



BROADWAY BOULEVARD CITIZEN PLANNING TASK FORCE

MEMORANDUM

TO: Broadway Boulevard Citizens Task Force
FROM: Broadway Boulevard Project Team
DATE: May 10, 2013
RE: **Initial Example Cross Sections and Street Section Element Cards**

Attached to this cover memorandum are a set of initial example cross sections showing the range of travel lane configurations and the range of design options within each of those lane configurations. These examples are constructed from a set of street section element cards; these build from those that you used to explore the issues of cross section design for Broadway in an earlier CTF meeting. The idea is to use these cross sections and the cards to begin exploring potential cross sections for future Broadway; a set of them will be assessed at the May meetings (by both the CTF and agency staffs) and revised as necessary; and, then used in the next Public Meeting to get broader community input of preferences and potentially additional design approaches to the cross section of future Broadway. These materials are explained below.

Street Section Element Cards

Street section element cards provide a way for the Task Force and the public to explore initial options for the design of Broadway. These cards have been used by the Broadway Planning Team to put together the initial example street cross section designs. The cards are specifically designed for the conditions and potential design of Broadway. A few cards to represent the design of some elements per the existing City of Tucson arterial roadway design standards. The majority of cards illustrate a context sensitive and walkable design approach that works within the flexibility provided by various roadway design guidance; these are generally based on the guidance provided by the ITE *Designing Walkable Urban Thoroughfares* manual. The roadway, pedestrian, median and special cards respond to a mix of existing policy, best practices, and climate of Tucson. The “menu” of cards shows the range of cards available. Each card, except the medians, has a right and a left side configuration to illustrate traffic direction and the proper relationship of landscape buffering, parking, and other elements, to the direction of travel.

Roadway Cards

Roadway cards address potential uses between the curbs, for vehicles, transit, and bikes. The design of the cards is based on a range of TDOT standards and multi-modal transportation best practices.

- **Travel lane (10'-12')** – with the 10' end of the range in width representing a minimum width that could be allowed for some lanes based the expected 30-35 mph speed for future Broadway and 12' representing the TDOT standard for arterials. Note – the ITE manual and

other design practice does not recommended combining minimum lane widths for all elements between the curbs, although in some cases minimums can be used to avoid localized impacts for a short length of roadway.

- **Transit lane (11'-12')** – this is the generally accepted minimum width for bus lanes. Modern buses are generally 10'-6" wide and at the speeds expected along Broadway a 12' wide transit lane is desired by TDOT and Sun Tran, although the ITE manual does provide guidance that could allow for an 11' width.
- **Bike lane (5'-7')** – a 5' width is the TDOT minimum standard with 6' being desired for a roadway with Broadway's speed and traffic levels with some additional width where possible. The Grant Road Design Concept Report uses a 7' bike lane comprised of a 6' clear width, including the gutter, and a 1' strip between the bike lane and traffic lane rather than the typical 6" stripe that is within the 5'-6' width of the Tucson standard bike lanes.
- **Center-running transit lanes (26')** – the pair of 13' lanes used here allow for future conversion of bus rapid transit lanes to be converted to street car or light rail in the future with space for overhead electrical supports.
- **Continuous turn lane (12')** – this is the generally accepted minimum width for these lanes; it should be noted that safety and traffic flow performance can be impacted by the use of continuous center turn lanes and that this is an existing condition that TDOT would like to improve upon in the design for future Broadway.

Pedestrian (/Bike) cards

Pedestrian cards address potential uses in the pedestrian realm on either side of the roadway. The design of these cards is based on a range of TDOT standards, multi-modal transportation best practices, and needs of trees and landscape.

