



# Broadway Boulevard: Euclid to Country Club Improvement Project

## Technical Advisory Committee Review of Draft Staff Recommended 6 Lanes with Transit Refined Alignment

March 13, 2015

### Introduction

During the week of February 2, 2015, the Broadway Project Team met with members of the Broadway Project Technical Advisory Committee (TAC) several times to review the draft Staff Recommended 6 Lanes with Transit Refined Alignment. These meetings covered a broad range of design, performance, safety, and implementation topics. Several topics that were discussed came to a resolution that further refined the design of the alignment and elements within the design. Other topics were not fully resolved and will need further assessment and conversation to reach resolution in later stages of design.

Please note that the purpose of these meetings was to develop an alignment plan to present to the Mayor and Council for approval as a starting point from which to base the final design. The responses presented here are largely made in that context—therefore some of the comments may result in further alterations and refinements during the design. The design team will continue to work with TAC members during the design process to resolve these remaining details and concerns.

This report summarizes those discussions providing a record of TAC comments and the resolution of suggested revisions to the design for Broadway. The appendix provides a table with the individual comments given by the TAC during the meetings.

*NOTE: This is a technical report and technical language is used throughout the document. If you need clarifications to any of the language presented in this report please email us [broadway@tucsonaz.gov](mailto:broadway@tucsonaz.gov) or call 520-622-0815.*

*This project is funded by the City of Tucson, Pima County and the Regional Transportation Authority (RTA), and is part of the voter-approved, \$2.1 billion RTA plan that will be implemented through 2026. Details about the plan are available at [www.RTAmobility.com](http://www.RTAmobility.com).*

## Attendees

The TAC is comprised of professionals with specific expertise and experience pertaining to various aspects of the project and how they might affect the particular departments and other entities they represent. Individuals were present representing the City of Tucson; the Regional Transportation Authority and Pima Association of Governments; TUSD; University of Arizona (UA) Parking and Transportation Services; UA Planning, Design and Construction; UA College of Architecture, Planning, and Landscape Architecture, in the fields of engineering, planning and design, public safety, transit, and alternative travel modes. Members of the Broadway Project Team also attended these meetings and participated in the discussions.

## TAC Comments

The following provides summaries of the comments and discussion with the TAC. These are divided into a range of topic areas organized into two groupings which are ordered alphabetically with page numbers noted in parentheses:

### **General Topic Areas**

- Access Management (3)
- Americans with Disabilities Act (4)
- Alley Use (4)
- Bus Stop Design (5)
- Bus Stop Location (6)
- Channelized Right Turn Design (6)
- Cycle Track Design (7)
- Green Streets (9)
- HAWK Design (9)
- HAWK Location (10)
- Intersection Design (10)
- Landscape Design (11)
- Lane Widths (14)
- Local Access Lane Design (15)
- Parking Impact (15)
- Pedestrian Crossings (16)
- Pedestrian Design at Intersection (17)
- Pedestrian Realm Design (17)
- Property Impacts and Acquisition (20)
- Roadway Design within Curbs (21)
- Refuse Access (22)
- Sidewalk Design (23)
- Signal Design (23)
- Transit Design (24)
- University of Arizona (UA) Linkages (24)

### ***Specific Locations***

- Chase Bank (25)
- Cherry Avenue Intersection Design (26)
- Country Club Road Intersection Design (26)
- Euclid Avenue Intersection Design (27)
- Euclid Avenue Intersections: 2-way Cycle Track Connection (27)
- Fire Station Location (28)
- Norris Avenue Intersection (28)
- Park Avenue Intersection (29)
- Treat Avenue Intersection (29)
- Vine Avenue Intersection (30)
- Warren Avenue Intersection (30)

## ***General Topic Areas***

### **Access Management**

#### ***Summary of Comments***

Comment Numbers: 28 and 71

Several suggestions were made to add access drives to properties. Additionally, there were concerns expressed regarding degrading the access management goals of the project. This could be a particular issue where existing strips of commercial retail buildings are much too narrow for each property to have direct access from Broadway and providing access to one while not another may appear to be arbitrary. There were also concerns expressed about safety of some driveways that are included in the plan, such as the access to the Chase Bank just to the west of the Country Club Road Intersection.

#### ***Responses***

This is one of the reasons that local access lanes had been proposed in some locations. Absent local access lanes, a clear policy for when access can be provided from Broadway and when it cannot be provided needs to be developed.

#### ***Resolution***

To be determined through further discussions with TDOT. **Results in no changes to street design or alignment at this time.**

## Americans with Disabilities Act (ADA)

### **Summary of Comments**

Comment Number: 32

36" sidewalks are only allowed by ADA where constraints like utility poles are present; 48" wide sidewalks are allowed by ADA, but there is a need to install a 5' turning pad every 200 feet at a minimum. - 5' should be the absolute minimum; 6' minimum is currently the city's policy on arterials, but additional width is often needed to accommodate utilities, light poles, etc.

### **Responses**

Staff agree with these comments; the universal design goal of the project is to exceed ADA standards when feasible and appropriate. Wider sidewalks also improve the walking and commercial environments (see memorandum regarding pedestrian realm design and benefits).

### **Resolution**

Maintain 8' wide sidewalk design concept as feasible; see also resolution of Pedestrian Realm Design and Sidewalk Design topic areas, below. **Results in no changes to street design or alignment.**

## Alley Use

### **Summary of Comments**

Comment Numbers: 11, 16, 17, and 72

There are locations where allowing more flexibility for the use of alleys for non-residential parking, refuse collection, and loading would help mitigate the loss of access from Broadway; for example, if residential use is on the other side of an existing alley non-residential use is currently not allowed. Some expressed support of the commercial use of alleys.

Some expressed the desire/need to maintain access to existing alleys for refuse collection.

### **Responses**

Alley access for commercial uses would provide more flexibility in terms of maintaining access and viable use of properties. Sufficient width would need to exist or be achieved for single or two-directional access as well as provide for utilities.

### **Resolution**

This is a code change that is beyond the technical scope of the Broadway Boulevard project. A change to city standards would need to be pursued through other means. This could be coordinated with OIP and PDS. **Results in no changes to street design or alignment.**

## **Bus Stop Design**

### **Summary of Comments**

Comment Numbers: 1, 42, 44, 46, and 47

**Comment Type 1:** Do we need to have bus pullouts if we are going to 4+2? (2 comments stating same question).

If a cyclist does not want to use the bike bypass around the bus stop, consider treatment to allow them to continue through in the lane.

A civil lawsuit could be pursued if someone challenges the design of the bus stop/pullout and bike design - this is good to consider in the design.

### **Responses**

VISSIM modeling of projected future traffic has indicated that bus pull outs are not necessary to improve traffic flow during the peak hours compared to today. RTA and TDOT have expressed the desire to provide pull outs at signalized intersections whenever feasible both for near term improvement of traffic flow and to avoid additional acquisition for pull outs at some point in the future. Bus pullouts are no longer being proposed at Highland and Tucson Boulevard out of concern for transit and safety operations.

### **Resolution**

Resolution: Design will provide bus pull outs at bus stops adjacent to signalized intersections wherever feasible from a property impact and cost perspective. **Results in no changes to street design or alignment directly, but some bus stop configurations are being revised to address other comments.**

**Comment Type 2:** People collect behind shelters during times of the year to be in the shade; this should be considered in the design of the pullouts and bike bypasses.

### **Response and Resolution**

Current design proposes planting trees in grates within the sidewalk area adjacent to the cycle track to provide opportunities for shade in proximity to the bus stop platforms. Bus

shelter types may address this, too. **Results in no changes to street design or alignment.**

**Comment Type 3:** Concerns were expressed that bus bypasses will not be used by commuters and other more experienced cyclists will chose to stay in the lane rather than going around the back of the bus stop in order to avoid the slower indirect pathway and the pedestrian crossings. There was a concern that civil lawsuits could be pursued if someone challenges the design of the bicycle bypasses. The idea of widening the lane next to the bus stops was mentioned to provide some space for cyclists to continue through without using the bypass. Other cities utilizing the bike bypass at bus stops may have guidance on design features to enhance safety.

### **Responses**

The Broadway Project Team is reaching out to staff at several cities around the country and in Canada that have installed bicycle bypasses to document their experiences and design details.

### **Resolution**

To be determined, the current design may be further refined in the future based on the research discussed above and further discussions with the TAC and TDOT. **Results in no changes to street design or alignment at this time.**

## **Bus Stop Location**

### **Summary of Comments**

Comment Number: 6

See also, specific location discussion for Euclid Intersection Design, below.

