32.0	30.3 / 73.6	36.6 / 180.8	**2' 48" / 0' 42"**	5
Alternative 1C: Crescent w/ Directional	107.0 / 2.8	143.0 / 26.1	15.9 / 19.3	**3' 18" / -0' 36"**	5
Alternative 3A: Juniper w/ Piedmont Crossing	-	145.8 / 11.0	5.6 / 16.6	**1' 48" / -0' 30"**	3
Alternative 3B: Juniper w/ Juniper Crossing	-	53.7 / 75.5	37.6 / 17.7	**0' 48" / 0' 36"**	1
Alternative 3C: Juniper w/ Directional Bikes	-	145.8 / 26.1	15.9 / 19.3	**2' 00" / -0' 12"**	3

Table 15: PM Peak Hour 10th Street 95th Percentile Queue Storage Ratio by Route (EB / WB)

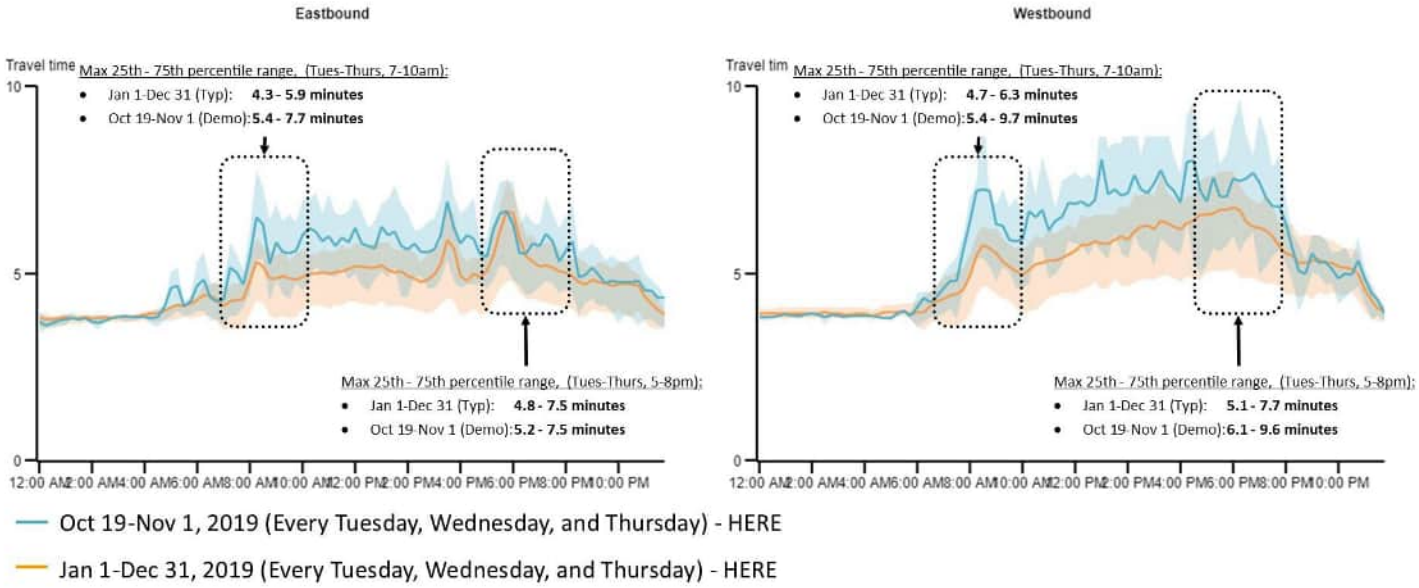
Route	*Peachtree*	*Juniper*	*Piedmont*	*Rank*
Storage	1050' / 375'	375' / 525'	525' / 750'	-
Alternative 1A: Crescent w/ Piedmont Crossing	0.9 / 0.3	1.9 / 0.3	0.2 / 0.5	3
Alternative 1B: Crescent w/ Juniper Crossing	1.0 / 0.3	0.5 / 1.2	1.1 / 0.2	1
Alternative 1C: Crescent w/ Directional	0.9 / 0.3	1.8 / 0.8	0.5 / 0.2	3
Alternative 3A: Juniper w/ Piedmont Crossing	0.4 / 0.3	2.8 / 0.3	0.2 / 0.5	5
Alternative 3B: Juniper w/ Juniper Crossing	0.4 / 0.3	0.9 / 1.2	1.1 / 0.2	1
Alternative 3C: Juniper w/ Directional Bikes	0.4 / 0.3	2.8 / 0.8	0.5 / 0.2	5

NOTE: A ratio of 1.0 or greater (in red) means anticipated vehicle stacking exceeds block length

It should be noted that models utilized for the added delay analysis were developed using pre-pandemic traffic volumes, which does not account for any potential volume reductions as a result of rerouting, temporal shift in travel behavior, or mode shift.

For further comparison, a temporary pop-up bike lane was tested along 10th Street between Myrtle Street and Juniper Street in October 2019, implemented by the City of Atlanta. One westbound lane was repurposed to a bicycle lane, and no other geometric changes were incorporated into the demonstration project to mitigate traffic. Travel time data was compared for the Tuesday, Wednesday, and Thursday of the demonstration (October 19 - November 1, 2019) to all Tuesdays, Wednesdays, and Thursdays within the previous month (September 2019). The results of this comparison showed morning travel times increasing by less than 2 minutes for eastbound travelers, and evening travel times increasing by approximately 3 minutes in both directions.

Figure 19: Baseline Travel Time comparison for 10th Street between Monroe Drive and Williams Street



Final Ranking

A preliminary ranking was developed using the previously identified criteria (Vehicle Conflicts, Bike Delay, and Motorist Impacts). Table 16 (below) shows a 1-6 ranking for each criterion. Similar values with nominal differences between alternatives were given the same (tie) rankings.

Table 16: Final Ranking

	Route	Vehicle Conflicts	Bike Delay		Vehicle Delay		Block Storage	
			AM	PM	AM	PM	AM	PM
Crescent Ave	Alternative 1A: Piedmont Crossing	1	1	3	1	5	3	3
	Alternative 1B: Juniper Crossing	3	1	1	4	5	5	1
	Alternative 1C: Directional Bikes	1	3	3	6	5	1	3
Juniper St	Alternative 3A: Piedmont Crossing	3	4	6	1	3	3	5
	Alternative 3B: Juniper Crossing	5	4	1	1	1	5	1
	Alternative 3C: Directional Bikes	3	6	5	4	3	1	5

Based on the final rankings, the top three preferred alternatives are 1A, 1C, and 3A. In line with project safety goals, these alternatives are amongst those with the fewest vehicle-conflicts, leading to the selection of Alternative 1A and 1C. The combined desirability of the remaining measures was also considered when selecting Alternative 3A. Some of the conclusions used to narrow these alternatives are listed below:

- Alternative 3B was removed from consideration due to this alternative having the highest number of driveway conflicts.
- Alternative 3C was removed from consideration due to this alternative having the highest bike delays.
- Alternative 3A has the added benefit of almost no travel delay impacts in the AM peak hour. While it also has more bicycle delay than Alternative 1B, the difference is less than 40 seconds for the whole corridor. Also, keeping one alternative from Route 3 provides additional flexibility in the concept phase.

Alternative 1A: Crescent Bike Connection with Two-Stage Piedmont Ave Crossing

Figure 20: Alternative 1A – Crescent Bike Connection with Piedmont Ave Crossing

This alternative has the fewest total driveway conflicts and the second fewest conflicts with the two-way facility. All intersection crossings have a bike delay that is ≤40 seconds per crossing, with half being below 30 seconds. This alternative will add less than 1 minute of travel delay to motorists in the AM peak hour, though westbound queues will likely exceed block spacing between Juniper Street and Piedmont Avenue. This alternative will add 3 minutes of eastbound travel delay in the PM peak hour, and eastbound queues will likely exceed the block spacing between Juniper Street and Peachtree Street. These traffic impacts

represent "worst-case" as they assume pre-COVID volumes without accounting for any potential volume reductions as a result of rerouting, temporal shift in travel behavior, or mode shift.

The two-stage option at Piedmont Avenue would cross bicycles on the east leg of the intersection by protecting left-turn and right-turn signal phases and make use of the south leg of the intersection, where there are no conflicting turns from 10th Street motorists. Providing dedicated left-turn and right-turn bays at Juniper Street would allow bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts.

Alternative 1C: Crescent Bike Connection with Directional lanes on 10th Street

Figure 21: Alternative 1C – Crescent Bike Connection with Directional Bike Lanes

This alternative has the fewest two-way bike lane conflicts and the second fewest total driveway conflicts. All intersection crossings have a bike delay that is ≤41 seconds per crossing, with a few below 30 seconds. This alternative will add 2 minutes of westbound travel delay to motorists in the AM peak hour, but AM queues will fit with the existing blocks. The alternative will add 3 minutes of eastbound travel delay in the PM peak hour, and eastbound queues will likely exceed the block spacing between Juniper Street and Peachtree Street.

Alternative 3A: Juniper Bike Connection with Two-Stage Piedmont Ave Crossing

Figure 22: Alternative 3A – Crescent Bike Connection with Piedmont Ave Crossing

This alternative has the fewest total driveway conflicts between the three Juniper Street alignments, but more than any of the Crescent Avenue alignments. All intersection crossings have a bike delay that is ≤46 seconds per crossing, and most are greater than 30 seconds. This alternative will add almost no travel delay to motorists in the AM peak hour, though westbound queues may exceed block spacing between Juniper Street and Piedmont Avenue. This alternative will add 2 minutes of eastbound travel delay in the PM peak hour, and eastbound queues will likely exceed the block spacing between Juniper Street and Peachtree Street.

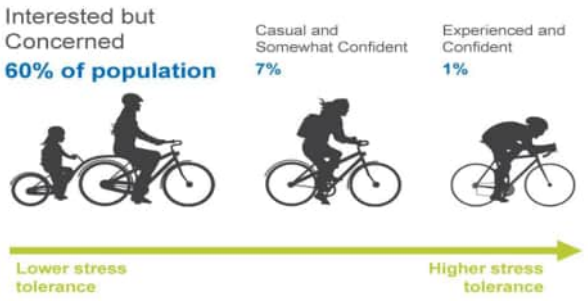
The two-stage crossing option at Piedmont Avenue would cross bicycles on the east leg of the intersection by protecting left-turn and right-turn signal phases and make use of the south leg of the intersection, where there are no conflicting turns from 10th Street motorists. Providing dedicated left-turn and right-turn bays at Juniper Street would allow bike signal heads to be utilized for a bike phase, protecting riders from left/right turning vehicle conflicts.

Appendix A – LTS Score Calculations

Facility Name	From	To	Bike Facility Type	Vehicle Lanes	Daily Vehicles	Vehicle Speeds	LTS Score	
10th Street	Crescent	Myrtle Street	Separated Bike Facility	2 thru lanes per direction	8001+ ADT	30 mph	1	
Crescent St	10th Street	Peachtree Place	Separated Bike Facility	1 thru lane per direction (Lined or Non-Residential)	3001-8000 ADT	25 mph	1	
Peachtree Place	Williams Street	Spring Street	Bike Lane alongside Parking (≥15 ft total width)*	1 thru lane per direction (Lined or Non-Residential)	1501-3000 ADT	25 mph	1	*see note
Peachtree Place	Spring Street	Peachtree Street	Bike Lane alongside Parking (≥15 ft total width)*	1 thru lane per direction (Lined or Non-Residential)	3001-8000 ADT	25 mph	1	*see note
Peachtree Place	Peachtree Street	Juniper Street	Bike Lane alongside Parking (≥15 ft total width)*	1 thru lane per direction (Unlined or Residential)	1501-3000 ADT	25 mph	1	
8th Street	Cypress Street	Piedmont Ave	Mixed Traffic	1 thru lane per direction (Lined or Non-Residential)	1501-3000 ADT	25 mph	3	
8th Street	Piedmont Ave	Myrtle Street	Mixed Traffic	1 thru lane per direction (Unlined or Residential)	1501-3000 ADT	25 mph	2	
Cypress Street	Peachtree Place	8th Street	Mixed Traffic	1 thru lane per direction (Lined or Non-Residential)	3001-8000 ADT	25 mph	3	
Peachtree Street	Peachtree Place	10th Street	Mixed Traffic	2 thru lanes per direction	8001+ ADT	30 mph	4	
Juniper Street	10th Street	8th Street	Separated Bike Facility	2 thru lanes per direction	8001+ ADT	30 mph	1	
Myrtle Street	10th Street	8th Street	Mixed Traffic	1 thru lane per direction (Unlined or Residential)	8001+ ADT	≤20 mph	2	

Level of Traffic Stress (LTS) Score

1	Low traffic stress, equivalent to neighborhood roads, cycle tracks, trails.	Interested but Concerned Bicyclists
2	Moderate traffic stress, equivalent to low-volume / low-speed roads	Somewhat Confident Bicyclists
3	High traffic stress, equivalent to bicycling on four-lane roads with bike lanes.	Highly Confident Bicyclists
4	Extreme traffic stress, equivalent to bicycling in traffic on 40+ mph roads	"strong and fearless"



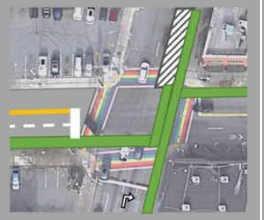
NOTE:

The existing score on Peachtree Place between Williams and W Peachtree Street is LTS 3 (Highly Confident). This is based on 25 mph speeds and mixed traffic. Advisory bike lanes and other alternatives being considered in these blocks will still improve LTS scores from the current conditions. Any bike lane additions will raise score to LTS 2 (Somewhat Confident), and buffered lanes will offer LTS 1 (Interested but Concerned).

For lined, unresidential roadways at 25 mph:
- Mixed Traffic: LTS 3 (LTS 2 if <25 mph and <3000 ADT)
- Alongside Parking (<15ft): LTS 2
- Alongside Parking (15ft): LTS 1
- No Parking (<6ft): LTS 2
- No Parking (6ft): LTS 1
- Separated: LTS 1

Appendix B – Crossing Alternatives Evaluation

10th Street at Piedmont Avenue

Measure	 No-Build Condition	 Two Stage Crossing	 Bike Only Scramble	 Ped and Bike Scramble	 Protected EBL/WBR with NBR lane (No Transition)	 Protected EBL/WBR with NBL lane (No Transition)
Ped Split Time AM (PM)	N-Leg: 50 (47) seconds S-Leg: 65 (74) seconds E-Leg: 55 (46) seconds W-Leg: 55 (46) seconds	N-Leg: 61 (57) seconds S-Leg: 76 (72) seconds E-Leg: 29 (30) seconds W-Leg: 44 (48) seconds	N-Leg: 63 (50) seconds S-Leg: 73 (70) seconds E-Leg: 32 (35) seconds W-Leg: 32 (35) seconds	All: 30 (30) seconds (Dedicated phase only)	N-Leg: 41 (49) seconds S-Leg: 73 (85) seconds E-Leg: 32 (21) seconds W-Leg: 47 (35) seconds	N-Leg: 46 (42) seconds S-Leg: 74 (82) seconds E-Leg: 43 (38) seconds W-Leg: 43 (38) seconds
Ped Delay AM (PM)	N-Leg: 29 (31) seconds S-Leg: 20 (15) seconds E-Leg: 27 (34) seconds W-Leg: 27 (34) seconds	N-Leg: 21 (25) seconds S-Leg: 16 (16) seconds E-Leg: 45 (47) seconds W-Leg: 33 (32) seconds	N-Leg: 21 (29) seconds S-Leg: 16 (17) seconds E-Leg: 45 (42) seconds W-Leg: 45 (42) seconds	N-Leg: 45 (45) seconds S-Leg: 46 (46) seconds E-Leg: 47 (47) seconds W-Leg: 47 (47) seconds	N-Leg: 36 (30) seconds S-Leg: 16 (10) seconds E-Leg: 45 (55) seconds W-Leg: 33 (42) seconds	N-Leg: 32 (35) seconds S-Leg: 15 (12) seconds E-Leg: 34 (40) seconds W-Leg: 34 (40) seconds
Bike Split Time AM (PM)	N-Leg: - S-Leg: - E-Leg: 55 (46) seconds W-Leg: -	N-Leg: - S-Leg: 76 (20) seconds E-Leg: 29 (30) seconds W-Leg: -	All: 12 (12) seconds (Dedicated phase only)	All: 30 (30) seconds (Dedicated phase only)	N-Leg: 41 (49) seconds S-Leg: - E-Leg: 32 (21) seconds W-Leg: -	N-Leg: 46 (42) seconds S-Leg: - E-Leg: 46 (38) seconds W-Leg: -
Bike Delay AM (PM)	N-Leg: - S-Leg: - E-Leg: 18 (23) seconds W-Leg: -	N-Leg: - S-Leg: 9 (10) seconds E-Leg: 32 (34) seconds W-Leg: -	All: 49 (49) seconds	All: 34 (34) seconds	N-Leg: 26 (21) seconds S-Leg: - E-Leg: 32 (41) seconds W-Leg: -	N-Leg: 23 (25) seconds S-Leg: - E-Leg: 23 (28) seconds W-Leg: -
Vehicle Delay AM (PM)	EB: 8.1 (9.0) seconds WB: 22.6 (29.9) seconds NB: 41.6 (44.9) seconds	EB: 13.8 (15.4) seconds WB: 28.3 (10.9) seconds NB: 136.5 (30.1) seconds	EB: 15.3 (24.7) seconds WB: 29.0 (27.1) seconds NB: 217.9 (147.3) seconds	EB: 21.8 (51.3) seconds WB: 142.4 (22.5) seconds NB: 269.0 (218.7) seconds	EB: 33.7 (24.5) seconds WB: 46.0 (26.8) seconds NB: 141.6 (149.7) seconds	EB: 33.8 (32.3) seconds WB: 45.0 (27.8) seconds NB: 65.4 (167.8) seconds
Vehicle 95th %ile Queue AM (PM)	EB: 58 (142) feet WB: 188 (215) feet NB: 543 (#540) feet	EB: 119 (154) feet WB: #376 (313) feet NB: #882 (315) feet	EB: 82 (258) feet WB: #481 (367) feet NB: #738 (#640) feet	EB: 187 (#311) feet WB: #777 (#436) feet NB: #796 (#696) feet	EB: 346 (410) feet WB: 440 (125) feet NB: #881 (#656) feet	EB: 337 (#465) feet WB: 440 (127) feet NB: #632 (#670) feet

95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

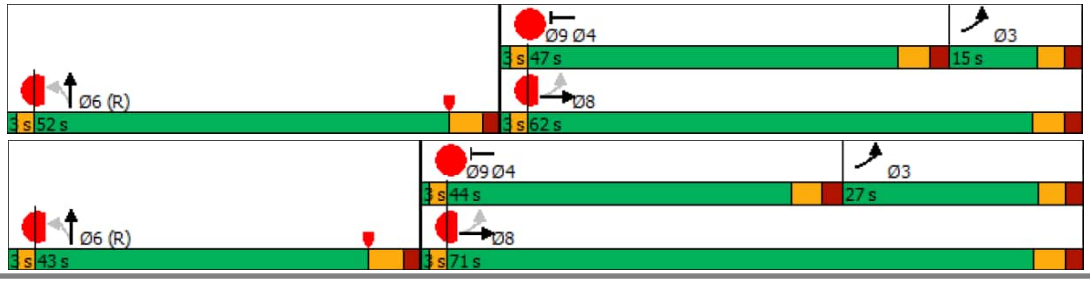
10th Street at Juniper Street

Measure	 No-Build Condition	 South Leg Crossing (1 Lane WB Approach)	 Two Stage Crossing (1 Lane WB Approach)	 South Leg Crossing (2 Lane WB Approach)	 Two Stage Crossing (2 Lane WB Approach)
Ped Split Time AM (PM)	N-Leg: 60 (53) seconds S-Leg: 50 (42) seconds E-Leg: 37 (37) seconds W-Leg: 37 (37) seconds	N-Leg: 48 (97) seconds S-Leg: 15 (15) seconds E-Leg: 40 (53) seconds W-Leg: 30 (42) seconds	N-Leg: 75 (63) seconds S-Leg: 35 (44) seconds E-Leg: 45 (57) seconds W-Leg: 34 (42) seconds	N-Leg: 75 (70) seconds S-Leg: 25 (22) seconds E-Leg: 45 (50) seconds W-Leg: 30 (40) seconds	N-Leg: 75 (70) seconds S-Leg: 50 (55) seconds E-Leg: 45 (50) seconds W-Leg: 25 (35) seconds
Ped Delay AM (PM)	N-Leg: 23 (27) seconds S-Leg: 30 (36) seconds E-Leg: 41 (41) seconds W-Leg: 41 (41) seconds	N-Leg: 31 (6) seconds S-Leg: 60 (60) seconds E-Leg: 38 (29) seconds W-Leg: 47 (37) seconds	N-Leg: 31 (21) seconds S-Leg: 51 (34) seconds E-Leg: 38 (26) seconds W-Leg: 47 (37) seconds	N-Leg: 14 (17) seconds S-Leg: 50 (53) seconds E-Leg: 34 (31) seconds W-Leg: 47 (38) seconds	N-Leg: 14 (17) seconds S-Leg: 30 (53) seconds E-Leg: 34 (31) seconds W-Leg: 51 (38) seconds
Bike Split Time AM (PM)	N-Leg: - S-Leg: - E-Leg: - W-Leg: 37 (37) seconds	N-Leg: - S-Leg: 15 (15) seconds E-Leg: - W-Leg: 30 (42) seconds	N-Leg: 78 (63) seconds S-Leg: - E-Leg: - W-Leg: 34 (42) seconds	N-Leg: - S-Leg: 25 (22) seconds E-Leg: - W-Leg: 30 (40) seconds	N-Leg: 75 (70) seconds S-Leg: - E-Leg: - W-Leg: 25 (35) seconds
Bike Delay AM (PM)	N-Leg: - S-Leg: - E-Leg: - W-Leg: 29 (29) seconds	N-Leg: - S-Leg: 46 (46) seconds E-Leg: - W-Leg: 34 (25) seconds	N-Leg: 7 (14) seconds S-Leg: - E-Leg: - W-Leg: 31 (25) seconds	N-Leg: - S-Leg: 38 (40) seconds E-Leg: - W-Leg: 34 (27) seconds	N-Leg: 8 (10) seconds S-Leg: - E-Leg: - W-Leg: 38 (30) seconds
Vehicle Delay AM (PM)	EB: 12.0 (30.0) seconds WB: 25.4 (26.5) seconds SB: 19.9 (51.9) seconds	EB: 72.6 (42.6) seconds WB: 301.8 (214.3) seconds SB: 92.2 (158.3) seconds	EB: 75.6 (39.4) seconds WB: 63.9 (69.1) seconds SB: 47.6 (116.0) seconds	EB: 33.4 (109.7) seconds WB: 21.8 (17.5) seconds SB: 45.6 (225.0) seconds	EB: 10.8 (101.4) seconds WB: 25.9 (24.4) seconds SB: 40.1 (202.6) seconds
Vehicle 95th %ile Queue AM (PM)	EB: 72 (#452) feet WB: 386 (181) feet SB: 278 (#936) feet	EB: 158 (#478) feet WB: #1208 (#673) feet SB: #647 (#1047) feet	EB: 189 (300) feet WB: #1160 (444) feet SB: 537 (#997) feet	EB: 192 (#1047) feet WB: 568 (168) feet SB: #550 (#1089) feet	EB: 304 (#1085) feet WB: #976 (433) feet SB: 515 (#1089) feet

