



U.S. Department  
of Transportation

**Federal Highway  
Administration**

Texas Division

February 11, 2022

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Ghassan 'Gus' Khankarli, PE, PMP, CLTD  
Director  
City of Dallas Department of Transportation  
1500 Marilla St., L1BS  
Dallas, TX 75201

Dear Mr. Khankarli:

Enclosed for your use is the Martin Luther King Jr. Blvd 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 Martin Luther King Jr. Blvd corridor from Forest Ave. to Robert B. Cullum Blvd. Thank you for the City's interest in pedestrian safety for the neighborhood, hosting the assessment, and providing the staff's time and support from multiple city departments.

Once the City of Dallas 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,

Stephen Ratke, P.E. (NV), RSP21  
Safety and Traffic Operations Specialist

Enclosure

Cc: Kathryn Rush, City of Dallas  
Kierra Williams, City of Dallas  
Karla Windsor, NCTCOG  
Kevin Kokes, NCTCOG



# Road Safety Audit

## Martin Luther King Jr. Blvd

### Dallas, TX

FEBRUARY 11

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Facilitated by: Stephen Ratke, PE (NV), RSP2I  
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, beginning with the Martin Luther King Jr. Blvd corridor in South Dallas.

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.

Due to the length of the corridor, the number of intersections to review, and the presence of the Dallas Area Rapid Transit (DART) light rail station and James Madison High School, it was decided to conduct the RSA in two halves of approximately three days each. The first portion covered the corridor from just west of Malcolm X Blvd to SH 352 / Robert B Cullum Blvd. For the first portion, the review was conducted on September 14-16, 2021. The second portion covered the corridor from Forest Ave to just west of Malcolm X Blvd and was conducted on December 8-9, 2021.

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# Road Safety Audit Team

Those who participated in the audit team for only the first portion are marked with a \* and those who only participated in the second portion are marked with a #.

- City of Dallas:
  - Kierra Williams
  - Sergeant Ira Carter\*
  - Wayne Powell#
- City of Richardson:
  - Daniel Herrig\*
- Texas Department of Transportation:
  - Erick Ramirez\*
  - Nicholas Aiello#
- NCTCOG:
  - Julie Anderson
  - Bobby Kozub\*
  - Stu Burzette\*
  - Erin Curry\*
  - Pat Rohmer\*
  - Travis Liska\*
- FHWA:
  - Amelia (Millie) Hayes
  - Ed Burgos-Gomez
  - Stephen Ratke

# RSA Location

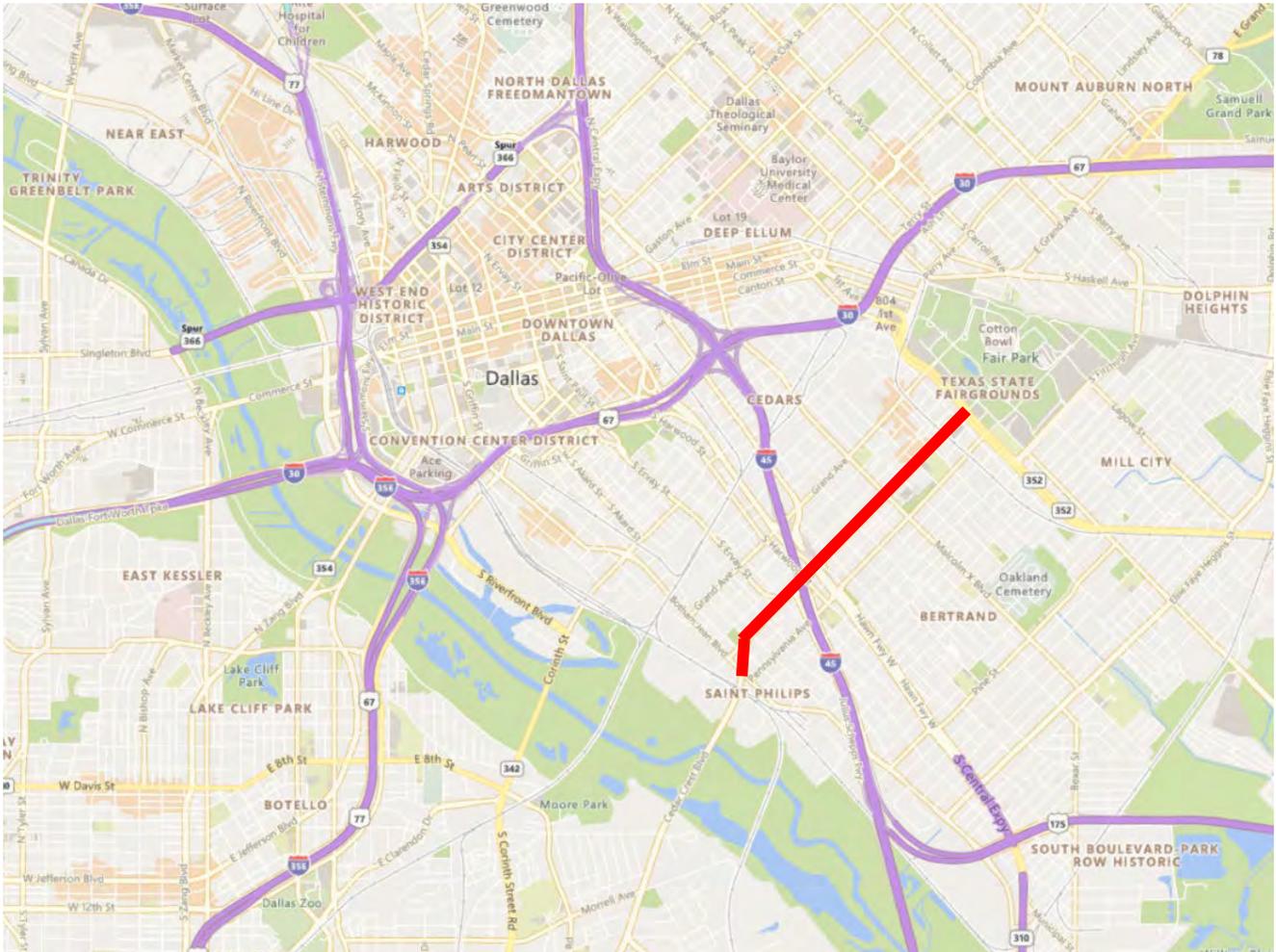


Figure 1: MLK Blvd corridor location map of Dallas with RSA limits highlighted in Red. (Source: Bing maps / Excel)

The MLK Blvd corridor is located in South Dallas, approximately one mile south of downtown Dallas. On the east end of the corridor it is bordered by SH 352 (Robert B Cullum Blvd), and on the west end it turns slightly and becomes Cedar Crest Blvd in the vicinity of Botham Jean St. Uses along the street are mixed but primarily commercial, with residential uses on neighboring streets. On the east end of the corridor is the Texas state fairgrounds, along with chain commercial developments. This area transitions to smaller and older developments proceeding west after crossing the DART rail green line, with a stop and bus transfer hub located just north of MLK Blvd at Trunk Ave. Further west includes the area around James Madison High School, and the MLK Jr. Community Center. MLK then crosses SM Wright (US 175) which is currently a freeway with partial frontage roads but is slated to be removed and replaced with a

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boulevard cross-section and a single at-grade intersection. Just west of SM Wright is the crossing of Interstate 45 (IH-45), which is currently under construction that is associated with the pending removal of the SM Wright freeway. West of IH-45 the corridor returns to its primarily commercial nature before a curve where a connection to Botham Jean St. can be made via Forest Ave or continuing onto Cedar Crest Blvd which crosses the Trinity River and floodplain. The segment between IH-45 and Forest Ave is six through lanes, while the remaining segments are all four through lanes.

## Kickoff Meeting

The kickoff meeting was held at the St. Phillips WeCreation Center at 9am on Tuesday, September 14, 2021. The meeting included staff from the City of Dallas Department of Transportation, Dallas Police Department, NCTCOG, City of Richardson, TxDOT and FHWA. The list of attendees for the first kickoff are listed 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 Dallas presented information about the MLK 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.

For the second portion of the RSA a separate kickoff meeting was not conducted. The RSA team began with field reviews in the afternoon due to meeting room availability. The next morning, the team did meet to go over the second portion locations and background information from the City of Dallas.