### **Responses**

See Response and Resolution discussion for Euclid Intersection Design, below.

## **Channelized Right Turn Design**

### **Summary of Comments**

Comment Number: 20

Is this a mountable apron or just painted? (typical) [Comment made at channelized right turn at northeast corner with Campbell, but is applicable to all channelized rights].

### **Responses**

Making this area a raised area that can be used by larger vehicles would be a benefit if feasible from a drainage and cost perspective.

### **Resolution**

Design and alignment plan will be revised to make these areas a mountable apron.  
Results in change to design drawings which do not affect street alignment.

## **Cycle Track Design**

### **Summary of Comments**

Comment Numbers: 9, 10, 13, 19, 24, 38, 39, 40, 41, 42, 43, 44, 45, and 48

**General Support for Cycle Track Design Concept:** In general there were many comments supporting the concept of the semi-raised cycle track included in the street design, because of the benefits to cyclists from the additional separation from traffic; the reduction in vehicle-bicycle conflicts improving cyclist safety, and how this should encourage a broader range of cyclists to travel along Broadway to local and more distant destinations. There were some concerns expressed:

**General Cycle Track Comments:** TDOT's Pedestrian and Bicycle Coordinator stated that the ideal cyclist facility would be a 6' lane with a 2' buffer but that the proposed semi-raised cycle track was okay. She also suggested that the cycle track could be protected by a curbed landscape buffer or raised to sidewalk height in areas where there are stretches of no driveways. Related to this there was also a concern that future design and resolution of property acquisitions could lead to more driveway access points along the street which would reduce the length of semi-raised cycle track.

**Bus Stop Cycle Bypass:** The cycle bypass which is included at most of the bus stops led to much discussion. The first concern was that commuter and other more experienced cyclists who are focused on maintaining a higher speed will chose to stay in the lane rather than going around the back of the bus stop in order to avoid the slower indirect pathway and the pedestrian crossings. There was a concern that civil lawsuits could be pursued if someone challenges the design of the bicycle bypasses. The idea of widening the lane next to the bus stops was mentioned to provide some space for cyclists to continue through without using the bypass. Other legal issues raised included that bicyclists must operate under the same laws as vehicles, and that it is a civil infraction if a cyclist does not use a bike lane when one is provided. Other cities utilizing the bike bypass at bus stops may have guidance on design features to enhance safety.

Concerns were also expressed about the design of how cyclists enter and exit the bypass. It was suggested that the design be reviewed to maximize the extent to which bicycle

lanes keep to a straight and expected path thru areas where vehicles may shift over to make a right turn and then deflect bicyclists towards the bus bypass in order to avoid collisions with right turning vehicles (right hooks). Specific locations commented on were at east bound travel into the Highland Avenue intersection, to the east of Tucson Boulevard in the east bound cycle track, and at the southwest corner of the Park Avenue intersection. Similarly, there were concerns expressed about points where the bicycle bypass comes back into the cycle track location along the curb when this area is in close proximity to an intersecting street or a driveway. Specific locations mentioned are west bound at Martin Avenue where vehicles will be turning to access the Starbucks at the northwest corner of Campbell Avenue and Broadway. The concern in these areas is that buses stopped at the stop may make it more difficult for right turning motorists to see bicyclists traveling along the bypass and cycle track. The use of signs, green paint, and other markings was also encouraged.

**Drainage:** Concerns were expressed about how the semi-raised cycle track could make storm drainage a challenge while trying to minimize the width of the street as much as feasible.

### **Responses**

The Broadway Project Team agrees that a 6' lane with a 2' buffer would be a more ideal design solution given the extent and speed of vehicular and bus traffic that is expected along Broadway. But given the need to minimize the width of the future street and other design elements and goals of the project, the 7' semi-raised cycle track makes sense in balancing various needs and desires for the future street alignment. That said; there are a number of design refinements that can be made to improve the design.

### **Resolution**

The design of the cycle track will continue to be refined as the project moves into more detailed design.

The Broadway Project Team, in coordination with TDOT's Pedestrian and Bicycle Coordinator, will be reaching out to staff in cities around the county that have designed, built, and are operating similar bicycle facilities, including bus stop bypasses in order to enhance the understanding of best practices and use this information to refined the project design.

The cycle bypasses will be reviewed further and refined to improve visibility and predictability between cyclists and right turning drivers.

Drainage solutions for the cycle tracks will be determined in later phases of the design; these are not expected to affect alignment or impacts to adjacent properties.

Additional width in the travel lane next to bus pull outs or within the pull out area will be added at bicycle bypasses. Results in no other changes to street design or alignment at this time.

## Green Streets

### **Summary of Comments**

Comment Number: 35

City will follow Green Streets policy regarding water harvesting.

### **Responses**

Agreed though the specific volume of retention goals called for may be difficult to achieve given the narrowness of the landscape areas.

### **Resolution**

Potential for Green Streets infrastructure as part of the drainage and landscape design for the project will be defined further as the design is developed further, following approval of the street alignment. **Implementing the city's Green Street results in no changes to street design at this time and final resolution is not expected to affect alignment.**

## HAWK Design

### **Summary of Comments**

Comment Numbers: 8, 26, and 81

Where intersecting streets at HAWK signals are part of the existing and planned bicycle network, these should be Bike HAWK designs with elements that better serve cyclists. These HAWKs include those at Park Avenue and Treat Avenue.

Are there any HAWKs in the west mile that would be suitable for a TOUCAN treatment rather than a HAWK to better support bicycle access to UA campus.

### **Responses**

Agreed, regarding keeping HAWK signals and making Park and Treat Bike HAWKs.

It is possible that TOUCANs could be appropriate at some of the intersections that are currently designed as HAWKs.

### **Resolution**

Park Avenue and Treat Avenue, as well as any other appropriate HAWK signals, will be designed as Bike HAWKs as the design is developed further, following approval of the street alignment. Labels/symbols will be added to the alignment plan to clarify which intersections have various types of signal controls. **Results in no changes to street design at this time, and final resolution should not affect alignment.**

TDOT will assess the appropriateness of Bike HAWKs versus TOUCANs at crossings in the project area. **If any TOUCANs are appropriate revisions to the design will be explored in the next phase of the project.**

## **HAWK Location**

### **Summary of Comments**

Comment Numbers: 7, 8, and 21

Clarification questions were asked as to which intersections will have HAWK signals in the future design [note: the drawings presented at the TAC meetings did not make this clear]. Specific intersections where this question was raised were Park and Norris, and including the ability of the Norris signal to function for fire trucks accessing Broadway from the fire station to the north on Norris.

### **Responses**

Agreed, design drawings were not clear in this regard.

### **Resolution**

Labels/symbols will be added to the alignment plan to clarify which intersections have various types of signal controls. **Results in no changes to street design or alignment.**

## **Intersection Design**

### **Summary of Comments**

Comment Numbers: 13, 54, and 56

There were a few comments regarding vehicle use of intersections in the design and alignment concept, with the exception of the left turn design from Broadway to Euclid. See site specific discussion regarding this intersection below.

There were a number of comments regarding the design of intersections in relation to bicycles and these are discussed elsewhere, see Cycle Track Design topic area and discussion regarding the Euclid intersection.

Additionally, there was some discussion regarding pedestrian crossing behavior, legality of crossings, and the location and design of pedestrian crossings in the design and alignment concept. The Tucson Police Department representative pointed out that it is likely legal for pedestrians to cross Broadway at any location given that the levels of commercial activity along the street do not meet the state legal requirements for making crossings at non-intersection locations illegal. Similarly, it was pointed out that legal crossings exist at locations where public streets intersect and align on the north and south sides of Broadway even when the center median along Broadway extends through the intersection, Warren Avenue for example. It was pointed out that in these cases a pedestrian pathway passing through the median might be appropriate. Moreover, there was a discussion about the need to review pedestrian crossings in proximity to bus stops to ensure convenient pedestrian access across the street, both in immediate proximity to the stops and within a 1/4 mile radius of the stops.

### **Responses**

Responses and resolutions related to particular locations and the cycle track design are included in those topic area discussions in this document.

There was some questioning as to the legality of pedestrians crossing Broadway at any location in the study area, but this does not necessarily affect the design of the future improvements.

The issue of legal crossings where the center median extends through an intersection needs further review and discussion.

The Broadway Project Team agrees with the comment regarding pedestrian crossings in proximity to bus stops.

### **Resolution**

The Broadway Project Team and TDOT staff will discuss the issue of legal crossings at intersections where the center median extends through and determine if design refinements are needed. This would not affect the alignment of the street.