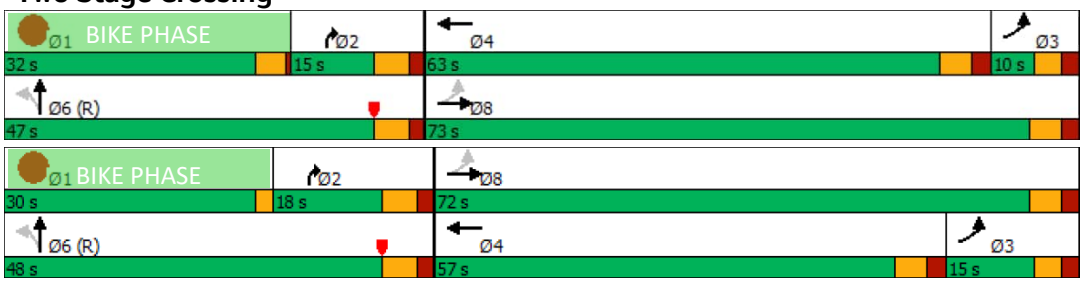
95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Phasing Diagrams for Piedmont Avenue Crossing Alternatives

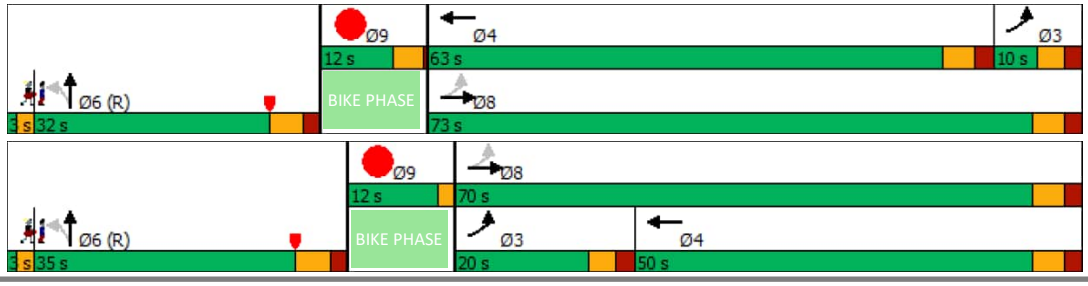
No-Build Condition



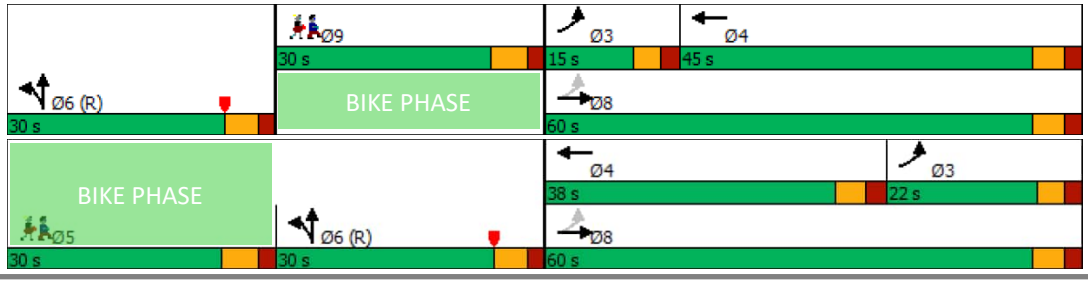
Two Stage Crossing



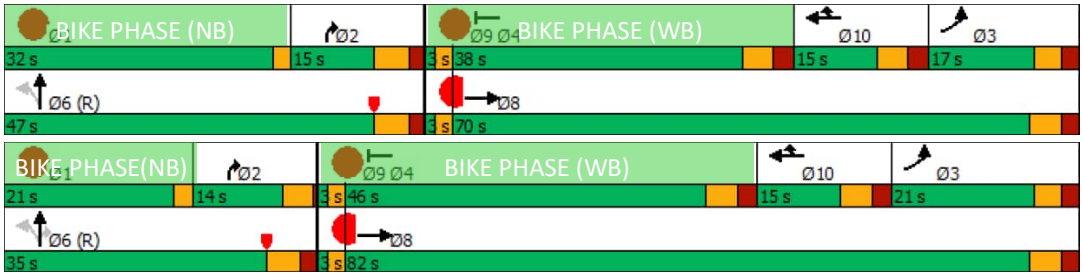
Bike Only Scramble



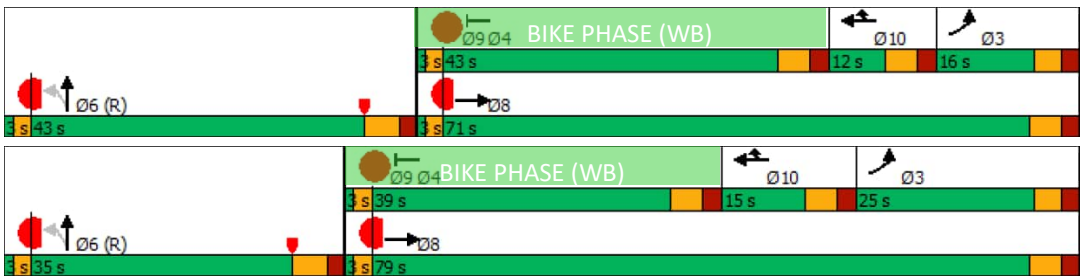
Ped and Bike Scramble



Protected EBL/WBR with NBR (No Transition)

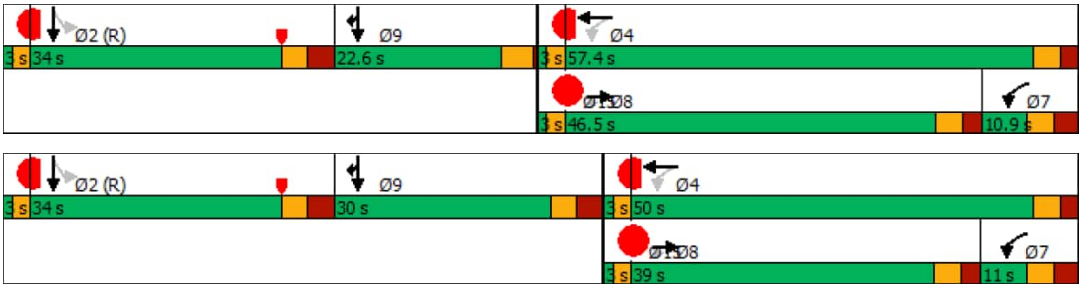


Protected EBL/WBR with NBL (No Transition)

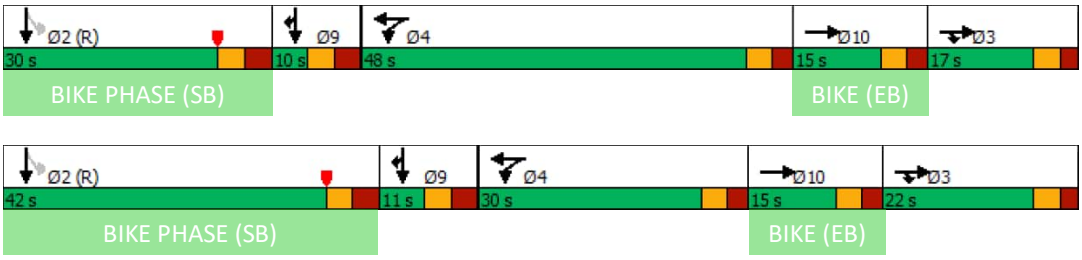


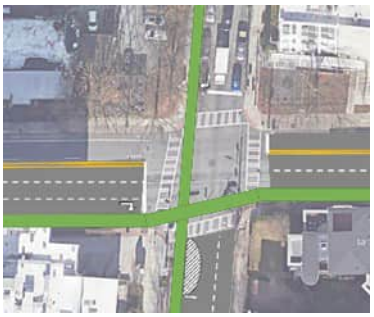
Phasing Diagrams for Juniper Street Crossing Alternatives

No-Build Condition

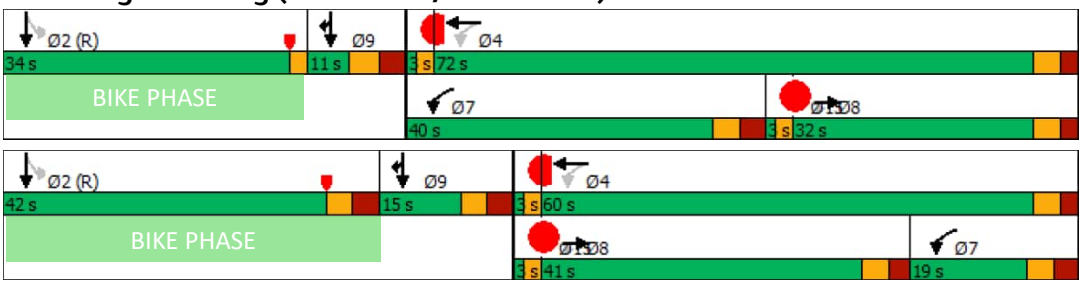


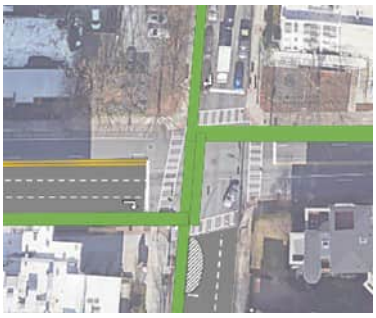
South Leg Crossing (1 WB Lane / 2 EB Lanes)



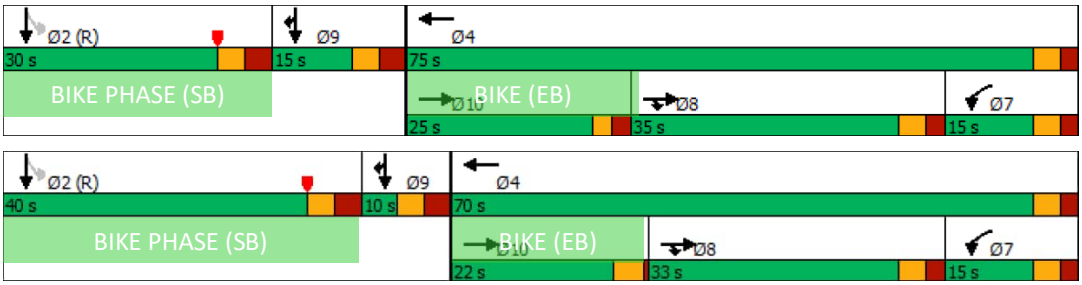


Two Stage Crossing (1 WB Lane / 2 EB Lanes)

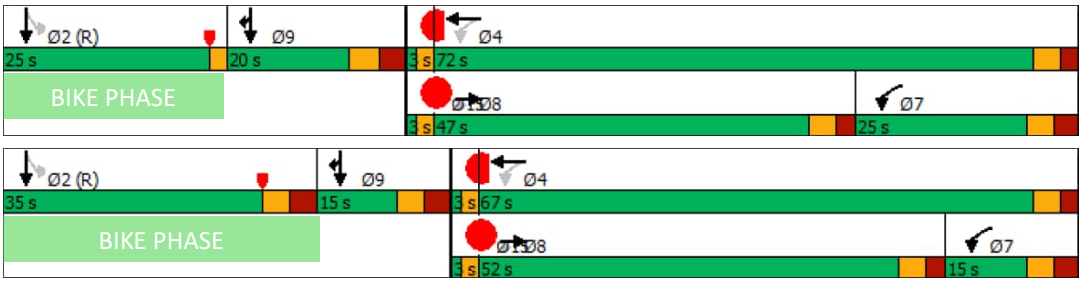




South Leg Crossing (2 WB Lanes / 1 EB Lane)



Two Stage Crossing (2 WB Lanes / 1 EB Lane)

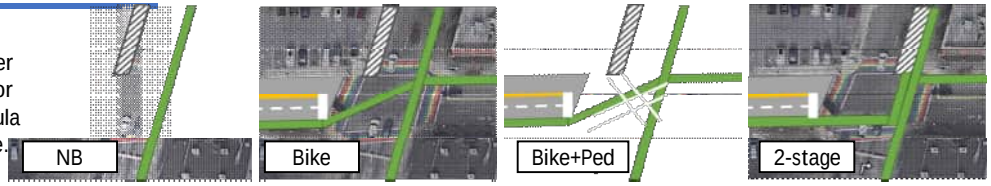


Bicycle Delay

Piedmont Avenue at 10th Street Crossing Alternatives

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.



c_b = capacity of the bicycle lane (bicycles/h)

g_b = effective green time for the bicycle (s)

C = cycle length (s)

v_{bic} = bicycle flow rate (bicycles/h)

Scenario 1: Transition at Piedmont (Piedmont at 10th Street)

AM Bike Split	NB	Bike	Bike+Ped	two stage
N Leg	0	12	30	0
S Leg	0	12	30	73
E Leg	55	12	30	32
W Leg	0	12	30	0

AM Bike Delay	NB	Bike	Bike+Ped	two stage
N Leg		49	34	
S Leg		49	34	9
E Leg	18	49	34	32
W Leg		49	34	

PM Bike Split	NB	Bike	Bike+Ped	two stage
N Leg	0	12	30	0
S Leg	0	12	30	72
E Leg	46	12	30	30
W Leg	0	12	30	0

PM Bike Delay	NB	Bike	Bike+Ped	two stage
N Leg		49	34	
S Leg		49	34	10
E Leg	23	49	34	34
W Leg		49	34	

Pedestrian Delay

Minimum Splits	PC	Y	R	PC+Y+R
N Leg	12	3.5	2.2	17.7
S Leg	13	3.5	2.2	18.7
E Leg	14	3.9	1.9	19.8
W Leg	14	3.9	1.9	19.8

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay

g_{walk} = effective walk time for the phase serving the movement (s)

C = cycle length (s)

Scenario 1: Transition at Piedmont (Piedmont at 10th Street)

AM Ped Split	NB	Bike	Bike+Ped	two stage
N Leg	50	63	30	63
S Leg	65	73	30	73
E Leg	55	32	30	32
W Leg	55	32	30	47

AM Ped Delay	NB	Bike	Bike+Ped	two stage
N Leg	29	21	45	21
S Leg	20	16	46	16
E Leg	27	45	47	45
W Leg	27	45	47	33

PM Ped Split	NB	Bike	Bike+Ped	two stage
N Leg	47	50	30	57
S Leg	74	70	30	72
E Leg	46	35	30	30
W Leg	46	35	30	48

PM Ped Delay	NB	Bike	Bike+Ped	two stage
N Leg	31	29	45	25
S Leg	15	17	46	16
E Leg	34	42	47	47
W Leg	34	42	47	32

Bicycle Delay

Piedmont Avenue at 10th Street Crossing Alternatives

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

c_b = capacity of the bicycle lane (bicycles/h)

g_b = effective green time for the bicycle (s)

C = cycle length (s) v_{bic} = bicycle flow rate (bicycles/h)

Scenario 2: Transition at Juniper (Piedmont at 10th Street)

AM Bike Split	NB	Dedicated NBR	Dedicated NBL
N Leg	0	41	46
S Leg	0	0	0
E Leg	55	32	46
W Leg	0	0	0

AM Bike Delay	NB	Dedicated NBR	Dedicated NBL
N Leg		26	23
S Leg			
E Leg	18	32	23
W Leg			

PM Bike Split	NB	Dedicated NBR	Dedicated NBL
N Leg	0	49	42
S Leg	0	0	0
E Leg	46	21	38
W Leg	0	0	0

PM Bike Delay	NB	Dedicated NBR	Dedicated NBL
N Leg		21	25
S Leg			
E Leg	23	41	28
W Leg			

Pedestrian Delay

Minimum Splits	PC	Y	R	PC+Y+R
N Leg	12	3.5	2.2	17.7
S Leg	13	3.5	2.2	18.7
E Leg	14	3.9	1.9	19.8
W Leg	14	3.9	1.9	19.8

$$d_p = \frac{\left(C - g_{\text{Walk},mi}\right)^2}{2\,C}$$

d_p = pedestrian delay

g_{walk} = effective walk time for the phase serving the movement (s)

C = cycle length (s)

Scenario 2: Transition at Juniper (Piedmont at 10th Street)

AM Bike Split	NB	Dedicated NBR	Dedicated NBL
N Leg	0	41	46
S Leg	0	73	74
E Leg	55	32	46
W Leg	0	47	46

AM Bike Delay	NB	Dedicated NBR	Dedicated NBL
N Leg	74	36	32
S Leg	76	16	15
E Leg	27	45	34
W Leg	77	33	34

PM Bike Split	NB	Dedicated NBR	Dedicated NBL
N Leg	0	49	42
S Leg	0	85	82
E Leg	46	21	38
W Leg	0	35	38

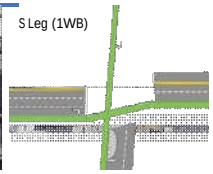
PM Bike Delay	NB	Dedicated NBR	Dedicated NBL
N Leg	74	30	35
S Leg	76	10	12
E Leg	34	55	40
W Leg	77	42	40

Bicycle Delay

c_b = capacity of the bicycle lane (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)
v_{bic} = bicycle flow rate (bicycles/h)

$$d_b = \frac{0.5\,C\,(1-g_b/C)^2}{1-\min\left(\frac{v_{bic}}{c_b},1.0\right)\frac{g_b}{C}}$$

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.



