



TECHNICAL MEMORANDUM:

# STOP LOCATIONS AND DESIGN ELEMENTS

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**Date:** April 2016

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**PREPARED FOR:**

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## EXECUTIVE SUMMARY

This technical memorandum summarizes the stop design elements of a typical stop location for the TramLinkBR project and summarizes the analysis conducted to select stop locations for the locally preferred alternative (LPA).

### **Stop Design Elements**

A typical stop location for the TramLinkBR project will have level boarding platforms with ADA accessible ramps, guard rails and detectable warning strips. They will contain simple shelters with bench seating and trash receptacles. Other potential amenities that may be included at stop locations include off-vehicle fare collection, real-time vehicle arrival displays, public art, landscaping and a bike rack.

Downtown tram stops will utilize a curb-side bumpout design, where platforms will be placed alongside the sidewalk, in what is typically space for parking. Along Nicholson Drive, if the track is placed in the inside lane, the stop platforms would be placed within the median. If the track is placed in the outside lane of Nicholson Drive, the stop platforms would be integrated with the sidewalks because the current right of way is insufficient to separate the sidewalks and platforms and maintain two travel lanes in each direction.

### **Selected Stop Locations for the LPA**

Following the January 28, 2016 public meeting, local input was considered and additional engineering and operational planning was completed to refine the project elements. As a result, some stop locations were modified to align with the selected route alternative in downtown and to address engineering and operational criteria along Nicholson Drive. In addition, stop locations along Nicholson Drive were coordinated with LA-DOTD plans for roadway improvements along Nicholson Drive and a potential relocation of the I-10 freeway ramp. The recommendations made for the U.S. DOT Bike and Pedestrian Mobility Assessment of the OSBR Neighborhood were also considered.

On February 26, 2016 the TramLinkBR Steering Committee recommended the locally preferred alternative (LPA) for the project, which included the selected stop locations. On March 3, 2016 the City-Parish announced the locally preferred alternative for the project and sent out a press release.

In the downtown area, the locally preferred stop locations include: North Street, Florida Street, North Boulevard, Government/Spain Street and Europe Street.

Along Nicholson Drive the locally preferred stop locations include: Terrace/Water Street, Oklahoma Street (alternate/future stop), Van Buren Street, McKinley Street, Aster Street, Galvez Court and North Stadium Drive.

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# 1 INTRODUCTION

The purpose of this memorandum is to detail stop location design elements and the process used to determine the stop locations for the TramLinkBR project. The recommended stop locations and designs will be included in the Locally Preferred Alternative and evaluated in greater detail in the Environmental Assessment being prepared for this project.

## 2 STOP DESIGN ELEMENTS

### 2.1 Basic Program Elements

The basic program elements for TramLinkBR stop locations include:

- Level boarding platform
- ADA accessible ramps to platform
- Simple shelter with seating
- Guard rail and warning strip
- Signage and trash receptacle

Other potential amenities that may be included at stop locations include off-vehicle fare collection, real-time vehicle arrival displays, public art, landscaping and a bike rack.

### 2.2 Typical Stop Layout and Designs

Downtown tram stops will utilize a curb-side bumpout design, where platforms will be placed alongside the sidewalk, in what is typically space for parking.

Along Nicholson Drive, two options for the placement of track are being evaluated. One option would place the track in the inside travel lane and the other option would place the track in the outside travel lane. The track alignment affects the placement of the stop platform.

If the track is placed in the inside lane, the stop platforms would be placed within the median. The median platforms would be placed at intersections with traffic signals and integrated with the cross walks to give pedestrians safe access to adjacent land uses.

If the track is placed in the outside lane of Nicholson Drive, the stop platforms would be integrated with the sidewalks because the current right of way is insufficient to separate the sidewalks and platforms and maintain two travel lanes in each direction.

A typical stop layout, cross section and rendering were prepared for downtown bumpout stops (**Figures 1-3**), Nicholson Drive median stops (**Figures 4-6**) and Nicholson Drive sidewalk stops (**Figures 7-9**).

