Appendix E | Nassau Street Alternatives

princeton bicycle master plan appendices **| 2017**


STATE LAW
STOP
Bus Stop
PALMER

Nassau Street Design Alternatives

Throughout the course of the study, Nassau Street was identified as a critical corridor to improve bicycle access. While two conceptual design alternatives were developed for consideration in the Princeton Bicycle Master Plan (BMP), they were not included in the final BMP. The Nassau Street corridor ultimately requires a comprehensive, Complete Street Corridor Plan that addresses the needs of all users and incorporates the findings of several recent studies.

This appendix documents the two alternatives developed by the Princeton BMP for future study and consideration.

Nassau Street (NJ 27, University Place to Washington Road)

This section of Nassau Street (NJ 27) is the center of the community, with its vibrant downtown, shops, and restaurants on one side and the Princeton University campus on the other. As the primary hub of community activity, there is a strong demand and need for improved bicycle access with minimal impact to traffic circulation, parking, and pedestrian street life. This section of Nassau Street (NJ 27) also has the widest cartway width, which allows for some flexibility in roadway configuration, as well as three parking garages in close proximity that provide additional off-street parking capacity.

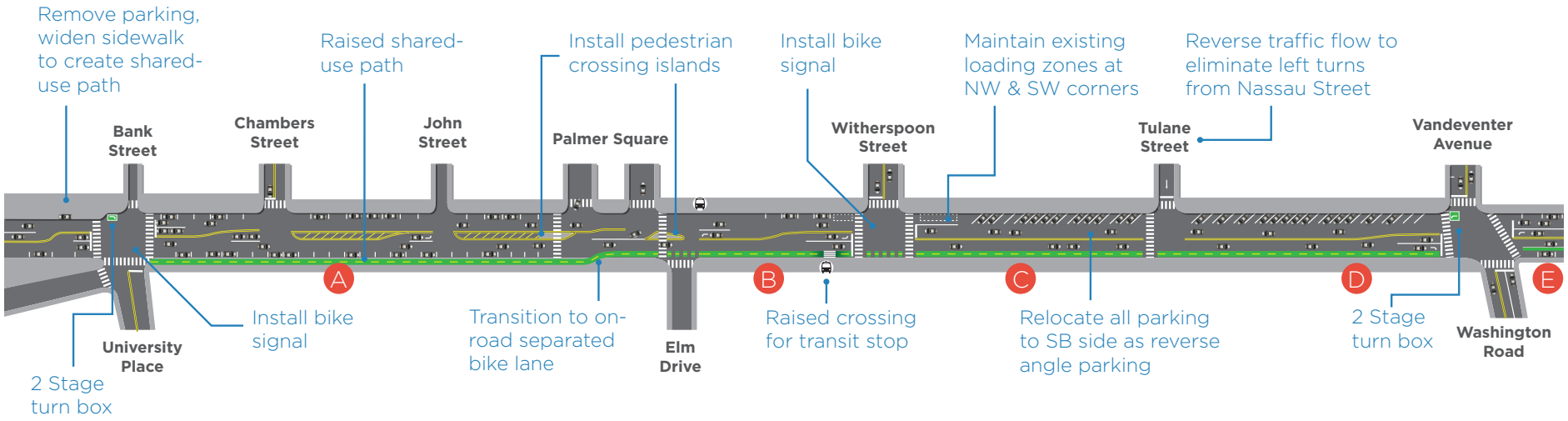
Two concept alternatives are provided for incorporating separated bike lane facilities into the downtown, providing a low-stress facility to the area of peak demand. Both alternatives recommend reversing the traffic flow on South Tulane Street from westbound to eastbound. This change would eliminate the demand for left-turns and a turn bay from Nassau Street (NJ 27) northbound, which allows more design flexibility, and would provide an alternative route option for motorists exiting the Spring Street garage.

The cross sections for the two alternatives are described on the following pages.