Scenario 1: Transition at Piedmont (Piedmont at 10th Street)

AM Bike Split	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg	0		78		75
S Leg	0	15		25	
E Leg	0				
W Leg	37	30	34	30	25

AM Bike Delay	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg			7		8
S Leg		46		38	
E Leg					
W Leg	29	34	31	34	38

PM Bike Split	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg	0		63		70
S Leg	0	15		22	
E Leg	0				
W Leg	37	42	42	40	35

PM Bike Delay	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg			14		10
S Leg		46		40	
E Leg					
W Leg	29	25	25	27	30

Pedestrian Delay

Minimum Splits	PC	Y	R	PC+Y+R
N Leg	11	3	2.2	16.2
S Leg	14	3	2.2	19.2
E Leg	21	3	3	27
W Leg	21	3	3	27

$$d_p = \frac{\left(C - g_{\mathrm{Walk},mi}\right)^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase serving the movement (s)
C = cycle length (s)

Scenario 1: Transition at Piedmont (Piedmont at 10th Street)

AM Ped Split	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg	60	48	75	75	75
S Leg	50	15	35	25	50
E Leg	37	40	45	45	45
W Leg	37	30	34	30	25

AM Ped Delay	NB	S Leg to Crescent	2 Stage to Crecent	S Leg to Crescent	2 Stage to Crecent
N Leg	22	30	14	14	14
S Leg	30	60	42	51	30
E Leg	47	44	40	40	40
W Leg	47	53	50	53	58

PM Ped Split	NB	S Leg (1 WB)	2 Stage (1 WB)	S Leg (2 WB)	2 Stage (2 WB)
N Leg	53	97	63	70	70
S Leg	42	15	44	22	55
E Leg	37	53	57	50	50
W Leg	37	42	42	40	35

PM Ped Delay	NB	S Leg to Crescent	2 Stage to Crecent	S Leg to Crescent	2 Stage to Crecent
N Leg	26	5	20	16	16
S Leg	36	60	35	53	27
E Leg	47	34	31	36	36
W Leg	47	43	43	44	49

Appendix C – Synchro Printouts for Detailed Analysis

(submitted electronically)

Appendix D – Bike Delay Calculations

Bicycle Delay

Alternative 1A (Crescent, Pied)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	0	0
S Leg	50	40	73
E Leg	0	0	32
W Leg	0	0	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg				
S Leg	20	27	9	
E Leg			32	
W Leg				
TOTAL	20	27	41	89

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	0	0
S Leg	55	22	75
E Leg	0	0	30
W Leg	0	0	0

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg				
S Leg	18	40	8	
E Leg			34	
W Leg				
TOTAL	18	40	42	100

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	47	75	63
S Leg	50	40	73
E Leg	35	45	32
W Leg	40	30	47

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	33.6	61.3	49.3
S Leg	33.6	25.3	58.3
E Leg	15.9	29.2	16.2
W Leg	16.9	14.2	31.2

N Leg	31	14	21
S Leg	31	37	16
E Leg	45	34	45
W Leg	44	47	33

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	55	70	53
S Leg	55	22	75
E Leg	35	50	30
W Leg	33	40	45

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	41.6	56.3	39.3
S Leg	38.6	7.3	60.3
E Leg	15.9	34.2	14.2
W Leg	9.9	24.2	29.2

PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	26	17	27
S Leg	28	53	15
E Leg	45	31	47
W Leg	51	38	34

Bicycle Delay

Alternative 1B (Crescent, Jnpr)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	75	46
S Leg	55	0	0
E Leg	0	0	0
W Leg	0	34	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg		8	23	
S Leg	18			
E Leg				
W Leg		31		
TOTAL	18	39	23	80

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	63	42
S Leg	49	0	0
E Leg	0	0	0
W Leg	0	42	0

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg		14	25	
S Leg	21			
E Leg				
W Leg		25		
TOTAL	21	39	25	85

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	51	75	46
S Leg	55	35	74
E Leg	35	45	46
W Leg	35	34	46

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	37.6	61.3	32.3
S Leg	38.6	20.3	59.3
E Leg	15.9	29.2	30.2
W Leg	11.9	18.2	30.2

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

	Ptree	Juniper	Piedmont
N Leg	28	14	32
S Leg	28	41	15
E Leg	45	34	34
W Leg	49	43	34

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	41	63	42
S Leg	49	44	82
E Leg	36	47	38
W Leg	41	42	38

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	27.6	49.3	28.3
S Leg	32.6	29.3	67.3
E Leg	16.9	31.2	22.2
W Leg	17.9	26.2	22.2

PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	36	21	35
S Leg	32	34	12
E Leg	44	33	40
W Leg	43	37	40

Bicycle Delay

Alternative 1C (Crescent, Dir)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	75	41
S Leg	75	25	73
E Leg	0	0	32
W Leg	0	30	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg		8	26	
S Leg	8	38	9	
E Leg			32	
W Leg		34		
EB	8	38	41	88
WB	8	42	26	77

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	0	70	49
S Leg	55	22	85
E Leg	0	0	21

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg		10	21	
S Leg	18	40	5	
E Leg			41	
TOTAL	18	50	67	135

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	75	75	41
S Leg	75	25	73
E Leg	45	45	32
W Leg	45	30	47

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	61.6	61.3	27.3
S Leg	58.6	10.3	58.3
E Leg	25.9	29.2	16.2
W Leg	21.9	14.2	31.2

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

	Ptree	Juniper	Piedmont
N Leg	14	14	36
S Leg	16	50	16
E Leg	37	34	45
W Leg	40	47	33

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	55	70	49
S Leg	55	22	85
E Leg	35	50	21
W Leg	33	40	35

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	41.6	56.3	35.3
S Leg	38.6	7.3	70.3
E Leg	15.9	34.2	5.2
W Leg	9.9	24.2	19.2

PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	26	17	30
S Leg	28	53	10
E Leg	45	31	55
W Leg	51	38	42

Bicycle Delay

Alternative 3A (Juniper, Pied)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	15	0	0
S Leg	15	40	73
E Leg	0	0	32
W Leg	0	0	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	46			
S Leg	46	27	9	
E Leg			32	
W Leg				
TOTAL	46	27	41	114

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	25	0	0
S Leg	25	22	75
E Leg	0	0	30
W Leg	0	0	0

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	38			
S Leg	38	40	8	
E Leg			34	
W Leg				
TOTAL	75	40	42	157

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	45	75	63
S Leg	45	40	73
E Leg	75	45	32
W Leg	75	30	47

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	31.6	61.3	49.3
S Leg	28.6	25.3	58.3
E Leg	55.9	29.2	16.2
W Leg	51.9	14.2	31.2

	Ptree	Juniper	Piedmont
N Leg	33	14	21
S Leg	35	37	16
E Leg	17	34	45
W Leg	19	47	33

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	55	70	53
S Leg	55	22	75
E Leg	65	50	30
W Leg	65	40	45

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	41.6	56.3	39.3
S Leg	38.6	7.3	60.3
E Leg	45.9	34.2	14.2
W Leg	41.9	24.2	29.2

PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	26	17	27
S Leg	28	53	15
E Leg	23	31	47
W Leg	25	38	34

Bicycle Delay

Alternative 3B (Juniper, Jnpr)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	15	75	46
S Leg	15	0	0
E Leg	0	0	0
W Leg	0	34	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	46	8	23	
S Leg	46			
E Leg				
W Leg		31		
TOTAL	46	39	23	108

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	25	63	42
S Leg	25	0	0
E Leg	0	0	0
W Leg	0	42	0

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	38	14	25	
S Leg	38			
E Leg				
W Leg		25		
TOTAL	75	39	25	139

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	45	75	46
S Leg	45	35	74
E Leg	75	45	46
W Leg	75	34	46

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	31.6	61.3	32.3
S Leg	28.6	20.3	59.3
E Leg	55.9	29.2	30.2
W Leg	51.9	18.2	30.2

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

	Ptree	Juniper	Piedmont
N Leg	33	14	32
S Leg	35	41	15
E Leg	17	34	34
W Leg	19	43	34

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	55	63	42
S Leg	55	44	82
E Leg	65	47	38
W Leg	65	42	38

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	41.6	49.3	28.3
S Leg	38.6	29.3	67.3
E Leg	45.9	31.2	22.2
W Leg	41.9	26.2	22.2

PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	26	21	35
S Leg	28	34	12
E Leg	23	33	40
W Leg	25	37	40

Bicycle Delay

Alternative 3C (Juniper, Dir)

AM Bike Split	Ptree	Juniper	Piedmont
N Leg	15	75	41
S Leg	15	25	73
E Leg	0	0	32
W Leg	0	30	0

AM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	46	8	26	
S Leg	46	38	9	
E Leg			32	
W Leg		34		
EB	46	38	41	125
WB	46	42	26	114

$$d_b = \frac{0.5\,C\,(1 - g_b/C)^2}{1 - \min\left(\frac{v_{bic}}{c_b}, 1.0\right)\frac{g_b}{C}}$$

v_{bic} = bicycle flow rate (bicycles/h)
d_b = bicycle delay (s/bicycle)
c_b = capacity of the bicycle lane (bicycles/h)
s_b = saturation flow rate = 2,000 (bicycles/h)
g_b = effective green time for the bicycle (s)
C = cycle length (s)

* With lane capacity greatly exceeding number of users, the denominator for the HCM delay formula will effectively equal one.

PM Bike Split	Ptree	Juniper	Piedmont
N Leg	25	70	49
S Leg	25	22	85
E Leg	0	0	21

PM Bike Delay	Ptree	Juniper	Piedmont	
N Leg	38	10	21	
S Leg	38	40	5	
E Leg			41	
TOTAL	75	50	67	193

Pedestrian Delay

$$d_p = \frac{(C - g_{\text{Walk},mi})^2}{2\,C}$$

d_p = pedestrian delay
g_{walk} = effective walk time for the phase (s)
C = cycle length (s)

AM Ped Split	Ptree	Juniper	Piedmont
N Leg	45	75	41
S Leg	45	25	73
E Leg	75	45	32
W Leg	75	30	47

AM Walk Time	Ptree	Juniper	Piedmont
N Leg	31.6	61.3	27.3
S Leg	28.6	10.3	58.3
E Leg	55.9	29.2	16.2
W Leg	51.9	14.2	31.2

PC + Y + R

	Ptree	Juniper	Piedmont
N Leg	17.4	17.7	17.7
S Leg	20.4	18.7	18.7
E Leg	23.1	19.8	19.8
W Leg	27.1	19.8	19.8

$$g_{\text{Walk},mi} = D_{p,mi} - Y_{mi} - R_{c,mi} - PC_{mi} + 4.0$$

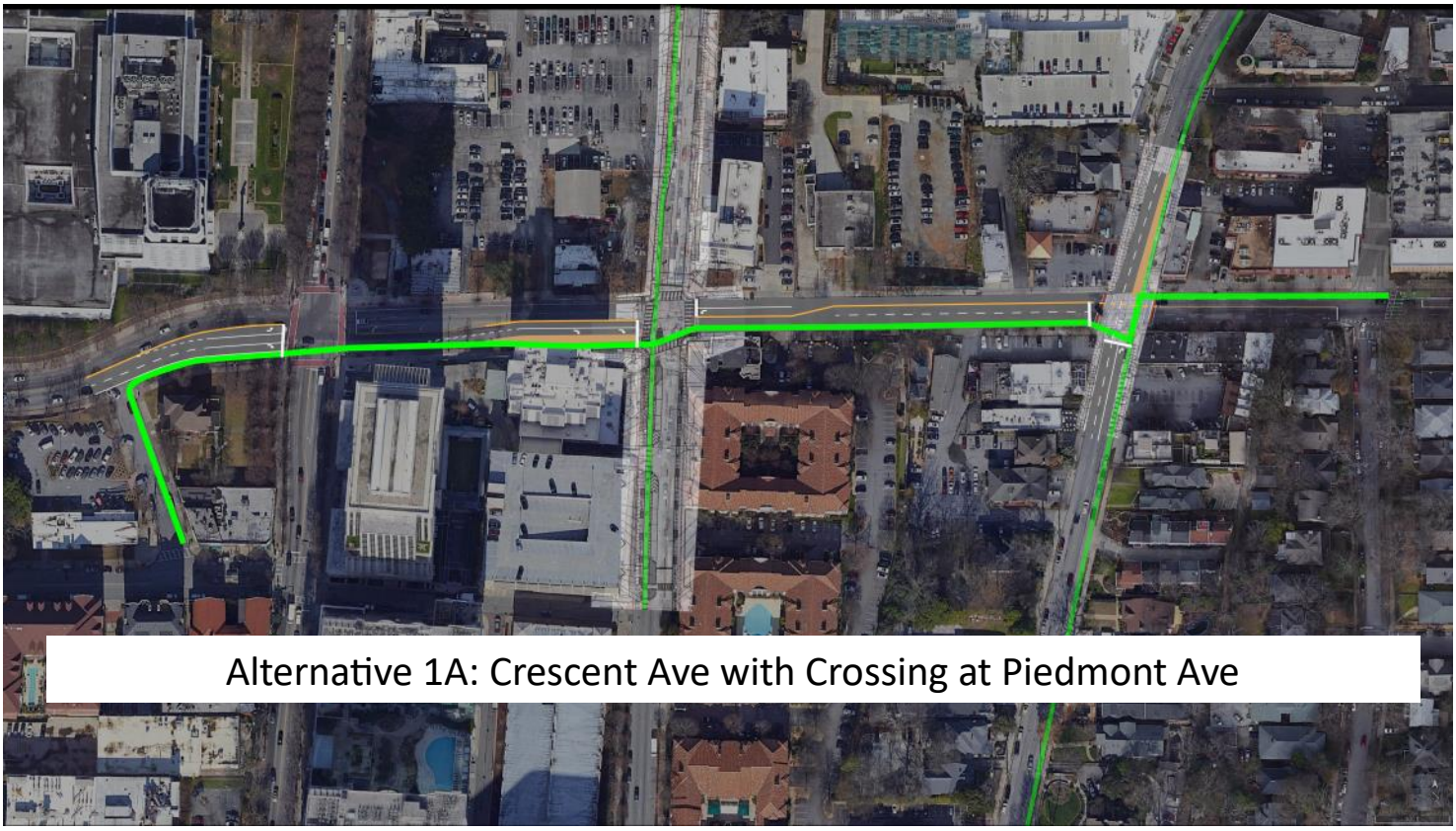
	Ptree	Juniper	Piedmont
N Leg	33	14	36
S Leg	35	50	16
E Leg	17	34	45
W Leg	19	47	33

PM Ped Split	Ptree	Juniper	Piedmont
N Leg	55	70	49
S Leg	55	22	85
E Leg	65	50	21
W Leg	65	40	35

PM Walk Time Split	Ptree	Juniper	Piedmont
N Leg	41.6	56.3	35.3
S Leg	38.6	7.3	70.3
E Leg	45.9	34.2	5.2
W Leg	41.9	24.2	19.2

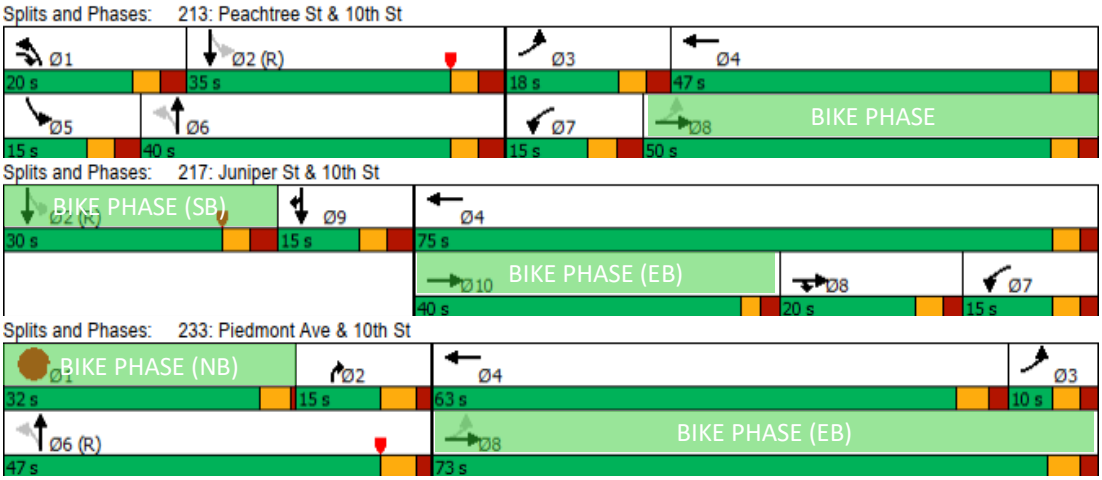
PM Ped Delay	Ptree	Juniper	Piedmont
N Leg	26	17	30
S Leg	28	53	10
E Leg	23	31	55
W Leg	25	38	42

Appendix E – Alternative Layouts and Signal Phase Diagrams



Alternative 1A: Crescent Ave with Crossing at Piedmont Ave

AM PEAK HOUR SIGNAL TIMING



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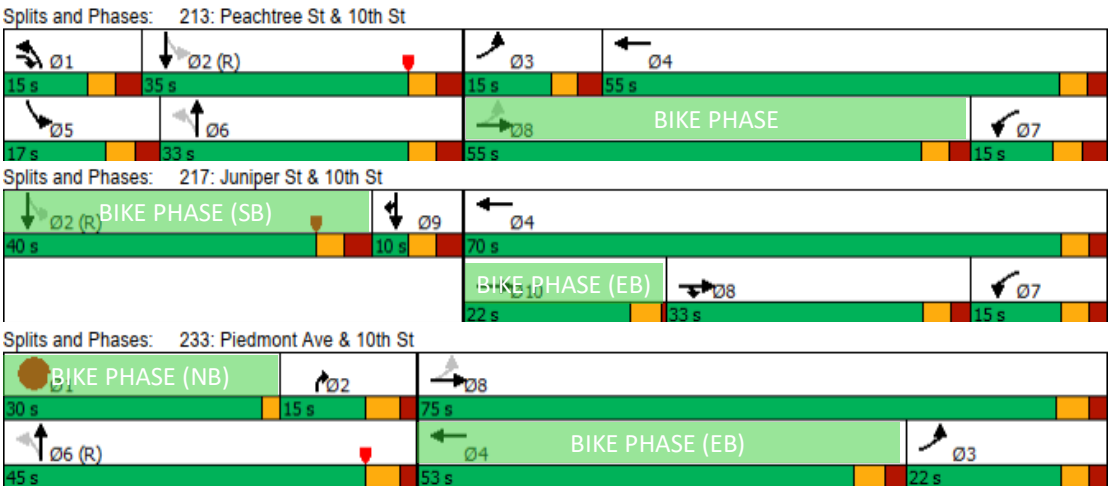
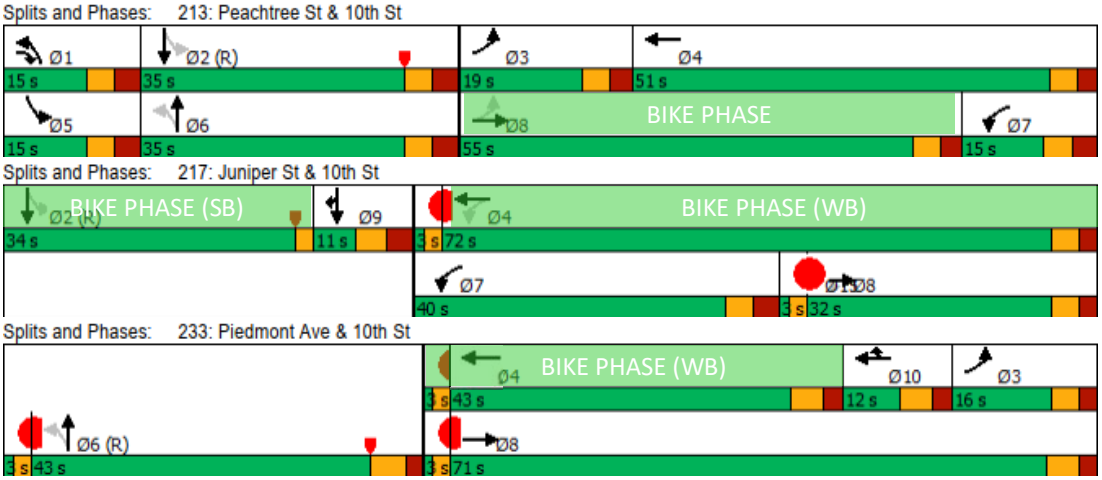


Alternative 1B: Crescent Ave with Crossing at Juniper Street

AM PEAK HOUR SIGNAL TIMING



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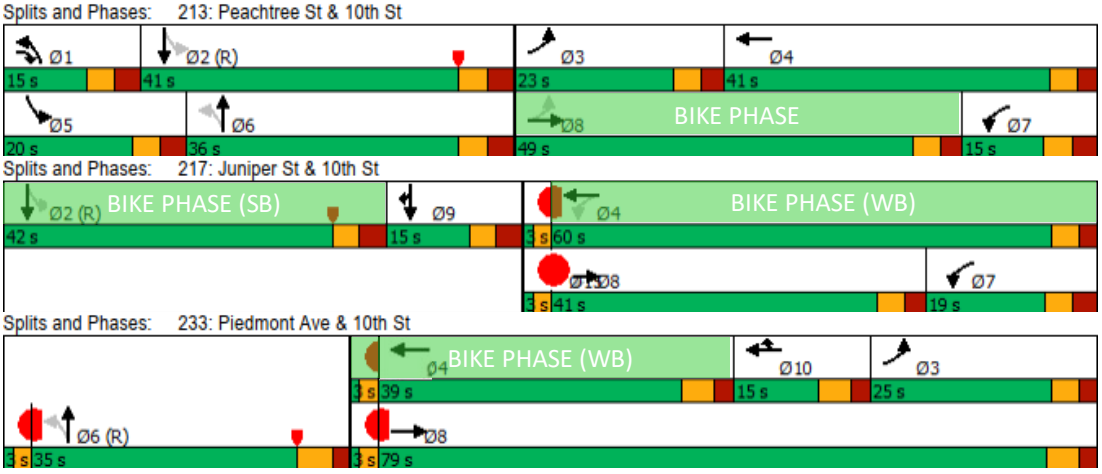

Alternative 1C: Crescent Ave with Directional Bike Lanes

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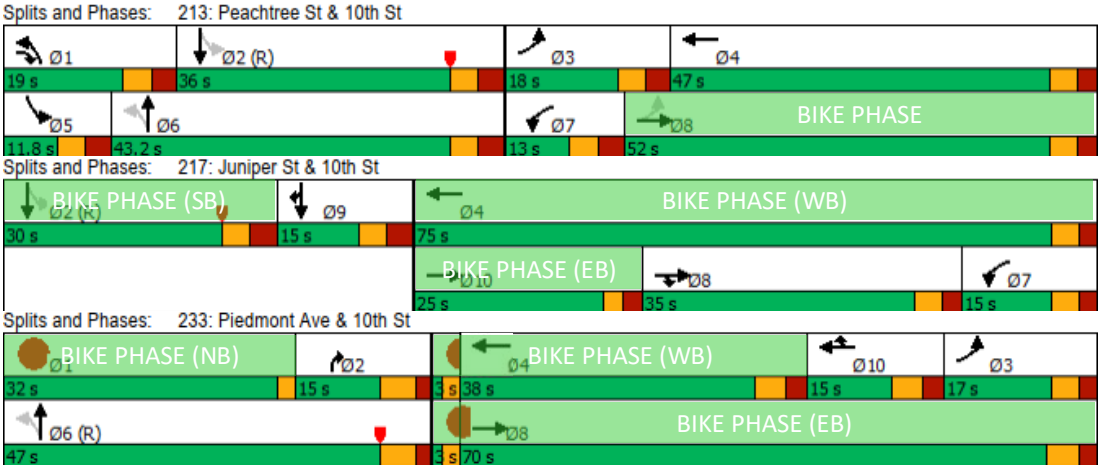