Figure 1: Downtown Bumpout Stop - Plan View

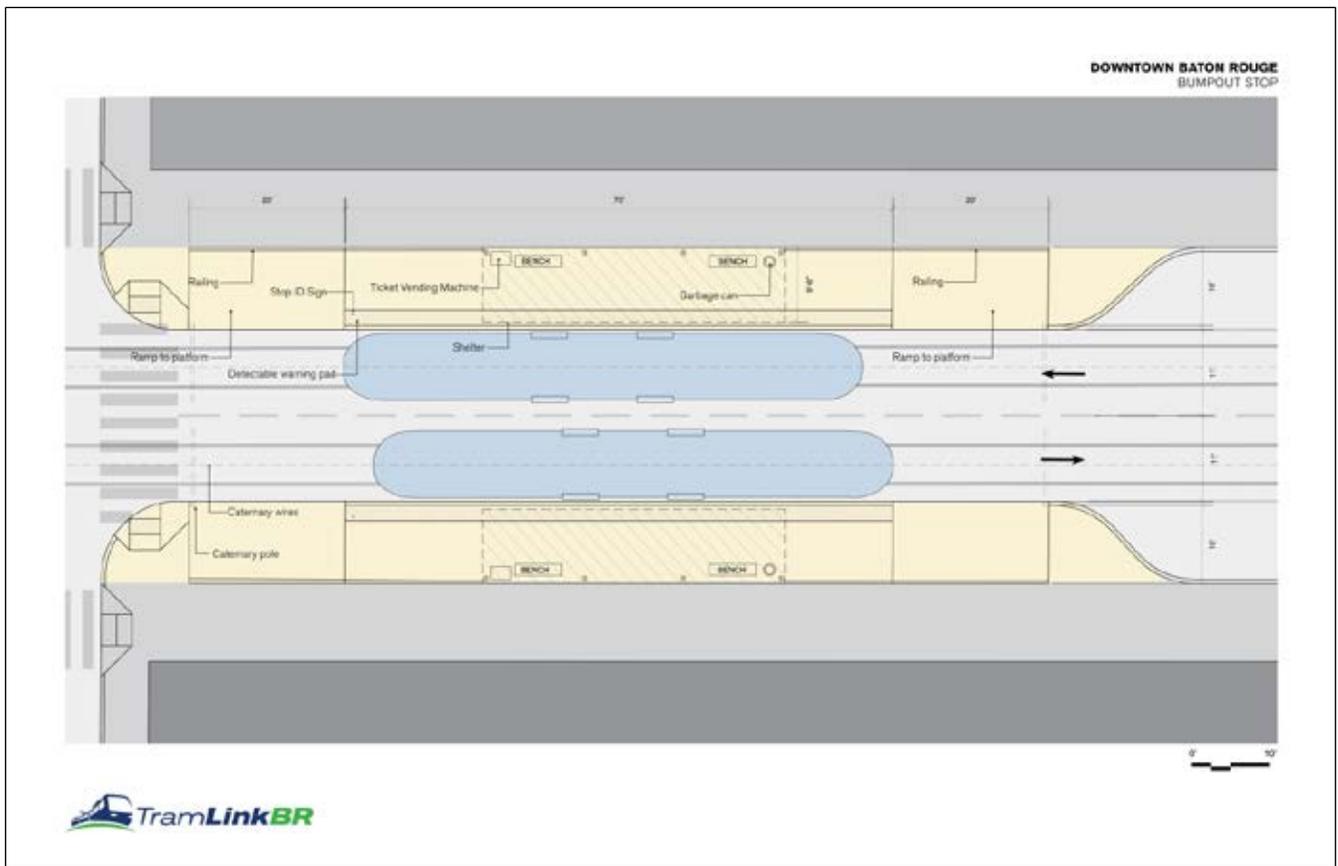


Figure 2: Downtown Bumpout Stop - Cross Section View



Figure 3: Downtown Bumpout Stop – Conceptual Rendering



*Conceptual rendering of downtown bumpout stop looking north along Fourth Street towards the Louisiana State Capitol.*