- **Sidewalk with shade tree (24')** – the width of this card is determined by the desired 24' clear width for a Sonoran Desert shade tree, such as a species of Palo Verde or Mesquite, with the width allowing the tree to take on its more natural spreading form without being 'trimmed' by passing vehicles. The 16' wide landscape area is also desirable for rain water harvesting and as a buffer for pedestrians from adjacent traffic. The 8' sidewalk width is the recommended width for streets like future Broadway by the ITE Walkable Thoroughfares manual.
- **Sidewalk with tree (16')** – this card uses a narrower street tree, such as the Ghost Gum that has been used historically on other Tucson streets, while maintaining a good buffer between pedestrians and traffic; a bit narrower than the 19' recommended by the ITE manual.
- **Sidewalk with landscaping, based on TDOT standards (12')** – this card is based on existing TDOT standards; TDOT realizes that it may not be appropriate for the multimodal and community character that could be desired for future Broadway. Still the Planning Team felt it was important to illustrate what could result from existing design standards. This design does not allow for street trees.
- **Sidewalk, based on TDOT standards (9')** – this card is also based on existing TDOT

standards, as the one described above, it does not allow for any planted landscape.

- **Pedestrian area with bike lane (24')** – This card was prepared to illustrate an alternative for narrowing the landscape area while still achieving the desired 24' width for shade trees. By putting the 7' bike lane adjacent to the curb the landscaped area can be narrowed to 9', compared to the 16' of the other card with a shade tree. So, this approach would not work with curb-side running transit or where there is a right turn lane.

Median cards

Median cards address potential types of medians between vehicle and/or transit lanes. The design of these cards is based on TDOT standards, multi-modal transportation best practices, and needs of trees and landscape.

- **9' median (with saguaro and shrubs)** – This card illustrates a minimum width that would allow for some vertical landscaping, such as saguaros. This design approach can be used for side medians and when used for a center median the width would need to be increased to 16'-17' where there is a left turn to allow for the turn lane and a pedestrian refuge if there is a pedestrian crossing at the same location; in other words the 9' width will need to widen at many locations along the length of Broadway.
- **13' median (with turn pocket at intersections)** – This median allows for a more vertical tree, such as Ghost Gums. Similar to the 9' median the roadway would need to be widened at turn pockets at pedestrian crossings to allow for the desired pedestrian refuge width.
- **20' median (with turn pocket and pedestrian refuge at intersections)** – 20' is the TDOT standard with for arterial streets of 75' or more in width. This allows for a staggered double row of more vertical trees and for a consistent median width along the length of future Broadway even where there are turn lanes.
- **24' median (with desert shade tree and turn pocket and pedestrian refuge at intersections)** – This width of median allows for shade trees to be planted with little 'trimming' by passing vehicles. It also allows for a consistent median width along the length of future Broadway even where there are turn lanes.

Special Cards

Special cards address special components that could potentially be included on Broadway.

- **Enhanced sidewalk with local access lane (29')** – a local access lane is the concept of provide a slower travel lane and parking along the side of street like Broadway that is providing for important through traffic functions as well as for adjacent commercial or residential access. This card needs to be paired with a median between the local access lane and the adjacent roadway in the center of the cross section, see the assembled cards for the initial example cross sections with local access lanes.

Initial Example Cross Sections

The Planning Team has used these cards to "build" initial options for Broadway cross sections and demonstrate the range of roadway lane configurations, the options within these configurations, and

the range of rights-of-way. We looked at the possible lane configurations, number of through traffic lanes and if there are dedicated transit lanes. We looked at the range of potential cross sections for each configuration (the potential range uses the minimal card elements at the low end and the wider cards at the upper end of the range) and then two representative sections are illustrated for a narrower and a wider cross section width. The assessment of the alternatives and review and comment by the CTF, the public, and stakeholder agencies will begin narrowing the options as we move forward in the planning and design process for Broadway. At this point, we want to represent the range of design options that members of the community may find desirable. We know that some stakeholder believe that Broadway does not need to be widened, the four lane options, while others favor the project definition of six lanes plus dedicated transit that was defined through earlier planning and design efforts for Broadway.

Four lane

Potential 92'-130' Right of Way

- **Option A: 97'**
- **Option B: 119'**

Four lane plus transit lanes

Potential 116' - 154' Right-of-Way

- **Option A: 121'**
- **Option B: 150'**

Six lane

Potential 114' - 152' Right-of-Way

- **Option A: 125'**
- **Option B: 152'**

Six lane plus transit lanes

Potential 138' - 172' Right-of-Way

- **Option A: 143'**
- **Option B: 172'**