



U.S. Department
of Transportation
**Federal Highway
Administration**

Texas Division

April 29, 2022

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In Reply Refer To:
HTA-TX

Mr. William M. Johnson
Director
Transportation and Public Works Department
City of Fort Worth
City Hall – Second Floor
200 Texas Street
Fort Worth, TX 76106

Dear Mr. Johnson:

Enclosed for your use is the Belknap Street Pedestrian and Bicycle Road Safety Assessment conducted by the Federal Highway Administration with assistance from the North Central Texas Council of Governments and other partners. The report includes several recommendations for improving pedestrian and bicyclist safety along the Belknap Street corridor from Pecan Street to Lexington Street. Thank you for the City's interest in improving pedestrian safety for the corridor, hosting the assessment, and providing the staff from multiple departments.

After the City of Fort Worth has completed its response to the recommendations, please provide me with a copy. If needed, my office is available to provide further technical assistance to help implement the recommendations. We look forward to continuing our work with the City to advance pedestrian and bicyclist safety and achieve vision zero.

Sincerely,

Amelia (Millie) Hayes, P.E., PTOE, RSP²¹
Safety and Traffic Operations Specialist

Enclosure

cc: Tanya Brooks, City of Fort Worth
Chelsea St. Louis, City of Fort Worth
Namoo Han, City of Fort Worth
Karla Windsor, NCTCOG
Kevin Kokes, NCTCOG



Road Safety Audit Belknap Street Fort Worth, TX

APRIL 29, 2022

Facilitated by: Amelia (Millie) Hayes, P.E., PTOE, RSP₂₁
FHWA Texas Division



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Background

In 2021 the North Central Texas Council of Governments (NCTCOG) and the Federal Highway Administration (FHWA), along with regional stakeholders, created a regional Pedestrian Safety Action Plan (PSAP) that was adopted by the Regional Transportation Council. Texas is a [FHWA pedestrian and bicycle Focus State](#) and Dallas and Fort Worth were Focus Cities until the late 2021. As part of the PSAP efforts to improve pedestrian safety throughout the NCTCOG region, pedestrian safety focused Road Safety Audits (RSA) were identified as a tool to help road owners identify possible improvements along priority corridors. FHWA agreed to facilitate several RSAs under the Focused Approach to Safety, including the Belknap Street corridor in downtown Fort Worth. The City of Fort Worth adopted a Vision Zero resolution in November 2019, and subsequent Vision Zero effort have included identification of a pedestrian high-injury network, among other efforts. The Belknap Street corridor is part of that pedestrian high-injury network.

The FHWA Office of Safety established RSAs to improve the overall safety performance of roadways. An RSA is a comprehensive formal safety performance evaluation on an existing or future road segment or intersection performed by an independent and multidisciplinary team. RSAs are a low-cost proactive approach to safety that considers all road users and identifies opportunities to enhance safety and reduce the number and severity of crashes. A pedestrian focused Road Safety Audit is a specialized type of RSA intended to focus on pedestrian safety issues. In addition to pedestrians, the RSA documented here also considered safety and operational conditions for motor vehicles, bicyclists, and transit vehicles and users.

The RSA was conducted on February 28 to March 2, 2022.

Road Safety Audit Team

- City of Fort Worth:
 - Namoo Han
- NCTCOG:
 - Julie Anderson

- FHWA:
 - Stephen Ratke
 - Ed Burgos-Gomez
 - Amelia (Millie) Hayes

RSA Location



Figure 1: Belknap Street corridor location map of Fort Worth with RSA limits highlighted in red. (Source: Bing maps/Excel)

The Belknap Street corridor is located in Fort Worth, in the northern part of downtown. The east end of the corridor is bordered by Pecan Street, and on the west end bordered by Lexington Street. Uses along the street are mixed but mainly commercial, with residential uses on neighboring streets on both east and west ends of the corridor limits. On the east end of the corridor is the Tarrant County College – Trinity River East Campus, along with small office buildings. The middle portion of the corridor transitions to larger city and county government services buildings, including the Tarrant County Courthouse, Tarrant County Criminal Justice Building, Tarrant County Criminal Courts Building, the Thomas R. Windham Building (City of Fort Worth Police Department and Tarrant County Jail), the Tim Curry Criminal Justice Center, the Tarrant County Corrections Center, and the Tarrant County College – Trinity River

Campus. The west end of the corridor contains small office buildings and commercial developments. The corridor generally has four lanes east of Houston Street and generally five lanes west of Florence Street.

Kickoff Meeting

The kickoff meeting for the RSA was held at the Tarrant County College – Trinity River Campus on Monday, February 28, 2022 at 1pm. The meeting included staff from the City of Fort Worth Department of Transportation and Public Works, Fort Worth Police Department, NCTCOG, and FHWA. The list of attendees are in Appendix A. FHWA began the meeting by providing a refresher on RSAs and explaining how the RSA would be conducted. NCTCOG and City of Fort Worth presented information about the Belknap corridor for the Team to consider. An open discussion with all attendees was then conducted, which gave the team more specifics to consider during the review.