## Site Visits

For the first portion of the RSA, the following site visits were conducted:

- Corridor drive through: 9/14: 11:00am – 12:15pm
- SH 352 / Robert B Cullum Blvd
  - 9/14: 2:00pm – 2:30pm (mid-day)
  - 9/14: 8:30pm – 9:00pm (night)
  - 9/15: 6:45am – 7:15am (AM peak)
  - 9/15: 4:30pm – 5:45pm (PM peak)
- MLK DART Station

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- 9/14: 2:30pm – 3:15pm (mid-day)
  - 9/14: 8:00 – 8:30pm (night)
  - 9/15: 7:15am – 8:00am (AM peak)
  - James Madison High School
    - 9/14: 3:15pm – 5:00pm (school dismissal, PM peak)
    - 9/15: 8:00am – 9:00am (school arrival, AM peak)
  - Malcolm X Blvd
    - 9/14: 5:00pm – 6pm (PM peak)
    - 9/14: 9:00pm – 9:30pm (night)

For the second portion of the RSA, the following site visits were conducted:

- Corridor drive through: 12/8: 3:30pm – 4:00pm
- Atlanta St
  - 12/8: 5:00pm – 5:45pm (PM peak and night)
  - 12/9: 7:50am – 8:15am (AM peak)
  - 12/9: 12:00pm – 12:15pm (mid-day)
- SM Wright Fwy and IH-45
  - 12/9: 8:30am – 9:00am (AM peak)
  - 12/9: 3:30pm – 4:15pm (PM peak, accompanied by TxDOT and TxDOT consultants)
- Colonial Ave and Holmes St
  - 12/8: 4:30pm – 5:00pm (PM peak)
  - 12/8: 6:30pm – 7:00pm (night)
  - 12/9: 7:00am-7:40am (AM peak)
  - 12/9: 12:15pm – 12:30pm (mid-day)
- Forest Ave / Cedar Crest Blvd
  - 12/8: 4:00pm – 4:30pm (PM peak)
  - 12/8: 6:00pm – 6:30pm (night)
  - 12/9: 9:00am – 9:15am (AM peak)

## Closeout Meeting

A closeout for the first portion of the RSA was held September 16, 2021 at 10:30 to 11:30am. The RSA team reviewed the observations made in the field and covered the

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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 first closeout meeting, no major issues were identified by the City or stakeholders, and the results of the recommendations are detailed in this report.

A closeout meeting for the second portion of the RSA was held December 15, 2021 at 1:00 to 2:30pm. The meeting was conducted virtually on MS Teams. 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 meeting, community and St. Philips representatives provided some additional information about community interests and visioning that had previously occurred that the RSA team had not previously seen during the field review portion of the RSA. This additional information was considered by the team after the review and is noted as necessary in the location specific recommendations.

## **The Positives**

While the MLK Blvd was identified for an RSA due to concerns about pedestrian 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 Dallas. The corridor is well served by transit, centered around the DART Green Line MLK station and bus transfer center. Transit is well used in the area, and most bus stops feature shelters and benches. Relatedly, there are high volumes of people walking and biking throughout the corridor throughout the day. Bicyclists were observed using both the outside lane and the sidewalks along the corridor, and pedestrians were observed walking along the sidewalks and crossing at many locations along the corridor at both controlled and uncontrolled locations.

During the night review, lighting of the roadway overall was quite good, with minimal interference from trees and other plantings. The area between the DART station and Fair Park also includes excellent pedestrian scale lighting in addition to high level roadway illumination. The area under IH-45 which is currently under construction was

the only area lacking lighting, all other areas provided at least basic levels of lighting and were functioning.

The corridor features several aesthetic placemaking treatments, ranging from brick sidewalks near Fair Park grounds to standard concrete sidewalks and arched poles and fixtures matching the trinity river aesthetic treatments on the west end of the corridor. There are several brick crosswalks throughout the corridor, along with benches and other aesthetic features that improve the pedestrian experience along the roadway. Sidewalks are continuous along the corridor with few identified gaps and generally are in good condition. The area near James Madison HS and the MLK Jr. Community Center had recently been repaved and the surface quality was excellent.

## Primary Concerns

As identified in the selection of the RSA site and the kickoff meeting, the primary concern for this corridor is the occurrence of motor vehicle crashes with pedestrians and bicyclist. The City is just beginning a process to reimagine the corridor and asked the RSA team to consider several possible future alternatives for lanes and types of bicycle accommodation. A map of pedestrian and bicyclist crashes in the area is shown below.

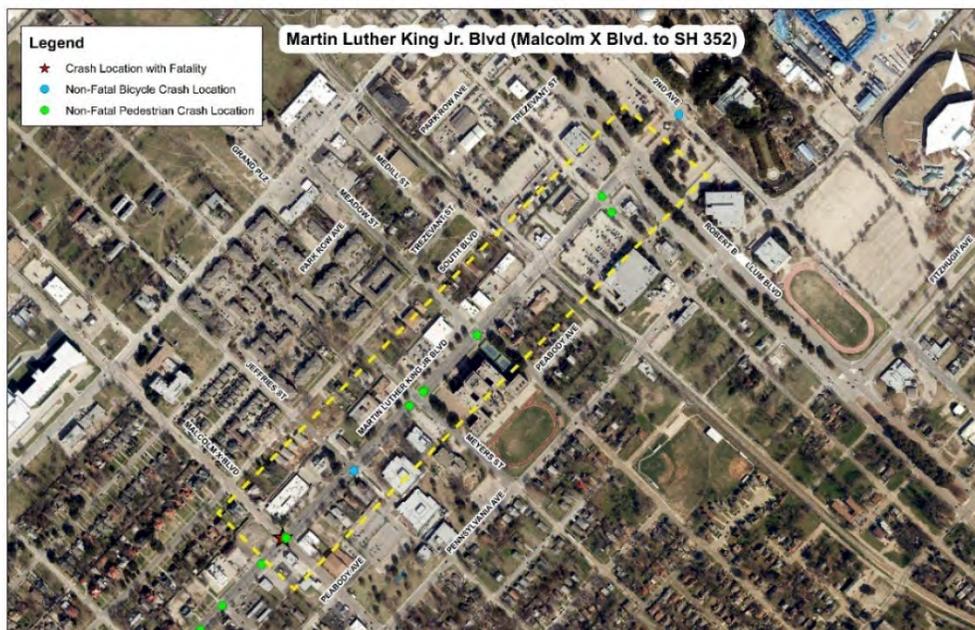
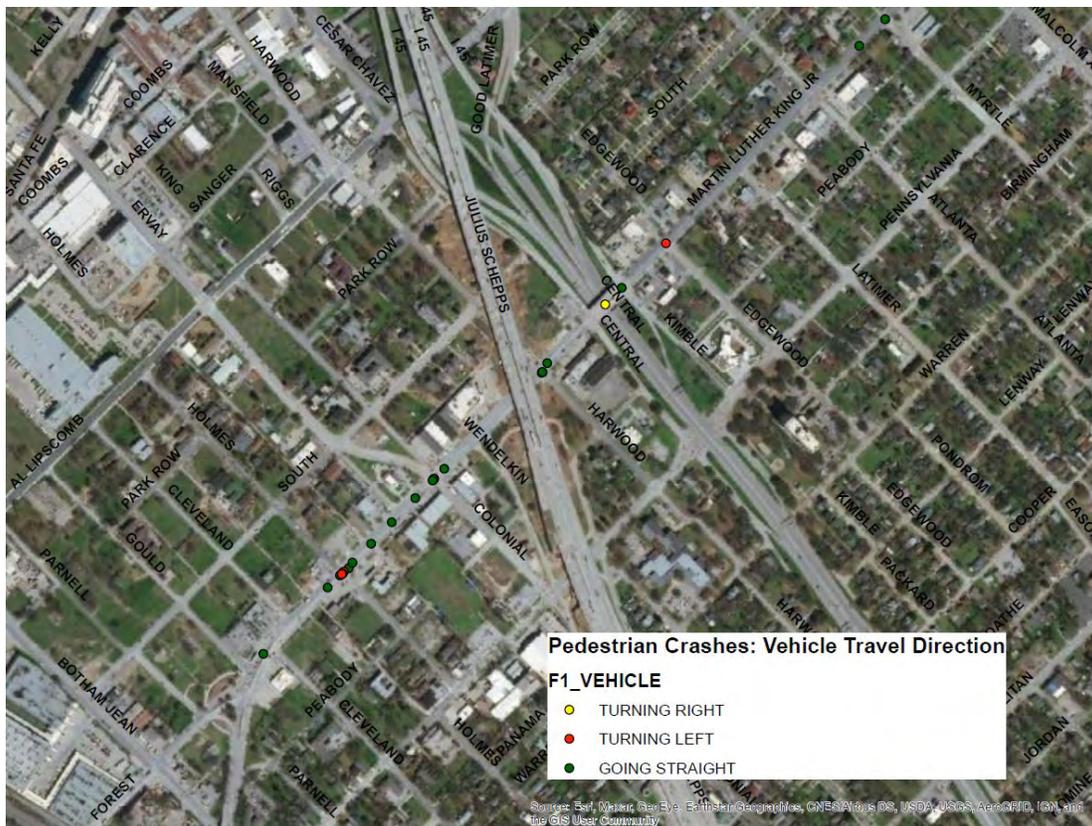


Figure 2: Pedestrian and Bicyclist crash map of phase 1 review of the MLK corridor. (Source: NCTCOG)



**Figure 3: Pedestrian and Bicyclist crash map of phase 1 review of the MLK corridor. (Source: NCTCOG)**

As shown in the map above, pedestrian crashes are concentrated in the area west of IH-45 and east of Forest Ave. This is the result of a combination of factors related to land use, societal issues, and road design. The segment here has six through lanes, making crossings longer than on the other portions of the corridor where there are four or five lanes. There are several liquor stores and pawn stores, along with social issues around poverty, homelessness, and drug use. There are several areas with significant tire marks on the roadway, indicating possible issues with drag racing, performing “donuts”, and related activities happening during non-peak hours overnight. While many of these issues can not be addressed directly by roadway design, they can be influenced by road design. Adding a continuous raised median would provide less space for these activities and allow for crossings to be made in two movements instead of one. Reducing from six lanes to four lanes would shorten the distance to be crossed, make it easier to judge traffic, and reduce speeds, all potentially reducing injury severities if crashes do occur.