In both alternatives, the following design factors should be considered as the concepts are advanced:

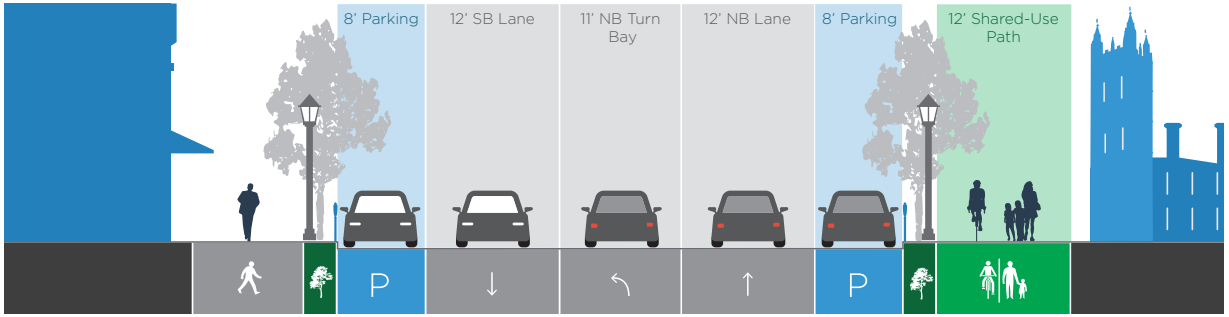
- The switch from parallel parking to reverse-angle parking between Washington Road and Witherspoon Street is not mandatory for implementation of either concept, but allows parking to be concentrated closest to demand (local businesses).
- Loading zones are maintained in their current location in Alternative 1. In Alternative 2, the loading zone would be consolidated to the northwest corner of the Witherspoon Street intersection. A second loading zone could be relocated between Palmer Square and Chambers Street (in lieu of on-street parking), or loading could be accommodated through policy changes to encourage off-peak deliveries.
- At transit stops, buses would typically stop in the travel lane during boarding/alighting. The bike lane would be marked with dashed striping to indicate a mixing area between cyclists and transit passengers. Alternatively, the transit stops could be relocated south of Palmer Square (in lieu of on-street parking).
- As an alternative to reversing traffic flow on South Tulane Street, left-turns from Nassau Street northbound to South Tulane Street could be prohibited and reinforced with changes to the curbing or a traffic diverter to deter the turning movement.

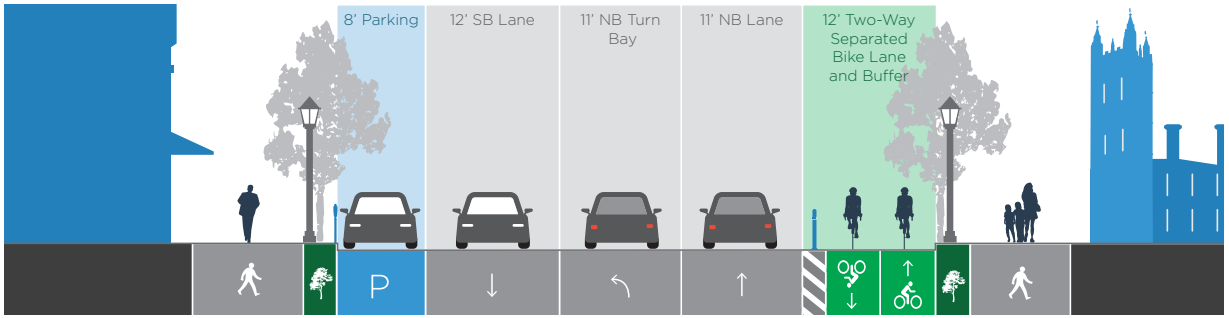
Alternative 1: Two-Way Separated Bicycle Lanes



