

To: Broadway Citizens Task Force
 From: Broadway Project Team
 Date: August 4, 2014
 RE: August 7, 2014 CTF Meeting Materials for Items 3, 5, and 8.
Viable Transit Options for Broadway

As requested by the CTF at the July 17, 2014 meeting, the planning team has continued discussions with TDOT, PAG, and Sun Tran staff regarding viable transit types and improvements for Broadway. This memorandum reports on the current status of these discussions that can be taken into consideration in the CTF discussions regarding street design and alignment variations.

There are three timeframes for thinking about viability of transit for the Broadway Boulevard project:

- **Long Term Potential Transit Scenarios** – what are the “ultimate” configurations and types of transit that should be considered in the design of the current project?
- **“Opening Day” Transit Scenario** – what type(s) of transit service and facilities are viable for including and accommodating in the current design for Broadway between Euclid and Country Club and what will be in-place when these street improvements are constructed?
- **Interim Transit Scenarios** – what are the possible and viable incremental steps in moving from the opening day to the long term scenarios, such as additional planning efforts, design studies, incremental transit service and infrastructure improvements, etc. that will help achieve the ultimate transit scenario?

Long-term Potential Transit Scenarios

A key goal is to provide a street right-of-way that can best accommodate the ultimate long-term transit system for Broadway. It is not feasible to decide within the timeframe of the current Broadway Project which range of transit system types and mixture of service will ultimately provide service on the full length of Broadway from downtown to the east side. Therefore the design for this 2-mile segment of Broadway needs to be designed to provide adequate right of way for the range of potential future transit service. Options that could prove viable in the future include:

Scenario	Limited Stop Service	Local Service
A	Light rail in center dedicated right of way	Bus or possibly streetcar (for all or a portion of Broadway) in mixed flow outside curb lane
B	BRT or streetcar mainly in center dedicated right of way, may need to be at outside curb in constrained locations	

Stops would most likely be located at Euclid Avenue, Campbell Avenue, and Country Club Road. Constraints to potential right of way space at Country Club could require a short single-track segment or use of outside curb lanes for limited stop service in the area of that intersection.

Base Street Section Studies

At this point the planning team has prepared base street section concepts that can accommodate any of these service scenarios within a 118 foot cross section, see Figures 1, 2, and 3. Further review of these sections is moving forward to verify the base standard cross section width. In addition, studies of center and side stations and local stops are also being prepared, some are included later in this memorandum.

BROADWAY BOULEVARD: EUCLID TO COUNTRY CLUB
August 7, 2014 CTF Meeting Materials for Item Items 3, 5, and 8.
Viable Transit Options for Broadway