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In addition to the above issues, several areas of the corridor would be enhanced by a thorough upgrading of the corridor. These include moving to current standards for accessibility with dual curb ramp designed corners, accessible pushbutton locations, additional sidewalk width, and better placement of crosswalk signals. The corridor would also be enhanced with a continuous and consistent accommodation for bicycles, with feedback from the community working with the City to determine the preferred design to accommodate bicycles. At most of the intersections the walk signal initiated concurrently with the green through signal. In several of those locations, the use of a Leading Pedestrian Interval (LPI) may reduce conflicts between turning vehicles and people walking, therefore reducing crashes.

On the western portion of the corridor, lighting was present but was a mixture of segment lighting and intersection lighting, with some LED fixtures and some older fixtures, resulting in several different colors of lights through the corridor, and some spots that were darker than others. On the eastern portion of the corridor there were a limited number of locations which also had lower, pedestrian scale lighting. There were also several locations with aesthetic and art-based lighting treatments. The corridor has several aesthetic treatments across the corridor, from the Forest Ave intersection which has elements aligned with the Trinity River designs, under IH-45 and over SM Wright where there are few aesthetic treatments, to the interior segments with elements highlighting Dr. Martin Luther King, Jr. and Malcolm X, and to the east where there are elements consistent with the Fair Park grounds. While the existing treatments enhance the particular locations, any future corridor work should consider the ability to tie these together and provide a unified sense of place for the community along the entire corridor.

## 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:

- Implement LPI. On many minor street approaches crossing MLK, the green time is controlled by pedestrian clearance interval and not the minimum green time

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for serving vehicles. In these locations, a 4 to 7 second LPI would allow people walking to establish themselves in the crosswalk prior to drivers of vehicles beginning to make turns, without sacrificing any vehicle throughput. In other locations, the value of an LPI would need to be considered against other timing needs for the signal, although an LPI is generally always beneficial for safety. 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 in some locations, medium- to long-term if new equipment is needed.

- Improve the consistency and directness of the walking path along MLK. In many locations, the sidewalks are at varying places away from the back of curb. The sidewalk may be behind angled parking during the segment, but the curb ramp may be directly at the curb line diagonally. This results in a meander of up to 20 feet at many intersections and can be particularly time consuming for wheelchair users with many changes of direction. Additionally, the sidewalks should be a minimum of six feet wide, free of obstructions, with wider areas needed when businesses front the street closely. Timeline: Mostly long-term to be corrected with the corridor reconstruction, although opportunities for clearing vegetation and other obstructions may exist short-term, and treatments should be considered for the upcoming work crossing IH-45 and SM Wright and at the Atlanta St. intersection.
- 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. Many of the pushbuttons are not fully accessible, with locations that are out of the way or lack a level landing area. Some pedestrian signal heads are out of line with the walking line of travel and crosswalk and would be enhanced by better positioning. Timeline: Primarily long-term, although medium-term if added to already planned and upcoming construction.
- Refresh pavement markings, particularly at crosswalks. Many of the intersections utilized brick pavers to delineate the crosswalks. While these treatments look pleasing and distinctive from overhead or while walking, they fail to provide adequate information to drivers about where to expect people

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walking, particularly at night. Additionally, at several intersections the brick pavers of the crosswalk extended into the interior of the intersection and space used by vehicle traffic, which potentially creates an unnecessary conflict area between those walking and driving. Any striping that is placed should be clear of vehicle paths, even if it conflicts with the brick patterns. Additionally, other pavements markings are in various conditions, with many stop bars and some longitudinal lane striping in need of being refreshed. Timeline: Short- to medium-term.

- Enhance intersection lighting. The intersections throughout the corridor had varying degrees of intersection specific lighting. Locations that had been updated more recently were more likely to have LED fixtures attached to signal poles supplementing the existing corridor length lighting. Going forward, the lighting design should ensure all crosswalks are adequately lit and have a similar color/temperature. Some intersections featured lower pedestrian scale lighting, but most did not. The City should develop and implement a consistent lighting design that maximizes potential for safety and comfort of those walking at night. Timeline: Medium- to long-term.
- Raised crosswalks. At minor, stop controlled intersections and across channelized right turn lanes such as are proposed at the new IH-45 frontage roads, the City should consider utilizing raised crosswalks. Raised crosswalks in these locations help control speed of turning movements and emphasizes the need to yield to people walking. These treatments offer a fixed, consistent cue to change the context of driving from the MLK corridor experience to a local street experience where drivers should always be proceeding slowly and cautiously. Raised crosswalks have been successfully used in several locations in Austin, Texas, and are becoming a more regular treatment for speed management and pedestrian safety across the US (see example below).



Figure 4: Example of a raised crosswalk on a turn lane joining an interstate frontage road in Austin, TX. (Source: Google Street View <https://goo.gl/maps/PnLAq25X2tKVjf8e9> )

- Determine a preferred cross-section for the MLK corridor. The existing facility is primarily a five-lane section with wide outside lanes, although some portions have raised medians, and the portion west of IH-45 has six through lanes. Working together with stakeholders, the City should determine its preferred cross section for the long-term full reconstruction of this corridor. Safety considerations for this discussion and project development should include:
  - Reducing the six-lane section to four through lanes. The team observed little to no congestion during the peak hours, and converting to four lanes west of IH-45 would allow several goals to be met: Reducing speeds, especially during off-peak hours; using the space for other priorities including bike accommodation, wider sidewalks, parking, or green space; and reducing conflicts for crossing and turning traffic including those walking and biking.
  - Adding a raised median. A raised median reduces the number of places left turn conflicts can occur from driveways and minor side streets and allows those walking to have simpler crossings where they only have to judge one direction of traffic at a time. They can also help reduce speeds from increased visual friction. They potentially could address issues

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around street racing and drivers doing “donuts”, as there would less space available to do those activities.

- Determine preferred bicycle accommodation. Bicycle users were observed throughout the corridor, with usage ranging from taking a lane, using the outside portion of a wide outside lane, or riding on the sidewalk. Considering stakeholder feedback and FHWA’s [Bikeway Selection Guide](#) the City should determine its preferred bicycle accommodation type. With the available space observed in the field, a bicycle lane, buffered bicycle lane, or separated bike lanes would seem to be preferred alternatives over the current shared use lanes.
- Determine preferred parking accommodation. In several locations there are spaces for pull-in angle parking to serve nearby businesses. While angle parking can increase parking supply, it results in the driver having to back out into a lane of travel, potentially with no or little line of sight. These are particularly problematic for bicyclists who are harder to see in the vehicle’s blind spots. In some areas parallel parking is allowed, although it was lightly used during the observed periods by the RSA team. In considering the future corridor, the City should evaluate the parking and access needs of the businesses, schools, and other property owners along the corridor and determine a preferred parking accommodation. Back-in angle parking would allow for a safer movement and is more compatible with bicycle usage, while parallel parking would be more conventional and easily understood, although it would reduce the number of parking spots. Parking could also be removed entirely, relying on cross streets and parking lots, while reassigning the use of that space to other needs, such as bike lanes, sidewalks, or green space.

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# Location Specific Issues and Recommendations

Location: SH 352 / Robert B Cullum Blvd

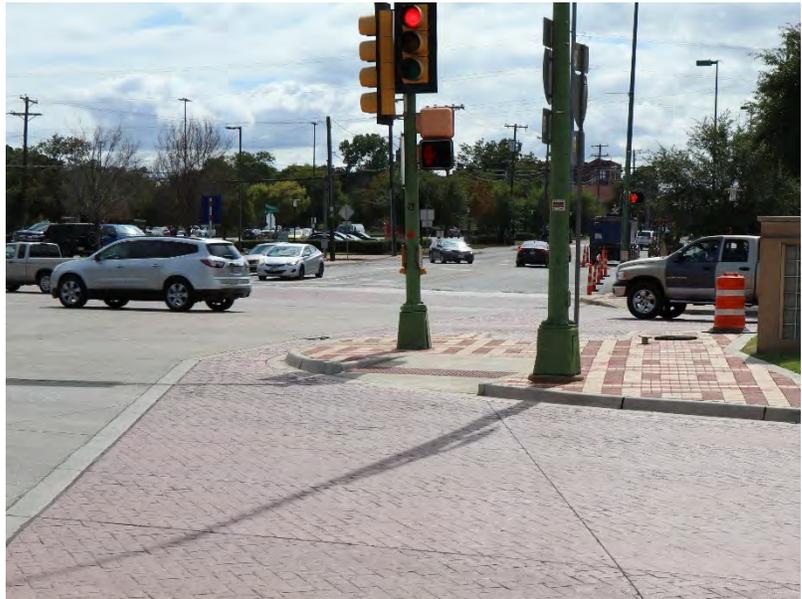
The intersection with Robert B Cullum Blvd is a large intersection with multiple lanes on all approaches. The fourth leg is an entrance to the Fair Park grounds, so the intersection functions as a T-intersection most of the time. Robert B Cullum Blvd is a TxDOT state highway. A brick crosswalk had been added to the intersection relatively recently. There are commercial developments on two corners opposite of the side occupied by Fair Park. Many bus turning movements related to accessing the nearby MLK DART station and bus transfer point were observed, although the closure of the nearby JB Jackson Jr Blvd was resulting in many detours of buses at the time of observation. DART representatives did note that for their drivers making a left turn from JB Jackson Jr to MLK was difficult, but the RSA team was unable to observe this directly due to the closure of JB Jackson Jr.