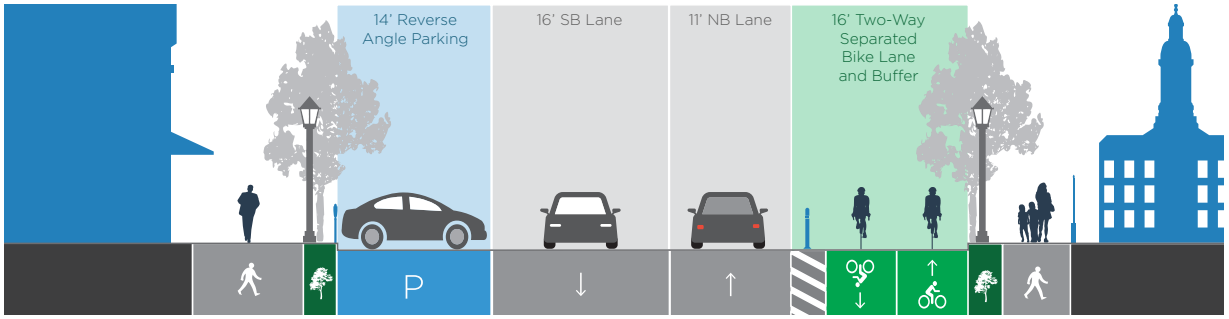
A Between University Place and the Nassau Presbyterian Church in the northbound direction, the existing 6-foot sidewalk is widened to 12 feet to provide a shared-use path. Widening would require taking space from the buffer between the curb and sidewalk, and acquiring right-of-way from Princeton University.

B At the Nassau Presbyterian Church, bicycles are transitioned on-road to two-way separated bike lanes. The existing taxi stand would be relocated to another area.

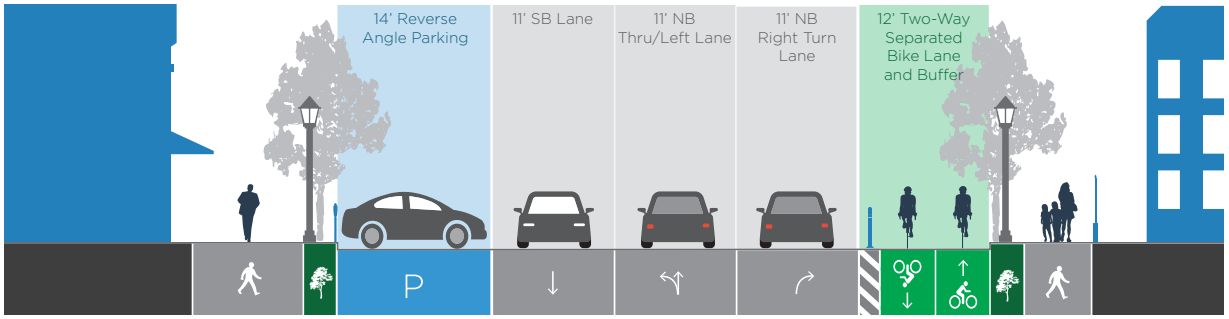




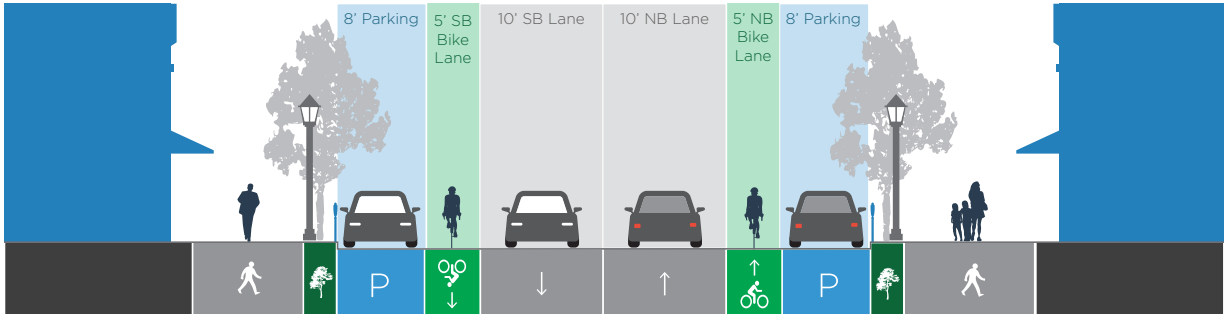
C Between Witherspoon Street and Washington Road, on-street parking is reconfigured from parallel parking on both sides to reverse angle parking on the southbound side only. By reversing traffic flow on Tulane Street, the need for two travel lanes northbound is eliminated.