Figure 4: Nicholson Drive Median Stop - Plan View

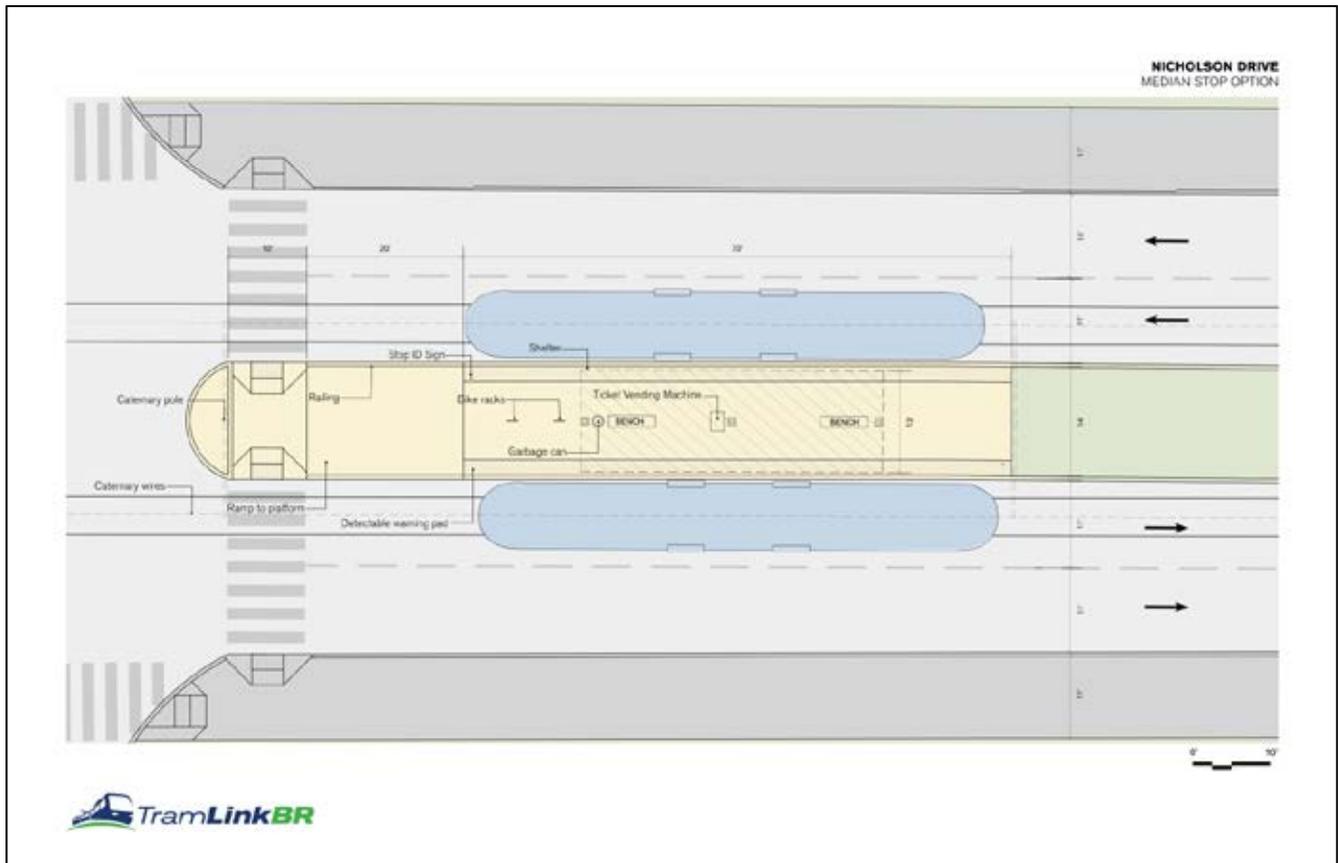


Figure 5: Nicholson Drive Median Stop - Cross Section View



Figure 6: Nicholson Drive Median Stop – Conceptual Rendering



*Conceptual rendering of median stop looking northwest at the intersection of Nicholson Drive and Van Buren Street.*

Figure 7: Nicholson Drive Sidewalk Stop - Plan View

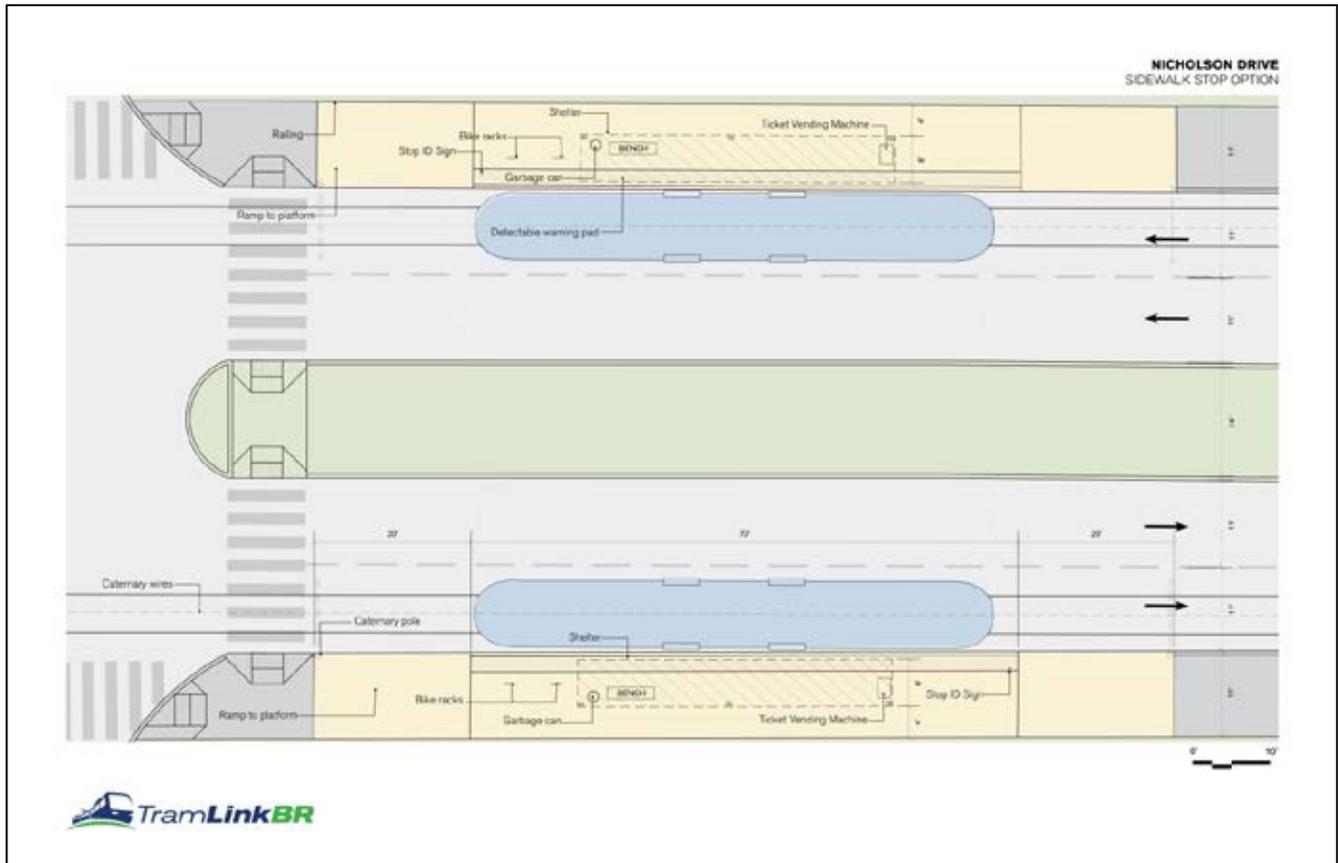


Figure 8: Nicholson Drive Sidewalk Stop - Cross Section View



Figure 9: Nicholson Drive Sidewalk Stop – Conceptual Rendering



*Conceptual rendering of sidewalk stop looking northwest at the intersection of Nicholson Drive and Van Buren Street.*

## 3 STOP LOCATIONS

This section discusses the placement of stop locations for the TramLinkBR project. The final placement of actual platform locations will be determined as part of the Advanced Conceptual Engineering design plans.