Observations and Recommendations:

- **Observation:** Southeast of the intersection, Robert B Cullum has four lanes in each direction, but three lanes in each direction to the northwest. Lane utilization of the outside lane was generally very low (except as discussed regarding the Irma Lerma Rangel School observation below). There was some spillback of left turning vehicles from the MLK intersection, resulting in some short periods where there was only one northbound through lane on Robert B Cullum. **Recommendation:** The City should work with TxDOT for possible reassignment of the outside lane to the southeast, possibly simply as a closure and use as a shoulder or right turn lanes. This change would help with driver positioning for those vehicles making a right turn from MLK onto Robert B Cullum.
- **Observation:** As discussed above, southeast of the intersection, Robert B Cullum has four lanes in each direction, but three lanes in each direction to the northwest. Lane utilization of the outside lane of Robert B Cullum was generally very low, except during the school dismissal period for the Irma Lerma Rangel Young Women’s Leadership School. During the school dismissal period, the RSA

team observed up to two lanes of Robert B Cullum blocked to through traffic by car drivers waiting to pick up passengers at the school. **Recommendation:** The City should do a further investigation of the school dismissal period at the school and consider changes in pickup locations and queues, signal timing, and lane assignments.

- **Observation:** The brick crosswalks at the intersection are not well aligned with desired walking paths, including a change in direction on one leg while crossing the median. The crossings are long and require large amounts of clearance time, and the south corner has a large amount of ambiguous space



*Figure 5: Misalignment of the accessible ramps and the crosswalk.*

where the crosswalk exists well away from the curb and desired walking path. On the south median, the median nose projects part way into the crosswalk, while on the north median the crosswalk is more fully protected by the median nose. The dual left and right turn lanes also generated more conflicts between drivers and those walking, particularly for the more heavily used left turn to proceed north on Robert B Cullum. **Recommendation:** Dual ramp curb ramp designs and pulling the crosswalks back from the intersection would allow for shorter, more direct crossings. The space in the crosswalk that is used by turning vehicles would be reduced as well. The median noses could be extended to fully protect the crosswalk, providing a better refuge for someone who is unable to cross the street in one cycle, and potentially slowing cars. An LPI at this location should be explored, as there are dual turning lanes in both directions from MLK contributes to lower yielding rates by drivers to people walking with a walk sign in the crosswalk. The City should determine if the dual right is necessary, as observed usage by the RSA team was quite low.

- **Observation:** On MLK just west of the intersection, the pavement condition was quite poor and through the asphalt what appeared to be an old brick crosswalk could be seen. This area was broken up enough that it was altering some drivers' behaviors, while it was also observed that many cars appeared to be bottoming out their suspension travel while traversing. It also made the pavement markings harder to see in the area. **Recommendation:** Reconstruct this approach and refresh the pavement markings.

The DART Green Line station for MLK generates a large volume of pedestrian and bus movements in the area. To the east, MLK has mostly wide sidewalks, pedestrian scale light fixtures, and small trees. The RSA team observed many people walking from the DART station to the Fiesta grocery store across the street. There is a small raised median in this area and brick crosswalks. Most people walking were observed to be crossing roughly diagonally using none or only part of the existing crosswalk. Crosswalk warning signs were only present in the median, but not on the right side of the street for either approach.



*Figure 6: Crosswalk near the DART station. The addition of pavement markings and a right-side warning sign would increase conspicuity for drivers, particularly at night.*

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- **Observation:** Similar to other crosswalks, any pavement markings that had been placed were worn away or were now missing entirely. Particularly at night drivers have little awareness of the location of the crosswalk as only a left-side sign indicates the crosswalk. **Recommendation:** Consider installing a high visibility (continental or ladder style) crosswalk pavement markings. Investigate the possible use of a [Rectangular Rapid-Flashing Beacons](#) (RRFB) or [Pedestrian Hybrid Beacons](#) (PHB) enhanced crossing, recognizing the interaction with the DART rail crossing may complicate the use of such a device.

## Location: James Madison High School

The area around James Madison High School has a fair number of challenges that are relatively typical of an urban high school. The segment of MLK in this area had recently been repaved at the time of observation, and permanent markings were not yet in place, so some observations may be outdated relative to the current condition where markings have been placed.

The school has a mix of students arriving and departing by car, by walking, and by school bus. The school uses both MLK and the adjacent Meyers St for school bus drop off and pickup. In the afternoon, there are also some bus drop-offs to the school for after school activities in addition to the students leaving for the day. The school had previously been coordinating with the City on a transportation plan, and associated documents were provided to the RSA team for review. Across MLK from the high school are two restaurants and a small grocery store, which generates crossing traffic from students getting food, particularly in the afternoon dismissal period.

Meadow St crosses MLK in an offset configuration with a traffic signal control. Use of Meadow was relatively light during the periods observed, with no school bus activity on that street. Three of the four pedestrian pushbuttons were not functioning at the time of the review. Due to the lack of permanent pavement markings and non-responsive pushbuttons it was difficult to evaluate the safety and comfort of crossing MLK on foot at this location during the review period.



*Figure 7: Students cross between stopped and moving cars and buses during the afternoon dismissal of James Madison High School.*

- **Observation:** The school dismissal period is particularly busy with a large number of observed conflicts between users. Students are crossing MLK in both directions, buses depart from both MLK and Meyers St, and car picks up happen in a combination of in a small lot, on Meyers St, on MLK, and in the community center/library parking lot, along with students walking in all directions. Students crossing MLK routinely walked between cars and forced some drivers to slow or stop for them, even outside of crosswalks. Mitigating this concern is that the school zone signing and driver behavior seemed to expect these actions and vehicles generally were traveling slowly enough to stop for the students crossing on foot. The draft school traffic management plan called for a possible crosswalk with RRFB mid-block in an area where most students crossed, but the City informed the RSA team after the review that the school is no longer pursuing this option (a number of driveway access points across the street made this option difficult to implement). The school will be working on installing fencing to better control walking paths and access. **Recommendation:** While the mid-block crosswalk was deemed to be infeasible going forward, reducing the number of possible conflict points would benefit safety and operations in the area during the school dismissal period. This could include preventing waiting vehicles on MLK and reserving the area for buses only or modifying curbs or shoulders to

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better define these areas. The school is proposing a 6' fence along their frontage to MLK with gates which will direct students to cross at intersections instead of at mid-block location. New ADA compliant barrier free ramps at Meadow St/MLK and Meyers/MLK intersections along with pedestrian pushbutton improvements at Meadow street will also help improve pedestrian safety. The use of a pedestrian refuge island or median at Meyer St would also potentially help issues around crossing, including potentially reducing left turn conflicts from the driveways along MLK in this area.

- **Observation:** The parking lot appeared to operate primarily in a one-way direction with access from Meyers St and exiting onto MLK, but there was no sign or markings indicating this. **Recommendation:** Replace do not enter sign at parking lot MLK, update markings.
- **Observation:** turning onto MLK from the cross streets between the existing school zone signs meant that some drivers could be subject to the school zone restrictions, but not see a sign about the school zone. **Recommendation:** Ensure side streets that connect to MLK have applicable information on school zone effective hours.

## Location: Malcolm X Blvd

The intersection with Malcolm X Blvd is a four-lane undivided road crossing the five lanes on MLK. There are bus routes on all four legs, including at least one left turn movement at the time of observation. The intersection features aesthetic treatments related to the namesakes of the streets, with art, benches, lighting, and other treatments present. There is unmarked pull-in angle parking on eastbound MLK on both sides of the intersection and businesses with close proximity to the street. Demand for parking in these spots was relatively low, but could change with reactivation of some of the business lots.

The intersection presented similar issues with the presence of a brick crosswalk without crosswalk striping, single diagonal curb ramps, and pushbuttons that were not all in accessible locations. Overall lighting was good thanks to the aesthetic treatments that provided some additional pedestrian scale fixtures in addition to the vehicle focused roadway lighting overhead.

- **Observation:** There are a fairly large number of left turns from Malcolm X onto MLK in both directions, including at least one bus route with a left turn through the intersection.



*Figure 8: Two busses on Malcolm X, with one at the bus stop and another waiting to complete a left turn.*

**Recommendation:**

Consider the applicability of a 4 to 3 lane road diet with a permanent left turn lane at the intersection, as during most cycles observed there was rarely any through traffic using the left lane while vehicles waited for a gap. The reallocation of space would also make it easier for bus and other heavy vehicles to complete the turns.

- **Observation:** Pull-in angle parking provides additional parking storage per length of curb along the street but has the disadvantage of requiring drivers to back into the flow of traffic. At this intersection, it also results in the bus stop not having



*Figure 9: A person entering a bus after having to step into the street near the bus stop at the Malcolm X intersection.*

enough space to serve both doors at curb height and with adequate boarding areas. The team observed a person with a walker who had to step into the street and then up onto the bus because of this configuration. **Recommendation:**

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Consider closing the parking spots closest to the bus stop and filling in to allow adequate boarding area for bus passengers to use both doors of a standard bus. (Long term, address as per the corridor plan)

## Location: Atlanta St

The Atlanta Street intersection is a relatively minor street signalized intersection. It has similar aesthetic treatments as the Malcolm X intersection to the east. Atlanta does not have any pavement markings, and the RSA team rarely observed more than four or five vehicles on Atlanta per cycle. There are some businesses on all corners, including an adult day center that is busy during regular business hours, and a pizza place and bar that are more active in the evening and late-night hours. There are bus stops along MLK, both west of Atlanta, but no bus service on Atlanta. There are more pull-in angle parking spots near the southwest corner which were frequently occupied when the RSA team observed the intersection. The pull-in angle parking spots create a similar issue to other locations where the bus stop does not have an adequate boarding area along the curb. The City is will soon begin a federal-aid funded Highway Safety Improvement Program (HSIP) project to upgrade the traffic signal and associated work, and many of the immediate observations by the team are likely to be corrected by the project.