Site Visits

The following site visits were conducted:

Monday, February 28:

- Corridor drive through
- High school bus queue/school dismissal observations from approx 3pm to 4pm
- Meeting with City of Fort Worth Development Services Department staff from 4pm to 4:30pm
- Afternoon and early PM peak observations from 4:30pm to 6:30pm
- Night observations from 7:30pm to 8:30pm

Tuesday, March 1:

- AM peak from 6:50am to 9am
 - School arrival observations from 7:30am to 8:15am
- Meeting with Trinity Metro from 10am to 11am
- Lunchtime observations from 11:30am to 1pm
- Mid-afternoon observations from 2pm to 2:30pm
- Meeting with TCC Police from 2:30pm to 3:30pm
- Meeting with City of Fort Worth Planning staff from 4pm to 4:30pm

Closeout Meeting

A closeout meeting was held at Tarrant County College – Trinity River Campus on Wednesday, March 2, 2022 at 10:30am. The RSA team reviewed the observations made in the field and covered the most important recommendations for feedback from City, stakeholder, and NCTCOG representatives, along with information the team requested feedback on to develop the final report. During the closeout meeting, no major issues were identified by the City or stakeholders, and the results of the recommendations are detailed in this report.

The Positives

While the Belknap Street corridor was identified for an RSA due to concerns about pedestrian and bicyclist safety, it is important to note that there are many positive aspects to the corridor that help it function well in providing an important transportation link in the City of Fort Worth. Few congestion or capacity issues were observed during peak periods. The RSA Team observed signal optimization, with very good vehicle progression throughout the corridor. Many pedestrians were observed using the corridor, particularly in moving between parking garages and the government buildings in the area.

Pavement markings and signs were visible and well maintained. During the night review, pavement markings and signs were very visible and retroreflective. Lighting of the roadway overall was quite good, with minimal interference from trees and other plantings. The east end of the corridor includes excellent pedestrian scale lighting in addition to high level roadway illumination. The area around Tarrant County College – Trinity River Campus was the only area lacking operational lighting, all other areas provided at least basic levels of lighting that were functioning.

The corridor features several aesthetic treatments, ranging from some brick sidewalks and bulbouts on the east end to standard concrete sidewalks on the west end of the corridor. There are several brick crosswalks throughout the corridor, along with pedestrian-scale lighting and buffers that improve the pedestrian experience along the roadway. Sidewalks are continuous along the corridor and generally are in good

condition. Several new and enhanced bus shelters were observed, providing good spaces for transit users in the area.

Primary Concerns

As identified in the selection of the RSA location and the kickoff meeting, the primary concern for this corridor is the occurrence of motor vehicle crashes with pedestrians and bicyclists. A map of pedestrian and bicyclist crashes in the area is shown below.

Belknap Rd: Lexington to Pecan (Fort Worth, TX)



Figure 2: Pedestrian and Bicyclist crash map of the Belknap corridor. (Source: NCTCOG)

As shown in the map above, pedestrian crashes are distributed evenly throughout the corridor and are primarily at intersections (note: the two pedestrian crashes that appear directly in front of the Courthouse on the map were actually within the crosswalk at Commerce Street). The RSA Team reviewed pedestrian and bicycle Crash Reports (TxDOT Form CR-3) for any trends in location or other similarities.

Approximately one third of pedestrian and bicycle crashes occurred in the morning

across the corridor. Approximately one third of crashes had contributing factor of driver failing to yield for pedestrian, and approximately one fifth had driver inattention; pedestrian at fault crashes were lower than the RSA Team would have normally expected. At Commerce Street, Crash Reports showed two separate instances of pedestrian crashes that had occurred on the west side of the intersection within the marked crosswalk. Since Crash Reports indicated that most crashes are the fault of the driver, steps to enhance yielding could improve safety and comfort for those walking in the area.

In the kickoff meeting and in subsequent interviews, the RSA Team heard feedback that drivers use the outside lanes much less due to perceived narrowness adjacent to on street parking. During our field reviews, the RSA Team observed less traffic traveling in some lanes on some blocks, particularly between Commerce and Houston Streets on the north side. In other locations, such as at Cherry Street, the RSA Team observed some lanes acting as de facto right turn lanes, which caused additional conflicts when drivers chose to weave to get around the right turning vehicles. In some locations, the RSA Team noted clear conflicts with parking lane markings that extended into the outside travel lanes.

General Recommendations

The RSA team identified several recommendations for the entire corridor based on the primary concerns identified above and other observations identified during the RSA. The recommendations below are presented in no order of priority but do note the relative expected timeline to implementation:

- Consider changes to lane configurations. Less traffic was observed traveling in some lanes, particularly outside lanes in some locations due to possible conflicts with the adjacent parking lane, anticipation of right or left turning traffic in front of them, or other reasons. While it was generally observed that queues for the intersections were fully served every cycle, the RSA Team also observed that the outside lane was a de-facto turn only lane during the peak periods, there are several locations where lane configuration could be changed to allow three

through lanes and dedicated turning lanes. Dedicated turn lanes would result in fewer conflicts and reduced lane straddling. A dedicated left turn lane could be considered for left turning traffic onto Calhoun Street, Houston Street, and Taylor Street, and possibly other locations. A dedicated right turn lane could be considered for right turning traffic onto Commerce Street, Taylor Street, Cherry Street garage entrance, and possibly others. Changes in lane configurations should also remove clear conflicts with parking lanes. The City should perform a corridor capacity study and any other studies needed to determine proper lane configuration changes. Timeline: Long-term.