### 3.1 Placement Criteria

The following criteria were used to help guide the placement of stop locations along the project corridor:

- **Transit operations and stop spacing:** In the downtown area, where development is the densest, stops should be spaced approximately 800 feet to 1,200 feet (2-3 blocks) apart to provide frequent access to the system. Along Nicholson Drive where development is intermittent, the stops should be placed approximately one-quarter to one-half mile apart. This spacing provides a balance between access to the system and efficient transit operations.
- **Transportation connectivity:** Stop locations should connect to the existing and planned multimodal transportation system including roadway, transit and bike and pedestrian facilities.
- **Activity Generators:** Stop locations should be convenient to local activity generators along the corridor including entertainment and cultural attractions, civic uses, job centers, hotels, clusters of commercial and office development and residential neighborhoods.
- **Local plans:** The stop locations should be consistent with local land use and transportation planning efforts in the corridor, such as the LSU Nicholson Gateway, the LA-DOTD Nicholson Drive rehabilitation project and the proposed LA-DOTD freeway ramp relocation project. Also, the stop locations should take into consideration the proposed bike and pedestrian recommendations made in the U.S. DOT Bike and Pedestrian Mobility Assessment of the OSBR Neighborhood.
- **Engineering design:** Stop locations must be consistent with the Advanced Conceptual Engineering plans and traffic analyses conducted for the project.

### 3.2 Preliminary Stop Locations by Alternative

**Figure 10** shows the preliminary stop locations that were presented at the January 28, 2016 public meeting. These preliminary options include potential stop locations for each downtown alternative and along Nicholson Drive.

Figure 10: Preliminary Stop Locations by Route Alignment Option



### 3.3 Selected Stop Locations for the LPA

Following the January 28, 2016 public meeting, local input was considered and additional engineering and operational planning was completed to refine the project elements. As a result, some stop locations were modified to align with the selected route alternative in downtown and to address engineering and operational criteria along Nicholson Drive. In addition, stop locations along Nicholson Drive were coordinated with LA-DOTD plans for roadway improvements along Nicholson Drive and a potential relocation of the I-10 freeway ramp. The recommendations made for the U.S. DOT Bike and Pedestrian Mobility Assessment of the OSBR Neighborhood were also considered.

On February 26, 2016 the TramLinkBR Steering Committee recommended the locally preferred alternative (LPA) for the project, which included the selected stop locations. On March 3, 2016 the City-Parish announced the locally preferred alternative for the project and sent out a press release. The selected stop locations are shown in **Figure 11**.

In the downtown area, the locally preferred stop locations include: North Street, Florida Street, North Boulevard, Government/Spain Street and Europe Street. Along Nicholson Drive, the locally preferred stop locations include: Terrace/Water Street, Oklahoma Street (alternate/future stop), Van Buren Street, McKinley Street, Aster Street, Galvez Court and North Stadium Drive.

The following subsections describe the rationale for each stop location as they relate to the placement criteria described in Section 3.1. Supporting figures for the stop recommendations include:

- **Figure 11:** Stop locations and stop spacing
- **Figure 12:** Multimodal transportation connectivity
- **Figure 13:** Activity generators map showing the proximity of stop locations to activity generators including exiting land uses, planned redevelopment districts and other attractions and destinations.
- **Figure 14:** Planned LA-DOTD roadway projects and proposed traffic signal changes along Nicholson Drive

#### 3.3.1 DOWNTOWN STOP LOCATIONS

The downtown alignment contains five stop locations as described below.

##### NORTH STREET

The northernmost stop of the TramLinkBR project is along the tram's Fourth Street alignment at North Street. This stop location was chosen because it is not only the northern terminus, but it is also near major employment and activity areas including the state government buildings, cultural attractions, the IBM Campus and the Louisiana State Capitol. (See **Figure 13** for land uses and activity generators in this area.)

As shown on **Figure 11**, the stop is 1,140 feet or three blocks from the next stop at Florida Street and is consistent with stop spacing criteria for downtown.

## FLORIDA STREET

The Florida Street stop is along the tram's Fourth Street alignment. Florida Street is a main east-west thoroughfare connecting downtown with the east side of the city and Interstate 110. Florida Street is also a key transit corridor for CATS. Bus routes 72 and 44 run along Florida Street and connect downtown with the CATS bus hub at Florida and 22<sup>nd</sup> Street. (See **Figure 12** for multimodal transportation connectivity.)

The Florida Street stop is also centrally located to many major office and commercial uses within the downtown area. (See **Figure 13** for land uses and activity generators in this area.) A number of new developments have also been recently completed or are under construction in this area and additional infill/redevelopment opportunities are present.

As shown in **Figure 11**, the stop is 800 feet or two blocks from the next stop at North Boulevard, which is consistent with stop location spacing criteria in the downtown area.