- **Observation:** The sidewalk in this area is set back from the curb which is good, but the curb ramps are placed diagonally on the corners. Some parts of the walking path also require walking around aesthetic treatments and the pull in angle parking, resulting in an indirect path for those walking along MLK.

**Recommendation:** Any future work should include dual curb ramps, and when the corridor cross section is determined in the ultimate configuration, the City should work to minimize the number of times someone has to change direction laterally to walk along the corridor.

## Location: SM Wright and IH-45

These intersections associated with the IH-45 freeway and SM Wright freeway are the busiest part of the observed MLK corridor. There are currently frontage road style streets on either of side of the MLK overpass over SM Wright, but TxDOT is removing the SM Wright freeway and replacing it with a boulevard cross section and a single at

grade intersection for SM Wright and MLK. Construction is underway south of MLK, altering traffic patterns, and construction at MLK is expected to begin in September of 2022. The nearby IH-45 corridor is currently under construction in coordination with the SM Wright freeway removal, with additional lanes and ramps being added, along with a new frontage road and ramps adjacent to the main lanes of IH-45. Additionally, several roads in the area will be reconfigured and will change traffic patterns, including dead-ending Colonial Ave near Pennsylvania, the removal of Harwood St north of MLK, changes to Kimble St just east of SM Wright, and others. The Forest Theater which sits on the south side of MLK between IH-45 and SM Wright is also slated for redevelopment. Due to the timing of construction and redevelopment, the RSA team did not go into much detail on immediate improvements but considered things that the City of Dallas could potentially work with TxDOT to change before different pieces of the intersections are constructed. Some of the short-term improvements will need to be coordinated with TxDOT's construction activities.



*Figure 10: Rendering of future conditions in the area around SM Wright Parkway. Source: TxDOT project information <https://www.smwrightproject.com/intersection-renderings>.*

- **Observation:** On the Westbound MLK approach to SM Wright, there is what appears to be a dynamic lane use sign that was black the entire time of the review. **Recommendation:** Replace with a static standard lane use sign, so that

the right lane is not the only lane without a lane use assignment by overhead signs.

- **Observation:** There were many pedestrians observed throughout the area, particularly at the SM Wright frontage road intersections and along MLK under IH-45. The area currently under construction does not have a continuous walking path on either side of



*Figure 11: A person walks through the construction area along MLK and underneath IH-45, where there is no accessible path.*

MLK and results in the public walking through dirt and is inaccessible to someone in a wheelchair. **Recommendation:** A temporary path that is at least as accessible as the prior condition needs to be maintained on at least one side of MLK at all times. Gaps needs to be filled with asphalt or other accessible materials, and traffic control devices should not block the walking paths. This needs to be planned in advance for the upcoming construction of the SM Wright and MLK intersection.

- **Observation:** At the intersection of Harwood and MLK, old pavement markings could be observed delineating the crosswalk and stop bar, although neither currently applies. On eastbound MLK, there was no advance warning or striping for the right lane closure. **Recommendation:** Pavement markings should be removed / updated per TxDOT's guidance on work zone traffic control, including removing the stop bar that is no longer applicable with the removal of the traffic signal, and for long term lane closures.
- **Observation:** At the proposed IH-45 frontage road intersections with MLK there right turn islands proposed in a relatively free-flow curved design that allows for higher speeds and has undesirable viewing angles. **Recommendation:** The City should work with TxDOT to change the design to match TxDOT's new right turn slip lane design, which features less curvature, which results in lower speeds,

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more yielding to people walking, and easier viewing of cross traffic than the proposed design. A partially raised crosswalk to serve those walking along MLK should also be considered, to further emphasize the need for yielding for pedestrians.

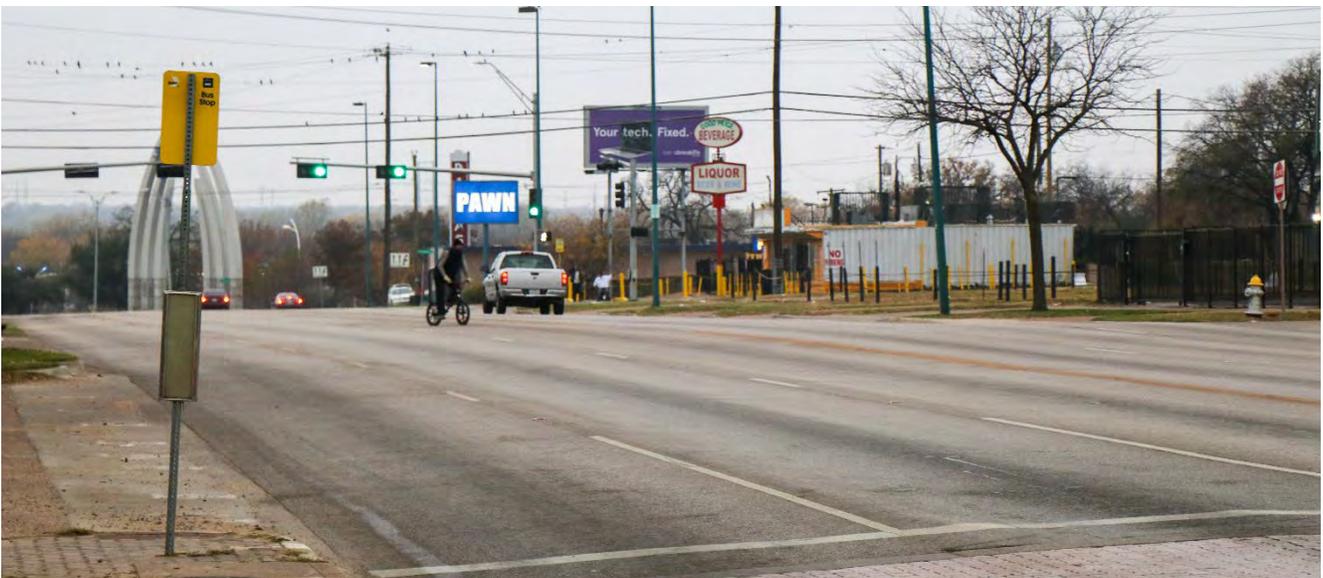
- **Observation:** The proposed SM Wright and MLK intersection features a northbound approach with three through lanes in each direction, two left turn lanes, and a dedicated right turn lane. Walking along MLK will require crossing nine lanes of traffic and a small median area. This very long crossing will require very long crossing clearance times and will result in more people crossing without the walk sign. The size of the intersection also may mean that it is easier for drivers to do things like perform “donuts” which is a noted issue in the area. **Recommendation:** The City should explore with TxDOT if changes can be made to the design that would shorten the crossing and be more responsive to the high levels of pedestrian activity observed at this location. Removing a left turn lane, removing the right turn lane, or adding a right turn island, and narrowing the lanes may all be alternatives to the currently proposed design. The importance of peak hour traffic needs should be considered against the need to provide safe crossings 24 hours a day and the City’s goals for mobility along the MLK corridor.
- **Observation:** The proposed MLK cross section includes a wide outside lane of 14’ plus a 2’ offset to curb, along with 12’ inside lanes and turn lanes. **Recommendation:** If possible, the City should determine its preferred proposed bicycle accommodation treatment (shared use path, separated bicycle lane, bicycle lane, shared lanes) quickly enough for TxDOT to accommodate in the construction that will begin no later than September 2022. This would minimize the amount of changes needed to be made for the ultimate corridor effort in the long term. The City should also ensure that lane widths and curb offsets match City standards and that the proposed design does as much as possible to reflect City and stakeholder goals for the area.
- **Observation:** The width of proposed sidewalks along MLK could not be confirmed by the RSA team at the time of the review. One plan set said 6 feet wide directly behind the curb, while another person said the sidewalks would be 4 feet wide. **Recommendation:** The City should confirm the planned design, with

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a minimum width of 6 feet preferred, and a buffer space between curb and sidewalk preferred if space is available.

## Location: Colonial Ave to Cleveland St

This portion of the MLK corridor is unique in that it is a six-lane undivided cross section. There are bus stops throughout this portion of the corridor, but limited benches and shelters. Many crossings on foot were observed in this area, both in defined crosswalks and between crosswalks. There is a raised median that stops at Cleveland street on the west, and the IH-45 work will add a raised median in advance and through the frontage road intersections. This portion of the corridor had the highest concentration of pedestrian and bicycle crashes, particularly near the Holmes St intersection (discussed in further detail later in this report). There are several liquor stores in this area and along with other social issues do contribute to the number of pedestrian crashes observed. The presence of six lanes without turn lanes means that drivers have more opportunity to speed through the part of the corridor, which may also contribute to the severity of crashes reported in this segment. Businesses have a mixture of parking access, with some pull-in angle parking and some long driveway cuts that are being used as perpendicular parking, results in vehicles backing into the travel lanes when leaving.