- Manage conflicts between pedestrians and drivers. Consider implementing the emerging trend of using Flashing Yellow Arrow for pedestrian conflicts instead of circular green signal indication where possible. Some municipalities, including Austin and Houston, have been using the Flashing Yellow Arrow in areas with pedestrian conflicts. Research indicates that the Flashing Yellow Arrow increases yielding behavior and “fails safe” in that drivers stop when they are unsure what to do while with a circular green signal indication drivers tend to go when they are unsure what to do. Houston and Taylor Streets might be particular locations for further study. While the City is considering the Flashing Yellow Arrow, a more immediate temporary Turning Vehicles Yield to Pedestrians signs (R10-15L) and pavement marking extensions through intersections (“puppy tracks”) could be installed. Timeline: Timeline: For Flashing Yellow Arrow, short-term in some locations, medium- to long-term if new equipment is needed. For signage and pavement markings while the City considers and/or plans for Flashing Yellow Arrow, short-term.



Figure 3: Example of Flashing Yellow Arrow for pedestrian conflicts (Google Street View)

- Install marked crosswalks at some locations. Marked crosswalks were not provided in some locations. Cherry and Florence had no marked crosswalks on the west sides of the intersections. Throckmorton had the west side of the intersection signed as No Pedestrian Crossing (Texas MUTCD R9-3). The RSA Team observed people crossing in all the locations without a marked crosswalk. Pedestrians, especially in a central business district, have a reasonable expectation for traditional intersections with marked crosswalks across all legs. Removing a crosswalk because of vehicle conflicts should be the last resort that has been unable to be corrected through other countermeasures. Timeline: Short-term.
- Install bulbouts/curb extensions. Some of the intersections on the east end of the corridor have bulbouts (see Photo 4 for bulbout at Grove Street), and additional bulbouts were being considered for future developments near the Tarrant County Courthouse (through the Tarrant County project), at the west end of the corridor with proposed developments near Lexington Street, and elsewhere in the City. Bulbouts extend the sidewalk into the parking lane and reduce the crossing distance for pedestrians. Bulbouts improve safety because they increase visibility, reduce speed of turning vehicles, encourage pedestrians to cross at designated locations, shorten the crossing distance, and prevent

vehicles from parking at corners. Bulbouts can also improve sight triangles, which could help locations like Lamar and Burnett Streets which have low visibility. Timeline: Medium- to long-term.

- Lengthen Leading Pedestrian Intervals (LPIs) in some locations. A LPI gives pedestrians the opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left. LPIs increase the visibility of crossing pedestrians, reduce conflicts between pedestrians and vehicles, and increase the likelihood of motorists yielding to pedestrians. The City had recognized the safety benefits of LPIs during previous operational improvements projects within the corridor and elsewhere. LPIs were in place for pedestrian crossings in the corridor; however, the interval lengths were on the shorter end of the range for most locations. Longer LPIs would provide increased visibility, especially at the intersections with longer crossing distances. If the LPI phase and walk phase entirely precedes the adjacent green through signal phase, accessible pedestrian signals may be required so that people who are blind or visually impaired are able to have an audio cue on when to start crossing. Timeline: Short-term to lengthen LPIs, otherwise medium- to long-term if additional equipment is needed.
- Improve the consistency and directness of the walking path along Belknap. In many locations, the sidewalks are away from the back of curb. Sidewalks behind parking, trees, and otherwise away from the vehicular traffic improve comfort and safety for people walking. When combined with single ramp designed corners, however, the through path moves laterally up to 20 feet. This change in path can be particularly time consuming for wheelchair users with the many required changes of direction. Using dual-ramp corner designs is preferred for accessibility and allows for the ramps to line up more directly with the sidewalk path away from the corner. See Location Specific Issues and Recommendations for additional information by location, more detailed recommendations, and photos. Timeline: Medium- to long-term.
- Upgrade accessibility to current standards. The corridor is primarily served by diagonal single curb ramp designed corners, while dual ramp directional designs are now preferred. Additionally, the sidewalks should be a minimum of six feet

wide, free of obstructions, with wider areas needed when businesses front the street closely. Many of the pushbuttons are not fully accessible, with locations that are out of the way, at inappropriate height, or lack a level landing area. Timeline: Medium- to long-term.

Location Specific Issues and Recommendations

Location: Pecan Street to Calhoun Street

This segment of the corridor has four through lanes. The RSA Team observed higher speeds as traffic transitioned from a limited-access facility in the blocks outside of our RSA limits. Pedestrian activity was consistent during the various times of our field reviews, though not as high as in other segments of the corridor.

- **Observation:** On Belknap Street just east of our limits, there is no sidewalk across the railroad tracks. There is a strip of pavement that does not meet the width and other requirements for a sidewalk but likely is used as one; other routes with sidewalks are several blocks out of the way. **Recommendation:** Install sidewalks. Sidewalks should be a minimum of six feet wide, free of obstructions, and buffered when possible. Timeline: Long-term.
- **Observation:** At Grove and Pecan Streets, using ramps requires out-of-direction travel. The sidewalks in this area were away from the back of curb which improves pedestrian comfort; however, when combined with single ramp designed corners, the through path moves laterally up to 20 feet. This change in path can be particularly time consuming for wheelchair users with the many required changes of direction. Using dual-ramp corner designs is preferred for accessibility and allows for the ramps to line up more directly with the sidewalk path away from the corner. **Recommendation:** As discussed in the General Recommendations above, improve the consistency and directness of the walking path.



Figure 4: Sidewalks and crosswalk ramps require out of direction travel for some users

- **Observation:** At Grove and Pecan Streets, vehicle speeds were high for those turning left from Belknap onto Grove or Pecan. **Recommendation:** Consider hardened centerlines to slow vehicles turning left onto Pecan and Grove Streets, and possibly other locations. Hardening refers to the use of modular curbs, vertical delineators, and/or striping at intersections to reduce left-turning speeds and to prevent “corner cutting.” Timeline: Short-term.