The provision and design of pedestrian crossings in proximity to bus stops will be reviewed and refined, if needed. **This would not affect the alignment of the street, and results in no design changes at this time.**

## **Landscape Design**

### **Summary of Comments**

Comment Numbers: 2, 30, 31, 33, 34, 35, 36, 37, 39, 62, 64, 65, and 70

This topic area discusses only issues related to landscape design and maintenance related issues. See the Pedestrian Realm Design topic area below regarding the transportation purpose of the landscape design in the buffer area between the sidewalk and traffic lanes as well as the Green Streets topic area regarding implementation of city's Green Streets policy.

For maintenance purposes, the TDOT Landscape Architect has set a minimum landscape space, including curb, that will allow for planting of shrubs and other lower height plantings is 7' for a median with traffic lanes on both sides and 4' for the buffer between the sidewalk and either a traffic or bicycle lane (or cycle track). An opinion was expressed that at least some landscape within a 4' width buffer is appropriate along Broadway, given levels of traffic and the 35 mph design speed for the street. Some felt that the 8' landscape width seems suburban in character (with the implication being that this is out of context for this part of Broadway).

**Relationship of Landscape Design to Property Acquisition:** Some felt the landscape area could be minimized or eliminated to avoid impacts to buildings for short lengths of the street; there was no agreement as to what a "short length" is, possibly one or a few parcel widths. It was pointed out that narrowing landscape to avoid a right of way impact to a building does not mean the building would not be demolished prior to or after any excess properties are sold by the City/RTA for private use. See Property Impacts and Acquisition topic area below.

There was a discussion that it might be possible to widen areas of landscape that had been narrowed to avoid full acquisitions if during right of way acquisition negotiations there are unanticipated full property acquisitions. See the Property Impacts and Acquisition topic area below for further discussion of the inability to implement this approach.

It was also stated that changes to the street design may occur during negotiations with property owners to facilitate a business remaining in the corridor. At this point, economic vitality and project budget become priorities. This is also discussed further in the Pedestrian Realm Design topic area below.

**Potential Design Strategies for Reducing Width of Landscape Area:** The use of raised planter boxes has been mentioned by CTF members and others with the goal of reducing the width of landscaped areas while still providing adequate buffering between pedestrians and traffic lanes. Raised planters are used in several locations in downtown Tucson, but these are not maintained by the City. It was pointed out that size, placement, and type of planting can create visibility/safety issues between traffic and pedestrians this can be a particular issue for those using wheelchairs. Toole Avenue was cited as an example.

The potential for providing landscape "nodes" instead of landscaping along the length of the street was mentioned, with the idea that this might reduce impacts to adjacent properties. A related aesthetic comment was to consider the visual interest of varying location and style of landscaping included in the design.

The potential for using shade structures rather than trees to provide shade for pedestrians and visual interest along the street was discussed. Concerns were expressed that it may not be feasible to provide shade that is equivalent to trees within a narrower buffer, particularly given that the shade structure should not obscure vision below a height of 8 to 10 feet above the sidewalk to provide visibility to adjacent businesses. Pedestrian safety was also of concern.

### **Responses**

See response and resolution discussion in the Pedestrian Realm Design topic area below in regard to the transportation purpose of the landscape design as proposed in the recommended design and alignment. The amount and length of landscape can be quite flexible from an aesthetic standpoint, but is not as flexible in terms of creating a pedestrian supportive environment along Broadway.

Options for narrowing of landscape areas have been explored throughout the design process to date, and the 4' minimum width for landscaping between the sidewalk and travel lane or bicycle lane is the result of discussions with TDOT's landscape architect. Similarly, the selection of a narrow Sonoran Desert native tree is challenging. Discussions with the TDOT landscape architect resulted in the selection of the Desert Willow (*Chilopsis linearis*) because it is narrow enough at maturity to not extend into the bicycle lane/cycle track or beyond the edge of the right-of-way, as required by the landscape architect - given the total 16' width of the sidewalk and landscape buffer.

While raised planter boxes may serve to improve the aesthetics of the street, it does not appear that they are viable from an on-going maintenance perspective. Landscape "nodes" could serve to improve the aesthetics of the street, but it does not appear that having a landscape width of more than 8' is viable along most of the street with the exception of narrower remnant properties, such as at the northeast corner of Campbell Avenue and Broadway.

The potential use of shade structures in a reduced width area has been received as public input throughout the project. There are questions regarding cost of construction and the extent of on-going maintenance cost as well as the safety and business impacts of shade structures that have not been investigated, as well as the actual vertical and horizontal extent of shade structure necessary to provide shade that is equivalent to street trees.

### **Resolution**

The current recommended street design and alignment has minimized landscape width in most locations with the exception of some areas around the Highland Avenue intersection in order to avoid impacting buildings. **A new design option is being prepared that eliminates landscape areas next to sidewalks in these areas as well as narrowing sidewalks further to see what additional building impacts can be avoided, and if the resulting design is acceptable given other trade offs. These design options can then be assessed and evaluated against the multimodal, aesthetic, community character, and other goals of the project.**

Shade studies to compare the effectiveness of the proposed street trees and a shade structure design concept will be prepared. This will also allow for an assessment of the visual impacts of the shade structure concept on pedestrian safety and business visibility.

Based on results of these studies decisions may be made to revise the design and alignment prior to Mayor and Council action.

## **Lane Widths**

### **Summary of Comments**

Comment Numbers: 52 and 53

Discussions reinforced the proposed recommended design which provides 11' travel lanes, and resulted in agreement that 11' travel lanes are the absolute minimum:

- TFD engines are 10'-8" mirror-to-mirror
- buses are the same size
- garbage trucks and semi-trucks are also similar.

There was a concern expressed that left turn lanes need to be wider for safe turning of fire engines (and similar vehicles).

### **Responses**

The Broadway Project Team agrees, based on public safety concerns, that 11' travel lanes should be established as the minimum design standard and the assessment of the current 10' and 11' travel lanes needs further analysis regarding roadway geometry and turning movements by fire engines and similar vehicles.

### **Resolution**

11' travel lanes will continue to be used as the minimum design standard width for the project. Assessment of fire engines and similar vehicles as left turn lanes will be undertaken...

Two issues are at play regarding left turn lanes: (1) the ability of a 10' left turn lane to accommodate vehicles of this width, and (2) the ability of these vehicles to make the turn within the curbed intersection.

The first will be discussed with TDOT engineering and traffic personnel to determine if it is permissible to assume some encroachment of large left-turning vehicles into the adjacent travel lane. If not, the left turn lanes will be widened as necessary during the next phase of design.

The second will be evaluated using specialized software (AutoTURN) to determine the trace of the vehicle to ensure that the curb lines can accommodate the turn. If not, the median noses may have to be pulled back. A preliminary AutoTURN evaluation has been made from which the current curb geometry has been established. A follow-up evaluation of the revised alignment will be made during the next phase.

## **Local Access Lane Design**

### **Summary of Comments**

Comment Number: 12

We need to verify that local access lane designs accommodate the turning requirements of large vehicles (including fire and refuse trucks) and vehicular access to any driveways accessed from the local access lanes.

### **Responses**

The intent of the local access lane design is to accommodate these vehicle movements.

### **Resolution**

AutoTURN will also be used for the design of access lanes. The design vehicles to be used for that purpose will be determined through discussions with TDOT, the Tucson Fire Department, and the Environmental Services Department.

## **Parking Impacts**

### **Summary of Comments**

Comment Numbers: 67 and 68

The City cannot provide parking to benefit private properties using property acquired for the roadway project. The City can only provide surplus property for public parking that the general public can use. Surplus property can be sold to private property owners interested in using property to create more parking for themselves.

The alignment drawings should reflect the design that best supports the transportation needs and goals. Do not include potential solutions on the drawings now, but rather separate them for future reference when negotiations with property owners occur.

### **Responses**

Local access lanes do serve transportation function. They limit access points to the roadway, improving safety and function for vehicular and bicycle traffic. They can improve pedestrian level of service and they may help reduce or avoid costly acquisitions.

### **Resolution**

Design of specific parking and access solutions will be performed during the property acquisition phase as the goals of affected property owners become known.

## **Pedestrian Crossings**

### **Summary of Comments**

Comment Numbers: 54, 55, 56

There was also some discussion regarding pedestrian crossing behavior, legality of crossings, and the location and design of pedestrian crossings in the design and alignment concept. The Tucson Police Department representative pointed out that it is likely legal for pedestrians to cross Broadway at any location given that the levels of commercial activity along the street do not meet the state legal requirements for making crossings at non-intersection locations illegal. Similarly, it was pointed out that legal crossings exist at locations where public streets intersect and align on the north and south sides of Broadway even when the center median along Broadway extends through the intersection, Warren Avenue for example. It was pointed out that in these cases a pedestrian pathway passing through the median might be appropriate. Also, there was a discussion about the need to review pedestrian crossings in proximity to bus stops to ensure convenient pedestrian access across the street, both in immediate proximity to the stops and within a 1/4 mile radius of the stops.