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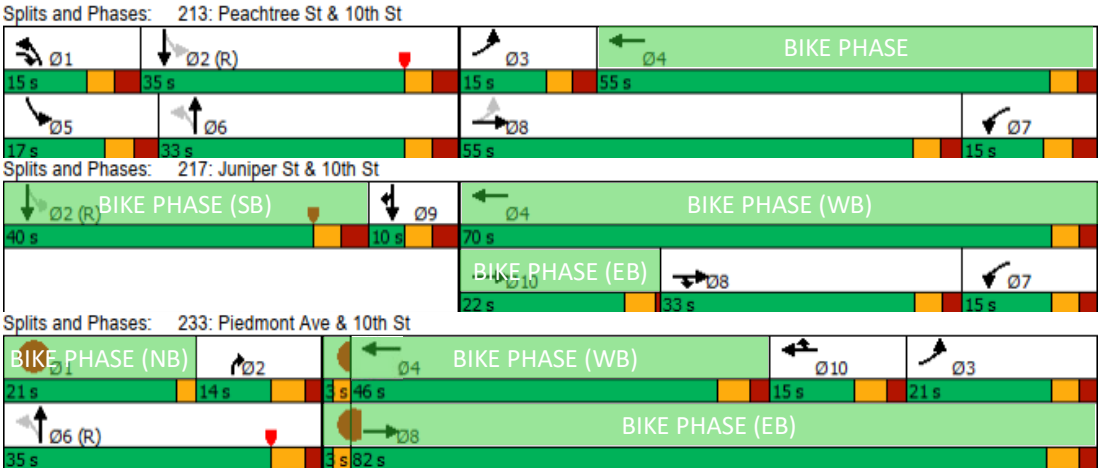
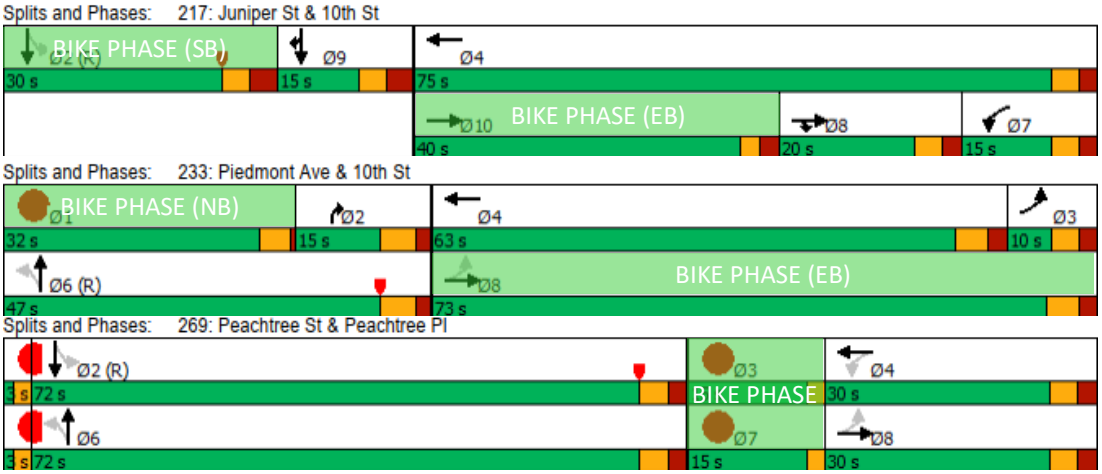


Alternative 3A: Juniper Street with Crossing at Piedmont Ave

AM PEAK HOUR SIGNAL TIMING



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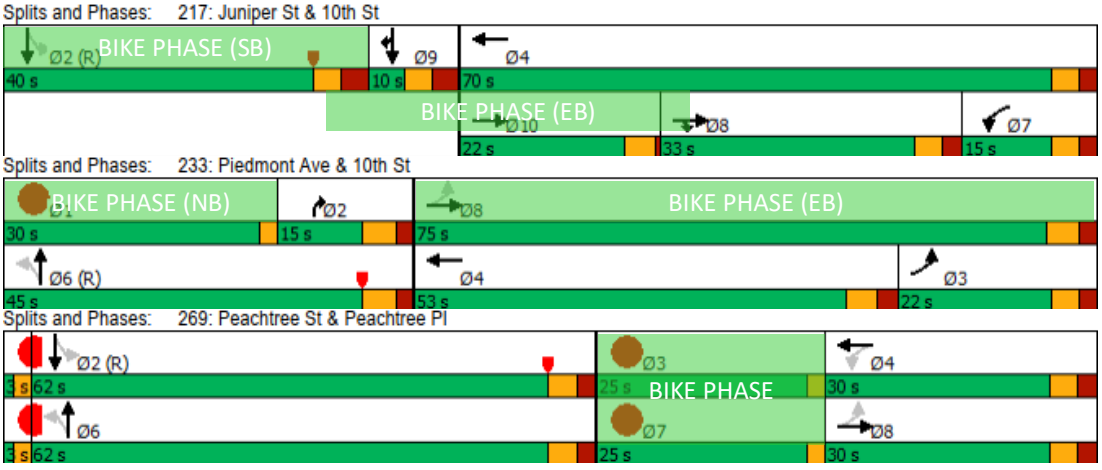
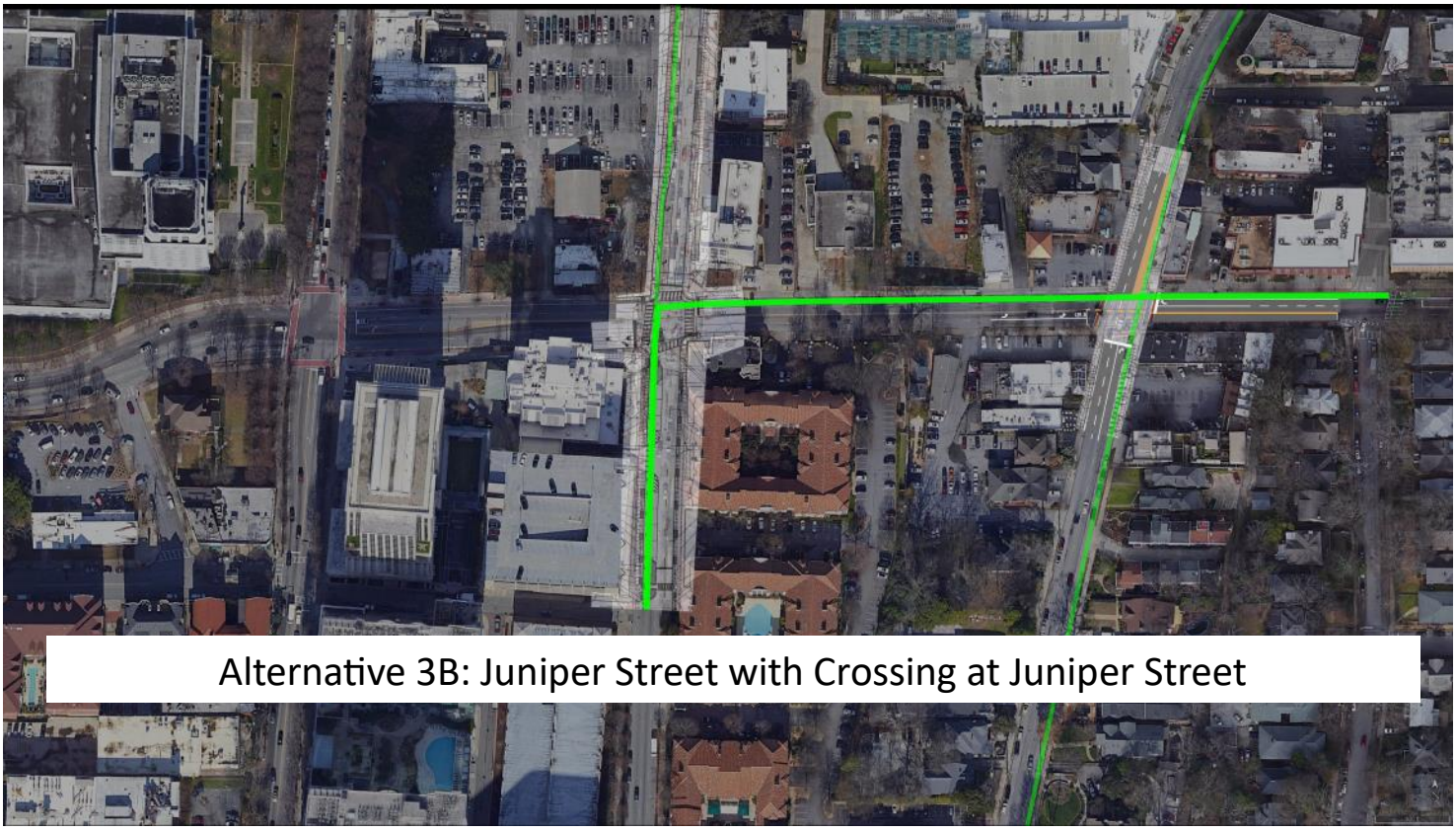
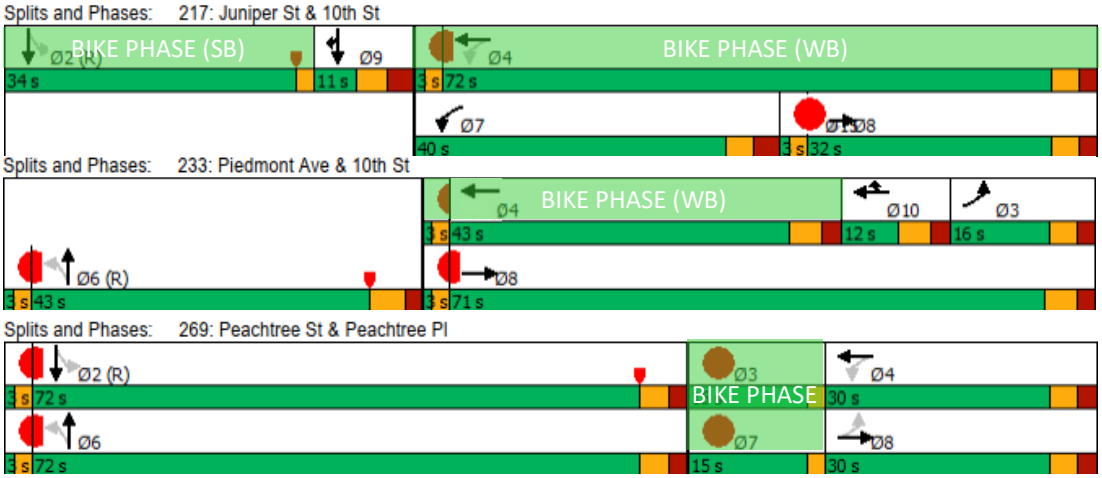




Alternative 3B: Juniper Street with Crossing at Juniper Street

AM PEAK HOUR SIGNAL TIMING



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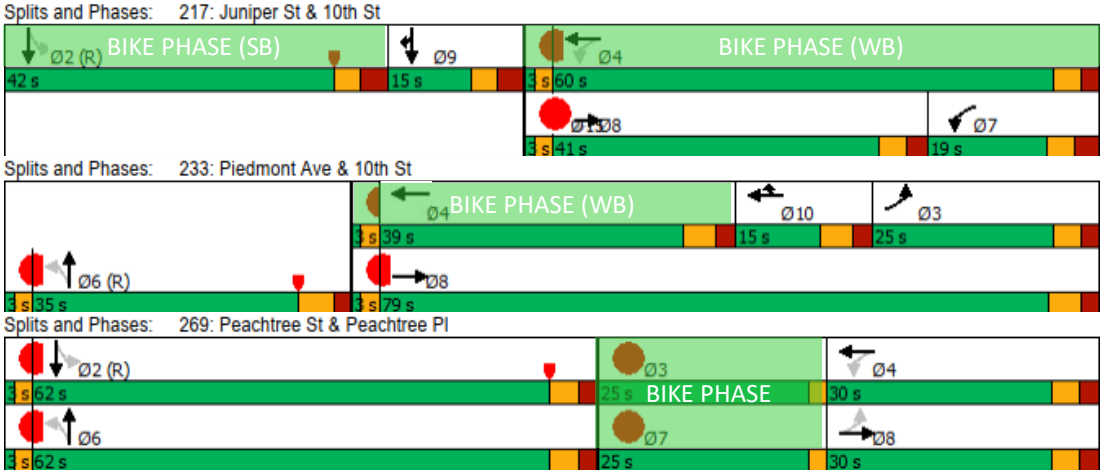
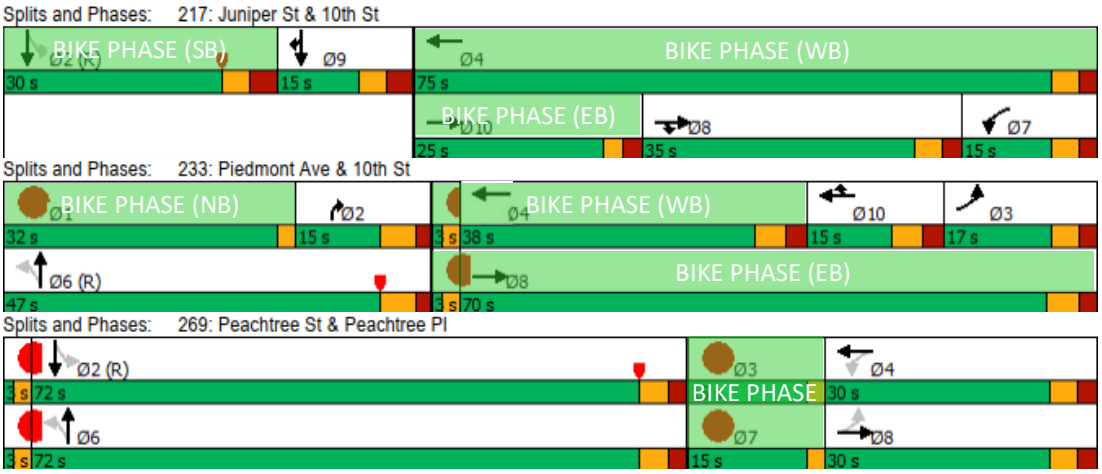


Alternative 3C: Juniper Street with Directional Bike Lanes

AM PEAK HOUR SIGNAL TIMING



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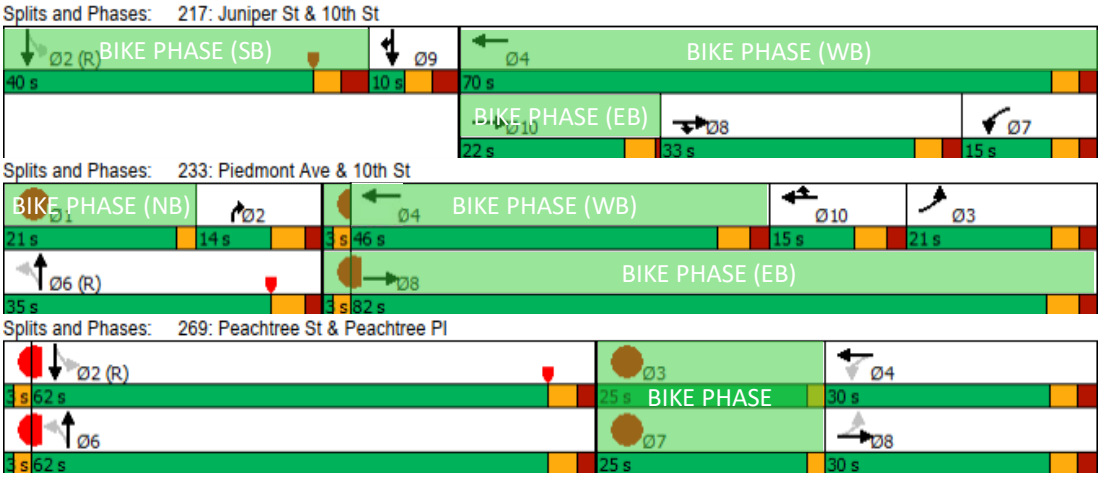

APPENDIX 5: CONCEPT VALIDATION

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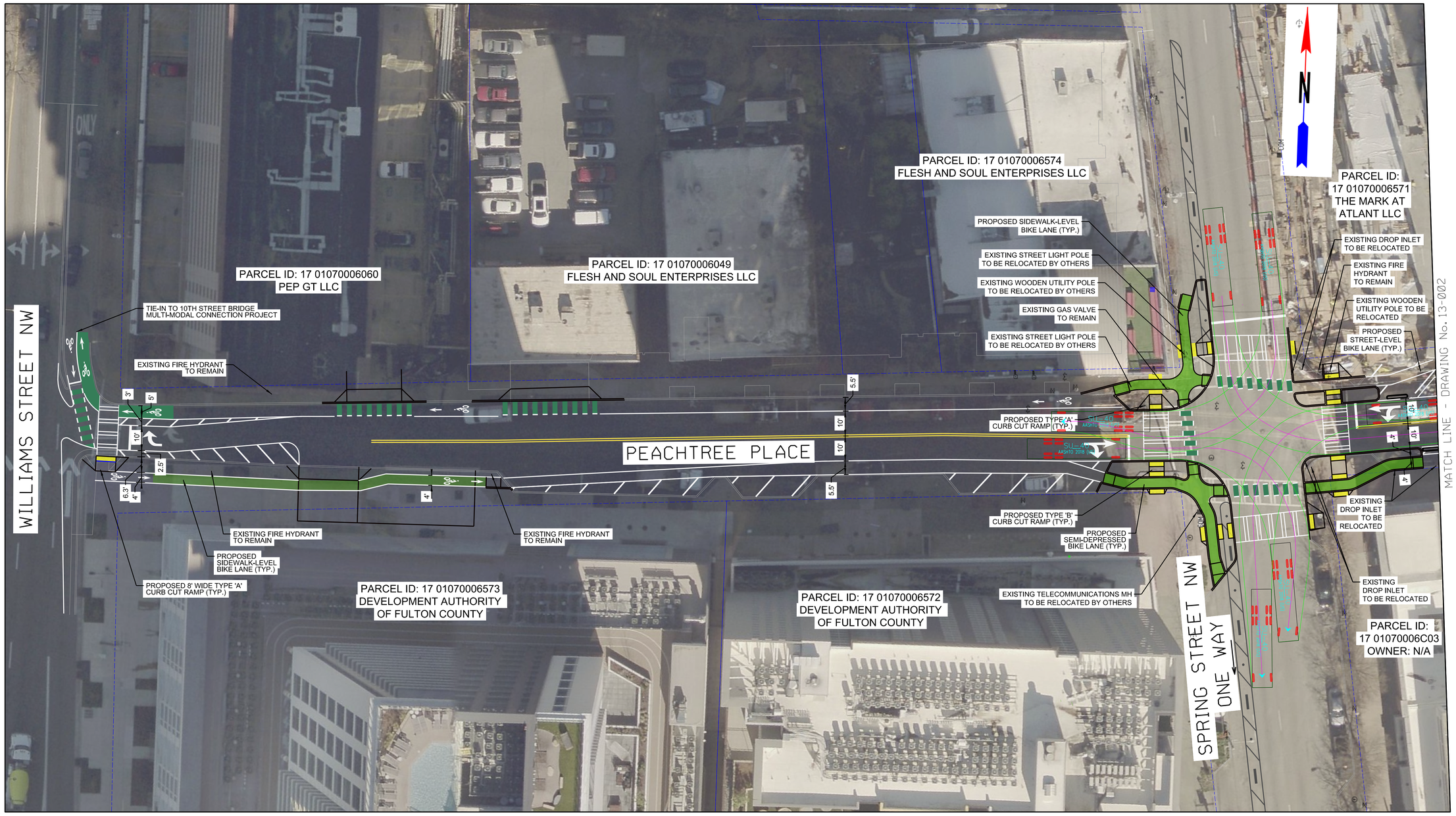
$USER$ | $$PENTABLE$$



DRAFT: NOT FOR CONSTRUCTION OR REPRODUCTION

TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES		

AUTOTURN MOVEMENTS
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		13-001
CORRECTED:		DATE:		
VERIFIED:		DATE:		