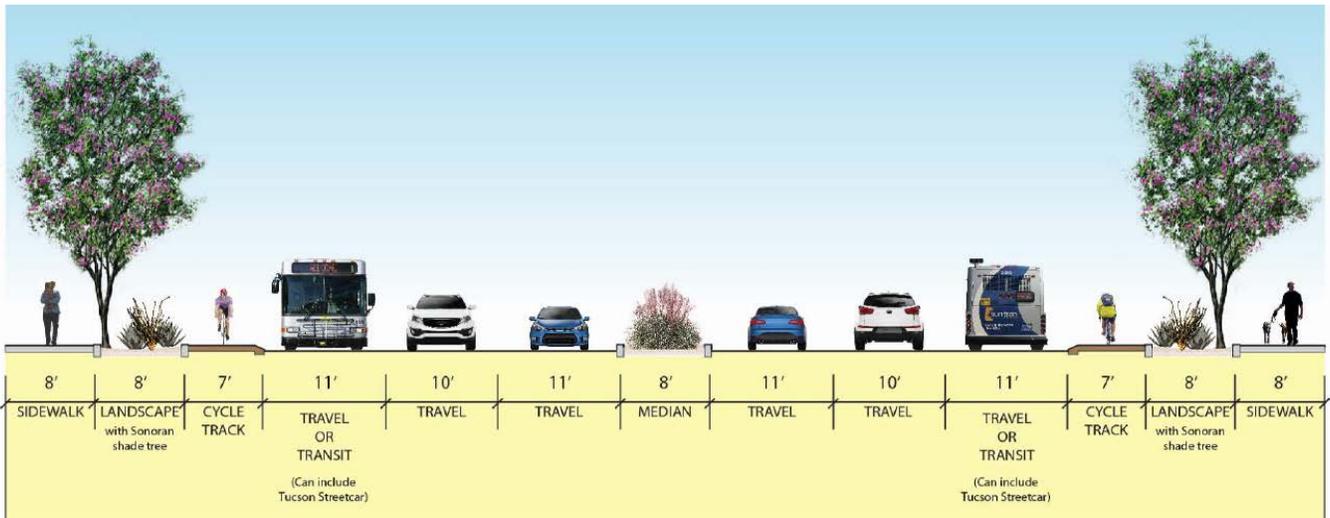


Figure 1: Prototypical 118 foot wide cross section with side running limited stop and local buses

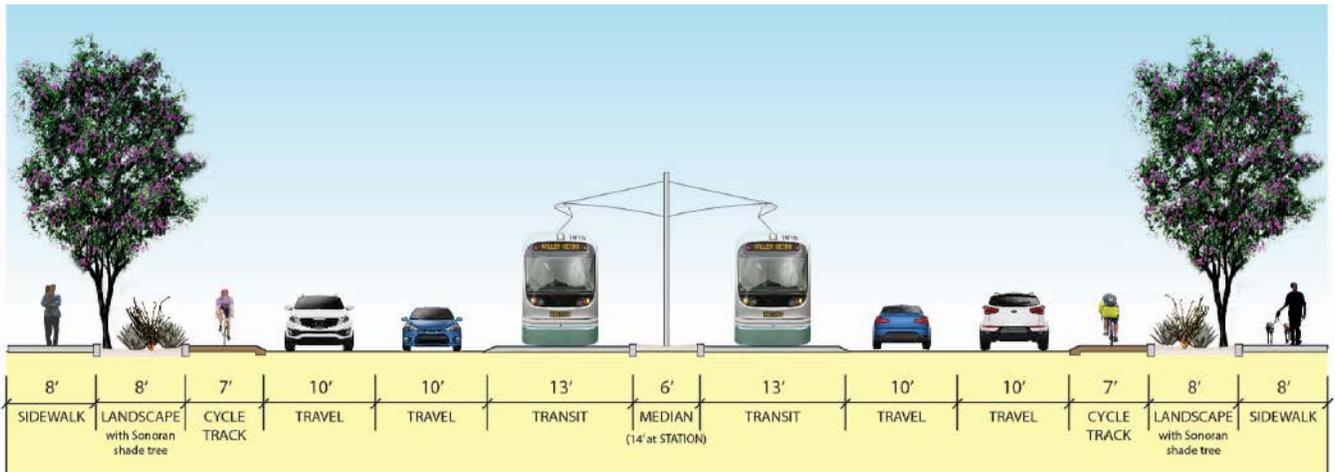


Figure 2: Prototypical 118 foot wide cross section with center running light rail and local buses or streetcars at the curb