### **Responses**

There was some questioning as to the legality of pedestrians crossing Broadway at any location in the study area; however, this does not necessarily affect the design of the future improvements.

The issue of legal crossings where the center median extends through an intersection needs further review and discussion.

The Broadway Project Team agrees with the need to review pedestrian crossings in proximity to bus stops to ensure convenient pedestrian access across the street, both in immediate proximity to the stops and within a 1/4 mile radius of the stops.

### **Resolution**

The Broadway Project Team and TDOT staff will discuss the issue of legal crossings at intersections where the center median extends through and determine if design refinements are needed. **Any future design changes are unlikely to affect the alignment of the street.**

The provision and design of pedestrian crossings in proximity to bus stops will be reviewed and refined, if needed. **Any future design changes are unlikely to affect the alignment of the street.**

## **Pedestrian Design at Intersection**

### **Summary of Comments**

Comment Number: 14

There was a concern that the bus bypass for the cycle track may push the sidewalk back away from intersection and in some cases makes pedestrians less visible to turning cars, a specific comment was made regarding south side at Highland Avenue intersection, and is likely applicable to some other locations as well.

### **Responses**

Further refinement of these designs is expected to occur in the next phase of design. The crosswalks in some locations have been adjusted to bring them closer to the right turn lane, while still keeping the access ramps at opposite ends of the crosswalk in line with each other.

### **Resolution**

Visibility of pedestrians at intersections near bus stops and cycle bypasses will be reviewed and refinements will be made as needed in the next phase of design. **Future refinements are not expected to affect the alignment or impacts to adjacent properties.**

## Pedestrian Realm Design

### **Summary of Comments**

Comment Numbers: 2, 29, 30, 31, 32, 33, 34, 36, 39, 62, 64, 65, and 70

This topic area discusses sidewalk and landscape issues related to the ability of the "pedestrian realm" (the combination of sidewalk and landscape buffer provided on both sides of the street) to create an environment that meets the transportation needs of pedestrians who walk along Broadway in terms of safety, shade, and comfort. Issues related to the landscape in the buffer are discussed in the Landscape Design topic area and ADA issues of sidewalk design are covered in the Sidewalk Design topic area.

An opinion was expressed that at least some landscape within a 4' width buffer is appropriate along Broadway given levels of traffic and the 35 mph design speed for the street. Some felt that the 8' landscape width seems suburban in character (with the implication being that this is out of context for this part of Broadway). There was also discussion of what the minimum sidewalk width should be in locations where narrowing can avoid direct right of way impacts to buildings, the 6' City standard was identified. This would mean a 10' width minimum for the pedestrian realm compared to the 16' width that is generally included in the street design and alignment recommendation.

**Relationship of Landscape Design to Property Acquisition:** Some felt the landscape area could be minimized or eliminated to avoid impacts to buildings for short lengths of the street; there was no agreement as to what a "short length" is possibly one or a few parcel widths. It was pointed out that narrowing landscape to avoid a right of way impact to a building does not mean the building would not be demolition prior to or after any excess properties are sold by the City/RTA for private use, see Property Impacts and Acquisition topic area below.

There was a discussion that it might be possible to widen areas of landscape that had been narrowed to avoid full acquisitions if during right of way acquisition negotiations there are unanticipated full property acquisitions. See Property Impacts and Acquisition topic area below for further discussion of the inability to implement this approach.

Some also stated that changes to the street design may occur during negotiations with property owners to facilitate a business remaining in the corridor. At this point, economic vitality and project budget become priorities. This is also discussed further in the Pedestrian Realm Design topic area below.

**Potential Design Strategies for Reducing Width of Landscape Area:** The use of raised planter boxes has been mentioned by CTF members and others as a way to reduce the width of landscaped areas while still providing adequate buffering between pedestrians and traffic lanes. Raised planters are used in several locations in Downtown, but these

are not maintained by the City. It was pointed out that size, placement, and type of planting can create visibility/safety issues between traffic and pedestrians this can be a particular issue for those using wheelchairs, Toole Avenue was cited as an example.

The potential for providing landscape "nodes" instead of landscaping along the length of the street was mentioned as well, with the idea that this might reduce impacts to adjacent properties. A related aesthetic comment was to consider the visual interest of varying location and style of landscaping included in the design.

The potential for using shade structures rather than trees to provide shade for pedestrians and visual interest along the street was also discussed. Concerns were expressed that it may not be feasible to provide shade that is equivalent to trees within a narrower buffer, particularly given that the shade structure should not obscure vision below a height of 8 to 10 feet above the sidewalk to provide visibility to adjacent businesses and pedestrian safety.

### **Responses**

This summary includes responses and resolutions regarding the landscape buffer and sidewalk design within the "pedestrian realm" on both sides of the street in relation to pedestrian transportation needs and goals. See also Landscape Design, Property Impact and Acquisition, and Sidewalk Design topic areas for related discussions.

The 16' wide pedestrian realm that is generally provided in the current street design and alignment plan was determined based on transportation engineering best practices in complete streets design for major urban streets as defined in the Institute for Transportation Engineer's Recommended Practice - Walkable Urban Thoroughfares Manual. This manual recommends providing at least a 9.5' wide landscape buffer and 8' wide sidewalk for conditions like those along the future Broadway. Given concerns about right of way impacts to buildings and properties the 9.5' buffer width was reduced to 8' because the combined 16' for buffer and sidewalk still allows for planting of shade trees which also contribute to a quality level of service for pedestrians.

The Broadway Project Team agrees that in some locations narrowing the pedestrian realm is appropriate in order to avoid direct right of way impacts to buildings, but that the width should not be less than the 10' combined width of a 4' landscape buffer and 6' sidewalk, except in very limited conditions such as one or two parcel lengths (about 100' maximum). These conditions are met in the current recommended design.

### **Resolution**

Width of the pedestrian realm has been an on-going subject of discussion through out the Broadway planning process. In order to provide further information to support resolution of this issue, the Broadway Project Team is gathering more information about compete

streets standards and guidance that have been adopted by cities throughout the country. Also, the Broadway Project Team will explore the potential to calculate pedestrian level of service performance for the 16' buffer and sidewalk and other narrower alternatives.

The current recommended street design and alignment has this minimal landscape width in most locations with the exception of some areas around the Highland Avenue intersection where it has been eliminated in order to reduce the number of buildings directly impacted. **A new design option is being prepared that eliminates landscape areas next to sidewalks in other areas to see what additional buildings could be avoided.** These design options can then be assessed and evaluated against the multimodal, aesthetic, community character, and other goals of the project.

Shade studies to compare the effectiveness of the proposed street trees and a shade structure design concept will be prepared. This will also allow for an assessment of the visual impacts of the shade structure concept on pedestrian safety and business visibility.

Based on results of these studies, decisions may be made to revise the design and alignment prior to Mayor and Council action.

## Property Impacts and Acquisition

### **Summary of Comments**

Comment Numbers: 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, and 70

Is there a way that implementing regulatory relief to create legal functionality of development along Broadway could occur now?

Based on what we are learning from what property owners are asking for, in terms of regulatory relief, on Grant Road and Broadway, it is worth discussing what we need to do now to help with the RTA roadway projects down the line.

City acquires properties based on what is necessary for the public purpose transportation project.

No other conversations about properties - including what the City will do with properties after acquisition - are allowable right now.

Grant Road actual acquisitions for Phase I (Grant/Oracle intersection) came in at half of the estimated 30% acquisition cost estimates, and surplus property put back on the market has already been sold.

Demolition may still occur if sidewalks are narrowed and landscape removed so that the ROW does not sever a structure because the final disposition of the building is the decision of the property owner.

Once full acquisitions occur, decisions will be made about whether a property is demolished utilizing a number of factors including RTA requirements and market conditions.

The alignment design adopted by Mayor and Council sets the footprint. It may be possible to narrow sidewalks and landscaping down to minimums during acquisition and negotiations to support keeping a business operating at a location.

If demolitions occur in areas of the narrowest design, sidewalks and landscaping can be installed to widths supporting a more ideal pedestrian realm.

Some changes to the roadway design may occur during negotiations with property owners to facilitate a business remaining in the corridor, as economic vitality and project budget are always top priorities.