10/23/2015 GPLN

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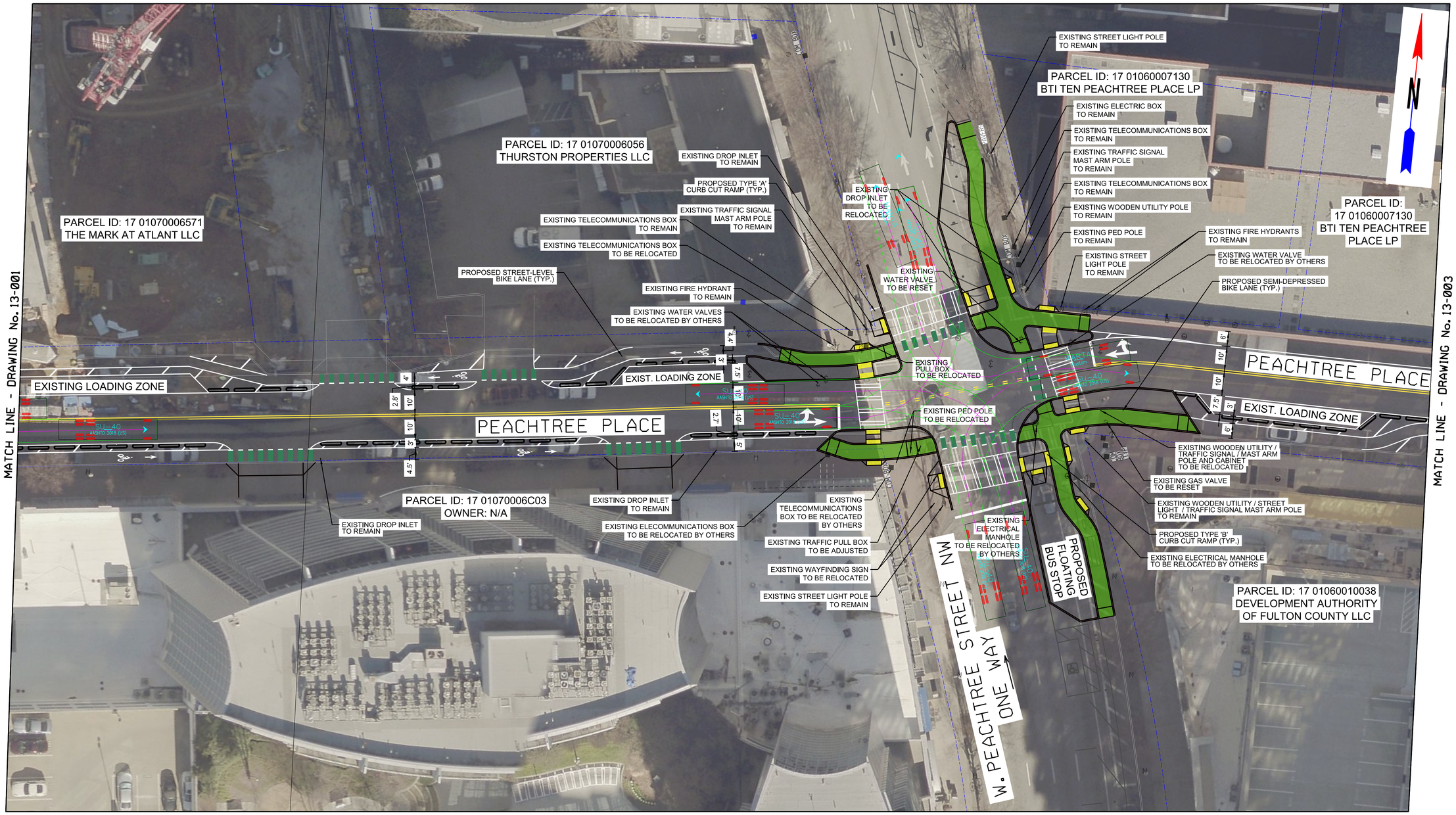

DRAFT: NOT FOR CONSTRUCTION OR REPRODUCTION

TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES		

AUTOTURN MOVEMENTS
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CENTRAL MIDTOWN CONNECTION PLAN

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10/23/2015 GPLN

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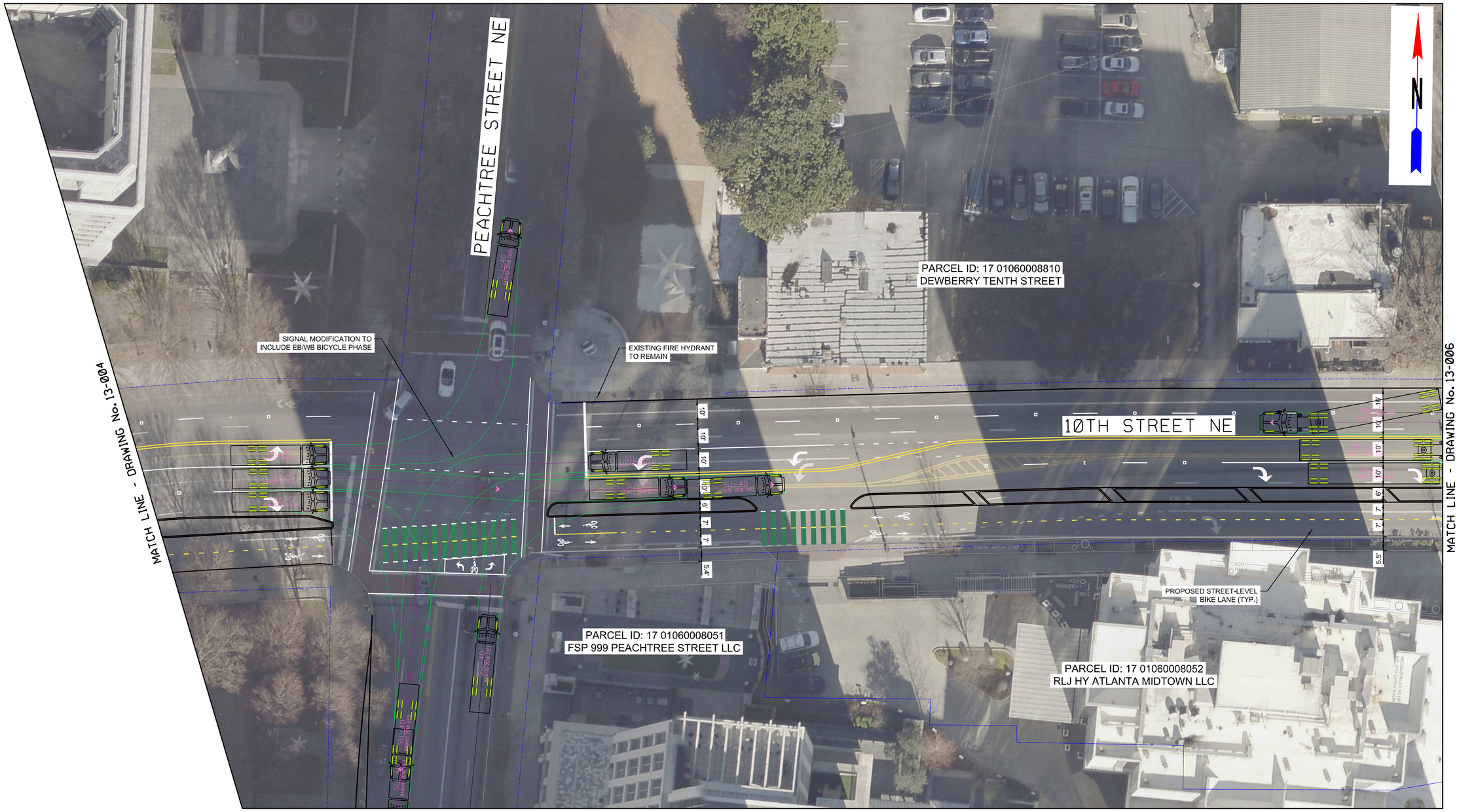

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TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES		

AUTOTURN MOVEMENTS
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CENTRAL MIDTOWN CONNECTION PLAN

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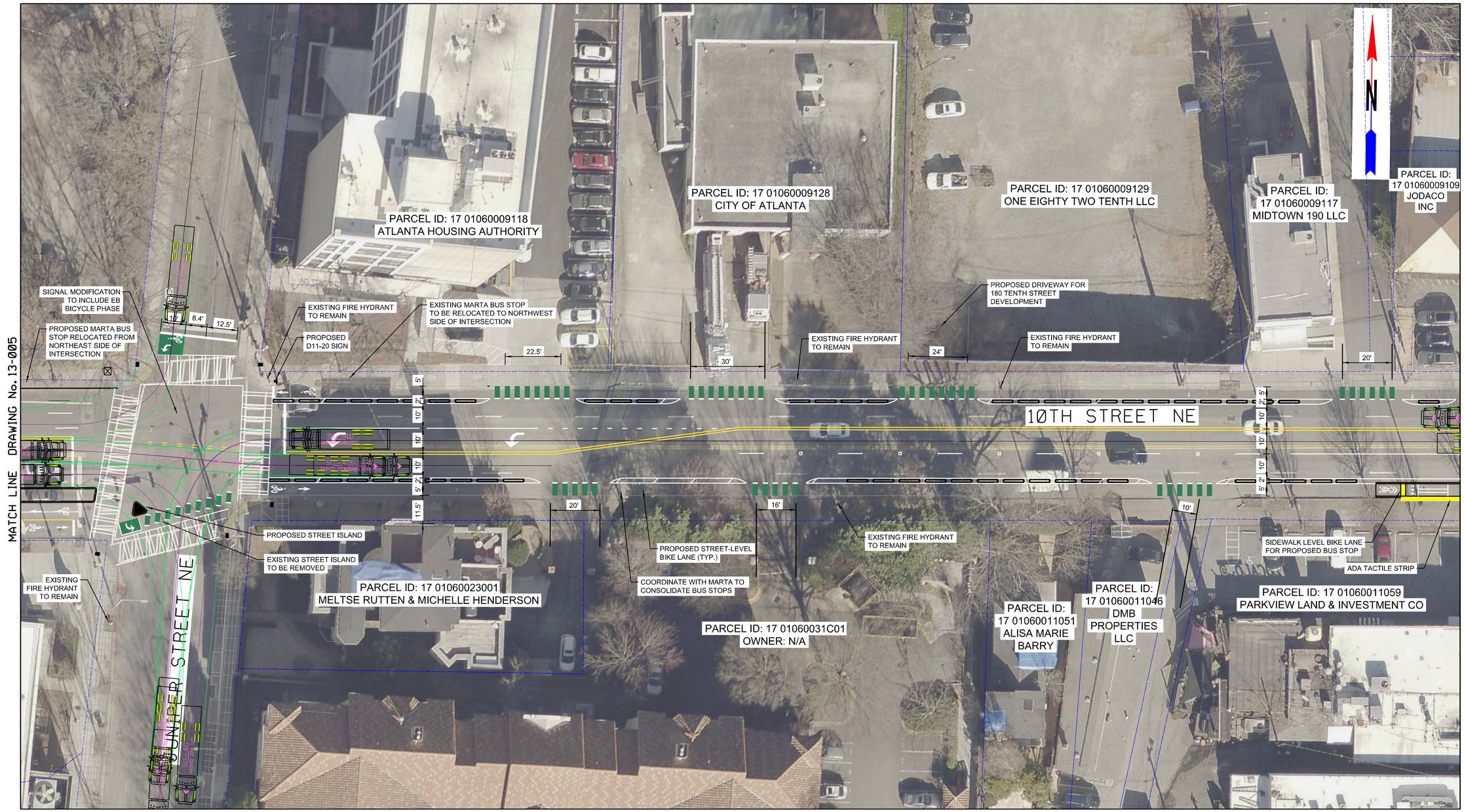
10/23/2015 GPLN



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TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES		

AUTOTURN MOVEMENTS
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

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VERIFIED:		DATE:		

10/23/2015 GPLN

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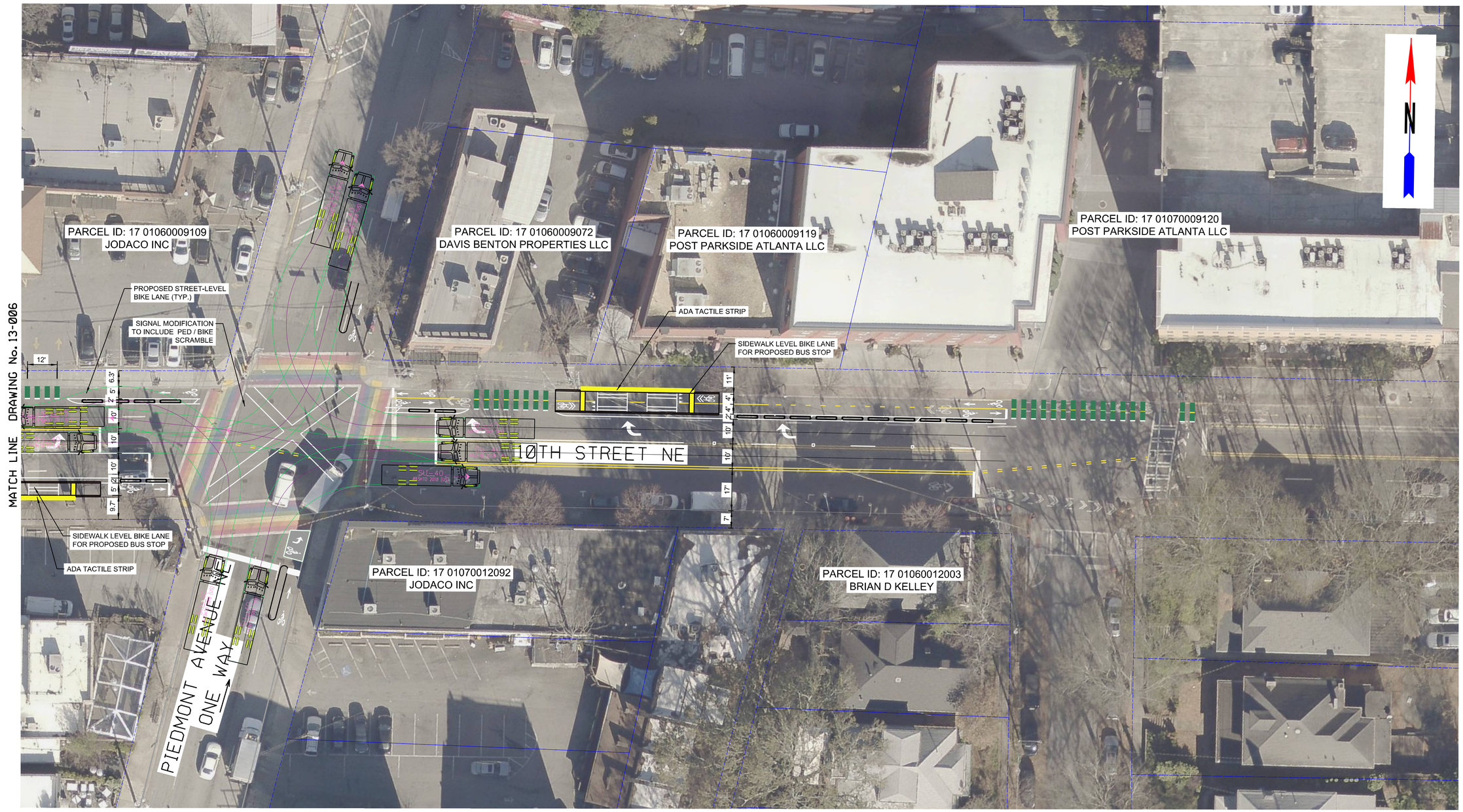

DRAFT: NOT FOR CONSTRUCTION OR REPRODUCTION

TOOLE DESIGN

MIDTOWN Alliance

SCALE IN FEET
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REVISION DATES		

AUTOTURN MOVEMENTS
30% PROGRESS SUBMITTAL
CENTRAL MIDTOWN CONNECTION PLAN

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BACKCHECKED:		DATE:		13-007
CORRECTED:		DATE:		
VERIFIED:		DATE:		

10/23/2015 GPLN

APPENDIX 6: PUBLIC COMMENT

Central Midtown Connection Plan - Public Meeting 5.10.2022 Q&A

Question Asked	Answer Given
Do we know when the street signal will be installed to the Peachtree PL and Spring?	The signal at Spring at Peachtree Place will be installed with a separate project that will happen before this project is built. Once a contract for construction has been awarded, a detailed timeline will be provided here - https://www.midtownatl.com/project/last-mile-intersection-improvements
Do we any details on Status and what is will entail? *Stratus	Stratus is a separate private development. The developer recently submitted plans to the DRC that you can read about here: https://mailchi.mp/midtownatl/may2022-business-and-real-estate-939298
Did you study the possible use of the alley on the eastside of the MARTA Station, instead of Crescent (for the connection from 10th to Peachtree Pl)?	This driveway and parking area is owned by MARTA and actively used for MARTA police vehicles, maintenance vehicles, etc. and is not available for use as a bikeway.
Thank you for bringing this mission critical topic to the public. Can you please share with us the traffic study for this projects and, in the mean time, address the balance between this plan and the high stress volume planned for the 30 story stratus development anticipated on Peachtree place?	The analysis of the different scenarios which includes an analysis of traffic impacts among other factors can be found here - https://ctycms.com/ga-midtown/docs/peachtree-place-alternatives-refinement-2022-02-17.pdf.
Can the traffic study for this project be made available to todays participants?	The full analysis can be found here: http://ctycms.com/ga-midtown/docs/peachtree-place-alternatives-refinement-2022-02-17.pdf
How will the bike lanes be protected?	We are still early in the design process, so we have not defined specific barrier materials or configuration at this time.
Thank you for ensuring pedestrians waiting for the Trolley are protected from cyclists.	Thank you for your comment.
Will you use signage or street markings that encourage people using e-scooters to ride in the LIT lanes instead of on the sidewalks? (Currently more people ride e-scooters on the 10th street sidewalk instead of the LIT lane.)	We will explore signage and markings to encourage people on scooters to use the LIT lanes.
How much longer will this make the commute down 10th to GA Tech? 3 mins? 4 mins?	After analysis we found that the selected route for people on bikes adds a layer of comfort and access to more origin/destination points than remaining on 10th St while only adding a 35 sec delay. After signal optimization, car delay during peak will be around 120 seconds.
How long is the "small travel time delay"?	After analysis we found that the selected route for people on bikes adds a layer of comfort and access to more origin/destination points than remaining on 10th St while only adding a 35 sec delay. After signal optimization, car delay during peak will be around 120 seconds.
Any update on the West Peachtree bike lane?	The West Peachtree bike lane is a separate, City of Atlanta project. We will post updates, as we have them, here: https://www.midtownatl.com/project/west-peachtree
When will the 10th st bridge be fixed?	10th St Bridge is a separate project, in coordination with GDOT. Information about the 10th St Bridge project can be found here: https://www.midtownatl.com/project/10th-street-bridge
It appears that the study gives minimal consideration to the proposed development on 10th, Crescent and Peachtree Place. This proposed project will have a major impact on its surrounding streets. Will the proposal be updated to reflect this development?	We have been actively coordinating with the development team for the Stratus project. That project has parking access from Peachtree Place and 10th Street. We anticipate that the Stratus project will add demand on Peachtree Place, which is why it is important to define safe spaces for pedestrians and people on bikes/scooter/etc.
Very exciting to see! Especially the floating bus stops. Please make sure there is sufficient space to unload and avoid conflicts with cyclists. Sounds good....	We are coordinating with Georgia Tech on this.
Will the City add bike signals at each signal installation along the route?	At Piedmont there will be a bicycle signal for a diagonal crossing, northbound cyclists and westbound cyclists will run concurrently with vehicles. There will be "no turns on red" where needed to mitigate conflict. At Juniper, the current proposal includes time-seperated bicycle movements. At Peachtree St we plan on having a dedicated bicycle phase. There are no signal modification at Spring and West Peachtree because we are proposing protected bicycle facilites.
Will there be any bike detection (apart from ADA compliant ped. push buttons)?	Where bicycle phasing is proposed, that signal would run with each cycle.
We can't see the sketch details.	find the full traffic analysis here: https://www.midtownatl.com/project/central-midtown-connection-plan
Will the proposed right turn lane Piedmont @ 10th have a No Right on Red, due to the bike box?	Yes, that is the plan.
Please consider flipping the parking/loading along Peachtree Pl and create parking protected LIT lanes. The unprotected bike lane will become filled with drivers stopping to run into the coffee shop.	We will explore that option. Thank you for your comment.
Do the blue lines represent changes to the curb? These bulb outs are not just going to be pavement markings?	The blue lines on the plan set do represent the existing or proposed curb line.
Where will the driveway for Stratus be located?	Stratus has driveways on 10th Street and Peachtree Place.

Central Midtown Connection Plan - Public Meeting 5.10.2022 Q&A

Question Asked	Answer Given
Drivers from Stratus will use Crescent St to turn right onto Peachtree Pl to access Williams St and I-75/I-85.	Since there are driveways on 10th Street and Peachtree Place, drivers will access I-75/85 directly from those streets rather than using Crescent Ave.
Overall a good plan. Depending on the level of protection, this could be a great project.	Thank you for your comment.
What was learned from the brief test of extension of the existing 10th st lanes to piedmont in 2020, and how was that applied to this larger scope?	One of the biggest lessons from the 10th St pop-up bike lane was that extending the 10th St cycle track is feasible if the traffic signals are optimized to accommodate the altered traffic patterns. We also learned that pedestrians are very constrained on 10th St, between Piedmont and Juniper, and benefited from the added buffer a bike lane provides and some extra space to safely move when needed.
I am not seeing the detailed views of lanes at the intersections of 10th and peachtree and juniper, which are being shown on this board, on the website? There are similar but less detailed...?	The presentation contained some extra call outs to help aid the conversation but that are not included in the official concept plan. The concept can be found here: https://www.midtownatl.com/project/central-midtown-connection-plan
Regardless of what material is selected, will these lanes be protected?	The bike lanes along 10th st will be protected. Our intent is to add protection wherever we have room to do so.
Following up on an answer above, is protection not planned for the bike lanes on Peachtree Pl?	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
It looks like a lot of Peachtree Pl has buffered bike lanes in this sketch - why can't protection at least be added in those sections?	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
I thought the plan for Peachtree PL a few years ago was for it to be a very slow, pedestrian focused street? Was this plan changed?	As proposed, the Central Midtown Connection Plan would add pedestrian safety by 2 crossings in front of the Midtown MARTA station, chicanes to slow cars, and added separation from cars as a result of the new bike lanes. Creating a safe and inviting space for pedestrians continues to be one of the main goals of this project.
Will the crosswalks added to Peachtree Pl be raised?	Ideally but this has yet to be determined.
Thank you for answering our questions!	
Margaret Mitchell House and Commercial Row also use Crescent for tour buses and deliveries. Are both of these existing uses accommodated?	The width of Crescent Ave will allow for deliveries/tour bus stopping. Pedestrians and bikes+ would utilize a separated shared-use facility to reduce conflict with vehicles stopping.
Please add concrete protection, such as precasted concrete similar to what D.C.'s DOT is installing. Relatively low cost at $70-78 per linear foot of concrete installed.	We will certainly explore this option.
Hard to see, but please add protection at intersections as well.	Our goal is to provide the most protection possible at intersections.
Are there any thoughts on adding a bike lane on Williams Street, to help bicyclists get back onto 10th street?	Yes, a two-way cycle track is planned for the east side of Williams St to connect people to the future facility planned for the 10th Street Bridge - more details on that project here - https://www.midtownatl.com/project/10th-street-bridge
Any thoughts on *not* using plastic delineators for the bike lanes? Existing bike lanes in the city with this protection constantly have missing pieces because drivers take them out. It would be safer for bicyclists to use stronger protection.	We do recognize that plastic delineators are not always the best option for several reasons. Stay tuned as we further the design and determine types of protection.
It looks like there are trees on the Crescent Ave sidewalks where the sidewalk is planning to be widened. Would those trees remain or be moved elsewhere?	New trees will be added back in conjunction with the development project on Crescent Ave.
Is there a call in number?	I'm checking but I don't believe so. Confirmed that there is not a call in #.
Any idea at all of the timeline?	We are still in the very early stage of design and funding is pending the TSPLOST vote so it's very difficult to provide a timeline at this point. As soon as possible!
Extend the existing cycle track all the way to Williams. People dont want to detour onto Peachtree Place or make numerous crossings from one side to another	As stated earlier, that option was considered during our analysis. More details on how we arrived at Peachtree Place on the western section of this corridor can be found here - https://ctycms.com/ga-midtown/docs/peachtree-place-executive-summary_20220414.pdf
Not wanting to impact car traffic with a direct 10th street route is just straight up cowardly. Cyclists should be treated as 2nd class citizens with less direct, less safe routing .	Thank you for your comment.
Why is the travel time for cars considered during a climate emergency? Shouldn't we be providing the best routing for cyclists to move quickly across the city, like staying on 10th?	After analysis we found that the selected route adds a layer of comfort and access to more origin/destination points than remaining on 10th St while only adding a 35 sec delay. After signal optimization, car delay during peak will be around 120 seconds.