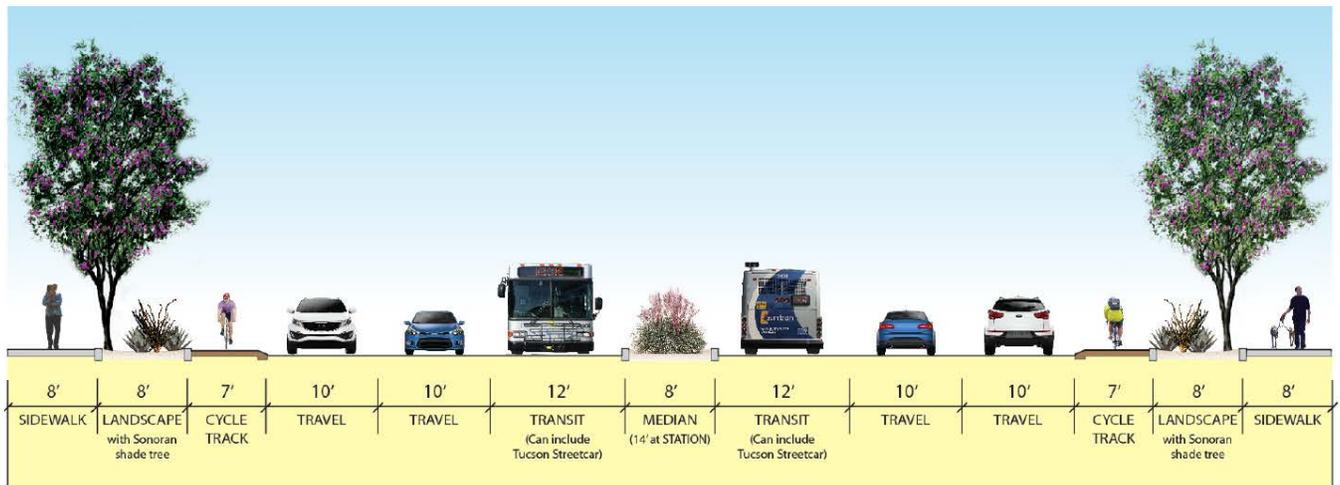


Figure 3: Prototypical 118 foot wide cross section with center running limited stop buses or streetcars and local buses or streetcars at the curb

BROADWAY BOULEVARD: EUCLID TO COUNTRY CLUB

August 7, 2014 CTF Meeting Materials for Item Items 3, 5, and 8.

Viable Transit Options for Broadway

“Opening Day” Transit Scenario

There is a range of transit improvements that are being considered for inclusion in this project or that could be put in place through other parallel efforts at the time that the street improvements for the Broadway Boulevard Euclid to Country Club project are built and operational. Improvements that are being considered include:

Potential Improvement	Affects Right of Way Width
Center transit platforms at key intersections (likely at Campbell and Euclid, difficult at Country Club given right of way constraints)	Yes
Far side transit stops	Yes
Fare payment before boarding	No
Level boarding	Possibly depending on stop design and design of buses
No bus pull outs	Possibly, although flexibility for future service changes may require right of way space
Bicycle “bypass” between transit platform and sidewalk, (see Appendix A)	Yes
Queue jump at most congested intersections	Likely
Transit priority at signals	No
Dedicated transit or high-occupancy lanes during non-commute times	Possibly
Limited-stop service throughout the day (could require some bus stops to be longer to accommodate “overlapping” of limited-stop and local service	Possibly
Park-N-Ride lot locations	Possibly
Relocate underground major utilities	Possibly

Interim Phase Transit Scenario(s)

There is recognition that additional planning, design, transit operations, and investment will be needed to move from the opening day transit scenario to the long-term or ultimate transit scenario. A range of incremental policy, program, operations, and physical improvements could be implemented in interim phases, possibly including:

BROADWAY BOULEVARD: EUCLID TO COUNTRY CLUB

August 7, 2014 CTF Meeting Materials for Item Items 3, 5, and 8.

Viable Transit Options for Broadway

Planning

- Full Broadway transit corridor study

Policies

- Elements listed in the “opening day” scenario that are not feasible for opening day
- Definition of ridership thresholds needed to support next steps in interim improvements
- Transit oriented development (TOD) policies
 - Adoption of TOD zoning overlay
 - Requiring TOD Planned Area Developments (PADs) for larger remnant properties. A PAD allows a property to write their own City Code for their property. In the Broadway project area, Broadway Village is an example of a PAD.

Funding

- Funding decisions and commitments from local jurisdictions
- Supplementary funding sought – through local funding sources (possibly reauthorization of the Regional Transportation Authority Plan 2) or other funding programs (Federal New Starts Program)

Programs

- Elements listed in the “opening day” scenario that are not feasible for opening day

Operational Improvements

- Elements listed in the “opening day” scenario that are not feasible for opening day
- Branding of Rapid bus service
- Implementation of BRT (side running or center running?)