*Figure 12: A person on a bicycle crosses MLK during the morning rush hour.*

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- **Observation:** The observed traffic in the area doesn't seem to justify the additional through lane that is present on the section. It allows greater speeds than a smaller section, which may be increasing injury severities when crashes do occur. **Recommendation:** A 6-to-4 or 6-to-5 lane road diet in the section would accomplish several goals, particularly if implemented along with a raised median. By making the roadway feel smaller, drivers would likely drive slower. This may help reduce injury severities, particularly with the observed pedestrian crashes. A median would limit the number of access points and turning conflict movements, and allow people walking to cross MLK in two stages, having to judge fewer lanes of traffic at a time and providing a safe refuge in the median. A left turn lane could be added at Colonial, improving safety and operations of that intersection.

## Location: Colonial Ave

The intersection with Colonial Ave is located just west of the IH-45 crossing. Colonial splits and curves into Ervay St just north of the intersection, which is continuous into downtown Dallas. Colonial to the south joins the IH-45 frontage road at the Pennsylvania Ave intersection, which will eventually be cut off by the IH-45 construction that is currently underway. There are reasonably heavy left turn movements on all approaches, although patterns will change once the current construction is completed. There are no dedicated turn lanes on any of the approaches, although turning traffic from Colonial was steady enough that most through drivers used the right lane. There are bus stops near all the approaching corners, and a bus shelter for the westbound MLK buses, although the bus shelter was continuously occupied by people experiencing homelessness during the RSA team's observations. There are businesses and store fronts on all corners, with pull-in angle parking near the southwest corner, and what was being used as perpendicular parking on the northeast corner. At the time of observation, the pushbuttons to cross MLK were not functioning, but a City of Dallas maintenance crew was working on repairs before RSA team adjourned its activities and is presumed to be fixed. Like other intersections, this location has brick crosswalks, but this location has the highest degree of overlap between the crosswalk area and the traffic utilizing the outside lanes of Colonial.

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At the closeout meeting a representative of St. Philip's shared with the RSA team a proposal to remove the curved portion of Ervay connecting to Colonial north of MLK. Combined with the already changing traffic patterns from the future closure of Colonial at Pennsylvania, this change would return the historic street grid allowing new development opportunities and removing the awkward movement observed several times where vehicles traveling south on Ervay made a U-turn to go north on Colonial, just outside of the signalized intersection of MLK and Colonial. While this alternative seems reasonable, the RSA team has not fully vetted the potential safety impacts of this change, and the City should consider the ability to operate these intersections with Ervay as a T-intersection with more traffic, signal spacing, and network level travel patterns to determine if this option is preferred for later implementation.

- **Observation:** One of the LED lights attached to a traffic signal pole has failed and the light emitted is purple in color, and this area had the most mismatch of lighting colors and temperatures from the various light poles in the area. **Recommendation:** The LED light should be replaced (may be under warranty), and the City should consider changing all the lighting to LED for consistent color along the corridor.
- **Observation:** The high level of left turning traffic from Colonial made the left lane effectively a permanent left turn lane, with through and right turning traffic using the outside lane. **Recommendation:** Colonial may be a good candidate for a 4-to-3 lane road diet with little effect on operations. The additional space could be used as a shoulder, a parking area, or a bicycle lane. Moving the through traffic away from the outside curb would result in less tracking through the brick crosswalk area and fewer conflicts between those walking and those driving.



*Figure 13: Traffic in the outside southbound through lane overlaps with the textured crosswalk area of Colonial intersection*

- **Observation:** Like many of the intersections, the crosswalk needed to be restriped, but at this location, particular care is needed to ensure there isn't any conflict between the crosswalk markings and through vehicle paths.  
**Recommendation:** Install crosswalk markings in a new location such that the crosswalk is entirely outside the vehicle paths.

## Location: Holmes St

The intersection with Holmes St has had relatively recent construction activity with new traffic signal equipment and updated corners and curb ramps. There are businesses on three corners, with a vacant lot on the remaining corner. There are no bus stops at this intersection. There are business driveways near the intersection on all sides. This location had the highest number of pedestrian crashes at a single location anywhere along the MLK corridor. The RSA team reviewed the crash reports (TxDOT Form CR-3) for the fatal and suspect serious injury severity crashes, and made the following determinations:

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- Most of the crashes involved crossing MLK with through traffic, only two were associated with left turns.
  - None of the crashes were associated with crossing Holmes.
  - Most crashes occurred between 7:30pm and 11:30pm.
  - Many of the crashes happened on the west leg, and many were noted to be 30 feet or less outside of the crosswalk

While observing the intersection, the RSA team was approached by someone on the street and was given information about their experience with the intersection.

Combined with the observations made, it is noted that there are significant connections between the liquor store on one corner, a known drug activity area just north of MLK, and the people who are crossing MLK, all of which may be contributing to the crash patterns observed.

- **Observation:** Street name signs for Holmes St were missing at the intersection. **Recommendation:** The street name signs should be installed.
- **Observation:** The observed pattern of crashes is a function of both social issues, the large amount of demand for crossing, and corridor wide engineering and design issues. **Recommendation:** The segment recommendations made above all apply to this location specifically – a median and lane reduction would potentially reduce speeds, which would reduce injury severities. The median would allow for a refuge area and result in shorter, easier crossings, and it would reduce the conflicts related to the nearby driveway openings. Parking, driveway access, and other issues should be addressed as part of the larger corridor conversation and ultimate cross section discussion.

## Location: Forest Ave

The Forest Ave / Cedar Crest Blvd / MLK intersection is a “Y” signalized intersection at the very west end of the RSA area. Cedar Crest proceeds on a viaduct to cross the Trinity River floodplain, and there are no signals in that direction for nearly a mile, which contributes to relatively high observed speeds. The signal was timed such that traffic coming from Cedar Crest rarely had to stop proceeding eastbound onto MLK, which may be further contributing to the crash patterns observed at Holmes. Forest Ave connects to Botham Jean Blvd, another significant corridor with access north south and connecting to downtown. A significant amount of heavy vehicle traffic is generated

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by businesses on Forest west of Botham Jean, as MLK allows access to IH-45 in either direction among other routes. On westbound MLK, the right lane drops as a slip lane to Forest, which is uncontrolled and can be made at high speed. The crosswalk across this slip lane is at an angle and is also uncontrolled. This crosswalk felt uncomfortable to cross on foot between the small angle of the turn and some excess paved area in the gore. Pedestrian pushbuttons were not located near the crosswalk being controlled (See TMUTCD section 4E.08). There is a sweeping right turn from Forest to Cedar Crest that can also be taken at speeds that make it unlikely drivers will yield to pedestrians. There are no bus stops in the immediate vicinity of the intersection. The southeast side of the intersection has a driveway access that is uncontrolled. Traffic on the Forest approach proceeding eastbound on MLK were almost always stopped at the signal. This operation has resulted in significant debris accumulation onto the roadway, building up several inches and hard packed by the heavy vehicles on top of the concrete, and obscuring the pavement markings. Due to the overlapping arrangement of left turns and the angle of crossings, there is no crosswalk on the east leg of the intersection, and “No Crossing” signs are posted. The intersection has extensive aesthetic treatments tied to styles used along the Trinity River, and the lighting and other features on Cedar Crest are consistent with those design elements elsewhere along the Trinity River.

- **Observation:** Accumulated debris and dust is affecting operations and visibility of the pavement markings. **Recommendation:** Debris at the intersection should be scrapped off, washed, and markings should be refreshed.
- **Observation:** At the uncontrolled driveway approach, there are two DO NOT ENTER signs posted, but it is unclear what movement they are meant to prevent. **Recommendation:** A “RIGHT TURN ONLY” or other sign on the driveway may provide clearer instruction and help reduce conflicts in the intersection.
- **Observation:** The team observed many trucks between Forest Ave and SM Wright, and the truck traffic was noted by stakeholders in the area as a concern. **Recommendation:** MLK is a designated truck route, so the City should consider working with businesses and stakeholders along MLK in the future when the City’s truck routes are being updated to see if other options may exist for the routing of heavy vehicles.

- Observation:** At the Forest Ave eastbound approach to MLK were frequently observed stopping in the crosswalk area in front of the stop bar.

**Recommendation:** Refresh the Stop bar marking and install a “STOP HERE ON RED” sign.
- Observation:** At the Forest Ave eastbound approach to MLK, there is a right turn slip lane well in advance of the intersection. This placement may cause confusion for unfamiliar drivers who are not familiar with the streets in the area.

**Recommendation:** The City should add a guide sign / street name sign directing the right turn to westbound Cedar Crest Blvd.
- Observation:** The angle of the intersection, combined with the existing design, result in high speed turns, limited yielding to pedestrians, crosswalks at high angles and longer crossings, and other issues. **Recommendation:** This recommendation is split into options for the City to consider as part of the long-term corridor improvements. **Option A:** Curve the Forest Ave approach to the south before intersecting MLK/Cedar Crest. This option would result in a more traditional square T-intersection. This would be better understood by all users, allow for a crosswalk across the east leg to serve observed crossings, and result in fewer high-speed conflicts between drivers and people walking by removing two sweeping right turns. At the closeout meeting, a St. Philip’s representative provided the team with a drawing of this change that had previously been discussed with the community, although the team made its recommendation of this option without knowing of this previous stakeholder involvement. **Option B:** Convert the signalized intersection to a roundabout.