Central Midtown Connection Map Exercise Responses

Question ID	Category	Comment Address	Question/Comment	Question Date	Relationship to Midtown	Answer/Response
3	Safety	988 Juniper St NE	When the bike lend ends as you go down 10th street, it would be helpful to have signage indicating that bikers will need to merge into the lanes for vehicles. It feels unsafe when you are biking in a dedicated bike lane, and you suddenly merge into lanes for vehicles. The vehicles usually seem unaware that the bike lane has ended, and bikers often are unaware as well.	5/12/2022 15:30	Live in Midtown	Thank you for your comment. We will consider how best to assist people on bikes/scooters who prefer to continue along 10th St beyond the dedicated facility.
4	Traffic Operations	68 10th St NE	Stop requiring so much parking. If you want to market midtown for walkable area, then cater to pedestrians. Thousands of residential units are being built, the people are here. We don’t need them driving in.	5/12/2022 15:31	Live in Midtown	Development in Midtown is regulated by the SPI-16 zoning code. There are no parking minimums for office and residential projects per SPI-16.
5	Accessibility	69 10th St NE	Please provide protected cycling options on both 10th St and Peachtree Place. Providing a direct route along 10th St should be the prioritized route, while Peachtree Place would be a route that complements 10th St. Forcing cyclists to cross intersections and change to parallel streets impacts the time and usefulness of a given route. Drivers already can access every single street in the neighborhood, we need to ensure 10th St protected lane is provided. With more offices and residences being added to the area, we must defend reliable and preferred cycling corridors, where 10th St. is clearly the best route for cyclists to continue from the Beltline, to Midtown Marta Station, and continue westward to Georgia Tech, and the developments around Howell Mill.	5/12/2022 15:38	Travel to Midtown Often	While direct routes are usually preferred, there were a number of considerations that went into using Peachtree Place over 10th for this facility. The western portion of 10th Street is too physically constrained to provide a facility with adequate separation within the right of way. Providing the facility would require a number of land acquisitions, making the cost of the facility too great. Routing to Peachtree Place allows people to enjoy lower vehicle volumes and lower speeds, gives people more access to origin/destinations points, and offers greater opportunity for placemaking. We will continue to investigate ways to calm traffic throughout Midtown.
6	Traffic Operations	120 10th St NE	Road diet starting here. Only need 1 lane in each direction. Road too wide. Need to widen sidewalks and add fully protected bike lanes on both sides instead.	5/12/2022 15:42	Work in Midtown,Travel to Midtown Often	Changes to 10th St, west of Peachtree St were not found to be feasible. Please refer to the existing conditions report.
7	General/Other Comments	32 10th St NW	This road is way too wide. Need to cut lanes to calm traffic. Add bike lanes and better pedestrian environment.	5/12/2022 15:43	Work in Midtown,Travel to Midtown Often	Changes to 10th St, west of Peachtree St were not found to be feasible. Please refer to the existing conditions report.
8	Safety	60 Peachtree Pl NE	These bike lanes look crappy. They need to be fully separated, wider and at different grade. Look how they do it in Copenhagen. Already got it figured out.	5/12/2022 15:44	Work in Midtown,Travel to Midtown Often	Our intent is to work within a limited budget and add protection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
9	Comfort and Aesthetics	76 Peachtree Pl NW	Convert all on-street parking along the corridor to parklets, unless the space is otherwise needed to accommodate the protected bike lanes. Ensure the parklets have space to sit. Do not install barstools to sit, as they are uninviting as they are uncomfortable for people at various heights, are at a height that is not convenient to those in wheelchairs, and do not encourage people to stay and relax for long.	5/12/2022 15:45	Travel to Midtown Often	Thank you for your comment. This project will incorporate recommendations from the Atlanta Curb Management Plan related to on-street parking. We will be identifying opportunities for place making including parklets.
10	General/Other Comments	984 W Peachtree St NW	Please remove 2 lanes of car traffic on West Peachtree. Street is too wide for neighborhood where people live. Add bike lanes and make wider sidewalks. Car speed is too fast and unsafe.	5/12/2022 15:45	Work in Midtown,Travel to Midtown Often	Thank you for your comment. This project does not include a redesign of West Peachtree St. A separate project is planned for West Peachtree that will include a lane reduction and protected bike lanes.
11	Safety	1028 Spring St NW	Cars go to fast here because road is like a racetrack. Need to cut lanes and cut speed. Dutch traffic engineers have figured this out. Slow everything down. This is a neighborhood with pedestrians now.	5/12/2022 15:47	Work in Midtown,Travel to Midtown Often	Thank you for you comment. Part of the Central Midtown Connection Plan will include traffic calming, pedestrian enhancements, and looking for opportunities for placemaking.
12	Comfort and Aesthetics	945 Crescent Ave NE	Turn this into a pedestrian connection. No reason this needs to be a road. There are already roads everywhere.	5/12/2022 15:48	Work in Midtown,Travel to Midtown Often	The goal of this project is to make Crescent Ave a pedestrian-oriented street. Closing it to all vehicle traffic is not currently part of the plan.
15	Traffic Operations	201 9th St NE	While possibly slightly longer for bikers, the 4 and 5 options seem the best based on safety...Myrtle is already a quiet street that bikes and cars share very well. I believe 8th St my take a little work, but again it is a quiet street with room for both bikes and cars. Extending the bike lane on 10th St is the least desirable option...reducing the main east west route for traffic to one lane, and expecting delivery drivers, uber, lyft, FedEx, Ups, USPS etc to never stop in that lane is wishful thinking. Businesses like Jason's Deli have to have deliveries of fresh food every day. Also, reducing 10th St by 50% seems to significantly increase the challenges for the fire department safely responding, especially with a major increase in traffic backups. Again, choices 4 and 5 seem much better.	5/12/2022 15:50	Live in Midtown,Work in Midtown	Directness and ease-of-use were important factors when selecting a connection between Williams and Piedmont Park. Routes 4 & 5 were ~50% longer than a direct route, and lacked sufficient space for buffered lanes. Also, route 5 would also add a very steep hill along Cypress. Riders that feel comfortable in mixed traffic would still be able to utilize the Peachtree Place facilities to access 8th and Myrtle Street routes. In regards to lane reductions on 10th Street, the design proposes to maintain the existing two westbound lanes approaching Piedmont (next to Jason's deli). Similar to the three-lane section of 10th Street that currently runs along Piedmont Park, the proposed design would extend these three lanes along the 900-ft length between Myrtle St and Juniper St, and four lanes for the remainder of 10th Street. The design processes includes review/comment from the Atlanta Fire Rescue Department to accommodate their vehicles' requirements.
16	Traffic Operations	989 Piedmont Ave NE	This street is too wide. Please remove a lane and make sidewalks wide and add a real bike lane.	5/12/2022 15:50	Work in Midtown,Travel to Midtown Often	This comment is outside of the project area.

Central Midtown Connection Map Exercise Responses

Question ID	Category	Comment Address	Question/Comment	Question Date	Relationship to Midtown	Answer/Response
17	Safety	993 Piedmont Ave NE	Ensure protected bike lanes are provided adequate protection, such as similar to the concrete "pills" and "continuous" installations by D.C.'s DOT, who are installing at a cost of $70-78/linear foot of concrete installed, or curb and grade separated similar to installations in Seattle, WA and Decatur, GA. Paint and K71 bollards are insufficient and subject our residents to potential fatalities and should not be supported.	5/12/2022 15:51	Travel to Midtown Often	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point. We will be identifying what kinds of protection we can provide in different parts of the corridor in upcoming design phases. We will certainly take how vehicles may enter the bike lane into consideration.
18	Traffic Operations	Piedmont Ave NE	Will there be a bike scramble phase here? If so, that could open up the possibility of a combined bike/ped scramble.	5/12/2022 16:24	Travel to Midtown Often	Several signal phasing plans have and are being considered here. The current design provides (at minimum) a dedicated diagonal crossing to facilitate crossings for eastbound bike lane users. Other options considered include: ped scramble, bike scramble, and bike+ped scramble. A simultaneous bike+ped scramble, if chosen, would require approval from the City and FHWA for experimentation and evaluation.
19	Traffic Operations	175 10th St NE	Can the entire cycle track stay together instead of splitting apart on this block?	5/12/2022 16:25	Travel to Midtown Often	Keeping the cycle track on one side of 10th Street was one of the factors evaluated in the study. One-way directional facilities was ultimately chosen for this section of 10th Street because of the number of driveway conflicts, number of destinations on both sides, and concerns for sight-lines and safety. Directional lanes were chosen to support less confident riders and for lower safety risks.
20	Traffic Operations	991 Juniper St NE	Could the entire cycle track shift here instead of splitting in half?	5/12/2022 16:27	Travel to Midtown Often	Keeping the cycle track on one side of 10th Street was one of the factors evaluated in the study. One-way directional facilities was ultimately chosen for this section of 10th Street because of the number of driveway conflicts, number of destinations on both sides, and concerns for sight-lines and safety. Directional lanes were chosen to support less confident riders and for lower safety risks.
21	Safety	75 10th St NE	Will this lane be wide enough after the bike lane and curb changes are made?	5/12/2022 16:27	Travel to Midtown Often	All travel lanes in the concept are min. 10' wide
22	Traffic Operations	911 Williams St NW	Does this connect to something or is it a stub for future lanes? It's a vehicle turn lane in streetview.	5/12/2022 16:28	Travel to Midtown Often	The west terminus of the Central Midtown Connection will tie into the 10th St Bridge project. Learn more about that project here: https://www.midtownatl.com/project/10th-street-bridge
23	Traffic Operations	103 10th St NW	The project page speaks of connect GT and Home Park to Midtown. Will there be a future project to complete this connection? This project is great for connectivity within Midtown, but cyclists starting on the west side of the connector are just as cut off as before.	5/12/2022 16:30	Travel to Midtown Often	The west terminus of the Central Midtown Connection will tie into the 10th St Bridge project. Learn more about that project here: https://www.midtownatl.com/project/10th-street-bridge
24	Safety	70 Peachtree Pl NE	What will the buffer be made of? The new bike lanes on Brady Ave have a great buffer I hadn't seen before that has much tighter spacing between buffer objects.	5/12/2022 16:32	Travel to Midtown Often	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point. We will be identifying what kinds of protection we can provide in different parts of the corridor in upcoming design phases. We will certainly take how vehicles may enter the bike lane into consideration.
25	Traffic Operations	1001 Peachtree St NE	Will there be any bike signals along the corridor? They're very helpful and relatively cheap even if the phasing isn't changing. If signals are added, please give cyclists the LPI. That's been added downtown recently and is a big help.	5/12/2022 16:33	Travel to Midtown Often	Protected bicycle phasing will be incorporated to the signals along 10th Street (with Peachtree Street, Juniper Street, and Piedmont Avenue)
26	General/Other Comments	951 W Peachtree St NW	Is the red paint here for a transit stop?	5/12/2022 16:34	Travel to Midtown Often	Yes. The red area denotes a proposed floating bus stop to accommodate the bus stop at West Peachtree and Spring.
27	Traffic Operations	92 10th St NW	I think this part of 10th St can lose a lane for a bike lane. The traffic chokepoint is the left turn onto the connector southbound, and the number of lanes here won't affect it much. Running the bike lane along 10th St will greatly help future projects to provide connectivity to Georgia Tech and Home Park.	5/12/2022 16:36	Travel to Midtown Often	A direct connection along 10th Street was ruled out in discussions with the City of Atlanta due to traffic demand exceeding 25,000 vehicles/day (FHWA guidelines for road diet) and the major capital required to address the grading, drainage, landscaping, right of way, and utility constraints in this area.
28	Traffic Operations	106 10th St NE	Areas where cars enter/exit should have a single bollard (not flex post) that prevent cars from entering and parking in the bike lanes.	5/12/2022 17:57	Live in Midtown,Travel to Midtown Often	Thank you for your comment. We will be identifying what kinds of projection we can provide in different parts of the corridor in upcoming design phases. We will certainly take how vehicles may enter the bike lane into consideration.
29	Traffic Operations	988 Juniper St NE	If cyclists are forced to cross to the other side of 10th St they should be afforded a dedicated phase to allow them to pass directly rather than waiting through two phases of lights (straight and then left).	5/12/2022 18:00	Live in Midtown,Travel to Midtown Often	Protected bicycle phasing will be incorporated to the signals along 10th Street (with Peachtree Street, Juniper Street, and Piedmont Avenue)
30	Safety	234 10th St NE	This area needs to have permanent physical separation. As we've seen on the lane next to the park, flex posts are not sufficient to protect cyclists and pedestrians and are not maintained. Planters or concrete barriers are a must along the entirety of the 10th st portion of the bike lane.	5/12/2022 18:02	Live in Midtown,Travel to Midtown Often	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.

Central Midtown Connection Map Exercise Responses

Question ID	Category	Comment Address	Question/Comment	Question Date	Relationship to Midtown	Answer/Response
31	Traffic Operations	178 10th St NE	Access to and from the proposed 180 10th street development is unclear and will provide considerable safety and congestion issue if a right in and right out circulation is not madated from the entrance on 10th street	5/12/2022 20:34	Live in Midtown,Work in Midtown	The plans presented to the DRC for the development at 180 10th St. show access on 10th limited to right in right out with bollards on the center line preventing left turns. Approvals from the DRC are reccomendation to the city and not binding, final traffic operations have not been fully approved.
32	General/Other Comments	1053 Peachtree St NE	Love this project. Way to go, Midtown Alliance. I work and live in Midtown and fully support the expansion of bike lines and pedestrian safety. Less cars, more walking, more bikes, more cafes, more life. Thank you!	5/12/2022 20:57	Live in Midtown	Thank you for your comment.
34	Traffic Operations	973 Crescent Ave NE	Stratus Midtown is about to add >800 space parking garage. Drivers are going to turn right and travel down Crescent Ave and then Peachtree Pl to quickly get back to Williams St NE and I-75/I-85. Please consider making this street a bike/pedestrian street.	5/13/2022 8:36	Travel to Midtown Often	Since the proposed development includes driveways on 10th Street and Peachtree Place, drivers will most likely access I-75/85 directly from those streets rather than using Crescent Ave.
35	Safety	69 Peachtree Pl NE	If this bike lanes don't have good vertical delineation, it will become a parking lane for drivers running into the coffee shop.	5/13/2022 8:38	Travel to Midtown Often	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
36	Safety	82 Peachtree Pl NE	Please consider swapping the placement of the parking and bike lane to create a parking protected bike lane.	5/13/2022 8:38	Travel to Midtown Often	While parking-protected bike lanes are ideal, adjacent bulb-outs and driveway aprons prevent this from being a feasible design.
37	Traffic Operations	86 Peachtree Pl NE	Please consider making this an all-way stop, that way drivers are forced to look for crossing bike lane users.	5/13/2022 8:39	Travel to Midtown Often	We will explore the potential for adding an all-way stop at this location.
38	Comfort and Aesthetics	958 W Peachtree St NW	Great to see a protected intersection is planned.	5/13/2022 8:41	Travel to Midtown Often	Thank you for your comment.
39	Safety	54 Peachtree Pl NE	Cars often wait here to pick up people from the MARTA station. Bike lanes on this portion should be physically protected, and if possible raised up to sidewalk level, to prevent cars from standing or parking in the bike lane.	5/13/2022 12:46	Live in Midtown	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
40	Safety	80 Peachtree Pl NE	Bike lane should be next to the sidewalk, with parking on the north. Similar to how the cycle track is set up on Spring street in front of the NCR headquarters, creating a parking-protected bike lane.	5/13/2022 12:48	Live in Midtown	While parking-protected bike lanes are ideal, adjacent bulb-outs and driveway aprons required for ADA accessibility prevent this from being a feasible design.
41	Traffic Operations	970 Crescent Ave NE	Suggest closing this street to general traffic, and allow only MARTA bus, Tech Trolley, and bicycles. This would tie in nicely to the under-construction improvements on Peachtree Place in from of Savi and Cafe Agora. It would create a safer environment for pedestrians and cyclists, and would not impede car traffic since this street is only one block long.	5/13/2022 12:52	Live in Midtown	The goal of this project is to make Crescent Ave a pedestrian-oriented street. Closing it to all vehicle traffic is not currently part of the plan.
42	Safety	233 10th St NE	Suggest a concrete barrier here with greenery - essentially the same as the Bill Kennedy cycle track in Glenwood Park. That would provide maximum safety while also making it very clear where bikes should be and where cars should be.	5/13/2022 12:53	Live in Midtown	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
43	Traffic Operations	253 10th St NE	Make this intersection a four way stop, or signalized. With two-way traffic on both 10th and Myrtle, cars entering/exiting the Post Parkside garage, and this new two-way cycle track, there is a high possibility of traffic conflicts. There is currently a HAWK crossing only on one side of the intersection - if left as is, it could cause further confusion as it would be unclear if eastbound bicycles need to stop for the HAWK crossing.	5/13/2022 12:57	Live in Midtown	Thank you for your comment. We will work with the City of Atlanta to determine what changes/improvements can be made at this intersection in future design phases.
44	General/Other Comments	Piedmont Ave NE	It's not clear how an eastbound bicycle will get from the bike lane on the south side of the street to the two-way track on the north side of the street. Will this be a "scramble"?	5/13/2022 13:27	Live in Midtown	Yes, as you head east into the existing 10st St Cycle track, there will be a bicycle signal for a diagonal crossing. Northbound cyclists and westbound cyclists will run concurrently with vehicles.
45	Safety	83 10th St NE	Suggest adding "no turn on red" signs to this intersection, to help prevent cars from hitting pedestrians or cyclists.	5/13/2022 13:33	Live in Midtown	There will be "no turns on red" where needed to mitigate conflict, to be identified as we get into more detailed phases of the study. At this point in the concept phase, Peachtree St. will have a dedicated bicycle phase.
46	General/Other Comments	84 Peachtree Pl NE	Please include clear bike signage here. Since there are not marked cycle lanes on Crescent street, eastbound cyclists may not be aware they are supposed to turn left on Crescent street and then right on 10th. Signs here could indicate these directions, and wayfinding (e.g., Piedmont Park 1/3 mile ahead, etc).	5/13/2022 13:41	Live in Midtown	Thank you for your comment. We will make sure to consider how best to communicate routing options as we move into more detailed phases of this study.
47	Safety	971 W Peachtree St NW	Put dashed green lines here where the bike lane crosses over the right turn lane, so cars are aware of the shift.	5/13/2022 13:44	Live in Midtown	The Central Midtown Connection Project will tie into the West Peachtree Quick-Build project. Conflict markings will be handled with the implementation of that project.
48	Traffic Operations	35 Peachtree Pl NW	The entire south side of the street here needs a physical barrier, so that cars don't block the bike lane in front of Plaza Midtown.	5/13/2022 13:50	Live in Midtown	Our intent is to add projection wherever possible. As we are currently in the concept phase, we have not gotten into that level of detail at this point.
49	Accessibility	46 Peachtree Pl NE	Place bike racks in this white striped area - good place to park/lock bikes for people going to the coffee shop, apartments, or MARTA.	5/13/2022 13:55	Live in Midtown	Thank you for your comment. We will definitely consider this.

Central Midtown Connection Map Exercise Responses

Question ID	Category	Comment Address	Question/Comment	Question Date	Relationship to Midtown	Answer/Response
50	Traffic Operations	27 Peachtree Pl NW	A loading zone or short term parking will be required in front of Plaza Midtown to accomodate large amount of deliveries and ride shares. If not provided, these drivers will park in the bike lane	5/13/2022 14:40	Live in Midtown,Work in Midtown	In addition to the large internal parking deck at Plaza Midtown, two areas on the north side of Peachtree Place will be reserved for deliveries/pick-ups. The bike lane on the south side of this section of Peachtree Place will have some sort of barrier to prevent parking. Specific materials for barrier protection have not been identified at this point of the study.
51	Traffic Operations	105 Peachtree Pl NW	Why end the 2 way operation at the driveway? Peachtree Pl should be bi-directional all the way to Williams	5/13/2022 14:43	Live in Midtown,Work in Midtown	GDOT will not allow right turns from the off-ramp to Peachtree Place due to the concern for vehicles queuing back onto the Interstate.
52	Safety	52 Peachtree Pl NE	Thank you for including crosswalks. Much needed here!	5/13/2022 14:44	Live in Midtown,Work in Midtown	Thank you for your comment.