Physical Improvements

- Elements listed in the “opening day” scenario that are not feasible for opening day
- Branding of Rapid bus service
- Implementation of BRT (side running or center running?)
- Park-N-Ride lots

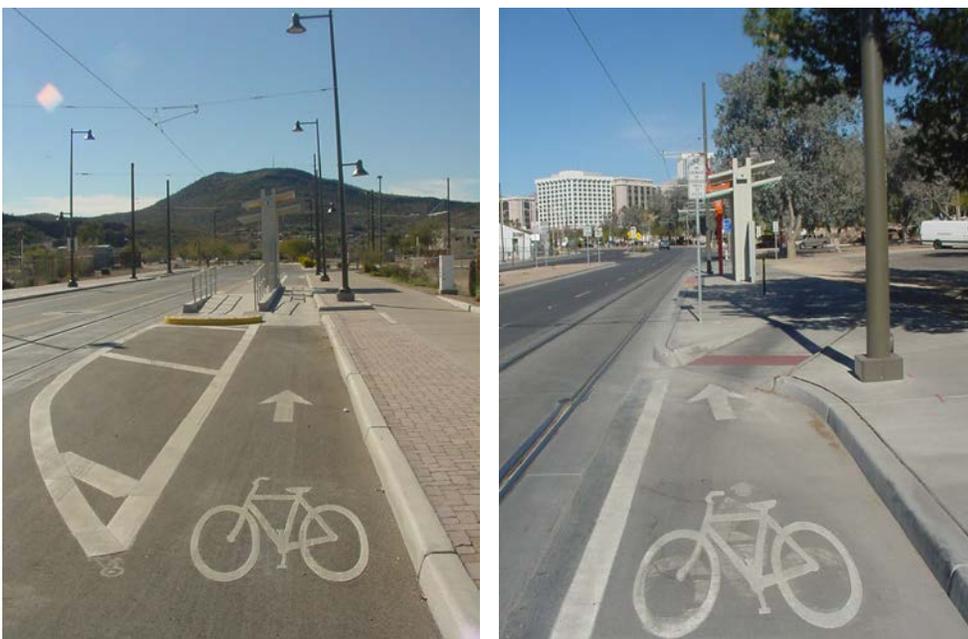
APPENDIX A: Bicycle “Bypass” between Transit Platform and Sidewalk

Bicycle and bus transit travel times are often quite similar, around 12 to 15 miles per hour, and this can lead to “leap-frogging” between bicyclists and buses, as buses stop along streets such as Broadway Boulevard. As a bus stops, a cyclist passes, as the bus travels to its next stop it passes the cyclist, and then the process repeats itself. This can create travel time and safety issues between buses and bicyclists as they repeatedly pass each other as they travel along the street.

A design solution that several communities around the United States have been implementing, see Figures 4 and 5, is to provide a bicycle lane or cycle track to pass between a bus. Tucson has implemented a similar treatment at some of the new streetcar stops, Figure 6 shows a bypass at street level and Figure 7 shows a bypass that ramps up to sidewalk level.