It will be important to convey to property owners during acquisition negotiations that the City will plan for disposition of property AFTER acquisitions occur. The City will not know what the future of the property will be until it has completed sufficient acquisitions and has an understanding of what surplus property it has. At that point, what will be demolished and what will be put on the market can be determined.

City cannot provide parking to benefit private properties using property acquired for the roadway project. The City can only provide surplus property for public parking that the general public can use. Surplus property can be sold to private property owners interested in using property to create more parking for themselves.

The alignment drawings should reflect the design that best supports the transportation needs and goals. Do not include potential solutions on the drawings now, but rather separate them for future reference when negotiations with property owners occur.

Narrowing sidewalks and removing landscape may result in an alignment that does not cut through a building. This does not mean that demolition will not occur.

Where narrowing of sidewalk and removal of landscape is drawn, yet demolition of the remaining structure occurs, the ideal cross-section widths should be constructed.

### **Responses**

The project team understands the institutional limitations regarding mitigation of property impacts with the project design.

### **Resolution**

Such mitigation can be a part of the acquisition process. Design modifications will require an interdisciplinary approach, and the project team will work with City Real Estate to assist as needed during the acquisition process.

## **Roadway Design within Curbs**

### **Summary of Comments**

Comment Numbers: 18, 52, and 53

Discussions reinforced the proposed recommended design which provides 11' travel lanes, and resulted in agreement that 11' travel lanes are the absolute minimum:

- TFD engines are 10'-8" mirror-to-mirror
- buses are 10'-2" mirror-to-mirror
- garbage trucks and semi-trucks are also similar.

There was a concern expressed that left turn lanes need to be wider for safe turning of fire engines (and similar vehicles).

Curvature of the lanes within the roadway was discussed and there was a specific comment regarding curvature in the area between Warren Avenue and Campbell Avenue and whether or not it meets AASHTO guidance.

### **Responses**

The Broadway Project Team agrees that 11' travel lanes are the minimum and that assessment of the current 10' and 11' travel lanes needs further analysis regarding turning movements by fire engines and similar vehicles.

The curvature of lanes within the roadway does meet AASHTO guidance.

### **Resolution**

11' travel lanes will continue to be used as the minimum width for the project. Assessment of fire engine and similar vehicles as left turn lanes will be undertaken, as described in the resolution section of the Lane Widths topic area, above.

Regarding the curvature of lanes, centerline curvature data will be provided on the next submittal of the street design and alignment drawings.

## Refuse Access

### **Summary of Comments**

Comment Numbers: 16, 17, and 25

The impacts of the alignment, particularly in regard to access management and the reduction of curb cuts and other access to the front of parcels along the street was discussed. There were comments about the desire to provide access for refuse collection through existing alleys. Access for refuse service will be considered in the right of way acquisition process, see also discussion in the Property Impact and Acquisition topic area.

### **Responses**

The Broadway Project Team agrees that use of alleys for refuse collection for residential or commercial use would better allow for the reduction of driveways along Broadway which provides safety and other transportation benefits through access management. But there are city standards restrictions on the use of alleys for commercial properties and in cases where residential uses are on the other side of the alley, commercial uses are not allowed to use alleys.

### **Resolution**

Ensuring the ability to maintain refuse collection for affected parcels will be evaluated during the acquisition process. The inability to provide refuse service to a particular parcel may result in its acquisition.

## Sidewalk Design

### **Summary of Comments**

Comment Number: 32

36" sidewalks are only allowed by ADA where constraints like utility poles are present; 48" wide sidewalks are allowed by ADA, but there is a need to install a 5' turning pad every 200 feet at a minimum. 5' is the absolute minimum; 6' minimum is city's policy on arterials.

### **Responses**

The Broadway Project Team agrees with this interpretation of ADA requirements and City standards.

### **Resolution**

The currently proposed design satisfies these requirements and future revisions will as well. **No design changes are being made at this time.**

## Signal Design

### **Summary of Comments**

Comment Numbers: 49 and 50

Transit priority is a possibility in the project area if:

- Schedule adherence data is updated (has been recently; time points correlate to signalized intersection stops)
- [Signal controllers in the corridor] are replaced with newer models
- Software is updated
- Buses have emitters to coordinate with the signal controllers.

Signal pre-emption is possible only for emergency vehicles.

### **Responses**

The Broadway Project Team agrees with discussion.

### **Resolution**

The Broadway Project Team will continue to coordinate with TDOT and SunTran staff to see if signal priority for transit vehicles is feasible within the budget and timeframe of this project. This should include installation of new signal equipment to support transit priority when buses are equipped with emitters and operational feasibility is verified.

Any future refinement to signals is not expected to affect the alignment.

## Transit Design

### **Summary of Comments**

Comment Number: 49, 80, and 82

Transit priority is a possibility in the project area if:

- Schedule adherence data is updated (has been recently; time points correlate to signalized intersection stops)
- [Signal controllers in the corridor] are replaced with newer models
- Software is updated
- Buses have emitters to coordinate with the [boxes].

Are there bus transfer stations in the project area?

### **Responses**

See Signal Design topic area response related to transit priority at signals. There are bus transfers at Broadway and Country Club

### **Resolution**

See Signal Design topic area resolution related to transit priority at signals.

## **University of Arizona (UA) Linkages**

### **Summary of Comments**

Comment Number: 73, 75, 78, 79, and 83

Highland Avenue, Park Avenue, Cherry Avenue and Santa Rita Avenue are key corridors into UA campus from the south with Highland Avenue and Park Avenue having significant bicycle traffic to campus. Given that new field has been constructed at 6<sup>th</sup> Street, would Warren Avenue be a better bicycle crossing at Broadway?

UA is constructing a new parking garage between 7th and 6th St and Cherry and Warren Avenues. The garage will replace 900 parking spots of a total 1,400 lost on campus. Access will only be from 6th Street; there will be no access from the south. The facility has been designed and acquisition of real estate needed is in process.

UA's faculty demographic is changing and many don't want to commute. The availability of good quality affordable housing near campus is important, as is an environment that supports walking and bicycling.

### **Responses**

Multimodal transportation linkages from Broadway to the UA campus are being considered in the design of the intersections along Broadway. Warren Avenue is not a good candidate for a bicycle crossing because of its proximity to Cherry and the curvature of the alignment as designed in this portion of the Broadway design. Highland Avenue's connection to Broadway could be improved for bicycles, but the width of the street is too narrow to provide bicycle lanes up to the intersection.

### **Resolution**

Park Avenue will be designed as a bike HAWK to improve accessibility for bicycles. Other comments are generally supported and accommodated by the draft street design and alignment. **No other design changes are needed in response to these comments.**

## *Specific Locations*

### Chase Bank

#### **Summary of Comments**

Comment Number: 28

The Chase Bank entrance to the west of the bus stop can create conflicts between vehicles, buses, and pedestrians and is a safety concern.

#### **Responses**

There is a potential that a stopped bus could affect visibility between pedestrians and vehicles in this location.

#### **Resolution**

The shifting of this bus stop to the east side of the Country Club intersection will resolve this comment. As a result, a westbound right turn lane will not be provided on the east side of the intersection. **No other design changes are expected.**

### Cherry Avenue Intersection Design

#### **Summary of Comments**

Comment Numbers: 15 and 74

Cherry Avenue at the intersection with Broadway currently has dedicated right turn lanes that may not be necessary. Narrowing the intersection crossing would be a benefit to pedestrians and cyclists. Consideration should be given to eliminating the right turn lanes.

#### **Responses**

The Broadway Project Team understands the potential for pedestrian and cyclist benefits from this potential narrowing, but this is outside of the scope of the Broadway project as direction from TDOT has been to minimize reconstruction of side streets.

#### **Resolution**

This improvement is not a part of the current project scope. **No design changes result from this comment.**

## Country Club Road Intersection Design

### **Summary of Comments**

Comment Numbers: 27

Consider keeping the west bound near side stop, as this stop allows transit riders who are transferring to routes traveling north bound on Country Club to transfer without crossing the street; a significant number of riders make this transfer.

### **Responses**

Agreed.

### **Resolution**

The Broadway Project Team has modified the bus stop location to keep it near side at this location.

## Euclid Avenue Intersection Design

### **Summary of Comments**

Comment Numbers: 3, 4, 5, 6, and 51

Is the west bound bus stop just west of the Euclid Avenue intersection being removed?

See also, Euclid Avenue Intersection: 2-way Cycle Track Connection topic area below.

Euclid/Broadway left turns will be an issue - the design only shows single left turn lanes, but queuing is a problem today.