APPENDIX 7: DESIGN VARIANCE

TOOLE DESIGN

315 S. BLOODWORTH STREET
RALEIGH, NC 27601

919.336.5010
TOOLEDESIGN.COM

FILE	Project Type	Bicycle Lane Design	County	Fulton
	ATLDOT Project #	N/A	NPU	E
	Council District(s)	2	tax allocation district	None
	Federal Route #	N/A	State Route Number	N/A
	Project Name	Central Midtown Connection Plan		
FROM	Chris Puglisi, P.E. – Toole Design Group			
TO	Atlanta Department of Transportation			

SUBJECT **Request for Design Variance for proposed travel lane width**

PROJECT DESCRIPTION The Central Midtown Connection Project is approximately 0.75 miles within the City of Atlanta in Fulton County. The streets within the scope of the project are posted at 25 mph. Bicycles are the modal priority for this project with the added goal to improve pedestrian safety. The purpose of the Central Midtown Connection Project is to provide a safe east-west micromobility connection across the Midtown Improvement District which will provide a connection from the existing two-way separated bike lanes on 10th Street to the proposed 10th Street Bridge bicycle lanes along Williams Street. The Central Midtown Connection will extend the existing 10th Street cycle track from its current terminus at Myrtle Street, west to Williams Street. The proposed route would carry the facility west to Crescent Ave where it would turn south and then west on Peachtree Place. It would continue along Peachtree Place to Williams St where the project would connect to the 10th St Bridge Multimodal Connection project.

FEATURE REQUIRING A DESIGN VARIANCE A design variance is being requested to reduce the proposed outside lane widths from 11-foot to 10.5-foot. The reduction would occur along the outside lanes throughout the bus route designated corridor. MARTA standard allows for a minimum 10.5-foot lane. All other travel lanes will be designed to the City of Atlanta 10-foot lane width standard.

Existing lane width conditions:
10th St is comprised of four travel lanes, two eastbound and two westbound. Travel lanes are 10-foot.
Crescent Ave includes two 10-foot travel lanes.
Peachtree Place consists of two travel lanes ranging from 10-foot to15-foot.

COST TO MEET STANDARD CRITERIA If the standard criteria for 11-foot lane widths for bus routes were to be met, there would be a cost impact associated with the need to increase the overall street width to avoid compromising the safe operation of the proposed bicycle facility. Survey has not been obtained at this phase of design, so it is unknown whether the presence of existing underground utilities and drainage pipes would have a cost impact when widening. At a minimum, the following existing conditions (visible on Google Street View), would have to be addressed to widen the west bound lane by one foot:

- Curb Inlet Adjustment
- Decorative Light Pole relocation
- Street tree removal and replacement
- Wood pole power lines removal and replacement
- Wood signal pole removal and replacement
- Hydrant adjustment
- ¾ mile of granite curb

An order of magnitude cost to widen 1 foot along the full limits of this project could range from $2,000,000 to $3,000,000.

WHY THE CURRENT STANDARD CRITERIA CANNOT BE MET As a general design approach, it is understood that streets should be able to accommodate all users and modes of travel; however, in a constrained environment, not all users can or need to be accommodated with the same quality of service. It should be noted that the constrained right-of-way for this proposed project cannot accommodate 11-foot lanes without compromising the proposed bicycle facility (bike lane plus buffer). Buses are currently operating adequately on streets in Atlanta (including the roads within the proposed project area), that are striped below the 11-foot outside lane width desired for bus routes. With approval of this lane width design variance to 10.5-feet, the outside lanes will result in a lane that's 6-inches wider than the current conditions.

MITIGATION PROPOSED The original concept design designates all lane widths at 10-foot. The mitigation proposed for this project is to revise the outside lanes to 10.5-foot, essentially providing a lane width that will be 6-inches wider than current striping conditions. As noted in NACTO's Urban Street Design Guide, 10-foot lanes would be appropriate in urban areas and can have a positive impact on a street's safety without impacting traffic operations. In contrast, providing wider travel lanes can have the unintended consequence of raising vehicle operating speeds.

RECOMMENDATION Brendetta H Walker, P.E. of Toole Design Group, Engineer of Record for this project can be reached at bwalker@tooledesign.com or alternatively by phone at 470-800-9525 X672. Supported by the conditions listed above, The Engineer of Record respectfully requests the approving authority grant a design variance to reduce the outside lanes of the designated bus route from the standard 11-foot to 10.5-foot.

Recommend:	Brendetta H. Walker	PE #026289	12/9/2022
	Engineer of Record		Date
Concur:			
	ATLDOT Pre-Construction Director		Date
Approve:			
	ATLDOT Deputy Commissioner – Capital Projects		Date

Approve: _____ _____

ATLDOT Deputy Commissioner – Strategy & Planning | Date

Approve: _____ _____

ATLDOT Commissioner | Date

Reviewers: ATLDOT: Chris Rome (CR) MARTA: Corentin Auguin (CA) Emma Polhemus (EP) Department of City Planning: Hillary Essig, Chris McIntosh, Ashley Shorter, Bette Maloy (Public Space)	Organization: Midtown Alliance / ATLDOT	Discipline Review: Planning, Transportation, Watershed, Fire	Sheet Page 1 of 18
Design Phase: Concept / 15%	Project Name: Central Midtown Connection Plan File Name: Final_Concept_Report_10112022.pdf	Submittal Name: Concept Report and Concept Plans Submittal Number: 1	Review Date: 11/1/2022

REVIEWER				DESIGNER RESPONSE		
Comment #	Drawing/ Document Page Number	Comment	Initials	Code No*	*Response By/Designer's Notes	**Verified By
1.	General	MARTA has safety concerns due to traffic lanes and layover bus stop bay on Peachtree Pl being narrower than MARTA's standards (10.5' minimum, 11' preferred). While bus volumes are low at the moment the Bus Network Redesign may bring a larger bus volume to Midtown Station which would increase the chances of incidents and slow bus movement in and out of the station. In accordance with the City of Atlanta Design Guidelines, MARTA (Planning, Operations, Safety) would like the outside lane to be 11' to ensure safe bus operations along the 10th St corridor.	CA, EP	3	A Design Variance has been included in this submittal. Design can be modified to include a 10.5' wide westbound lane on Peachtree Place between Crescent Street and West Peachtree Street. This would largely have an impact to the bicycle lanes and buffers as follows: • The WB bicycle lane will shrink from 6' to 5.5' between West Peachtree Street and N15 Parking Garage • The EB bicycle buffer between N15 parking garage and the MARTA station will shrink from 2' to 1.5' • The EB bicycle buffer across the street from the MARTA station will shrink from 3' to 2.5' • The WB bicycle buffer between Cypress Street and Crescent Street will shrink from 1.5' to 1.0' See response to comment #2 regarding the layover bus stop bay on Peachtree Place. The relocation of this bus stop will further provide flexibility for space reallocation to accommodate wider lane widths. As a general design approach, it is understood that the street should be able to accommodate all users/modes; however, not all users need to be accommodated with the same quality of service (especially in a constrained environment). It should be noted that the constrained right-of-way cannot accommodate 11' travel lanes without compromising the bike facility (lane and buffer), which are already below preferred minimums. While it is understood that 11' lanes (policy) are typically preferred for transit lanes, the buses currently operate adequately on streets in Atlanta below this preferred minimum width. Providing wider lanes will have unintended consequences on the operating speed of passenger vehicles who also use the street. In high-speed environments, wider travel lanes (11–13 feet) may be preferred to create a more forgiving buffer to drivers but as noted in	

CODES - ADDED BY DESIGNER: * Response: 1 = Will Incorporate 2 = Discussion/Clarification Required 3 = Not Applicable 4 = Not in Scope of Work 5 = Not Due at This Submittal 6 = Input/Direction Required By Others
(Codes 2 and 6 must be revised later to 1 or 3.)
****Verified: D = Done (Document Change Completed) - Used only if Response Code is 1.**

Reviewers: ATLDOT: Chris Rome (CR) MARTA: Corentin Auguin (CA) Emma Polhemus (EP) Department of City Planning: Hillary Essig, Chris McIntosh, Ashley Shorter, Bette Maloy (Public Space)	Organization: Midtown Alliance / ATLDOT	Discipline Review: Planning, Transportation, Watershed, Fire	Sheet Page 2 of 18
Design Phase: Concept / 15%	Project Name: Central Midtown Connection Plan File Name: Final_Concept_Report_10112022.pdf	Submittal Name: Concept Report and Concept Plans Submittal Number: 1	Review Date: 11/1/2022

REVIEWER				DESIGNER RESPONSE		
Comment #	Drawing/ Document Page Number	Comment	Initials	Code No*	*Response By/Designer's Notes	**Verified By
					NACTO's Urban Street Design Guide, 10-foot lanes are appropriate in urban areas and have a positive impact on a street's safety without impacting traffic operations. Per the NACTO Urban Design Guide, it provides data on the effect of lane widths on vehicle speeds and a 1-ft difference in lane width does have a significant impact on operating speeds.	
2.	13-003	Exploring moving the Tech shuttle onto the side parking lot is to be discussed with MARTA TOD (Jacob Vallo – jvallo@itsmarta.com), Facilities (Sean Thomas – sthomas1@itsmarta.com) and Operations (Pbruno@itsmarta.com). The Tech shuttle may be relocated inside the bus loop due to upcoming changes to their routes and discussion with MARTA. This potential arrangement may be reconsidered once the Bus Network Redesign new system is proposed.	CA	1	While the design team continues conversations with MARTA and Georgia Tech Transportation, the current preference from those conversations is to leave the bus stop where it is. Should those conversations change, the bus stop may be relocated during future design stages. – requiring additional coordination – any resulting design changes will be included in future phases.	
3.	13-003	Given the current low traffic level on Peachtree Pl, could the bike lanes design be narrower to allow wider bus lanes? Alternatively, if the traffic level is anticipated to grow to warrant this proposed bike lane design then having 10' traffic lanes would be even more of an issue for buses to navigate in and out of the station. Would either of the following allow for a 11' westbound bus lane: - bidirectional bike lane on the southside - not physically separated bike lanes (paint only) - use sidewalk space to accommodate full bike lanes and full bus lane?	CA	3	A Design Variance has been included in this submittal. See response to comment #1 Per FHWA Bike Selection Guide, while buffer treatment is not required, it is preferred. Per NACTO, buffered bike lane is recommended for all ages and abilities.	
4.	13-004	Ensure that turning movements from 10th St (both direction) onto Crescent are doable by a standard bus.	CA	1	Crescent St will be one-way southbound in the future, so there will no longer be a NB right out of Crescent St. Curb radii for the EB right will be designed for city bus turning movements. Changes will be incorporated at 60% Design	
5.	13-006	MARTA is open to discussing shifting the westbound stop #901165 (10th St & Juniper). However, the stop has the highest ridership along the bike lane corridor and is mostly	CA	1	Ongoing discussions with MARTA – requiring additional coordination – any resulting design changes will be included in future phases.	

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Reviewers: ATLDOT: Chris Rome (CR) MARTA: Corentin Auguin (CA) Emma Polhemus (EP) Department of City Planning: Hillary Essig, Chris McIntosh, Ashley Shorter, Bette Maloy (Public Space)	Organization: Midtown Alliance / ATLDOT	Discipline Review: Planning, Transportation, Watershed, Fire	Sheet Page 3 of 18
Design Phase: Concept / 15%	Project Name: Central Midtown Connection Plan File Name: Final_Concept_Report_10112022.pdf	Submittal Name: Concept Report and Concept Plans Submittal Number: 1	Review Date: 11/1/2022

REVIEWER				DESIGNER RESPONSE		
Comment #	Drawing/ Document Page Number	Comment	Initials	Code No*	*Response By/Designer's Notes	**Verified By
		used by senior residents living in the Juniper & Tenth Highrise. Previous attempts at relocating the stop caused some push back from the residents. Removing the eastbound stop is not possible due to the need to serve the high-rise. However, it could be shifted. MARTA recommends a discussion with the High-rise residents and management to discuss their concerns and get written approval before any stop relocation is implemented.				
6.	13-007	Westbound MARTA bus stop #901229 is proposed in a right turn lane which would be illegal for MARTA to operate. Would it be possible to shorten the right turn lane to build a boarding island on the far side of Myrtle Dr. The right turn lane would start where the boarding island ends. An alternative would be to have signage allowing buses to be in the right turn lane and a signal phase letting the buses travel straight through the intersection while the through lane vehicles have a red light.	CA	1	Ongoing discussions with MARTA about bus stop relocation. Potential alternate location would be near-side at Myrtle Note that a dedicated transit phase for a shared bus/right turn lane would require MARTA buses to have on-board units that communicate to the signal to trigger the transit phase. – requiring additional coordination – any resulting design changes will be included in future phases.	
7.	General	We understand there are challenges to having a bidirectional bike lane continuously on the south side of 10th St but it could: - provide consistency for cyclists who are already used to crossing over at 10th St (travelling eastbound) - avoid splitting the bike lane for a single block - reduce the impact on bus operations going into the station.	CA	3	See Appendix 4 for approved traffic study from ATLDOT	
8.	General	There are a lot of varying buffer to bike lane widths. Would like a prioritization justification on why some areas have a larger buffer then others (i.e. why do some areas have a 1 foot buffer with a 5 foot bike lane and others have a 2 foot buffer and 4 foot bike lane). If 6' is what is available, there should be some consistencies	Public Space	3	Curb-to-curb widths are not uniform and the controlling factor is maintaining 10' wide travel lanes; 2' buffer is desirable to include 18" concrete "pills", however open to exploring narrower buffer treatments which could reduce buffer width to 1'-1.5'. The design team prioritized better buffer/protection over bike lane width	

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					as this area is heavily residential and commercial and will invite illegal pick-up/drop offs and parking if unprotected. Also note that concept was developed on aerial imagery; moving from 30% to 60% design, survey will be performed to collect additional topographic information that will refine cross-sections. Note that 6.5' is the minimum width of a directional bike lane to allow for passing.	
9.	General	In existing conditions report – can we see a map of existing bus routes. 10' lanes are narrow for buses.	Public Space	3,1	A Design Variance has been included in this submittal. 3-See response to comment #1 regarding lane widths 1-can add a map of existing MARTA bus routes and directionality to the existing conditions section of the concept report, Page 4.	
10.	General	4' is too narrow for a protected bike lane. With protection, 4' doesn't allow bicyclists to pass one another, they become closed into a narrow funnel. Many bicyclists would stick to the roadway in order to pass slower bicyclists, omitting the original intent for a protected facility	Public Space	3	See response to comment #8	
11.	General	Would like justification on why a two-way cycle track wasn't considered for Williams to Crescent, may allow for the extra room to have a protected facility with passing room	Public Space	3	See Appendix 4 for approved Traffic Study from ATLDOT; directional bike lanes are preferable to two-way cycle track, safer as directional bike lanes meet driver expectancy exiting driveways and parking garages.	
12.	13-001	Stop sign needs to be added for vehicles moving WB on Peachtree Place. Existing roadway shows no stop sign.	Public Space	1	A stop sign will be called out in the plans for the westbound approach to Williams St; the design team would be supportive of the City installing a stop sign for the westbound approach in the interim as there is presently a stop bar present without a stop sign. Changes will be incorporated at 60% Design, if needed	
13.	13-001	Spring street is an unsignalized intersection. For this protected design to work there needs to be clearer signage on who has priority for crossing Spring Street. Are cars	Public Space	3,1	3-See Midtown Alliance's Last Mile Signalization project (Midtown Activity Center Pedestrian Improvement Project) for plans for future signal at this location. There	

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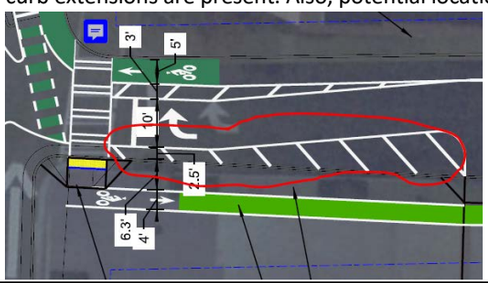
		yielding to bikes? Are bikes yielding to cars? Are pedestrians yielding to bikes and cars? Can see a lot of potential conflict without clear signage and no signal since most Atlanta users have never interacted with this type of intersection before. Can a signal be considered at this intersection to ease prioritization?			has been active collaboration with the Signal Design Team to ensure minimal conflicts between the two overlapping projects. 1-Will include callout that a future signal is be installed by others prior to construction.	
14.	13-001	Look at adding wheel stops to curb extension striping on SB side of Peachtree Place where curb extensions are present. Also, potential location for street art. 	Public Space	1	Can include vertical elements here at 60% Design.	
15.	13-001	4' is too n arrow for the EB sidewalk-level bike lane. Look at making at least 5'	Public Space	3	See comment #57; 4' min width is allowable when bikes have shy distance from vertical elements.	
16.	13-001	Are the south side parking spots being removed with the striping? If so, curb stops/wheel stops should be added to prevent cars from parking and blocking the bike lane (avoid what happens at the painted areas for the street car now). Look at potential street art and green infrastructure improvements instead of generic striping.	Public Space	3	This space is reserved for the implementation of parklets or bike/scooter corals post-installation. Note that the construction budget does not permit the reconstruction of the curb line along this block, therefore, existing bulbouts shall remain.	
17.	13-001	What's the justification for a depressed bike lane vs a sidewalk level bike lane? How does this impact ADA accessibility?	Public Space	3	Depressed bike lanes reduced/eliminated the need for R/W acquisition while maintaining ADA compliance for ramps. Depressed bike lanes will be bordered with beveled curb which is detectable under-cane for the seeing-impaired.- Construction details prepared as part of 60% design will illustrate cross-slopes across the semi-depressed bike lanes. Locating the bike lanes off the street also	

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					preserved space for tighter turn radii, shorter crosswalk distances, and better visibility of cyclists for turning vehicles at intersections, enhancing safety.	
18.	13-002	Refer to general comment but bike lanes are too narrow here with the protection	Public Space	3	See response to comment #8	
19.	13-002	7.5' loading zone with 10' lanes is insufficient for box trucks. Standard box trucks are 8.5'	Public Space	3, 1	3-See response to comment #8; existing loading zone is much narrower than 7.5' and works well as-is. Street is low speed low volume and traffic can easily navigate around a vehicle parked along the curb. 1-can propose dashed yellow lines through here to allow for passing around parked vehicles, if needed at 60% design.	
20.	13-002	Can we look at making the intersection at Peachtree Pl and Peachtree St straightened instead of curved? The east side of the intersection shows a curve,	Public Space	3	The existing intersection today is not aligned, the proposed design corrects the alignment while staying within public R/W and adding in protected bike lanes. Curbs along the east leg deflect to align with west leg.	
21.	13-002	Same question on semi-depressed bike lanes. Is there a benefit to the semi-depressed bike lanes at protected intersections over keeping them sidewalk level?	Public Space	3	See response to comment #17	
22.	13-002	There is an ADA ramp to nowhere near the proposed floating bus stop.	Public Space	1	Will remove in 60% design	
23.	13-002	Existing intersection has a mix of pedestrian buttons and integrated ped phasing. Look at removing ped buttons and have all crossings as integrated pedestrian phasing	Public Space	3	Existing signal infrastructure will be maintained; some signal poles may need to be relocated to accommodate the design, however, everything will be replaced in-kind.	
24.	13-003	Need more details on bus stop	Public Space	1,3	1-See response to comment #2 – requiring additional coordination – any resulting design changes will be included in future phases. 3-Provide additional clarity on bus stop details if not addressed by Comment #2	
25.	13-003	8' bike lane label is incorrect, looks like 4'	Public Space	1	Has been corrected in concept	
26.	13-003	2.5' buffer between bike lane and parking is too narrow. Needs to be at least 3' to avoid dooring	Public Space	1	Will reduce parking width to 7.5' and make buffer 3' in 60% design	

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27.	13-003	Recommend removing parking spots here to avoid constraints on bike lane	Public Space	3	Adjacent property owners were engaged during the development of this concept and those parking spaces are used by the residents of Cotting Court for guests, loading, and rideshare. Support of this project was contingent on maintaining on-street parking.	
28.	13-003	Dancing goats parklet needs to be included and shown, can be relocated but needs to be convenient to business	Public Space	1	Space has been reserved for their parklet between driveway apron and curb ramp bulb-out; will include call-out for parklet to remain in 60% design.	
29.	13-004	Add wheel stops to the leading edge of lane on Peachtree Pl leading to crescent to avoid cars parking	Public Space	3	This space is reserved for trash pick-up for residential buildings on southside	
30.	13-004	Remove sharrow from 10th street and Crescent	Public Space	1	Will remove in 60% design	
31.	13-004	Green striping across crescent on Peachtree pl should be full width, not tapered	Public Space	3	This is purposeful to direct cyclists onto the ramp; see examples along the Brady Ave cycle track. 	
32.	13-004	Turn radius for bicyclists is tight when going from Peachtree pl to crescent, look at removing on wheel stop	Public Space	1	We can shorten buffer to permit a more fluid turn in 60% design	