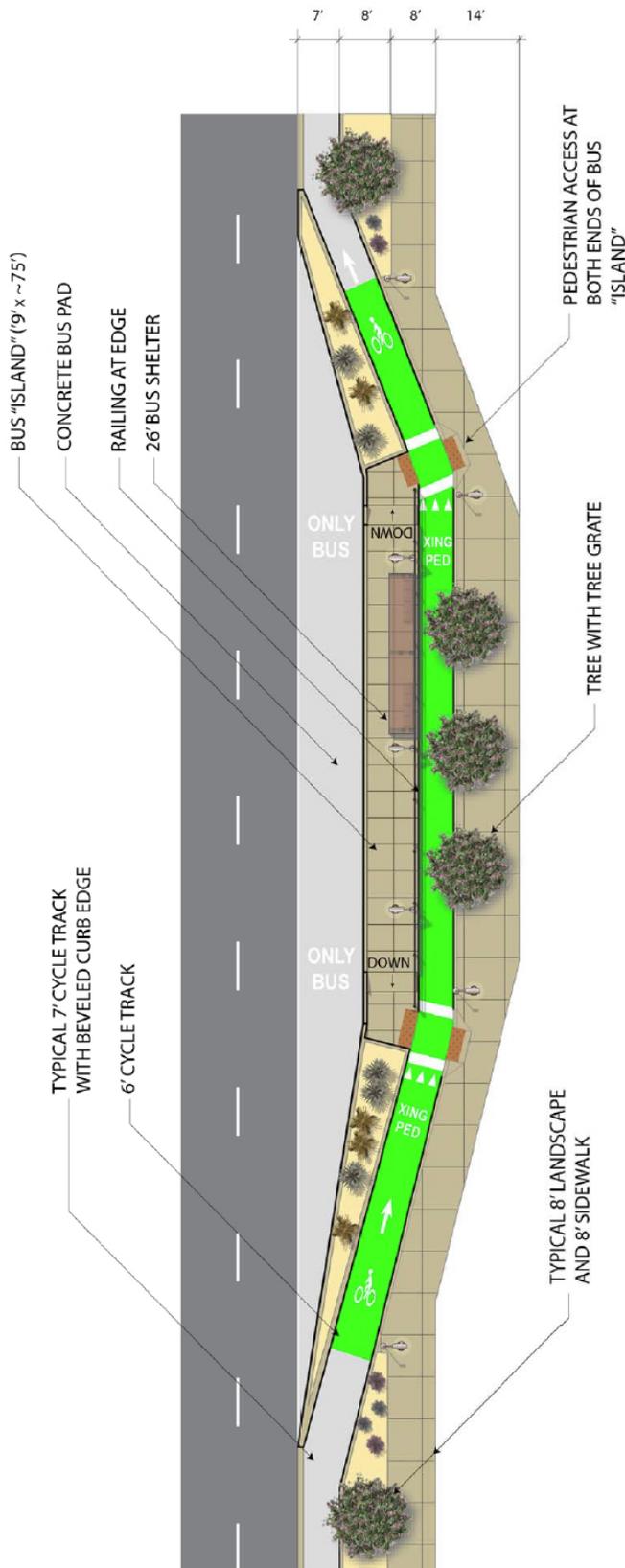


Figures 4 and 5: Bicycle “Bypasses” in Seattle, Washington (Source: NACTO)



Figures 6 and 7: Bicycle “Bypasses” of streetcar stops in Tucson

BROADWAY BOULEVARD: EUCLID TO COUNTRY CLUB
August 7, 2014 CTF Meeting Materials for Item Items 3, 5, and 8.
Viable Transit Options for Broadway



Two initial design studies have been prepared to illustrate how a cycle track bypass could be integrated into the design for Broadway. Figure 8 illustrates a cycle track bypass at a bus pull out. Crossings to the bus “platform” are provided at each end of the bus platform. The bus platform has enough depth to allow for ADA access as well as a Sun Tran bus shelter. Enough sidewalk width is provided in the area behind the bus platform to allow for trees to be planted and for good ADA access along the sidewalk. This design concept results in about a 14 foot widening of the right of way in proximity of the bus stop where a bus pull out without a cycle track by pass would expand the right of way about 6 to 8 feet.

A second study, Figure 9, illustrates a cycle track bypass where a bus stop is provided without a pull out. This is similar to the design with a pull out. But the length of the cycle track bypass is shorter and the widening of the right of way in proximity of the stop is about 4 feet.

These concepts have had an initial review by TDOT and Sun Tran staff, and would need further review and refinement if they are included in the ultimate design of the Broadway project. There is general support for the concept given the safety benefits for cyclists and buses, as well as the travel time benefits to buses. Issues to address include, relationship to access drives to adjacent properties and relationship to intersection design.