*Figure 14: A possible realignment of the Forest Ave intersection from a prior public engagement with the neighborhood, provided to the RSA Team at the close out meeting.*

While potentially controversial, a roundabout potentially better achieves several goals for the corridor. A roundabout would consistently slow traffic coming from Cedar Crest, resetting driver expectations to a commercial corridor with

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frequent crossings and pedestrian, bicycle, and bus activity. It would ensure that no drivers could drive continuously at high speed from crossing the river to the higher crash areas near Holmes and Colonial intersections. It would allow for reproducing the current or new aesthetic treatments, further establishing the intersection as a transition into the corridor. Roundabouts greatly reduce the number of severe crashes overall thanks to the reduced speeds. There would be no need for signal timing and maintenance into the future with a roundabout option. While heavy truck drivers might not be receptive to a roundabout initially, it should be noted that roundabouts can be designed for heavy truck use with proper use of truck aprons and controlling the approach angles. Additionally, all trucks observed were made to stop at the signal, while under a roundabout yield control, some of those vehicles would be able to proceed into the roundabout without stopping, which would be easier for the drivers.

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# Appendix A

List of Attendees at meetings:

Phase 1 kickoff meeting:

City of Dallas:

- Kathryn Rush
- Jessica Scott
- Franklyn Honeycutt
- Kierra Williams
- Joseph Marchione
- Sgt. Ira Carter

FHWA:

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

NCTCOG:

- Julie Anderson
- Bobby Kozub
- Travis Liska
- Pat Rohmer
- Stu Burzette
- Erin Curry

St. Philip's School & Community Center:

- Nicole Raphiel

City of Richardson:

- Daniel Herrig

TxDOT:

- Erick Ramirez

Phase 1 meeting with DART:

- RSA Team
- Ralph Zaragoza (DART)

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- Jacob James (DART)
  - Anthony Vickers (DART)

Phase 1 closeout meeting:

City of Dallas:

- Franklyn Honeycutt
- Kierra Williams
- Joseph Marchione

FHWA:

- Stephen Ratke
- Millie Hayes
- Ed Burgos-Ramirez

NCTCOG:

- Julie Anderson
- Bobby Kozub
- Travis Liska
- Stu Burzette
- Erin Curry

City of Richardson:

- Daniel Herrig

TxDOT:

- Erick Ramirez

St. Philip's School & Community Center:

- Nicole Raphiel

Phase 2 meeting with TxDOT:

- RSA Team
- Elecia Moore (TxDOT)
- Barry Heard (LTRA Engineers)
- Trena Brand (TxDOT)
- Jennifer Patterson (K Strategies)

Phase 2 closeout meeting:

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City of Dallas:

- Wayne Powell
- Kierra Williams
- Joseph Marchione
- Srinivasa Veeramallu
- Jessica Scott
- Kristopher Johnson
- Fernando Villarreal
- Quinton Rodgers
- Kimberly Smith
- Dorion Hasty

NCTCOG:

- Julie Anderson

FHWA:

- Stephen Ratke
- Millie Hayes
- Ed Burgos-Ramirez

TxDOT:

- Nicholas Aiello

St. Philip's School & Community Center:

- Nicole Raphiel
- Julie Saqueton

Community representative:

- Glorias Dixon

# Appendix B



Figure 1: Pedestrian and bicycle crash location map for phase 1 of the RSA review. (Source: NCTCOG)

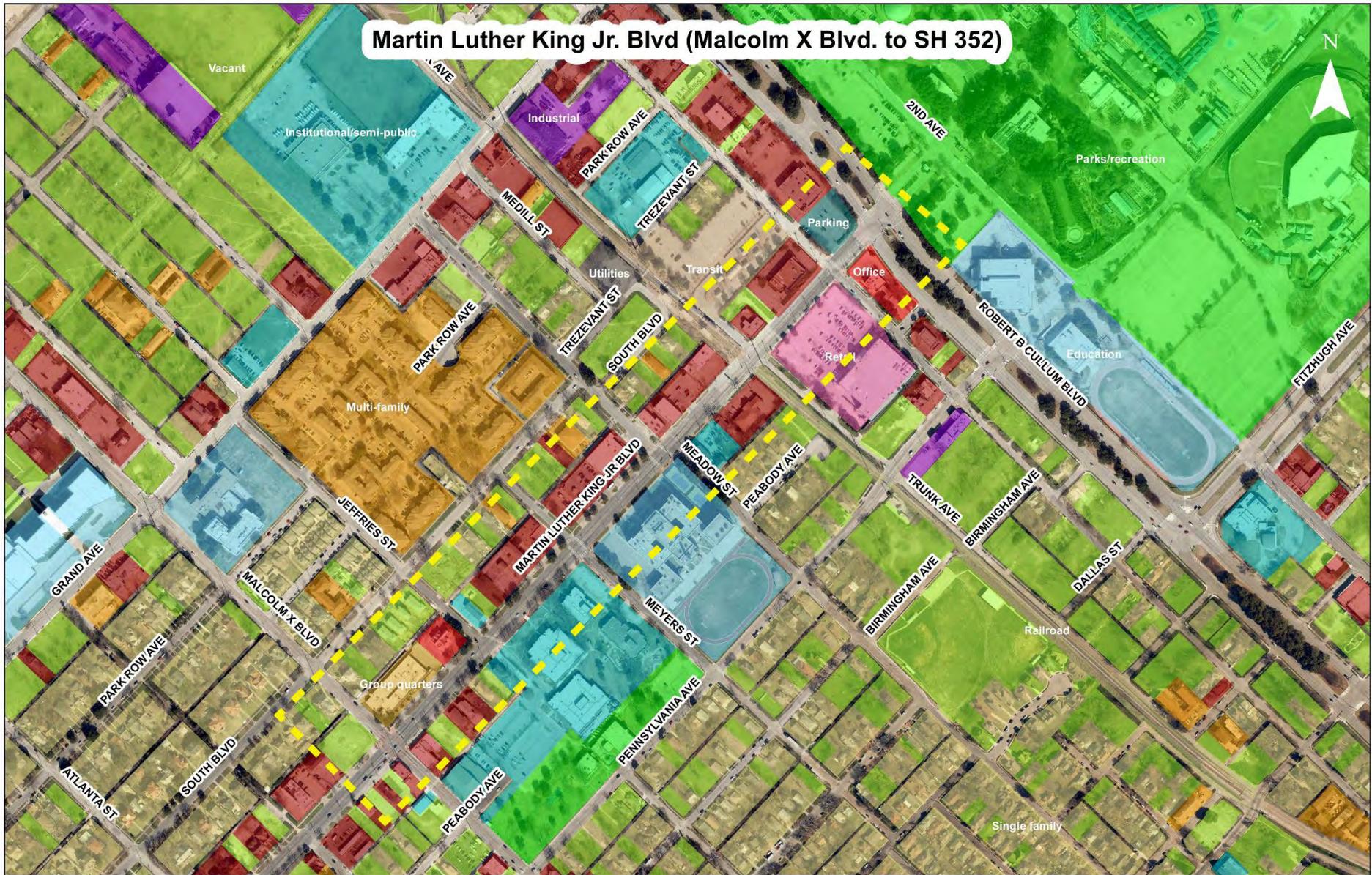


Figure 2: Land use map for phase 1 of the RSA review. (Source: NCTCOG)