- Are double lefts a possibility?
- If not, the project needs to consider including leading and lag lefts.

### **Responses**

These comments have been discussed further with TDOT staff and administration in order to reach resolution.

### **Resolution**

The Downtown Links project and separate federally funded extension of the two-way cycle track will make improvements to the area immediately to the west of the Euclid intersection. Refinements to the design of the Euclid intersection will be made in coordination with the designs resulting from the other projects.

No design changes result at this time. Future refinements are not expected to affect alignment to the degree that it would change impacts to adjacent privately owned properties.

## Euclid Avenue Intersections: 2-way Cycle Track Connection

### **Summary of Comments**

Comment Numbers: 3, 4, and 5

Make connection from 2-way cycle track that is being designed and implemented to connect from downtown to the Euclid Avenue and Broadway intersection along the north side of Broadway, as part of the Downtown Links project and a separate federally funded project. It is expected that a number of cyclists will use this cycle track to travel between downtown and the UA. Therefore, the connection through the north side of the Euclid intersection to Tyndall Avenue or Park Avenue and then north to campus is important. Also, the intersection of Euclid Avenue and Broadway needs to be designed for cyclists to transition between the two-way cycle track east of the intersection to the bicycle lanes to the south on Euclid and the cycle tracks on either side of Broadway to the east.

### **Responses and Resolution**

See response and resolution to Euclid Avenue Intersection Design topic area above.

## Fire Station Location

### **Summary of Comments**

Comment Number: 23

Tucson Fire Dept. is still looking to relocate the existing station at 24 N Norris; what other locations are in play?

### **Responses**

There is evidently the potential that the fire station may relocate, but this would not affect the design of the intersection given that residents from the adjacent senior community also benefit from the HAWK at this intersection and that the left turn movement for west bound traffic helps to provide access to the Safeway site.

### **Resolution**

No change is expected to the current recommended design.

## Norris Avenue Intersection

### **Summary of Comments**

Comment Number: 21

Currently Norris Avenue has an emergency signal and HAWK. Will the HAWK functionality be retained?

### **Responses and Resolution**

See response and resolution to Fire Station Location topic area above.

## Park Avenue Intersection

### **Summary of Comments**

Comment Numbers: 7 and 8

Is the HAWK retained at this intersection?

Make this a bike HAWK.

### **Responses**

Agreed, the existing drawing is not clear about this being a HAWK and a bike HAWK would be appropriate here given that Park Avenue is a part of the city's bicycle network.

### **Resolution**

Park intersection will be designed as Bike HAWKs as the design is developed further, following approval of the street alignment. Labels/symbols will be added to the alignment plan to clarify which intersections have various types of signal controls.

No design changes are needed at this time. Implementing Bike HAWKs is not expected to affect alignment or impacts to adjacent properties.

## Treat Avenue Intersection

### **Summary of Comments**

Comment Number: 26

A bike HAWK or Toucan should be installed at Treat Avenue.

### **Responses**

Agreed, a bike HAWK would be appropriate here given Treat Avenue is a part of the city's bicycle network.

**Resolution**

The Treat Avenue intersection will be designed as Bike HAWKs as the design is developed further, following approval of the street alignment.

No design changes are needed at this time. Implementing Bike HAWKs is not expected to affect alignment or impacts to adjacent properties.

**Vine Avenue Intersection Design**

**Summary of Comments**

Comment Number: 76

TUSD support providing a west bound left turn at Vine Avenue for bus and parent access for drop-off and pick-up. Buses use the curbside on Vine Avenue and parents use the curbside along Highland Avenue. While a high amount of bus and parent traffic comes from the east to the school, Miles School is a magnet school so the full intersection at Highland is needed to complement the left turn access at Vine.

**Responses**

The proposed staff recommended street design and alignment is supportive of these comments.

**Resolution**

No design changes are needed in response to comments.

**Warren Avenue Intersection Design**

**Summary of Comments**

Comment Number: 75

Given new field at 6<sup>th</sup> Street would Warren Avenue be a better bicycle crossing at Broadway?

**Responses**

Warren Avenue is not a good candidate for a bicycle crossing because of its proximity to Cherry Avenue and the curvature of the alignment as designed in this portion of the Broadway design.

**Resolution**

No design changes are needed in response to comments.



# Broadway Boulevard, Euclid to Country Club

## Technical Advisory Committee

### **Economic Initiatives**

Chris Kaselemis  
Camila Bekat

### **Environmental Services**

Pat Tapia

### **Fire**

Assistant Chief Laura Baker  
Lead Inspector Glenn D' Auria

### **General Services** *(not at Feb. 2015 Meetings)*

Martin DuPont  
Vinnie Hunt

### **Integrated Planning**

Nicole Gavin  
James MacAdam  
Jonathan Mabry  
Rebecca Ruopp

### **Planning & Development Services**

John Beall  
Patricia Gehlen  
Loren Makus  
Jim Mazzocco  
Glenn Moyer  
David Rivera

### **Police**

Captain Jim McShea

### **Real Estate Office**

Tim Murphy  
Ryan Tripp

### **Transportation**

*Jenn Toothaker, Sam Credio, Beth Abramovitz*

Daryl Cole  
Carlos de Leon  
Andrew McGovern  
Ann Chanecka  
Joe Chase  
Donovan Durband  
Shellie Ginn  
Michael Hicks  
Kate Riley (Sun Tran)  
Diahn Swartz  
Estevan Tineo  
Gary Wittwer

### **Pima County DOT** *(not at Feb. 2015 Meetings)*

Rick Ellis

### **PAG/RTA**

Jim DeGrood  
Mike Holder  
Paul Cella – RTA TMC liaison

### **TUSD Facilities**

Marcus Jones

### **University of Arizona**

Dave Heineking *(Parking & Transportation Services)*

Jan Cervelli *(College of Architecture, Planning, and Landscape Architecture)*

Arthur C. Nelson *(College of Architecture, Planning, and Landscape Architecture)*

Peter Dourlein *(Planning Design & Construction)*

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Comment		Topic Areas	Source
1	Do we need to have bus pullouts if we are going to 4+2? (2 comments stating same question)	<ul style="list-style-type: none"> <li>• Bus Stop Design</li> </ul>	Sun Tran
2	8 ft. landscaping strikes me as a suburban design. I support narrowing it as needed especially to improve visibility of pedestrians to turning traffic.	<ul style="list-style-type: none"> <li>• Pedestrian Realm Design</li> <li>• Landscape Design</li> </ul>	<i>Not sure specific commenter</i>
3	Incorporate 2-way cycle track into Broadway Plans [extending west of Euclid] - see Ann & Diahn	<ul style="list-style-type: none"> <li>• Euclid Intersections: 2-way Cycle Track Connection</li> <li>• Euclid Intersection Design</li> </ul>	Ann Chanecka, TDOT
4	Incorporate a connection from the 2-way cycle track [west of Euclid] to either the alley [to the north] or to Tyndall.	<ul style="list-style-type: none"> <li>• Euclid Intersections: 2-way Cycle Track Connection</li> <li>• Euclid Intersection Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
5	Incorporate a crossing for bikes at the intersection with Euclid to transition from 2-way cycle track west of Euclid	<ul style="list-style-type: none"> <li>• Euclid Intersections: 2-way Cycle Track Connection</li> <li>• Euclid Intersection Design</li> </ul>	Ann Chanecka, TDOT
6	Is existing bus stop being removed [west of Euclid]?	<ul style="list-style-type: none"> <li>• Bus Stop Location</li> <li>• Euclid Intersection Design</li> </ul>	<i>Not sure specific commenter</i>
7	HAWK is retained, right? [at Park]	<ul style="list-style-type: none"> <li>• HAWK Location</li> <li>• Park Intersection Design</li> </ul>	Diahn Swartz, TDOT
8	Make this a bike HAWK [at Park]	<ul style="list-style-type: none"> <li>• HAWK Location</li> <li>• HAWK Design</li> <li>• Park Intersection Design</li> </ul>	Ann Chanecka, TDOT
9	Concern for cyclist visibility for right-turning vehicles [at southwest corner at Park intersection]	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
10	I appreciate the access management and safety for the cycle track [in separate conversation Ann expressed some concern if driveways need to be added for site access where they are not shown today] [similar comment made at local access lane to the east of Park, block between Santa Rita and Highland (south side)]	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Ann Chanecka, TDOT
11	In order to maintain reduction of driveways onto Broadway, support commercial use of alleys	<ul style="list-style-type: none"> <li>• Alley Use</li> </ul>	Ann Chanecka, TDOT
12	Need to check the turning requirements of large vehicles [including fire and refuse trucks] + 2 side by side vehicles at driveways served by [local] access road [comment made regarding location just east of Park, but is applicable to most of the local access roads]	<ul style="list-style-type: none"> <li>• Local Access Lane Design</li> </ul>	Police, Fire, ESD and possibly others
13	Keep bike lane in the expected path thru right turn area and then deflect it towards behind the bus pull out (keep bikes as visible as possible to prevent right hooks) [Comment made regarding south side at Highland intersection, applicable to some other locations as well]	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> <li>• Intersection Design</li> </ul>	Ann Chanecka, TDOT
14	Problem with cycle track concept [bus bypass] is that it pushes the sidewalk back away from intersection, making pedestrians less visible to turning cars [Comment made regarding south side at Highland intersection, applicable to some other locations as well]	<ul style="list-style-type: none"> <li>• Pedestrian Design at Intersections</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
15	May be Cherry Ave need not be so wide [at Broadway intersection] consider eliminating dedicated right turn lanes that are not really needed.	<ul style="list-style-type: none"> <li>• Cherry Avenue Intersection Design</li> </ul>	Ann Chanecka, TDOT