Figure 5: Driver turning south onto Grove Street



Figure 6: Example of hardened turning treatment ([NYCDOT](#))



Figure 7: Example of hardened turning treatment ([Google Street View](#))

- **Observation:** At Jones Street, the rightmost left turn lane became blocked by the extended queue of vehicles waiting to turn right onto Commerce.
Recommendation: The City should investigate and verify whether there is a queueing issue from Commerce Street and extending onto Jones Street. If so, the City could consider signal adjustments or Do Not Block Intersection signs or pavement markings (per Texas MUTCD Section 3B.17). The City could also consider lane assignment guide signs on Jones (e.g. Right Lane to Commerce and Left Lane to West Belknap). Timeline: Short-term.



Figure 8: Extended queue of vehicles waiting to turn right onto Commerce Street

- **Observation:** Just east of our RSA limits, from the Weatherford/Belknap turnaround near Samuels Avenue, there is a prohibition of vehicles making a left turn onto Pecan Street. Many drivers were observed making the left turn movement from the Belknap turnaround onto Pecan Street, despite the prohibition. **Recommendation:** The City should investigate and verify. If this is an issue occurring regularly, the City could consider adding flexible vertical delineators. The City could also add a double white line to correspond with the Do Not Cross Double White Line sign (Texas MUTCD R4-3bT) already installed at the location. Timeline: Short-term.



Figure 9: The City should verify whether drivers are routinely completing prohibited turn; if so, consider adding flexible vertical delineators and/or double white line to correspond with existing R4-3bT sign

Location: Commerce Street to Throckmorton Street

This segment of the corridor has four through lanes except between Houston and Throckmorton Streets which has three lanes and a counterflow bus turnaround. At Commerce Street, the RSA Team observed high traffic volumes for vehicles traveling north to North Main Street (Business 287), one of the few crossings of the Trinity River in the area. Some pedestrian and bicycle (traversing on sidewalk) traffic was observed traveling to and from the direction of the river trails. Near Throckmorton, there was

poor access control; two parking garage driveways were immediately adjacent to intersections of Throckmorton and North Taylor Streets which resulted in additional conflicts.

- **Observation:** At Commerce, a dual left turn lane was underutilized during our field review. The RSA Team’s review of Crash Reports showed two separate instances of pedestrian crashes that had occurred on the west side of the intersection, with both pedestrians traveling southbound on Commerce Street in early- to mid-afternoon (daylight conditions). **Recommendation:** Evaluate vehicular traffic levels versus pedestrian demand for the dual left turn lanes from Commerce Street onto Belknap Street. Dual turn lanes typically show less yielding to pedestrians by drivers. This location should also be considered for Flashing Yellow Arrow for pedestrian conflicts as discussed in General Recommendations, above. Timeline: Short- to medium-term.



Figure 10: Dual left turn lane at Commerce Street

- **Observation:** At Throckmorton Street, there were misaligned crosswalks and ramps, particularly on the east and south sides of the intersection. The marked crosswalks at the intersection are not well aligned with desired walking paths, including a change in direction on one leg while crossing the median (bus/bicycle turnaround on the block between Commerce and Throckmorton Streets).

Marked crosswalks do not align with curb cuts, and one curb cut was provided for the west side of the intersection but signed as No Pedestrian Crossing. The south side of the intersection has a large amount of ambiguous space where the crosswalk exists well away from the curb cut and desired walking path. The RSA Team observed multiple instances of pedestrians crossing outside of the crosswalk on the south side of the intersection, including some near-miss crashes. Future developments with the Tarrant County project may include removal of the bus/bicycle turnaround (which is not currently used by Trinity Metro), which could provide an opportunity to consider intersection improvements and realignment. **Recommendation:** Improve the directness of the walking path. Marked crosswalks should be provided straight across the shortest path from corner to corner, and dual ramp curb ramps designs should be provided where applicable. Timeline: Short-term to coordinate with Tarrant County project on bus/bicycle turnaround within their upcoming project, otherwise medium- to long-term.



Figure 11: Misaligned crosswalks and ramps at Throckmorton Street, with bus/bicycle turnaround



Figure 12: Misaligned crosswalks and ramps at Throckmorton Street

- **Observation:** Sidewalk was obstructed in some locations, including the northwest side of the intersection at Commerce Street. **Recommendation:** As discussed in the General Recommendations above, improve the consistency and directness of the walking path. Sidewalks should be a minimum of six feet wide, free of obstructions, with wider areas when needed. Ensure removal of temporary traffic control devices when no longer in use. Timeline: Short-term to coordinate with Tarrant County project on possible corrections within their upcoming project, otherwise medium- to long-term.



Figure 13: Obstructed sidewalks at Commerce Street

- **Observation:** There was very little lighting in certain areas. In particular, between Commerce to Houston Streets the north side of Belknap Street had two streetlights but no pedestrian-scale lighting. At least one pedestrian-scale light was not operational on Houston Street. **Recommendation:** Investigate lighting from Commerce to Houston Streets. Timeline: Short-term to coordinate with Tarrant County project on lighting within their upcoming project, short- to medium-term for elsewhere.