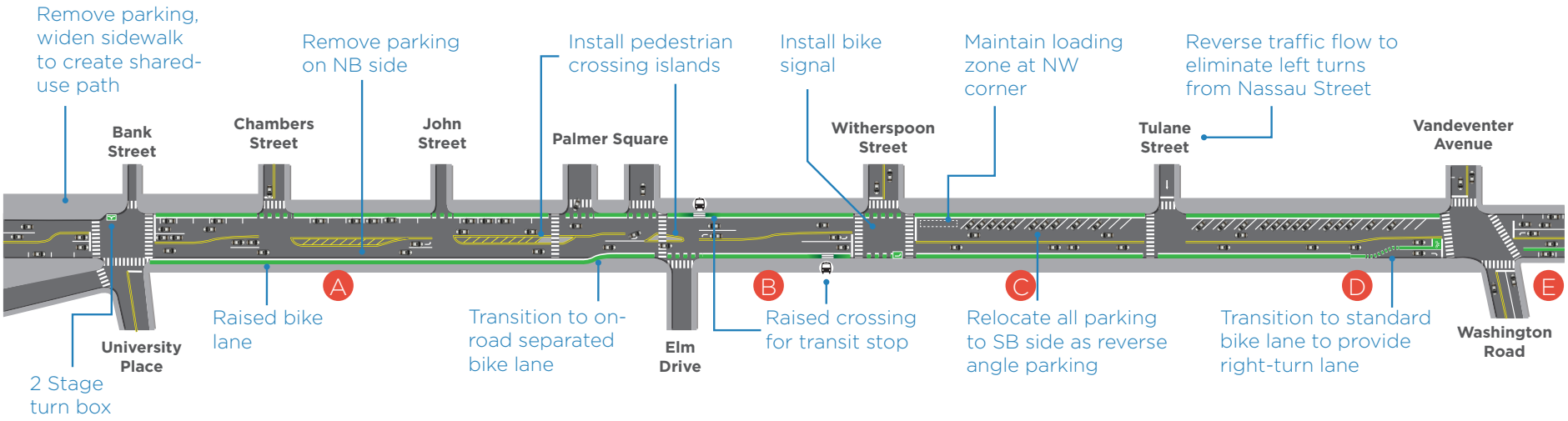
D Approaching the Washington Road intersection, an additional travel lane is provided in the northbound direction for turning vehicles. To accommodate the additional lane, the width of the southbound lane and the width of the two-way separated bike lane and buffer are reduced.