Comment	Topic Areas	Source
16 What will happen with alley collection? [assume this is regarding trash and recycling] in areas where lots are purchased	<ul style="list-style-type: none"> <li>Alley Use</li> <li>Refuse Access</li> </ul>	Pat Tapia, ESD
17 Need to make sure we keep alley collection? [assume this is regarding trash and recycling] in areas where lots are purchased]	<ul style="list-style-type: none"> <li>Alley Use</li> <li>Refuse Access</li> </ul>	Pat Tapia, ESD
18 Does horizontal curve meet AASHTO? [comment at curve between Warren and Campbell]	<ul style="list-style-type: none"> <li>Roadway Design within Curbs</li> </ul>	<i>Not sure specific commenter</i>
19 A lot of right runs (Starbucks), bus may block visibility of cyclist on cycle track [comment at Martin Ave west bound Broadway]	<ul style="list-style-type: none"> <li>Cycle Track Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
20 Is this a mountable apron or just painted? (typical) [Comment made at channelized right turn at northeast corner with Campbell, but applicable to all channelized rights]	<ul style="list-style-type: none"> <li>Channelized Right Turn Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
21 Currently an emergency signal and HAWK. Will HAWK functionality be retained? [Norris]	<ul style="list-style-type: none"> <li>HAWK Design</li> <li>Norris Intersection</li> </ul>	<i>Not sure specific commenter</i>
22 Tucson and Treat same <b>[not clear what this comment was referring to, possibly that the bus stop designs should be similar. Current design has Tucson stops as pull outs and Treat in-lane?]</b>	<ul style="list-style-type: none"> <li>Bus Stop Design</li> </ul>	<i>Not sure specific commenter</i>
23 Tucson Fire Dept. is still looking to relocate [existing station off Norris]; what other locations are in play?	<ul style="list-style-type: none"> <li>Fire Station Location</li> </ul>	<i>Not sure specific commenter</i>
24 Probably a worst case of compromised cyclist visibility due to bus pullout [east bound to the east of Tucson Blvd.]	<ul style="list-style-type: none"> <li>Cycle Track Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
25 Need to see what or how refuse will happen here? [north west corner at Treat]	<ul style="list-style-type: none"> <li>Refuse Access</li> </ul>	Pat Tapia, ESD
26 Bike HAWK or Toucan at Treat	<ul style="list-style-type: none"> <li>HAWK Design</li> <li>Treat Intersection</li> </ul>	Ann Chanecka, TDOT
27 Consider keeping near side stop [west bound at Country Club]; transfer stop is at north east side of Country Club - are there other transfer stops to consider at intersections?	<ul style="list-style-type: none"> <li>Bus Stop Location</li> <li>Country Club Intersection Design</li> </ul>	SunTran and TDOT Transit
28 Entrance can create opportunity for accident [west end of bus pull out west entry to Chase Bank]	<ul style="list-style-type: none"> <li>Access Management</li> <li>Chase Bank</li> </ul>	SunTran and TDOT Transit
29 To avoid impacts, the sidewalk can be reduced to 6' sidewalk for short stretches	<ul style="list-style-type: none"> <li>Pedestrian Realm Design</li> </ul>	Andy McGovern, TDOT
30 To avoid impacts, landscape can be cut out for short stretches	<ul style="list-style-type: none"> <li>Pedestrian Realm Design</li> <li>Landscape Design</li> </ul>	Andy McGovern, TDOT
31 The minimum landscape width is 4' - some buffer needed for sidewalk area, particularly along a 6-lane arterial planned at 35 mph design speed	<ul style="list-style-type: none"> <li>Pedestrian Realm Design</li> <li>Landscape Design</li> </ul>	Andy McGovern, TDOT
32 36" sidewalks are only allowed by ADA where constraints like utility poles are present; 48" wide sidewalks are allowed by ADA, but need to install a 5' turning pad every 200 feet min. - 5' absolute minimum; 6' minimum is city's policy on arterials	<ul style="list-style-type: none"> <li>Pedestrian Realm Design</li> <li>Sidewalk Design</li> <li>ADA</li> </ul>	GSD (Marty DuPont, ADA specialist); TDOT

Comment	Topic Areas	Source
33 Raised planters as landscaping are good for detection [need to talk to Gary Wittwer about maintenance] - Does City maintain planter boxes anywhere? (Downtown they are managed by other entities) - Will work only for smaller plants? - Size and placement can obstruct visibility, particularly of those in wheel chairs (Toole Ave cited as example)	<ul style="list-style-type: none"> <li>• Pedestrian Realm Design</li> <li>• Landscape Design</li> </ul>	GSD (Marty DuPont, ADA specialist); TDOT
34 Site lines for planter boxes must be considered to ensure bikes and pedestrians are not hidden from drivers (intersections, driveways, etc.)	<ul style="list-style-type: none"> <li>• Pedestrian Realm Design</li> <li>• Landscape Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
35 City will follow Green Streets policy regarding water harvesting	<ul style="list-style-type: none"> <li>• Green Streets</li> <li>• Landscape Design</li> </ul>	Andy McGovern, TDOT
36 Consider including landscaping "nodes" instead of lengths of landscaping, particularly where doing so will reduce impacts to properties.	<ul style="list-style-type: none"> <li>• Pedestrian Realm Design</li> <li>• Landscape Design</li> </ul>	Rebecca Ruopp, OIP
37 Consider giving visual interest by varying the location and style of landscaping included.	<ul style="list-style-type: none"> <li>• Landscape Design</li> </ul>	Rebecca Ruopp, OIP
38 Ideal bike facility would be 6' lane with 2' buffer; OK with 7' as shown on map.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Ann Chanecka, TDOT
39 A <b>curbed landscape</b> buffer of bike lanes separating <b>bike lanes</b> from traffic could be supported in areas where there are stretches of <b>no driveways</b> (such as along local access lanes).	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> <li>• Landscape Design</li> <li>• Pedestrian Realm Design</li> </ul>	Ann Chanecka, TDOT
40 Regarding bike facilities design: don't preclude bicyclists the option of using by designing to the comfort of one type of cyclist over the other, such as vehicular cyclists comfortable in the most narrow lanes or recreational cyclists more comfortable in areas with safer buffers.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Diahn Swartz, TDOT
41 Bicyclists must operate under the same laws as cars.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Jim McShea, TPD
42 If a cyclist does not want to use bike bypass around the bus stop, consider treatment to allow them to continue through in the lane.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> <li>• Bus Stop Design</li> </ul>	Diahn Swartz, TDOT
43 It is a civil infraction if a bicyclist is cited for not using a bike lane when one is provided.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Jim McShea, TPD
44 A civil lawsuit could be pursued if someone challenges the design of the bus stop/pullout and bike design - good to consider in the design.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> <li>• Bus Stop Design</li> </ul>	Jim McShea, TPD
45 Guidance for cyclists to direct them to the bike path should be considered (green paint, signage, other).	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Ann Chanecka and Diahn Swartz, TDOT
46 People collect behind shelters during times of the year to be in the shade; this should be considered in the design of the pullouts and bike bypasses	<ul style="list-style-type: none"> <li>• Bus Stop Design</li> </ul>	Jeremy Papuga, TDOT