Location: Taylor Street to Florence Street (including Tarrant County College – Trinity River Campus)

This segment of the corridor has four through lanes except between Burnett and Florence Streets which have five through lanes. At Taylor Street, the RSA Team observed a steady flow of pedestrians at every signal cycle in the peak hours. This traffic is driven by parking garages north of Belknap St and work sites on the south side of Belknap Street. Taylor Street is the departure route for school buses queueing, and a steady flow of school buses were observed traveling through the intersection both after morning drop off and after afternoon pick up. Private vehicles utilized the circle at both Burnett and Taylor Streets to drop off and pick up students in the mornings

and afternoons. The afternoon periods featured limited number of additional conflicts from this demand, but in the morning period the RSA Team observed several operational and safety concerns particularly at the Burnett Street intersection which is not signalized. There were many vehicle conflicts around the Cherry Street garage entrance, particularly at morning peak hours. Some bicycle and pedestrian traffic was observed traveling to and from the river trails, primarily along Taylor Street.



Figure 14: Steady flow of pedestrians during every signal cycle at Taylor Street

- **Observation:** At Taylor Street, vehicle traffic queued from Weatherford/Taylor onto Belknap/Taylor. During the morning peak period, queueing vehicles extended into the intersection, resulting in conflicts with pedestrians crossing Taylor Street to enter the Tim Curry Criminal Justice Center. **Recommendation:** The City should investigate and verify the presence of consistent queueing and intersection blocking on other days and time periods. If so, the City could consider signal adjustments or Do Not Block Intersection signs or pavement markings (per Texas MUTCD Section 3B.17). Timeline: Short- to medium-term.



Figure 15: Queuing from Weatherford/ Taylor onto Belknap/Taylor

- **Observation:** For vehicles traveling northbound at Taylor Street, the single lane is wide enough to be ambiguous. Drivers traveling through the intersection tended to cut around drivers turning left onto Belknap while they waited for a gap in traffic. Recommendation: For northbound Taylor traffic, the City could investigate further signal timing adjustments or pavement marking improvements (e.g. reduction of receiving lane width and/or addition of left-turn pocket). Timeline: Short- to medium-term.



Figure 16: Driver at right passing in what is marked as single lane, creating additional potential conflicts at Taylor Street

- **Observation:** At Taylor Street, there is a sidewalk closure on the southwest side of the intersection (adjacent to the Tim Curry Criminal Justice Center) due to a construction closure. The area currently under construction does not have a continuous walking path and results in pedestrians walking into the parking lane and travel lanes, and is inaccessible to someone in a wheelchair. The sidewalk closure has no advanced warning signs. Due to the high pedestrian traffic in the morning peak hours, the pedestrians were often observed walking two abreast in the roadway. **Recommendation:** The City should investigate who is responsible for the construction work at this location. The City should have standards for accessible detour paths for sidewalk closures. Sidewalk closures should be at least as accessible as they were prior to construction. **Timeline:** Short-term to provide continuous and accessible walking path, and medium-term for updating City standards for sidewalk closures.



Figure 17: Pedestrians navigating sidewalk closure at Taylor Street



Figure 18: Pedestrians navigating sidewalk closure at Taylor Street

- **Observation:** The progression of vehicles on Belknap Street, and vehicles turning onto Belknap from Lamar and Taylor Streets, provides continuous vehicular traffic on Belknap Street. This provides few gaps in traffic at Burnett Street, which causes delays at the TCC circle at dropoff and pickup times. Queues of northbound vehicles were observed at Burnett Street, most of which were waiting to cross into the circle, as well as long queues to exit the circle, often resulting in risky maneuvers and near-misses. **Recommendation:** Consider adding a traffic signal at Burnett Street at Belknap Street, and possibly Burnett Street at Weatherford Street. **Timeline:** Short- to medium-term to study whether signals are warranted at this location, and medium- to long-term to install if warranted.



Figure 19: Drivers completing risky maneuvers at Burnett Street



Figure 20: Northbound queue at Burnett Street



Figure 21: Southbound queue at Burnett Street, exiting TCC circle after completing student drop-off

- **Observation:** There were many vehicular conflicts around the Cherry garage entrance. In both morning and evening peak hours, the RSA Team observed drivers entering the added right lane just before Cherry Street, only to weave back into the second lane to try to get around the vehicles slowing to turn right into the Cherry Street garage, then ultimately merging into the right lane again to turn right onto North Henderson Street. Additionally, due to the constant vehicle traffic, few gaps in traffic, and uncertainty of whether drivers are turning onto Cherry Street or North Henderson Street, it was sometimes difficult for people walking to cross the Cherry Street garage entrance in this location at both morning and evening peak hours. **Recommendation:** Consider a dedicated right turn lane into the Cherry Street garage. As discussed in the General Recommendations section, dedicated right turn lanes could help reduce conflicts by eliminating weaving maneuvers into an area where most drivers will be turning. A right turn lane into the Cherry Street garage could be tested on a temporary trial basis by installing signage and temporary pavement markings, and flexible vertical delineators on the far end of the intersection to prevent through traffic. Timeline: Short-term for trial, and medium- to long-term for any permanent changes.



Figure 22: Vehicular conflicts at Cherry Street garage (note the weaving vehicle behind the turning vehicles entering TCC parking garage)

- **Observation:** Lighting near Tarrant County College – Trinity River Campus was not operational. While there were City street luminaires (on the north side of Belknap) and pedestrian-scale and landscape (tree well) lighting installed in this location, lighting was not operational during the night review. Lights in the new Trinity Metro bus shelter (Belknap at Burnett, route 046) were also not operational. With the lights not being operational at the time of observation, the RSA Team cannot comment on the adequacy of the existing lighting in improving safety along this section. **Recommendation:** Determine the cause of lighting not being on, and correct to make lighting operational. Once operational, evaluate to ensure proper lighting is provided. Timeline: Short-term.