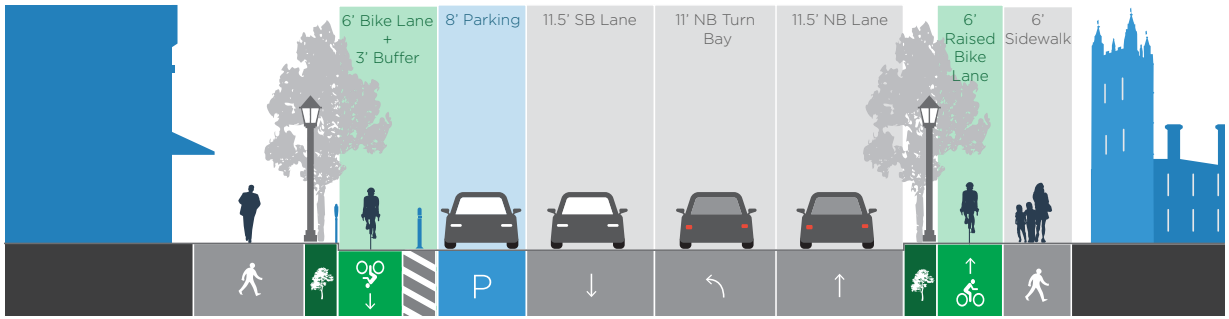


E At Washington Road, the two-way facility must then connect with the proposed one-way standard bicycle lanes. At the Washington Road southbound intersection approach, cyclists are diverted to the two-way separated bicycle lanes on the opposite side of the roadway via a two-stage bike turn box.



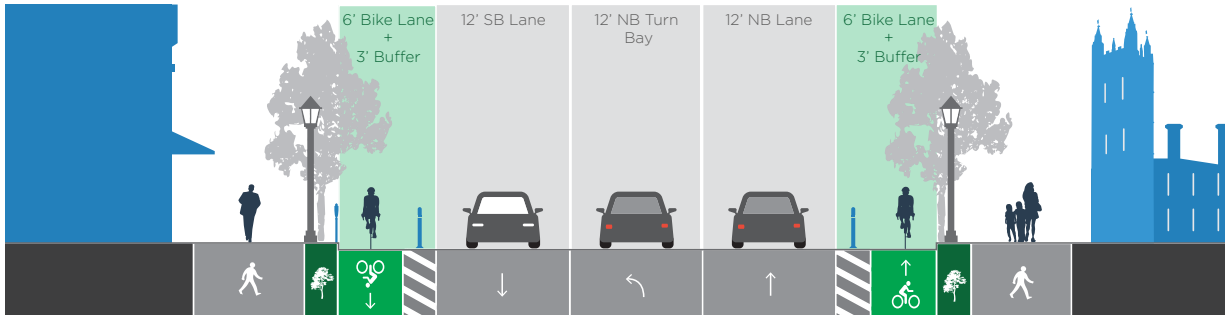
Alternative 2: One-Way Separated Bicycle Lanes



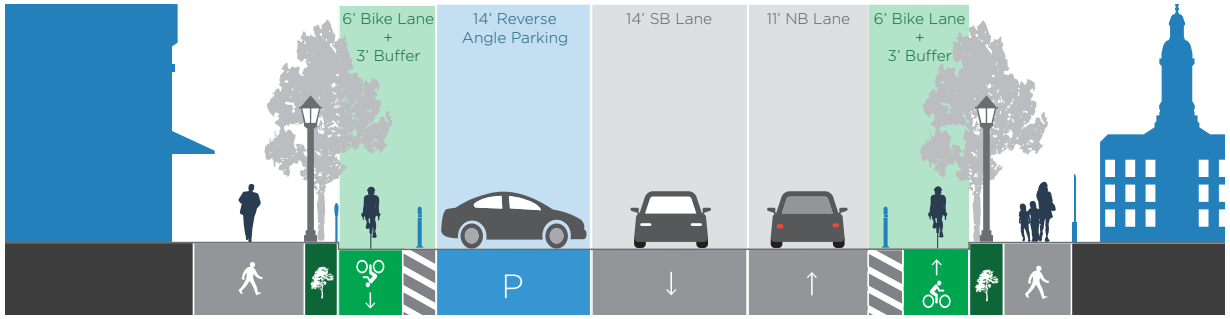


A Between University Place and the Nassau Presbyterian Church, on-street parking is removed from the northbound direction, allowing the vehicular lanes to shift towards the curb. On-street parking is maintained along the southbound side adjacent to businesses. The remaining roadway space is allocated to a one-way southbound separated bicycle lane between the curb and parking. Northbound cyclists are accommodated by a raised separated bicycle lane between the sidewalk and street trees. As with the two-way separated bicycle lane alternative, widening would require taking space from the buffer between the curb and sidewalk and acquiring right-of-way from Princeton University.