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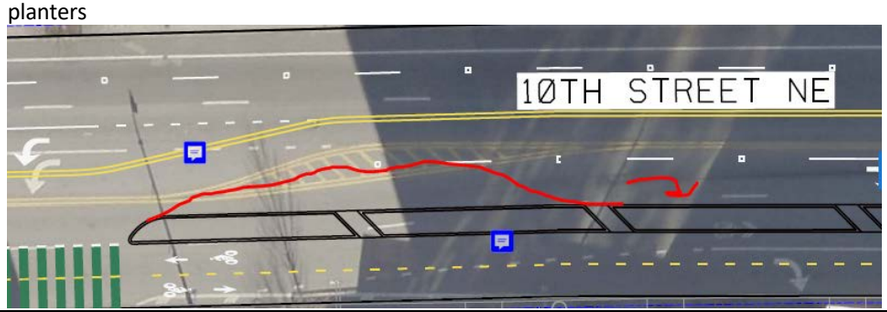
					Can also add sharrow for EB movement to continue on Peachtree Place to Peachtree Street in 60% design.	
33.	13-004	Look at some vertical wayfinding for the two-way cycle track to crescent	Public Space	1	Vertical wayfinding signs can be added to supplement wayfinding dots proposed on pavement to direct cyclists. Changes will be incorporated at 60% Design	
34.	13-004	8.5' Left turn lane is too narrow. Look at taking from cycle track buffer and adjust taper	Public Space	1	Left turn lane widens to 10' at stop bar; will narrow the bike buffer to maintain a 10' cross-section of left turn lane along its entire length. Changes will be incorporated at 60% Design	
35.	13-005	Taper on WB left turn lane needs to be adjusted for standard tapering	Public Space	3	Existing taper ratio of 5:1 is maintained and is common in urban environments where slower speeds are encouraged. ATLDOT: 50' taper is okay for a left turn lane; standard	
36.	13-005	Redesign 10th street vehicular lanes. Don't' design to dump drivers into a right-turn only lane. Create a larger concrete buffer and enlarge the taper. Look at buffers as an opportunity for green infrastructure stormwater management or bill Kennedy way planters 	Public Space	1	Will configure alignment of travel lanes to keep vehicles in the through lane; final design may not be a raised element but may be limited to striping only dependent on queue storage for WB right turn. Changes will be incorporated at 60% Design	

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37.	13-005	Bike box on Peachtree Street needs to have bicyclists symbol face the direction of the bike lane	Public Space	1	Bike box was requested by ATLDOT to provide a way for EB cyclists in the cycle track to continue on 10th Street and not continue onto Peachtree Place. Therefore the NB left arrow is used to permit this movement. The WB left arrow is used to permit cyclists to continue north on Peachtree Street; this could be changed to a thru arrow.	
38.	13-005	No rights on red across cycle track	Public Space	1	This will be included in signal modification at 60% which will include a phase-separated bicycle movement per compliance with IA-16.	
39.	13-006	No right on red on Juniper	Public Space	1	See response to comment #38	
40.	13-006	Ensure the right turn radius from 10th to Juniper is appropriate with the concrete island	Public Space	1	See Appendix 5 of concept report	
41.	13-006	Keep two-way cycle track on south side of the street vs creating a cycle track on both sides for one block. This allows the ped scramble at Piedmont and 10th to be the safest crossing for bicyclists.	Public Space	3	See Appendix 4 of concept report for approved traffic study from ATLDOT	
42.	13-007	Relocate bus stop farther east from the intersection. Current design dumps the bus into a right turn only lane when the bus needs to go through the intersection. Also look at keeping two-way cycle track separate from the bus platform. Think Guadalupe St in Austin Use the bus stop and a curb extension to keep one lane, and create an actual right turn only lane instead of creating two lanes at Argonne Ave intersection. Avoid dumping through vehicle lane traffic into right turn only lanes	Public Space	3	See response to comment #6 – ongoing discussions with MARTA about where best to relocate this bus stop.	

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		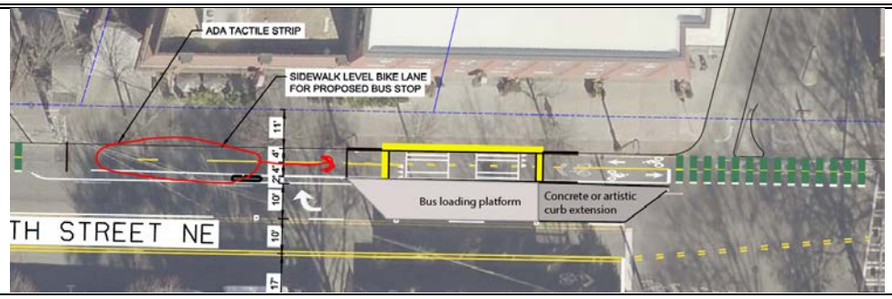				
43.	13-007	Remove existing sharrows and intersection striping	Public Space	3	Street is to be resurfaced; there will be no existing pavement markings at time of installation.	
44.	P3	PJS - Remove "hostile" – adjective is typically reserved for people and not inanimate objects like 10th St. Consider replacing with a factual statement with something from survey results like "least-comfortable" or "least-safe" if the crashes show that for the section of 10th St being referred to.	CR	1	Rephrased in concept report	
45.	P3	PJS - Is an additional secondary goal to also improve the delivery of people like pickup-dropoff of taxi and ridehailing? Are there any transit goals? Probably should say maintain existing transit service for Georgia Tech Tech Trolley and MARTA buses.	CR	1	Updated the PJS to incorporate additional goals of the project	
46.	P3	Ex. Con. - Spell out traffic lingo acronyms at first use – for example southbound (SB)	CR	1	Has been revised in the updated concept report	
47.	P3	Ex. Con. – add functional class and speed limits to the roadway descriptions	CR	1,3	1- speed limit has been added to the existing conditions. 3-Functional class can be found in section titled "functional class"	
48.	P6,P7	Lane Width Policy is 11' lanes (outer lanes) because MARTA bus service and /or freight route. See Streets Atlanta p4-5 and 4-9.	CR	3	A Design Variance has been included in this submittal. Comment #1 says policy is 10.5', 11' preferred See response to comment #1	

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					Note that wider travel lanes would come at the expense of narrower bike lanes and buffers (see related comments to widening bike lanes)	
49.	P7	Add design variances for vehicle lane widths, bike lane widths, auxiliary lane width, parking lane width. Consider revising design to meet minimums.	CR	1,3	1-Concept report has been revised to request DV for lane widths. 3-Is this sufficient for ATLDOT to consider allowing the DV? A Design Variance has been included in this submittal.	
50.	P10	"Virtual dot map exercise" seems like an incomplete sentence. Please revise	CR	1	Concept report has been expanded to include reference to the attachment (appendix 6)	
51.	P10	Mark July 29, 2022 as the initial concept meeting because the concept report and concept design was not complete at that point. CTM will be 11/8/2022	CR	1	Concept report has been revised	
52.	P11	Alt 1 total cost of $3.834M does not match the estimate of $2.817M in previous table. Revise	CR	1	Revised Table	
53.	P11, P12	Alt2-5 remove the *required text from Estimated ROW Cost:	CR	1	Has been removed from concept report	
54.	App. 1 – 13-001	Green pavement marking hue varies – make it consistent or provide a legend if they are intentionally different.	CR	3	They are different for illustrative purposes (mainly for when we brought the plans to the public for their input) –sidewalk level bike lanes were given a color to show that the bike lane is on the sidewalk and not in the road; the other is to depict green pavement markings. Moving from 30% to construction drawings these will be simplified. The City does not have a preference or policy on the markings of bicycle lanes on the sidewalk. resulting design changes will be included in future phases.	
55.	13-001	The hatched areas will get parked in. Convert to loading zones, install barriers or parklets	CR	3	See response to comment #16	

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56.	13-002	Westbound bike lane drops to 4' by Mac's driveway – the minimum width adjacent to a header curb is 5'. Remove some of the buffer there. Update concept report min. width tables as needed	CR	3	See response to comment #8 Note that vertical elements within the buffer are purposefully offset closer to the vehicle travel lane to provide more effective width for cyclists. Increasing the width of the bicycle lane and decreasing the width of the buffer will not increase the effective width. The proposed door buffer is needed to protect bicyclist.	
57.	13-003	See previous comment about 4' min – 4' min is only allowed where bikes have shy distance from vertical objects – refer to AASHTO design guide. Also that section is downhill so would be very tight. Remove protection here – regular bike lanes are ok for a street with this traffic volume per FHWA guidelines	CR	1	Clarification required – referring to bike lanes adjacent to Delta Community Bank? Removing buffer treatment to achieve 5' wide bike lanes will invite illegal parking, loading, and unloading activity. Future development will invite different traffic volumes/demands here. The current plans include a loading dock where the Delta Bank drive-thru exit currently stands. Providing barrier protection here is necessary because it will prevent parking in the bike land and will provide protection from vehicles that pick-up speed down this hill. Could consider a narrower buffer but believe the barrier separation is necessary.	
58.	13-003	Callout of 8' near the right side of the sheet looks wrong – the bike lane width is 5' here, correct?	CR	1	See response to comment #25	
59.	13-004	For eastbound bikes, why are the protection concrete objects on the bike lane side? This invites parking into the hatched area.	CR	3	See response to comment #29	
60.	13-004	The eastbound left turn bike movement should be curved some. 90 degree corner is not traversable for design bicycle with the concrete object in current location. I know it's a stop condition for bikes, but it looks like you would have to dismount, pick up and reorient your bike before proceeding in the current design. Consider using a cargo bike with trailer or something large as design bike and submit turning simulations for all bike turns.	CR	1	See response to comment #32 and will curve bike lane to make it easier for the maneuver. Changes will be incorporated at 60% Design	

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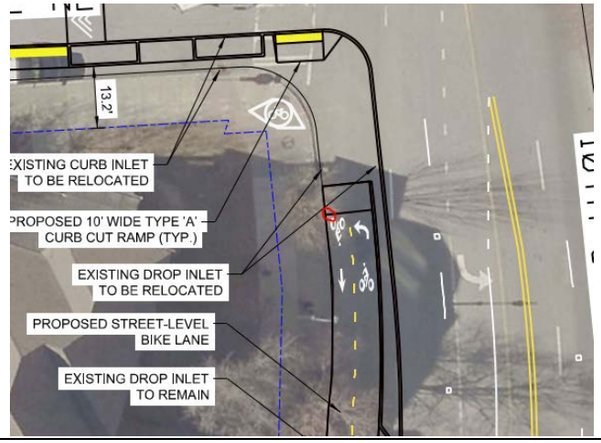
61.	13-004	Use separate material to define the "centerline" of the shared use path section. The BeltLine example would be a granite separator.	CR	1	Will coordinate with The Stratus developer on design treatment for the shared use path. Changes will be incorporated at 60% Design	
62.	13-004	10th St outer lanes will need to be 11' per previous comments. 8.5' turn lane is very tight. Suggest increasing to 10'.	CR	1	See response to comment #34	
63.	13-004	Extend the eastbound 10th St "drop lane" markings to Crescent Ave at least. Add solid line , then 3'9' wide skip for 100' min. and ONLY pavement marking words.	CR	1	Will add additional right arrow pavement markings and include the word "ONLY". Changes will be incorporated at 60% Design	
64.	13-004	Centerline does not tie to existing on 10th St - revise	CR	1	Need clarification, centerline is on top of existing centerline; centerline may shift, see response to comment #34 – any resulting design changes will be included in future phases.	
65.	13-004	You'll need a drain inlet here to avoid ponding at the bottom of the bike ramp  	CR	1	Will include additional drainage here; Survey is being performed between 30% and 60% to get topo info for drainage design. Changes will be incorporated at 60% Design	
66.	13-005	Add skip markings so the eastbound through lane continues straight and the eastbound right lane for Juniper St is not the default lane	CR	1	See response to comment #36	

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67.	13-006	Add white outer box for two-stage turn queue boxes – see MUTCD Interim Approval and Streets Atlanta details	CR	1	Will add white outer box markings. Changes will be incorporated at 60% Design	
68.	13-007	Add skip markings so the westbound through lane continues straight and the westbound right lane for Piedmont Ave is not the default lane	CR	1	Will revise lane markings, will also be impacted by comments #6 and #42. Changes will be incorporated at 60% Design	
69.	13-004	Add pedestrian crossing across Peachtree Place	Concept Meeting	3	There are three pedestrian crossings on Peachtree Place	
70.	Pg 6 of Report	General comment: the city of Atlanta code of ordinances formally adopted the NACTO Urban Street Design Guide for all bicycle, pedestrian, and other vision zero-related infrastructure projects under legislation 20-O-1239. Whereas the NACTO Urban Street Design Guide is considered best practice for large American municipalities and the one Atlanta strategic transportation plan calls for its adoption as city design standard for all transportation projects.	IM	1	Noted. Survey will be collected during the 60% design phase, and any resulting design changes will continue to follow the NACTO Urban Street Design Guide- and approved design variances.	
71.	Pg 11 of Report	The cost estimate on page 29 has this item at $2.2M after expected escalation. Why the discrepancy in estimates?	IM	1	The Cost Estimate Table has been updated to reflect these changes.	
72.	13-001	General comment: field measurements were taken in the field to confirm curb to curb widths with a pull tape 12/2/2022 at each dimension in the plans. Locations will be noted in the comments.	IM	1	Noted. The 60% design phase will include the collection of survey information to verify roadway width. Any resulting design changes will be included in future phases.	
73.	13-001	General Comment: THE CITY OF ATLANTA CODE OF ORDINANCES FORMALLY ADOPTED THE NACTO URBAN STREET DESIGN GUIDE FOR ALL BICYCLE, PEDESTRIAN AND OTHER VISION ZERO-RELATED INFRASTRUCTURE PROJECTS UNDER LEGISLATION 20-O-1239. WHEREAS, the NACTO Urban Street Design Guide is considered best practice for large American municipalities and the One Atlanta Strategic Transportation Plan calls for its adoption as city design standard for all transportation projects.	IM	1	See response to comment #70	
74.	13-001	More of a design question: How does the bulb-out on the northern leg of Spring St tie to the existing curb line?	IM	1	The proposed curb-line for the current development of The Hub at the NW quadrant of Peachtree Place and Spring Street did not get plotted from the reference file. That has been updated and will be shown accurately at 60% design; linework does not impact design as it was used to design bulb-out.	

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					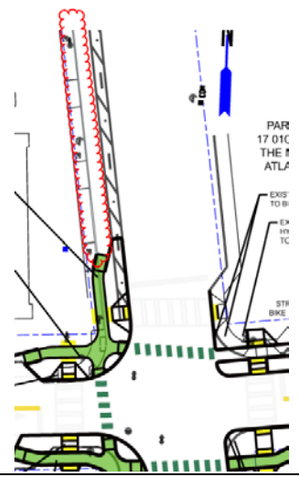	
75.	13-001	GDOT frontage road ties in at this location from I-75 (Williams St at Peachtree Place.) Coordination will be required.	IM	1	Design team is working in coordination with the 10st St Bridge Multi-modal Connection Project team.	
76.	13-001	Layout falls within NACTO 15' minimum standards for each direction.	IM	1	Noted – A Design Variance has also been included in this submittal.	
77.	13-001	NACTO minimum is 21 feet desired curb to curb, but City Fire has requested 22-foot width from curb to curb on other projects. If there is an issue with minimum spacings and ROW costs. Is the semi-depressed bike lane placed on the south side required? Can it match the type of installation on the north side to accommodate the 1-foot adjustment? This is a West bound only bus corridor, but desired parameters are preferred vs. minimums.	IM	3	Clarification from meeting on 2/23/2022: Peachtree Place accommodates buses in one direction; 21' min does not apply. City Fire Code is 20' min. Note – A Design Variance for lane widths was included in this submittal. 21-foot curb to curb distance would result in an impact to ADA requirements regarding the ramp slopes and ped refuge island. Modifying the semi-depressed bike lanes on the south side to match what is shown on the north side would	

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					result in a pedestrian refuge island that would be less than the required 6-feet per PROWAG R305.2.4 requirements Also note that semi-depressed bike lanes were included to conserve space in the design and limit impacts to private R/W. Semi-depressed bike lanes are also detectable underfoot or undercane for seeing-impaired compared to side-walk level bike lanes. Also note that the location noted in this comment is not a bus route. Refer to the Final Concept Report, Page 4, showing the identified bus routes and directionality.	
78.	13-002	Field Measurement = 42 feet. Developer might have removed existing bulb out or will possibly replace in final design. Adjustment to concept possible. Layout meets NACTO minimums. Width across Peachtree Place, just west of driveway to Mac's.	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width. Any resulting design changes will be included in future phases.	
79.	13-002	Field Measurement = 43 feet. Layout meets most NACTO minimums. The loading zone would not allow for single axle trucks to load and unload. Box truck width = 8 feet. Adjust accordingly if trucks are to use the loading zone. Loading Zone in front of Mac's.	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width. Any resulting design changes will be included in future phases. Reduction in the buffer to accommodate a wider loading zone would have a negative impact to the door zone between the parked vehicle and the bicycle traffic and would require a design variance.	
80.	13-002	Previous comment pertaining to 21 and 22 foot curb to curb applies. If there is an issue with minimum spacings and ROW costs. Can the semi-depressed bike lane be placed at sidewalk grade with texturing and Colored Concrete, or use the existing pavers to outline the bike facilities? Would this change accommodate the 1 foot adjustment request? This is a West Bound only bus corridor, but desired parameters are preferred vs. minimums. Ponding may occur within the semi-depressed East West lanes.	IM	3	See response to comment #70 and #77 Collected survey will include topo to account for proper drainage design. A design variance has been included in this submittal for lane widths below the preferred minimum for a transit lane.	
81.	13-002	Field Measurement = 41 feet. Layout shows 42.5 feet. The loading zone would not allow for single axle trucks to load and unload. Box truck width = 8 feet. Adjust accordingly while meeting NACTO minimums. Existing Loading Zone along Peachtree Place, just east of Peachtree Street. Existing Bus Stop just west of Cypress Street	IM	1	Phase II will include the collection of survey information to verify roadway width. Any resulting design changes will be included in design plans. Reduction in the buffer to accommodate a wider loading zone would have a negative impact to the	

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					door zone between the parked vehicle and the bicycle traffic; this would require an additional design variance for bicycle lane design.	
82.	13-003	Field measurement for location = 40 feet. With a 9 foot bus stop lane the bus mirror will be in the travel lane by 0.5 feet. Based on the field measurement the width can be adjusted to accommodate the bus width.	IM	3	Note – A Design Variance for lane widths was included in this submittal. Dashed yellow lines have been provided through this area to permit passing on the low volume roadway to account for constrained conditions.	
83.	13-003	Field measurement for location = 48 feet. Check with Mike to confirm. Dimensions show 48 feet and the layout meets NACTO minimums.	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width. Any resulting design changes will be included in future phases.	
84.	13-004	The traffic report does not show this location for turning movements. Possible stop bar or radius adjustment to accommodate buses. Can be reviewed during design. Eastbound Peachtree Place at Crescent Avenue	IM	1	With respect to Eastbound Peachtree Place at Crescent Avenue, there is not an eastbound bus route. Refer to the Final Concept Report, Page 4, showing the identified bus routes and directionality. The proposed layout of Crescent Ave is presented by the development team for the Stratus building and has been incorporated into the plans shown for Peachtree Place; comments on Crescent Ave should be directed to The Stratus design team.	
85.	13-004	Possible catch basin needed to remove ponding from newly installed raised crossing? (Crescent Avenue)	IM	3	The proposed layout of Crescent was presented by the development team for the Stratus building; comments on Crescent Ave should be directed to The Stratus design team.	
86.	13-004	NACTO minimum is 21 feet desired curb to curb, but City Fire has requested 22-foot width from curb to curb on other projects. Adjust width accordingly even though this is a two-lane one-way. (Crescent Avenue)	IM	3	The proposed layout of Crescent was presented by the development team for the Stratus building. Confusion regarding which NACTO publication cites 21'? NACTO guidance usually isn't prescriptive but instead encourages context-sensitive design. Note that the international fire code requires a minimum unobstructed width of 20' on public streets.	
87.	13-004	Transition should be adjusted to accommodate a full lane width earlier. (Eastbound left turn lane along 10th Street – East of Crescent Avenue	IM	1	See response to Comment #34	
88.	13-005	Field Measurement = 59 feet. Layout shows 60 feet. It is recommended that another foot from the buffer be used to accommodate an 11-foot center/turn lane making the	IM	1	Note – Survey will be collected at 60% and design will reflect true conditions. Buffer width can be adjusted to provide additional lane widths where necessary.	

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		buffer a total of 4 feet to Juniper. Adjust accordingly while meeting NACTO minimums. (Measurement across 10th Street, just east of Peachtree Street)				
89.	13-006	Field Measurement = 44 feet. Layout meets NACTO minimums. (Measurement across 10th Street, just east of Juniper Street)	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width.	
90.	13-006	Field Measurement = 44 feet. Layout meets NACTO minimums. (Measurement across 10th Street, just west of Caribou Coffee)	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width.	
91.	13-007	Field Measurement = 47 feet. Layout meets NACTO minimums. (Measurement across 10th Street, just west of Piedmont Avenue)	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width.	
92.	13-007	Field Measurement = 44 feet. Layout meets NACTO minimums. (Measurement across 10th Street, just east of Piedmont Avenue)	IM	1	Noted - Phase II will include the collection of survey information to verify roadway width.	
93.	Appendix 2	Adjust typical sections to reflect plan view changes noted in comments.	IM	3	Typical Sections reflect the current concept at 30%. Survey will be collected at 60%; design and typical sections will be updated accordingly.	
94.	Pg 29	These percentages are low for today's market Preliminary Opinion of Probable Construction Cost	IM	1	ATLDOT to provide current market conditions they would like to be used in the OPCC.	

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