Figure 23: Non-operational pedestrian-scale lighting near TCC



Figure 24: Non-operational City street luminaires near TCC

Location: North Henderson Street (Texas State Highway 199)

The intersection with North Henderson Street is a large intersection with multiple lanes on all approaches. North Henderson Street is a TxDOT state highway. The Belknap Street approach has one right-turn lane, three through lanes, and one option lane of through or left-turn lane. Vehicle speeds were higher through his segment, particularly for the vehicles turning right onto North Henderson Street. Higher pedestrian volumes were observed in the morning peak hours but not the evening peak hours. Vehicle queues and phasing were controlled by the coordination between the Belknap and Weatherford intersections and large turning movement needs intersecting with the one-way pair of streets.

- **Observation:** The right turn movement from Belknap Street to North Henderson Street has no control (yield or stop signs, or pavement markings) or crosswalk pavement markings. Vehicle speeds were high for those turning right onto North Henderson since turning vehicles have their own lane until the Tarrant County College parking garage/Peach Street. **Recommendation:** Install yield sign and marked crosswalk. During future improvement projects, consider [TxDOT's new standard](#) for right turn islands, which tightens the right turn and provides improved visibility for crossing pedestrians. Timeline: Short-term for pavement markings, medium-term for right turn island.



Figure 25: Right turn island at Henderson

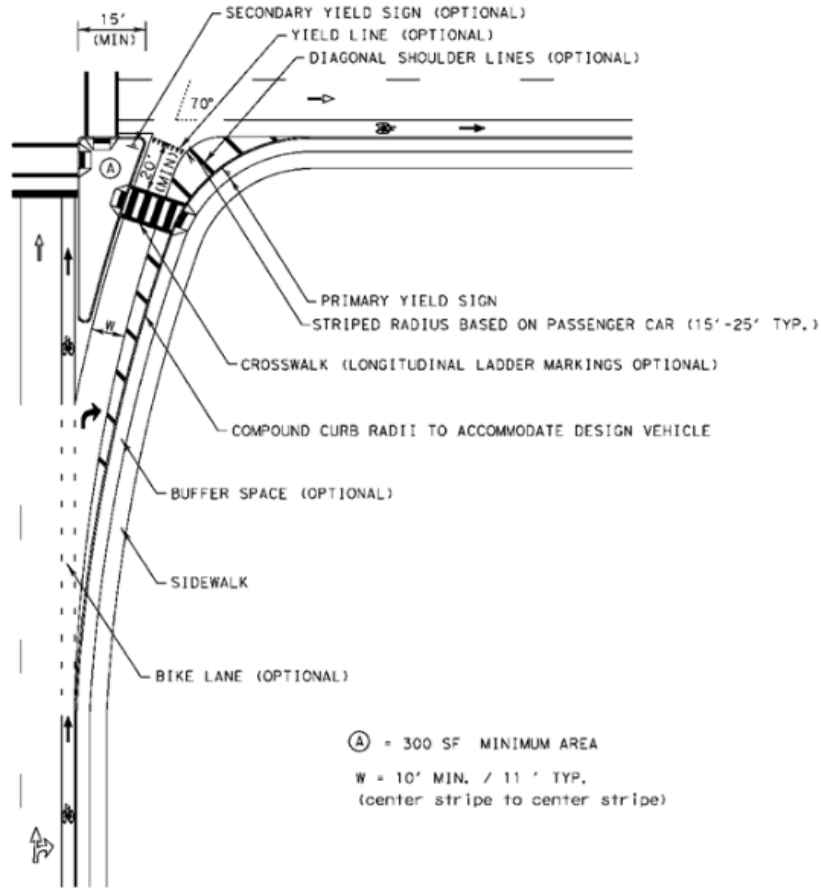


Figure 26: Right turn slip lane design (TxDOT)

- Observation:** All marked crosswalks at the intersection are standard are two transverse lines. **Recommendation:** The most current TxDOT standard for crosswalk pavement markings is the longitudinal crosswalk markings (continental style) which have higher visibility. During future projects (resurfacing or restriping), install high-visibility longitudinal crosswalk pavement markings, per [TxDOT traffic standard PM\(4\)-20](#) and [City of Fort Worth standard D643](#). Timeline: Short- to medium-term.

Appendix A

List of attendees at meetings:

Kickoff meeting:

City of Forth Worth:

- Wilma Smith
- Namoo Han
- Shannon Hobbs
- Officer Adam Coleman

FHWA:

- Stephen Ratke
- Ed Burgos-Gomez
- Millie Hayes

NCTCOG:

- Julie Anderson

Meeting with City of Fort Worth Development Services Department staff:

- RSA Team
- Sevanne Steiner

Meeting with Trinity Metro:

- RSA Team
- Phil Dupler

Meeting with TCC Police:

- RSA Team
- Captain Jerome Albritton

Meeting with City of Fort Worth Planning staff:

- RSA Team
- Mary Elliott

Closeout meeting:

City of Forth Worth:

- Chelsea St. Louis
- Wilma Smith
- Namoo Han
- Mary Elliott
- Aziz Rahman
- Shannon Hobbs
- Officer Adam Coleman