## NORTH BOULEVARD

The North Boulevard stop is along the St. Ferdinand Street tram alignment. It serves Town Square, an area of downtown that has become a central gathering space for the community. This area contains public spaces surrounded by cultural and civic uses including the city hall complex, the county court house, the Shaw Center for the Arts and Louisiana's Old State Capitol. This stop location also serves the majority of restaurants/bars in the downtown area and the region's largest office towers. (See **Figure 13** for land uses and activity generators in this area.)

As shown in **Figure 11**, the North Boulevard stop is approximately 1,200 feet or 3 blocks from the next stop at Government/Spain Street, which is consistent with the stop location spacing criteria for downtown.

## GOVERNMENT/SPAIN STREET

The Government/Spain Street stop is along the tram's St. Ferdinand alignment. It is planned as a park and ride stop and could be a future multimodal hub. (See **Figure 12** for multimodal transportation connectivity.) The stop was placed to align with two existing city-owned parking structures, known as the East and West River Center parking garages, which contain 1,350 parking spaces and are connected via an overhead pedestrian bridge that goes over St. Louis Street. The east and west parking structures connect to the Baton Rouge River Center, which hosts over 500 events per year within its facilities.

The stop could also become a multimodal hub in the future with a tram stop next to a proposed bus transit hub. CATS and the City-Parish are exploring the potential for a downtown CATS transit center immediately north of the existing East River Center parking garage. An additional 800 parking spaces could be added to the east parking garage as part of this project, when demand warrants, bringing the total parking spaces to 2,150.

Government Street is a major east-west thoroughfare for the community, serving as a main route into downtown Baton Rouge from the west. Bus route 12 currently runs along Government Street and would provide connectivity between the tram and the CATS bus system. As shown in **Figure 11**, the stop is approximately 890 feet or 2.5 blocks from the next stop at Europe Street, which is consistent with the stop location spacing criteria for downtown.

## EUROPE STREET

The Europe Street stop is the southern-most stop in downtown and is located along Europe Street where the alignment transitions between St. Louis Street and St. Ferdinand Street. The stop provides a local connection to the Beauregard Town neighborhood and the nearby Belle of Baton Rouge Casino & Hotel. (See **Figure 13** for land uses and activity generators in this area.)

As shown in Figure 11, the stop is 0.35 miles from the next stop along Nicholson Drive at Terrace/Water Street. This is consistent with stop location spacing criteria for Nicholson Drive and is consistent with the relatively low density levels of the southern end of downtown.

### 3.3.2 NICHOLSON DRIVE STOP LOCATIONS

The Nicholson Drive alignment contains six stop locations and one alternative/future stop location as described below.

#### TERRACE/WATER STREET

The first stop along Nicholson Drive is the Terrace/Water Street stop. This stop is aligned with the existing and planned Water Campus development that is located on the western side of Nicholson Drive between South Boulevard and Oklahoma Street. It also serves the northern portion of the Old South Baton Rouge neighborhood. (See **Figure 13** for land uses and activity generators in this area.)

Planned roadway improvements influence the location of the stop and its platforms in this area. LA-DOTD plans to add a new traffic signal at the new Water Street as part of the Nicholson Drive rehabilitation project. Also, a new traffic signal would be added at Oklahoma Street and the existing traffic signal at Terrace Avenue would be removed as part the proposed LA-DOTD freeway ramp relocation project. The placement of the stop location is compatible with both of these projects and would not preclude their development. (See **Figure 14** for planned roadway improvements.)

As shown on **Figure 11**, the Terrace/Water Street stop is roughly 0.55 miles from the next stop at Van Buren Street. This is slightly greater than the recommended  $\frac{1}{4}$ -mile to  $\frac{1}{2}$ -mile stop placement along Nicholson Drive, but still would provide adequate tram access for this area as demonstrated by the  $\frac{1}{4}$ -mile buffers around each stop location on **Figure 11**.

#### OKLAHOMA STREET (ALTERNATE STOP LOCATION)

The Oklahoma Street stop is being evaluated in the Environmental Assessment as an alternate stop location to the Terrace/Water Street stop. Since LA-DOTD is planning so many potential changes to the roadway and traffic signals for this area, evaluating an alternate stop will provide flexibility during the design phase to finalize the best placement of the stop location at the northern end of Nicholson Drive. Under current development levels, a stop in both locations would not be warranted at this spacing distance, which is only 0.15 miles between Terrace/Water Street and Oklahoma Street.

The Terrace/Water Street stop provides a more direct connection to the Water Campus development and currently would provide the most direct connectivity to the Terrace Street corridor in the Old South Baton Rouge neighborhood. However, under LA-DOTD plans to relocate and construct an I-10 freeway ramp, the traffic signal at Terrace Street would be removed and access at Terrace and Highland Avenue would be

closed. Oklahoma Street would then become the northern most street with east-west access between Nicholson Drive and Highland Avenue. As a result of these potential changes, a stop location at Oklahoma is being considered as an alternate stop location.