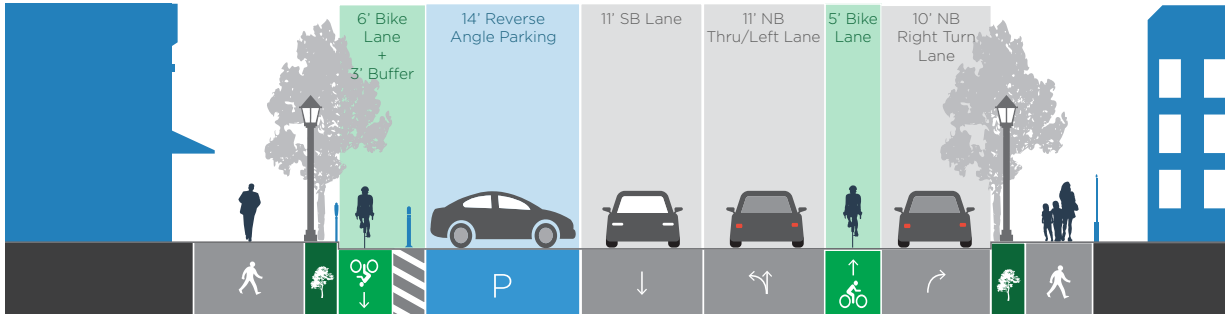
B At the Nassau Presbyterian Church, northbound bicyclists are transitioned on-road to a one-way separated bike lane. The existing taxi stand would be relocated to another area. Parking is removed from the southbound side, and the southbound one-way separated bicycle lane continues along the curb.



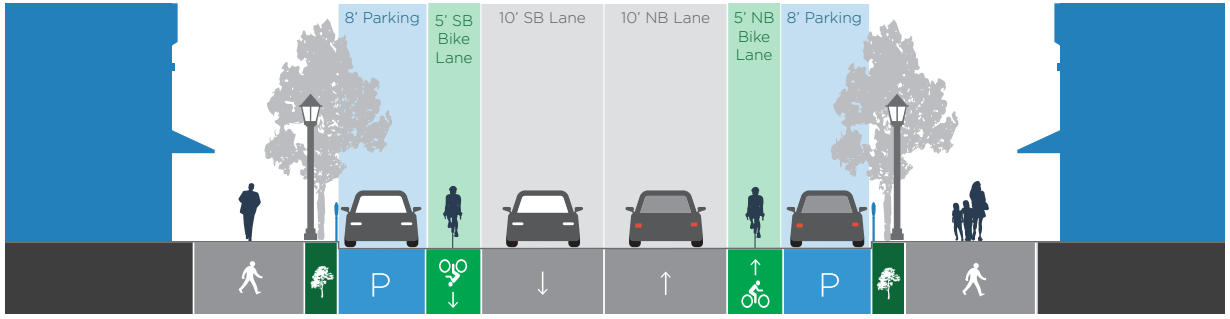
C Between Witherspoon and Washington Road, on-street parking is reconfigured from parallel parking on both sides to reverse angle parking on the southbound side only, and a separated bicycle lane is provided on each side of the street.



D Approaching Washington Road, the separation along the eastbound side ends to provide a right-turn lane. A standard bicycle lane continues northbound between the right-turn lane and through lane.



E At Washington Road, the separated bicycle lane connects with the proposed standard bicycle lanes north of Washington Road.



In conjunction with the proposed separated bicycle lane alternatives, several additional improvements were considered along Nassau Street to provide continuous bicycle facilities along the corridor and connect to other elements of the proposed network, which are summarized in Appendix C. These concepts are generally limited to the existing roadway width and constraints, and may be improved through a more cohesive and consistent design as a part of the proposed Complete Street Corridor Plan.