TCC Police:

- Captain Jerome Albritton

FHWA:

- Stephen Ratke
- Ed Burgos-Gomez
- Millie Hayes

NCTCOG:

- Julie Anderson

Appendix B

Corridor map provided by Transportation and Public Works staff

Route map provided by Trinity Metro staff

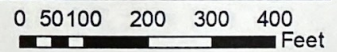
Proposed Heritage Park streetscape rendering provided by Development Services Department staff

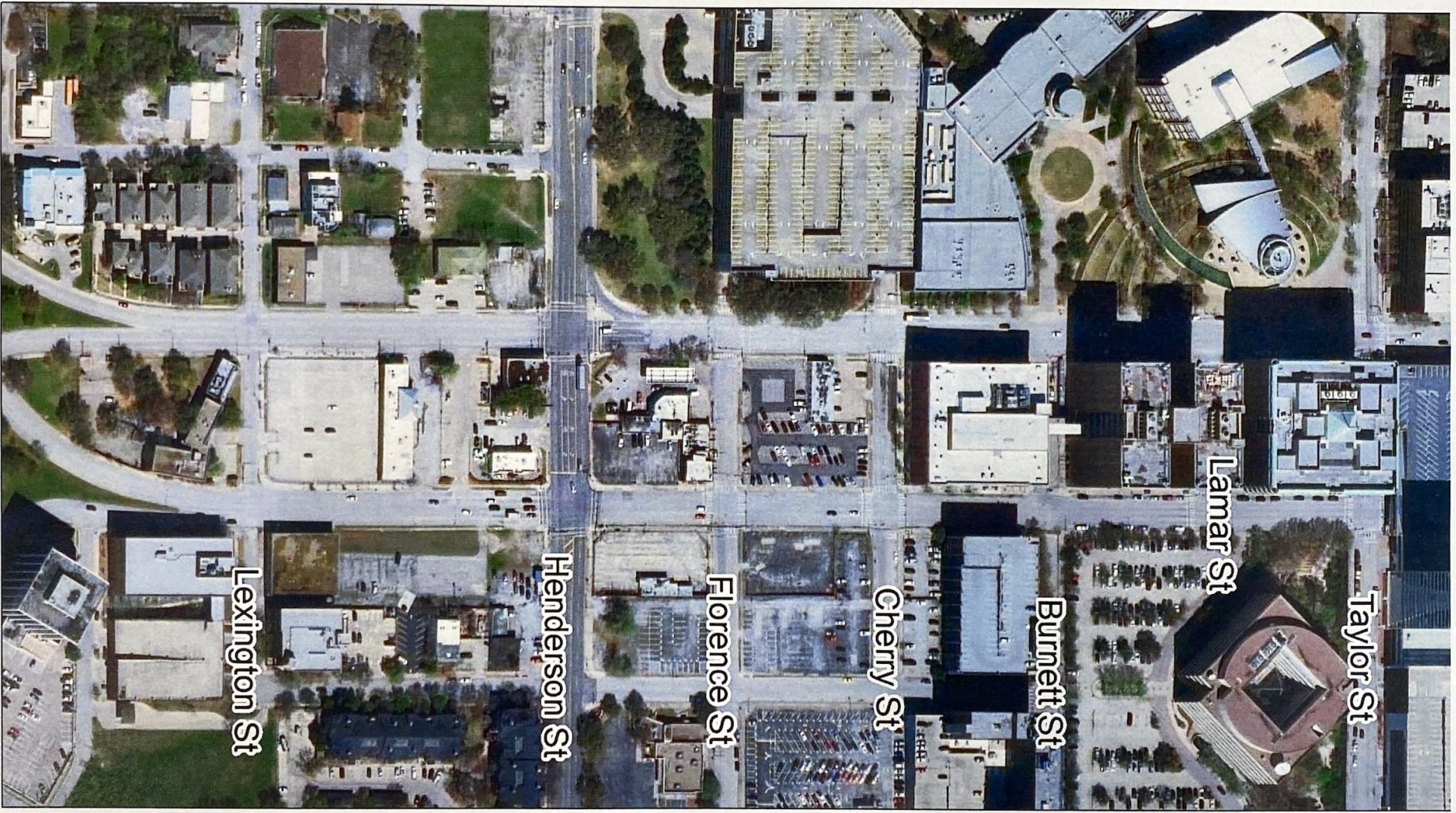
Kickoff meeting sign-in sheet

Closeout meeting sign-in sheet



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Taylor St

Lamar St

Burnett St

Cherry St

Florence St

Henderson St

Lexington St

Bus Routes on Belnap





Trinity River

Trinity Trails

Future

Pedestrian and Vehicular Safety Improvements

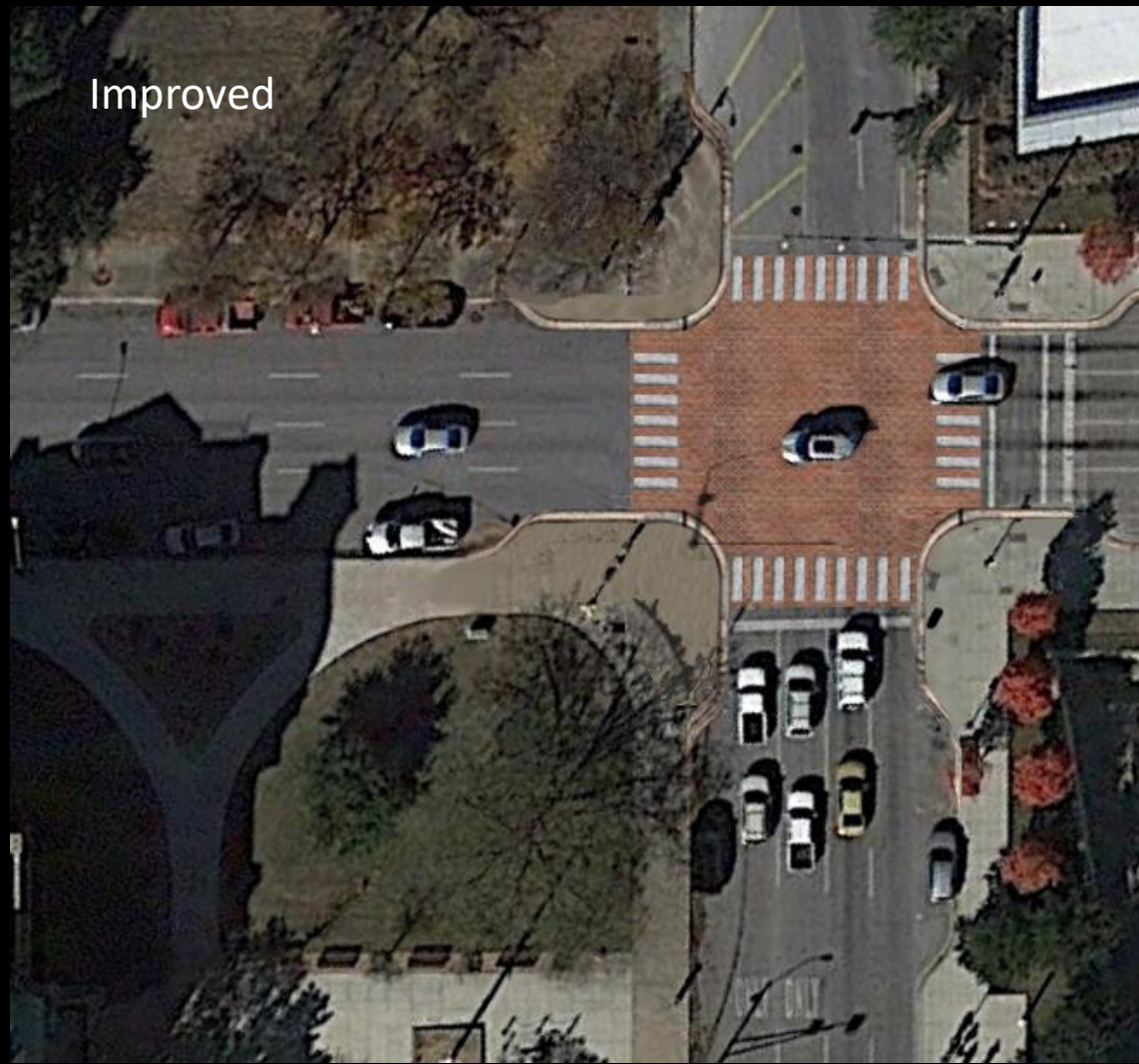


Pedestrian Safety Improvements

Existing



Improved



Ease this
Radius



Pedestrian and Vehicular Safety Improvements

\$8.3M Funded

**Tarrant County \$1M
RTC \$7.3M**





Paddock Park



Paddock Park

City of Fort Worth Road Safety Audit: Belknap from Lexington to Pecan

Kickoff Meeting - Monday, February 28, 1pm

| <u>Name</u> | <u>Organization</u> | <u>Title</u> | <u>Email</u> |
|----------------|---------------------|------------------------------------|----------------------------------|