#### VAN BUREN STREET

The Van Buren Street stop provides a crucial connection to the central portions of the Old South Baton Rouge neighborhood providing one of the neighborhood's east-west connections between Nicholson Drive and Highland Avenue. Tram access at Van Buren Street is consistent with the U.S. DOT mobility assessment for the Old South Baton Rouge neighborhood which identifies Van Buren as a critical route to facilitate pedestrian movements from the neighborhood to the Nicholson Drive corridor. (See **Figure 14.**) This stop will also provide future access to the planned River District development. (See **Figure 13** for land uses and activity generators in this area.)

A new traffic signal at Van Buren Street is proposed as part of the LA-DOTD Nicholson Drive rehabilitation project. The signal will facilitate safe pedestrian crossings at this stop location. (See **Figure 14.**)

As shown in **Figure 11**, the Van Buren Street stop is approximately 0.40 miles from the McKinley Street stop. This is consistent with the recommended  $\frac{1}{4}$ -mile to  $\frac{1}{2}$ -mile stop spacing criteria for Nicholson Drive.

#### MCKINLEY STREET

The McKinley Street stop location is the next logical stop south of Van Buren Street. It is located south of the BREC Magnolia Mound Plantation and would serve as a southern connection point to the planned River District development. (See **Figure 13** for land uses and activity generators in this area.)

The stop location provides strong transportation connectivity since McKinley Street is an east-west corridor linking Nicholson Drive and Highland Road and providing convenient access to the southern end of the Old South Baton Rouge neighborhood. Also, McKinley Avenue connects with River Road to the west of Nicholson Drive which makes the stop location accessible from the exiting bike trail along the levy. (See **Figure 14.**)

The U.S. DOT mobility assessment conducted for the Old South Baton Rouge neighborhood identified McKinley Avenue as a critical route to facilitate bicycle mobility. The stop location would facilitate easy transfers between bike and transit users. Furthermore, this stop location connects with bus route 14, the only CATS bus route to currently connect with Nicholson Drive. (See **Figure 14.**)

This stop is also consistent with LA-DOTD roadway plans. A traffic signal is proposed at McKinley Avenue as part of the Nicholson Drive rehabilitation project. This will help facilitate safe pedestrian crossing at this stop location. (See **Figure 14.**)

This stop location would also serve the Roosevelt Street area, which is only three blocks to the south. The planned LA-DOTD rehabilitation project for Nicholson Drive as part of the Road Transfer program will construct sidewalks along both sides of Nicholson Drive, which will greatly improve pedestrian mobility and safety along Nicholson Drive, allowing easier access to tram stop locations from the neighborhood and existing and future businesses. See **Figure 11** that shows stop location spacing and  $\frac{1}{4}$ -mile buffers around each stop location. As shown in **Figure 11**, the McKinley Street stop is approximately 0.3 miles from the next stop at Aster Street. This is consistent with the recommended  $\frac{1}{4}$ -mile to  $\frac{1}{2}$ -mile stop spacing criteria for Nicholson Drive.

## ASTER STREET

The Aster Street stop is located at the southern end of the Old South Baton Rouge neighborhood and the northern end of the LSU campus. (See **Figure 13** for land uses and activity generators in this area.)

Aster Street provides the last contiguous connection between Nicholson Drive and Highland Road and also connects with River Road and the bike trail along the levy. Aster Street also provides connectivity between Nicholson Drive and the North Gate business district along Highland Road on the east side of campus. In addition, Aster Street is a major ingress-egress point for LSU students, faculty and visitors. As part of their master planning efforts, LSU is planning to make improvements to Aster Street to make it feel more like a roadway instead of a parking lot. This will help facilitate connectivity to the tram stop location for the neighborhood and for LSU activities. LA-DOTD is also planning to add a new traffic signal at Aster Street as part of the Nicholson Drive rehabilitation project. (See **Figure 14**.)

The Aster Street stop location is consistent with the mobility assessment conducted by the U.S. DOT for the Old South Baton Rouge neighborhood that recommended a stop location at Aster Street instead of Roosevelt Street for the reasons discussed above. The McKinley Street and Aster Street stop locations are each only three blocks from Roosevelt Street and should provide ample access for the southern end of Old South Baton Rouge neighborhood. As mentioned above, the planned LA-DOTD rehabilitation project for Nicholson Drive will construct sidewalks along both sides of Nicholson Drive, which will greatly improve pedestrian mobility and safety along Nicholson Drive. The stop is located approximately 0.2 miles from the next stop at Galvez Court.

## GALVEZ COURT

The Galvez Court stop location is located between Aster Street and North Stadium Drive. This stop location is consistent with LSU Nicholson Gateway Plans, which call for a heavily-travelled pedestrian corridor in this area between the Nicholson Gateway development and the LSU campus. (See **Figure 13** for land uses and activity generators in this area.) This stop is likely to serve a substantial number of LSU students since it is most central to campus and would serve future student housing that is planned for the Nicholson Gateway project.

As shown in **Figure 11**, the stop is located approximately 0.3 miles from the next stop at North Stadium Drive. This is consistent with the recommended  $\frac{1}{4}$ -mile to  $\frac{1}{2}$ -mile stop spacing criteria for Nicholson Drive.

## NORTH STADIUM DRIVE

The North Stadium Drive stop is the southern terminal stop location along Nicholson Drive. This stop location provides direct access to the LSU campus and athletic facilities, such as Tiger Stadium and Pete Maravich Assembly Center. It is also adjacent to the planned Nicholson Gateway redevelopment project. (See **Figure 13** for land uses and activity generators in this area.)