NJ Route 27 (U.S. 206 to University Place) | New Shared-Use Path

Proposed path is along the westbound side only and would accommodate both pedestrians and bicyclists. An on-road option is not feasible due to the constrained cartway width and difficult circulation pattern at the U.S. 206/ Nassau Street (NJ 27)/Mercer Street intersection. Widening the existing 6-foot sidewalk may require removing on-street parking approaching the University Place intersection and/or eliminating left-turns from Nassau Street to Mercer Street, which would allow the curb line to be adjusted and more space to be allocated to pedestrians and bicyclists. Details of the design will need to be integrated with the proposed separated bicycle lanes on Nassau Street to ensure bicyclists are appropriately diverted to the bicycle-only facility as they travel east on Nassau Street and to minimize potential conflicts with pedestrians. Due to the separation the proposed facility provides, the level of stress is reduced from LTS 4 to LTS 1.

NJ Route 27 at University Place | Bike Box

A two-stage bike box and accompanying bicycle signal would accommodate bicyclists turning left from the proposed westbound separated bicycle lane on Nassau Street (NJ 27) onto University Place.

NJ Route 27 (University Place to Washington Road) | Separated Bicycle Lanes

This section of Nassau Street (NJ 27) is the center of the community, with its vibrant downtown, shops, and restaurants on one side and the Princeton University campus on the other. As the primary hub of community activity, there is a strong demand and need for improved bicycle access with minimal impact to traffic circulation, parking, and pedestrian street life. This section of Nassau Street (NJ 27) also has the widest cartway width, which allows for some flexibility in roadway configuration, as well as three parking garages in close proximity that provide additional off-street parking capacity.

Two concept alternatives are provided for incorporating separated bike lane facilities into the downtown, providing a low-stress facility to the area of peak demand. Both alternatives recommend reversing the traffic flow on South Tulane Street from northbound to southbound. This change would eliminate the demand for left-turns and a turn bay from Nassau Street (NJ 27) eastbound, which allows more design flexibility, and would provide an alternative route option for motorists exiting the Spring Street garage.

The cross sections for the two alternatives are described in the following sections, and illustrated in Chapter 6 of the Princeton BMP.

NJ Route 27 at Palmer Square | Crosswalk Enhancements

Installation of a pedestrian refuge island at the west side of Palmer Square would create a shorter and more comfortable crossing for pedestrians and bicyclists approaching Nassau Street (NJ 27) and the downtown from the proposed Princeton University Campus path connection. The refuge island would require shortening the existing left-turn bay.

NJ Route 27 at Palmer Square/Elm Drive | Crosswalk Enhancements

Installation of a pedestrian refuge island at the east side of Palmer Square would create a shorter and more comfortable crossing for pedestrians and bicyclists approaching Nassau Street (NJ 27) and the downtown from the proposed Elm Drive bicycle boulevard. The refuge island would be located within an existing striped median.

NJ Route 27 at Witherspoon Street | Bike Box

A two-stage bike box and accompanying bicycle signal would accommodate bicyclists turning left from the proposed eastbound separated bicycle lane on Nassau Street (NJ 27) onto Witherspoon Street.

NJ Route 27 at Washington Road | Bike Box

A two-stage bike box would accommodate bicyclists turning left from the proposed eastbound separated bicycle lane on Nassau Street (NJ 27) onto Vandeventer Avenue.

NJ Route 27 (Washington Road to Moore Street) | Bicycle Lanes

Provides dedicated space for bicyclist through the central core, connecting to enhanced shared-lane markings to the east and separated bicycle lanes to the west. The existing 46-foot cartway width would be divided with 8-foot parking lanes, 5-foot bicycle lanes, and 10-foot travel lanes. LTS is lowered from LTS 3 to LTS 2.

NJ Route 27 (Moore Street to Harrison Street) | Enhanced Shared-Lane Markings

Upgrade existing shared-lane markings to enhanced, connecting NJ 27 bicycle lanes to the east and west. Speed limit reduced from 30/35 to 25 along the entire corridor, creating a consistent driver expectation and appropriate for the surrounding land use context. Maintains existing LTS 3/4 throughout.

appendix e – nassau street alternatives

princeton bicycle master plan | **2017**