Comment	Topic Areas	Source
47 Other cities utilizing the bike bypass at bus stops may have guidance on design features to enhance safety.	<ul style="list-style-type: none"> <li>• Bus Stop Design</li> <li>• Cycle Track Design</li> </ul>	Ann Chanecka, TDOT
48 Drainage concerns with respect to elevated cycle track.	<ul style="list-style-type: none"> <li>• Cycle Track Design</li> </ul>	Sam Credio, TDOT
49 Transit priority is a possibility in the project area if: - schedule adherence data is updated (has been recently; time points correlate to signalized intersection stops) - [boxes in the corridor] are replaced with newer models - software is updated - buses have emitters to coordinate with the [boxes]	<ul style="list-style-type: none"> <li>• Transit Design</li> <li>• Signal Design</li> </ul>	Mike Hicks, TDOT
50 Signal pre-emption is possible only for emergency vehicles.	<ul style="list-style-type: none"> <li>• Signal Design</li> </ul>	Mike Hicks, TDOT
51 Euclid/Broadway left turns will be an issue - design only shows single left turn lanes, but queuing is a problem today. - double lefts a possibility? - if not, need to consider including leading and lag lefts.	<ul style="list-style-type: none"> <li>• Euclid Intersection Design</li> </ul>	Mike Hicks, TDOT
52 11' lanes are the absolute minimum - TFD engines are 10'8" mirror-to-mirror - buses are the same size - garbage trucks (?).	<ul style="list-style-type: none"> <li>• Roadway Design within Curbs</li> <li>• Lane Widths</li> </ul>	Jim McShea, TPD; Glenn D'Auria, TFD
53 Concern that left turn lanes need to be wider for safe turning of fire engines (and similar vehicles).	<ul style="list-style-type: none"> <li>• Roadway Design within Curbs</li> <li>• Lane Widths</li> </ul>	Glenn D'Auria, TFD
54 Concern about the implied intersections and design of crossings and medians and pedestrian behaviors - Warren used as example.	<ul style="list-style-type: none"> <li>• Pedestrian Crossings</li> <li>• Intersection Design</li> </ul>	Jim McShea, TPD
55 Where bus stops exist, people will cross traffic to get to it.	<ul style="list-style-type: none"> <li>• Pedestrian Crossings</li> </ul>	Jared Forte, Sun Tran
56 Pedestrian crossings around bus stops should support ease of access within 1/4 mile radius.	<ul style="list-style-type: none"> <li>• Pedestrian Crossings</li> <li>• Intersection Design</li> </ul>	
57 Is there a way that implementing regulatory relief to aid properties' Code compliance and site function could occur now?	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Nicole Gavin
58 Based on what we are learning from what property owners are asking for, in terms of regulatory relief, on Grant Road and Broadway, it is worth discussing what we need to do now to help with the RTA roadway projects down the line.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Nicole Gavin
59 City acquires properties based on what is necessary for the public purpose transportation project.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff

Comment	Topic Areas	Source
60 No other conversations about properties - including what the City will do with properties after acquisition - are allowable right now.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
61 Grant Road actual acquisitions for Phase I (Grant/Oracle intersection) came in at half of the estimated 30% acquisition cost estimates, and surplus property put back on the market has already sold.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Beth Abramovitz, TDOT
62 If sidewalks are narrowed and landscape removed so that the ROW does not sever a structure, this does not mean demolition will not still occur.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Landscape Design</li> <li>• Pedestrian Realm Design</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
63 Once full acquisitions occur, decisions will be made about whether a property is demolished utilizing a number of factors including RTA requirements and market conditions.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
64 The alignment design adopted by Mayor and Council sets the footprint. Staff recommends including the ideal widths for sidewalk and landscape in the adopted alignment. During negotiations with property owners, if there is flexibility and it makes sense, widths and placement of sidewalk and landscape might be adjusted to support keeping a business operating at a location.  Such decisions are multi-faceted and must be made with an understanding about what trade-offs are being made by making these adjustments.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Landscape Design</li> <li>• Pedestrian Realm Design</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
65 Some changes to the roadway design will occur during negotiations with property owners to facilitate a business remaining in the corridor. It will be important that the spectrum of competing priorities are considered before conscious choices are made: auto, bike, pedestrian, transit, real estate, project costs, economic vitality, land development, and ADA. A multi-disciplinary team working together to make these decisions could ensure that performance is not degraded unintentionally.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Landscape Design</li> <li>• Pedestrian Realm Design</li> </ul>	Beth Abramovitz, TDOT
66 It will be important to convey to property owners during acquisition negotiations that the City will plan for disposition of property AFTER acquisitions occur. The City will not know what the future of the property will be until it has completed sufficient acquisitions and has an understanding of what surplus property it has. At that point, what will be put on the market can be determined, as will what can be rehabilitated or will be demolished.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff

Comment	Topic Areas	Source
67 City cannot provide parking to benefit private properties using property acquired for the roadway project. The City can only provide surplus property for public parking that the general public can use. Surplus property can be sold to private property owners interested in using property to create more parking for themselves.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Parking Impact</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
68 The alignment drawings should reflect the design that best supports the transportation needs and goals. Do not include potential solutions on the drawings now, but rather separate them for future reference when negotiations with property owners occur. The City cannot impose solutions on property owners. The property owners must be part of the decision.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Parking Impact</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
69 Narrowing sidewalks and removing landscape may result in an alignment that does not cut through a building. This does not mean that demolition will not occur.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> </ul>	Myrlene Francis, Tierra ROW; Real Estate Office staff
70 Where narrowing of sidewalk and removal of landscape is drawn, yet demolition of the remaining structure occurs, the ideal cross-section widths should be constructed.	<ul style="list-style-type: none"> <li>• Property Impacts and Acquisition</li> <li>• Landscape Design</li> <li>• Pedestrian Realm Design</li> </ul>	TDOT
71 Several suggestions during meetings to add drives to properties to provide access. But also some expression of concerns regarding degrading the access management goals of the project. This could be a particular issue where existing strips of commercial retail buildings are much too narrow for each property to have direct access from Broadway and providing access to one while not another may be arbitrary.	<ul style="list-style-type: none"> <li>• Access Management</li> </ul>	TDOT and Design Team
72 There are locations were allowing more flexibility for use of alleys for non-residential parking and loading would help mitigate loss of access from Broadway; for example if residential use is on the other side of an existing alley non-residential use is not allowed.	<ul style="list-style-type: none"> <li>• Alley Use</li> </ul>	OIP and Design Team
73 Highland and Cherry are good links to the fields and Greenway south of Broadway	<ul style="list-style-type: none"> <li>• University of Arizona Linkages</li> </ul>	Marcus Jones, TUSD
74 Cherry seems really wide for as little traffic as it has. Is it possible to narrow it down?	<ul style="list-style-type: none"> <li>• Cherry Avenue Intersection Design</li> </ul>	Marcus Jones, TUSD
75 Would Warren make a better bike crossing due to new field at 6th St, and the bike path?	<ul style="list-style-type: none"> <li>• University of Arizona Linkages</li> <li>• Warren Avenue Intersection Design</li> </ul>	Marcus Jones, TUSD
76 Moving signalized intersection from Highland to Vine is not supported by TUSD; WB left turn at Vine is supported. Parent drop-offs are curb-side on Highland. Bus drop-off is on Vine. There is a high amount of traffic coming from the eastside that will use both the Vine left turn and the Highland intersection. Miles is a magnet school that attracts students from all over the district.	<ul style="list-style-type: none"> <li>• Vine Avenue Intersection Design</li> </ul>	Marcus Jones, TUSD
78 Highland, Park, and Santa Rita are key corridors into UA campus from the south. Highland and Park are high bike corridors	<ul style="list-style-type: none"> <li>• University of Arizona Linkages</li> </ul>	Dave Heineking, UA Parking and Transportation

Comment	Topic Areas	Source
79 UA is constructing a new parking garage between 7th and 6th St and Cherry and Warren. The garage will replace 900 parking spots of a total 1,400 lost on campus. Access will only be from 6th Street; no access from south. The facility has been designed and acquisition of real estate needed is in process.	• University of Arizona Linkages	Peter Dourlein, UA Planning, Design and Construction
80 Are there bus transfer stations in the project area?	• Transit Design	Jan Cervelli, UA CAPLA
81 Are any of the HAWKS in the west mile of project area suitable for a TOUCAN instead of HAWK?	• HAWK Design	
82 A consideration being discussed as part of the Ronstadt Transit Center selection committee is whether it is appropriate to have all of the transfer activity occurring downtown. The Broadway Volvo site has been mentioned as a possible alternative location.	• Transit Design	Jan Cervelli, UA CAPLA
83 UA's faculty demographic is changing and many don't want to commute. The availability of good quality affordable housing near campus is important, as is an environment that supports walking and bicycling.	• University of Arizona Linkages	Jan Cervelli, UA CAPLA