Figure 11: Selected Stop Locations for LPA



Figure 12: Multimodal Transportation Connectivity

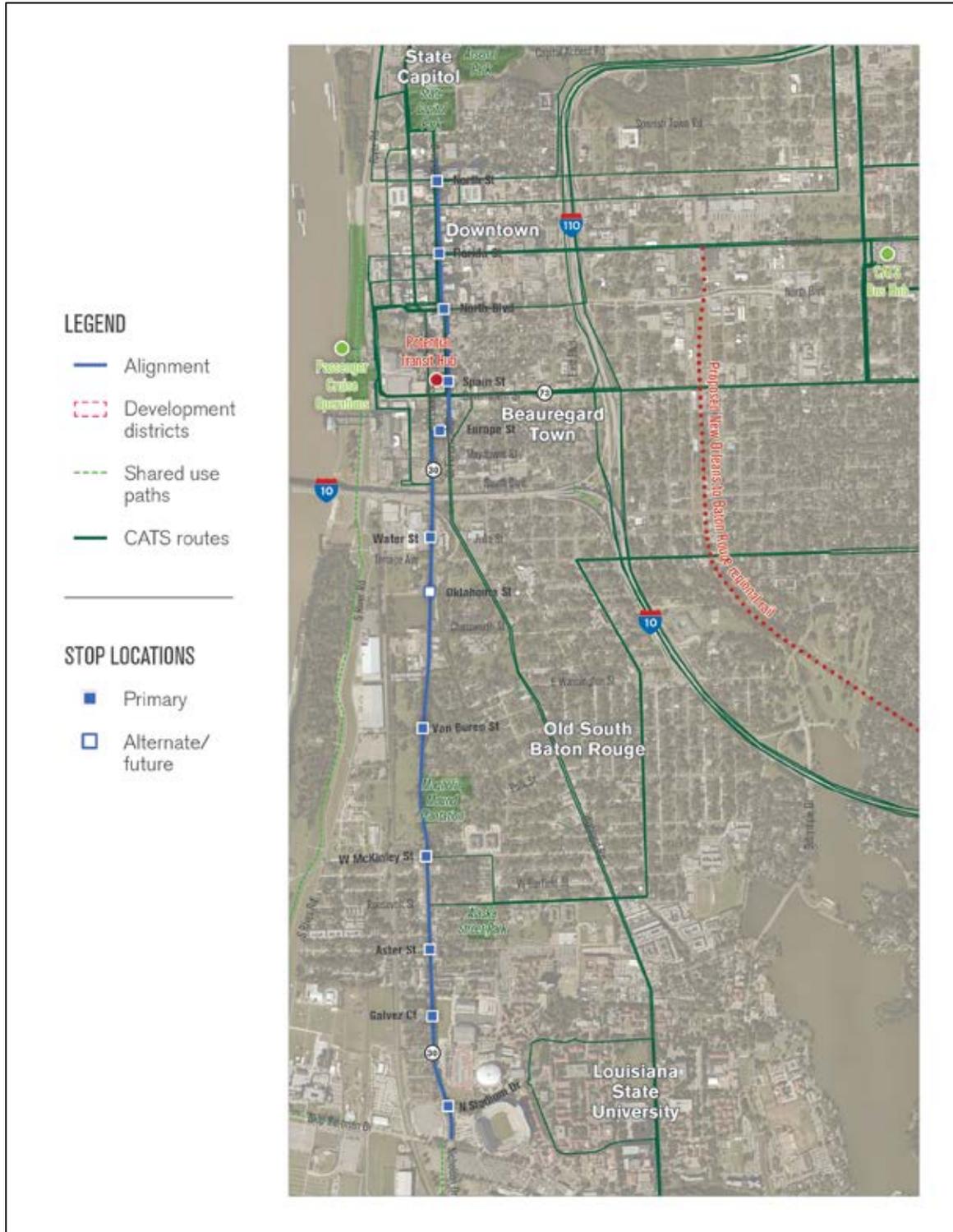
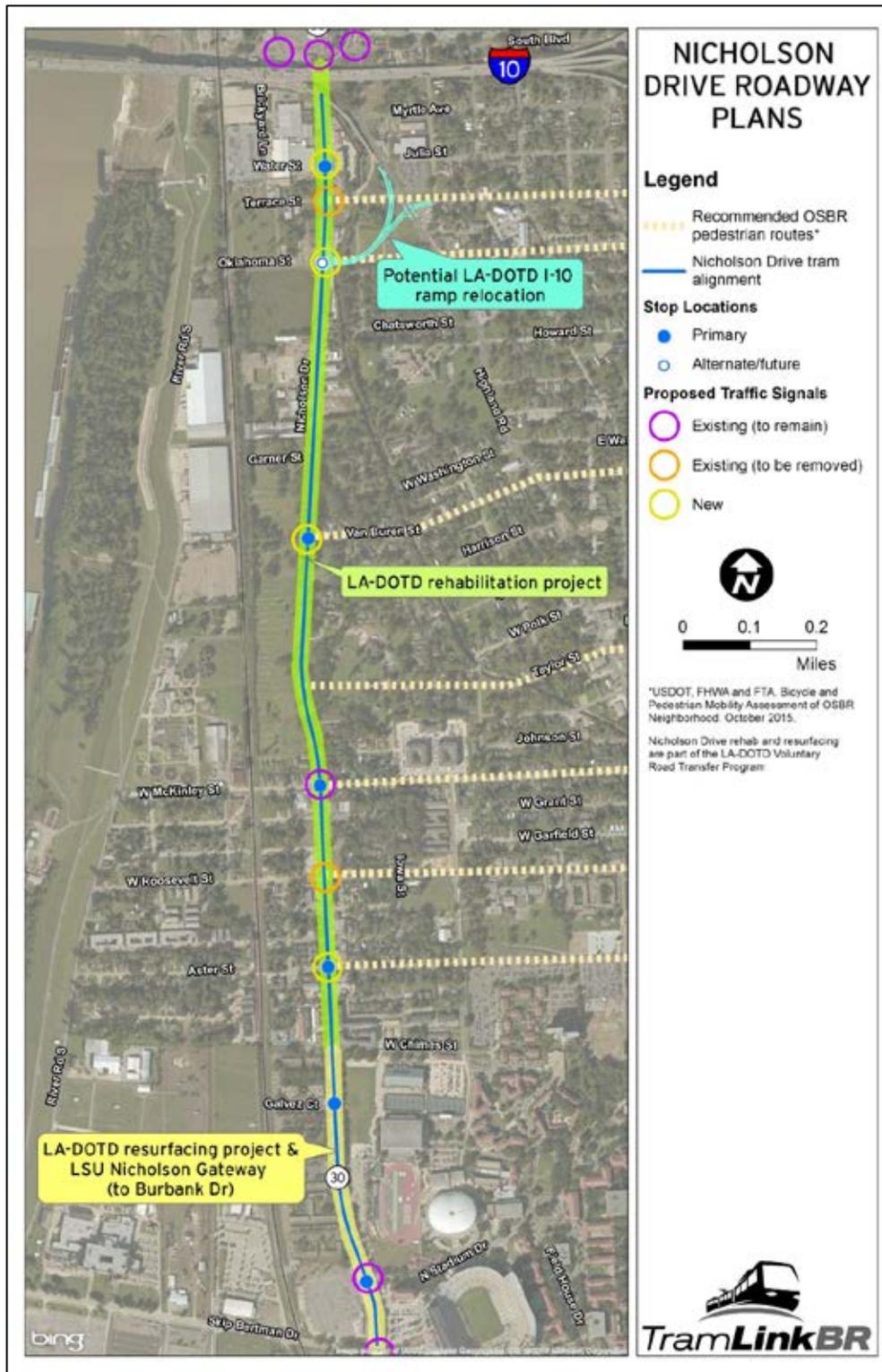