| Adam Coleman | PD | Officer | adam.coleman@fortworthtexas.gov |
| Namoo Han | Fort Worth TPW | Engineer | namoo-han@fortworthtexas.gov |
| Stephen Ratke | FHWA | Safety & Traffic Ops Specialist | stephen.ratke@dot.gov |
| Ed Burgos | FHWA | Safety Engineer | ed.burgos-gomez@dot.gov |
| Julie Anderson | NCTCOG | Sr. Transp. Planner | janderson@nctcog.org |
| Wilma Smith | CFW | Engineer | wilma.smith@fortworthtexas.gov |
| Shannon Hobbs | CFW | Engineer | shannon.hobbs@fortworthtexas.gov |

City of Fort Worth Road Safety Audit: Belknap from Lexington to Pecan

Closeout Meeting - Wednesday, March 2, 10:30am

| <u>Name</u> | <u>Organization</u> | <u>Title</u> | <u>Email</u> |
|-------------------|---------------------|------------------|-------------------------------------|
| Chelsea St. Louis | CFW | Sr. CPD | chelsea.st.louis@fortworthtexas.gov |
| Namoo Han | CFW | P.E. | namoo.han@fortworthtexas.gov |
| Shannon Hobbs | CFW | P.F. | shannon.hobbs@fortworthtexas.gov |
| Adam Colman | FurPD | OFR | adam.colman@fortworthtexas.gov |
| Mary Elliott | CFW | Transp. Mgr. | mary.elliott@fortworthtexas.gov |
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| AZIZ RAIMAN | CFW | Eng. Mgr. | AZIZ.RAIMAN@FORTWORTHTEXAS.GOV |
| Jerome Albritton | NCCPD | Police Commander | Jerome.Albritton@ced.edu |