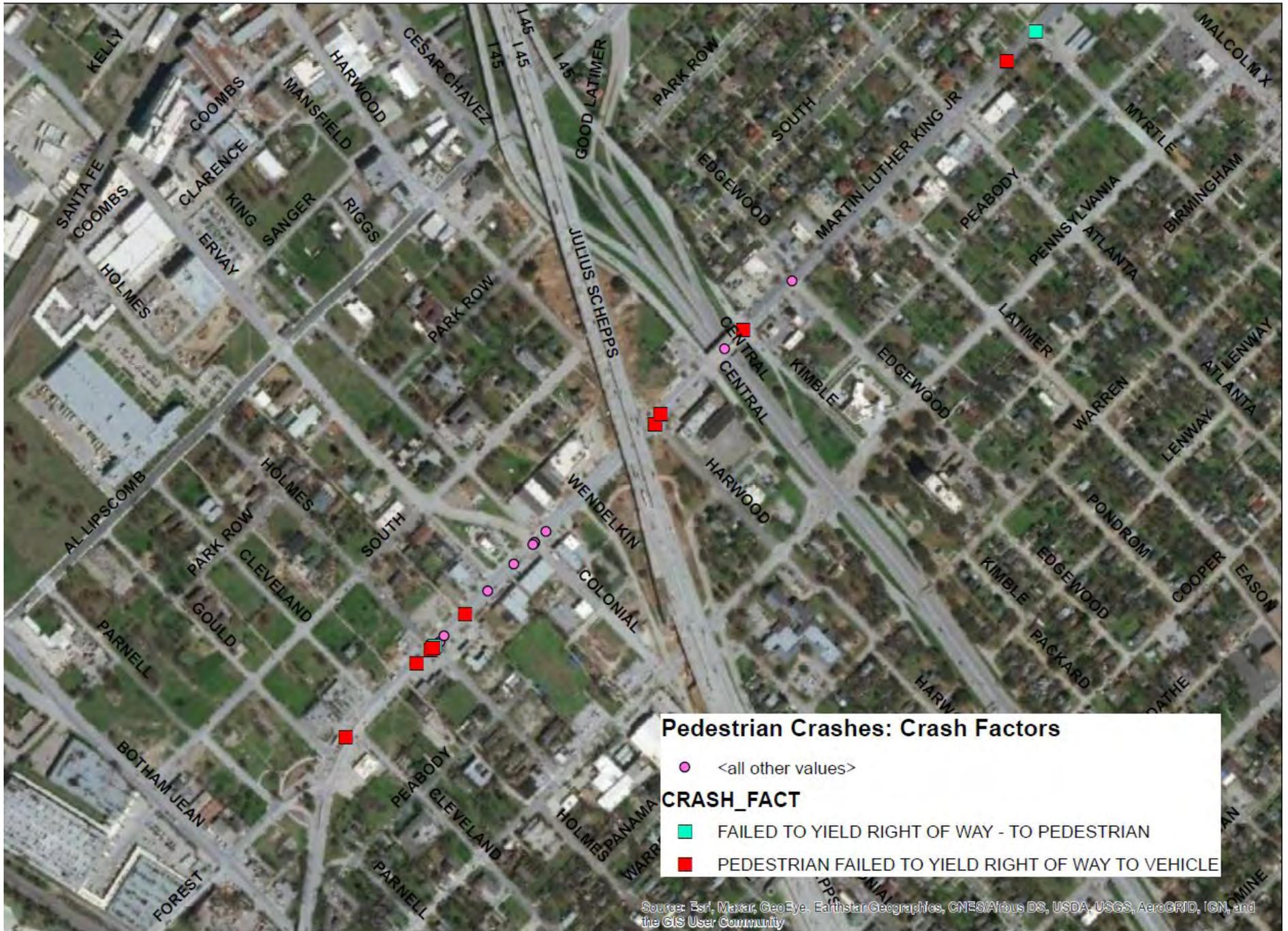


Figure 3: Location map of pedestrian crashes by crash factor for phase 2 of the RSA review. (Source: City of Dallas)





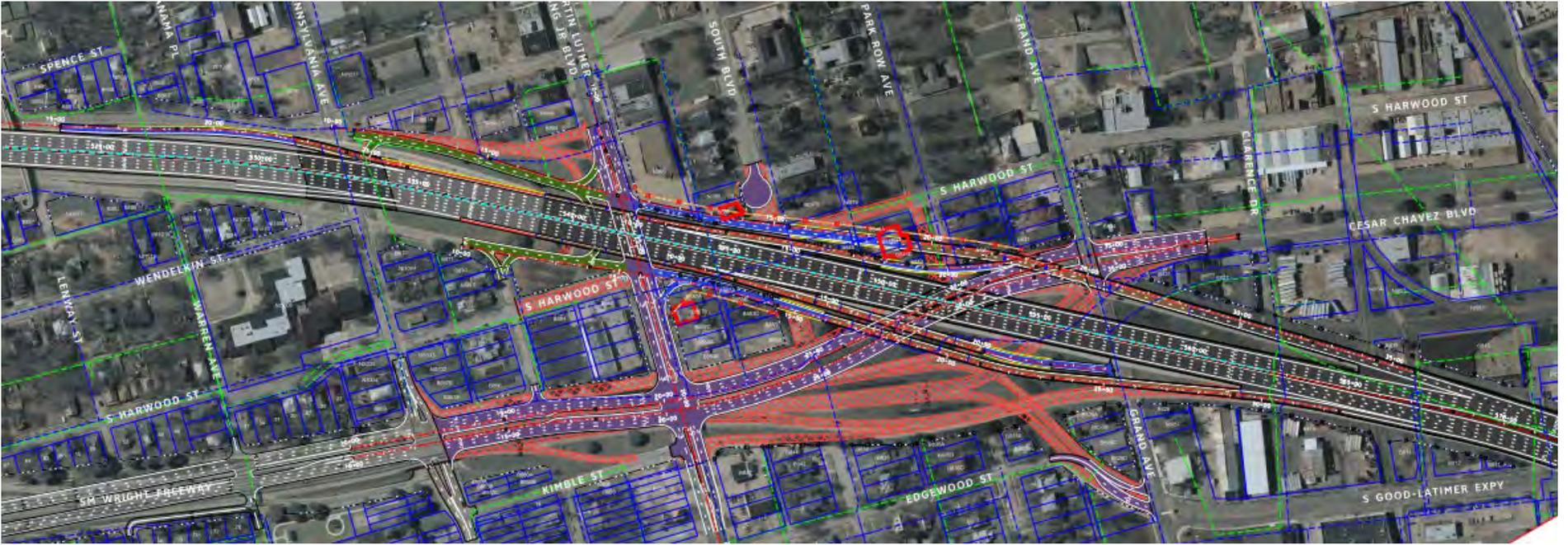


Figure 6: Schematic of the I-45 and SM Wright construction plans provided to the RSA Team by TxDOT. (Source: TxDOT)

# Appendix C

Location: TX 352 / Robert B Cullum Blvd



Figure 1: Dual right turns from MLK to SH 352

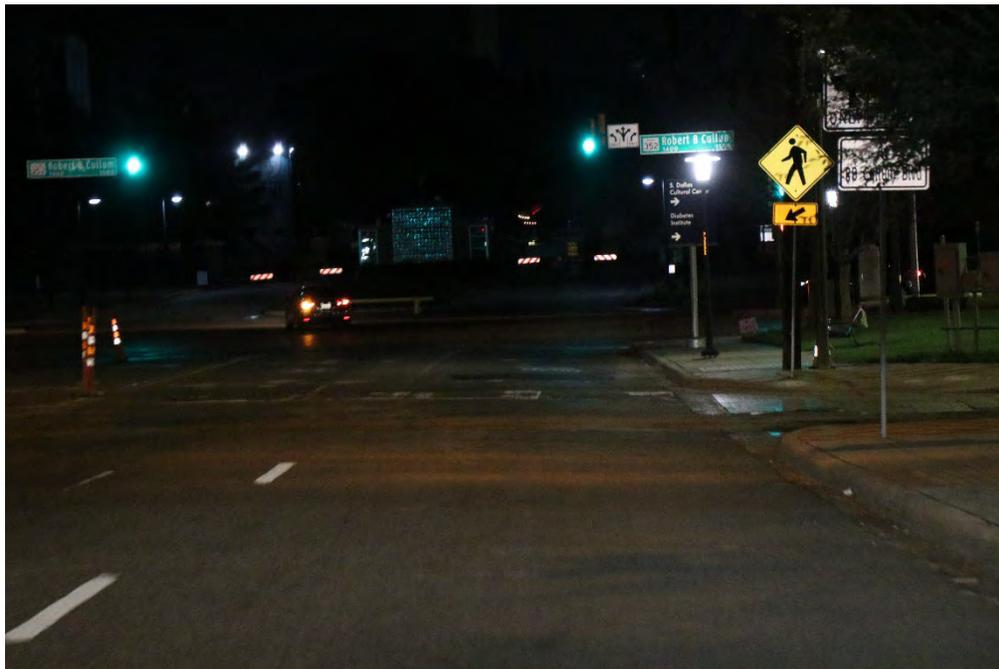


Figure 2: Conflicting and faded markings on the MLK westbound approach to TX 352

## Location: MLK DART Station



*Figure 3: A person crossing on foot at the MLK crosswalk south of the DART station.*



*Figure 4: A Commercial vehicle drives on the wrong side of MLK to access a loading area south of MLK near the DART station.*

Location: James Madison High School



Figure 5: Meadow intersection at night, with missing street name sign on the westbound approach. The addition of the retroreflective background around the signal helps with visibility of the signal indications.



Figure 6: Meyers St with vehicles and a bus waiting for the afternoon dismissal.

## Location: Malcolm X Blvd



*Figure 7: the sidewalks and crosswalk ramps along MLK don't line up, requiring out of direction travel for some users, along with push buttons in improper locations.*

Location: Atlanta St



Figure 8: Push button location to cross MLK.



Figure 9: Atlanta intersection overview.

Location: SM Wright and IH-45



Figure 10: Westbound approach to S.M. Wright with inoperable dynamic lane use display sign.



Figure 11: Stop bar and crosswalk markings that should be removed as they are no longer applicable.



Figure 12: The area underneath I-45 lacked a continuous accessible sidewalk at the time of the observation.

## Location: Colonial Ave to Cleveland St



Figure 13: Overview of the cross section of MLK from Colonial looking towards Holmes and Cleveland Streets.



Figure 14: Example of common truck traffic on this portion of the MLK corridor.

## Location: Colonial Ave



Figure 15: North looking view of the Colonial intersection and the nearby split with Ervay St.



*Figure 16: Sidewalk discontinuity northeast of the intersection with Colonial.*



*Figure 17: Night view of intersection with several colors of overhead lighting in the area.*

## Location: Holmes St



Figure 18: Westbound approach to Holmes intersection. A street name sign is missing.



Figure 19: Crosswalk at Holmes, showing removed ladder style markings, and tire marks from cars doing "donuts."

## Location: Forest Ave



*Figure 20: Build-up of Debris on the Forest approach to MLK.*



*Figure 21: Several of the push buttons were placed away from the crossing point and had incorrect arrows on the plaques.*