Figure 13: Activity Generators and Land Use



Figure 14: Planned Roadway Projects and Pedestrian Corridors



### 3.4 Stop Locations Eliminated

This section analyzes some stop locations that have been considered throughout this phase of the project, but were eventually eliminated from consideration.

#### LOUISIANA AVENUE

Louisiana Avenue was eliminated from consideration as a stop location due to spacing. Louisiana Avenue is located too close to Government/Spain Street and North Boulevard stops.

#### MAYFLOWER STREET

A stop at Mayflower Street was previously considered and shown at the January 28, 2016 public meeting, but has been eliminated from consideration. The northbound platform is not feasible because the tram must remain in the inside lane of St. Louis Street to avoid the traffic backups associated with the LA-DOTD freeway ramp entrance between Europe Street and Mayflower Street. A median platform is also not feasible because the existing right of way does not allow sufficient space. A southbound bumpout stop is feasible at Mayflower Street. However, the ridership potential is limited due to the presence of the power substation and the planned operations and maintenance facility site for the project. As a result of these challenges, the stop was moved to Europe Street between St Louis Street and St Ferdinand Street. This avoided the engineering and traffic challenges and improved access to the Beauregard Town neighborhood to the east.

#### CHATSWORTH STREET

A stop near Chatsworth Street on Nicholson Drive was previously considered and shown at the January 28, 2016 public meeting. However, this location is no longer being considered. The current development levels along Nicholson Drive do not warrant a stop between Terrace/Water Street and Van Buren Street. Also, Chatsworth Street does not connect with Nicholson Drive, limiting east-west neighborhood connections. In addition, LA-DOTD plans for Nicholson Drive do not warrant a traffic signal at this location due to the lack of cross streets. Integrating stops with traffic signals along Nicholson Drive is essential to ensure pedestrian safety.

#### ROOSEVELT STREET

Roosevelt Street was evaluated as a potential stop location, but was eliminated from consideration because of its close spacing to adjacent stop locations. Roosevelt Street is approximately 740 feet or three blocks to the McKinley Street stop to the north and about 740 feet or three blocks to the Aster Street stop to the south. Both McKinley and Aster street stops would provide access from Roosevelt Street. Additionally, as part of the Nicholson Drive rehabilitation project, LA-DOTD plans to remove the traffic signal at Roosevelt Street. As stated previously, integrating stops with traffic signals along Nicholson Drive is essential to ensure pedestrian safety. Also, the A mobility assessment conducted by the U.S. DOT for the Old South Baton Rouge neighborhood recommended a stop location at Aster Street instead of Roosevelt Street.