Figure 8: Cycle Track Bypass at Bus Pull Out

BROADWAY BOULEVARD: EUCLID TO COUNTRY CLUB
August 7, 2014 CTF Meeting Materials for Item Items 3, 5, and 8.
Viable Transit Options for Broadway

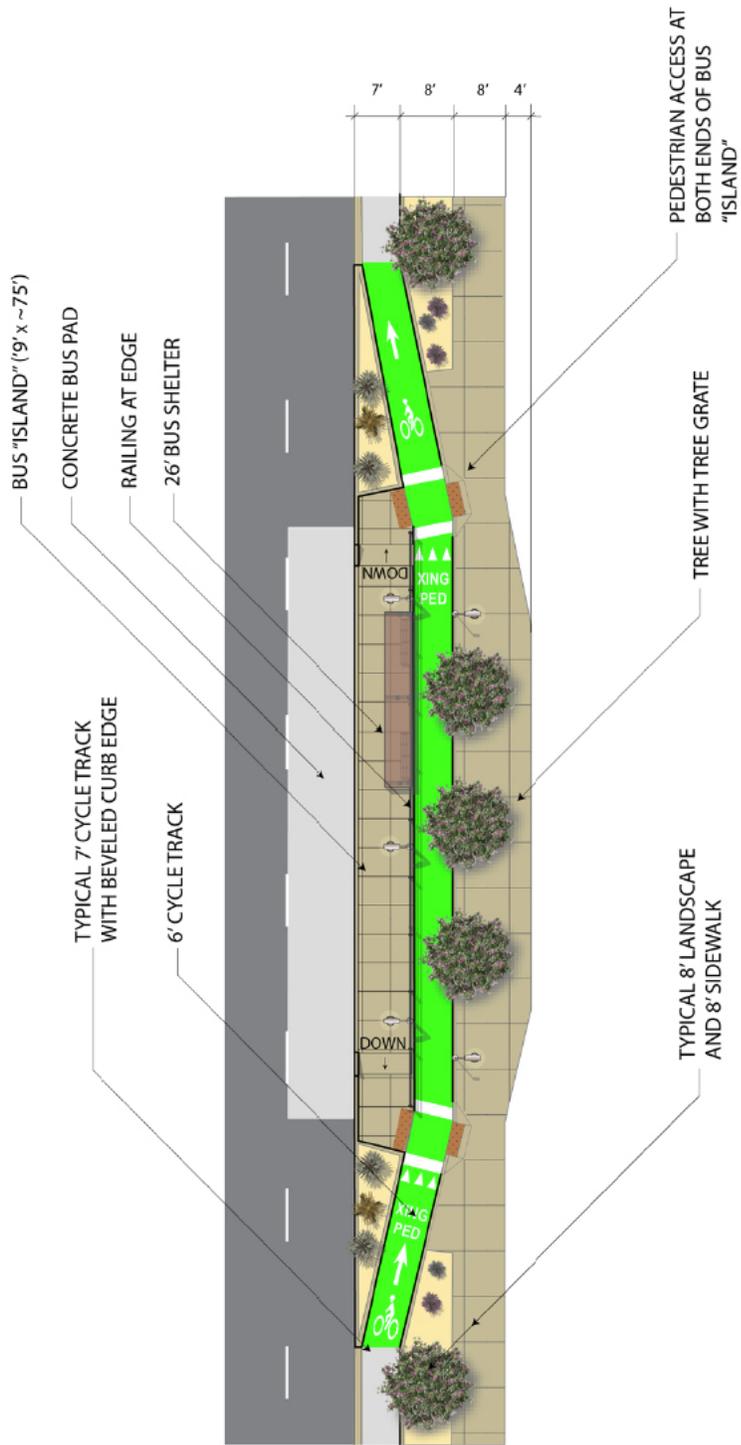


Figure 9: Cycle Track Bypass at Bus Stop with No Pull Out