North Central Texas Council of Governments

DART let's go.

DART Red & Blue Line Corridors Last Mile Connections Project

Final Report

December 11, 2020

LEE ENGINEERING

ARS Engineers, Inc.

HAYDEN CONSULTANTS, INC.

Table of Contents

Appendices

List of Figures

List of Station Area Figures

List of Tables

1. Introduction

One of the biggest challenges our nation's transit agencies face is finding a way to increase ridership in light of limited revenues. As is the case with many American cities, large portions of Dallas and its adjacent suburban areas have a relatively low population density level, which may make travel by transit a less viable option.

As an indication of these preferences, population density has been growing near transit stations along the Dallas Area Rapid Transit (DART) Blue and Red lines in the cities of Dallas, Garland, Plano, and Richardson. As ridership increases, the effects of existing gaps in infrastructure or barriers to pedestrian and bicycle accessibility at DART stations becomes more evident. These barriers have the potential to suppress the demand for rail traffic, increase motorized traffic to and from the rail stations, or increase safety risks for the roadway's most vulnerable users.

Coordination between transit agencies and city transportation offices is necessary in targeting first and last mile improvements that produce the greatest benefits while planning for anticipated costs. In support of these efforts, the North Central Texas Council of Governments (NCTCOG) initiated this study to verify exiting needs and to prioritize identified improvements for twenty-eight stations and their adjacent developed areas within the cities of Dallas, Garland, Plano, and Richardson.

1.1 Objectives

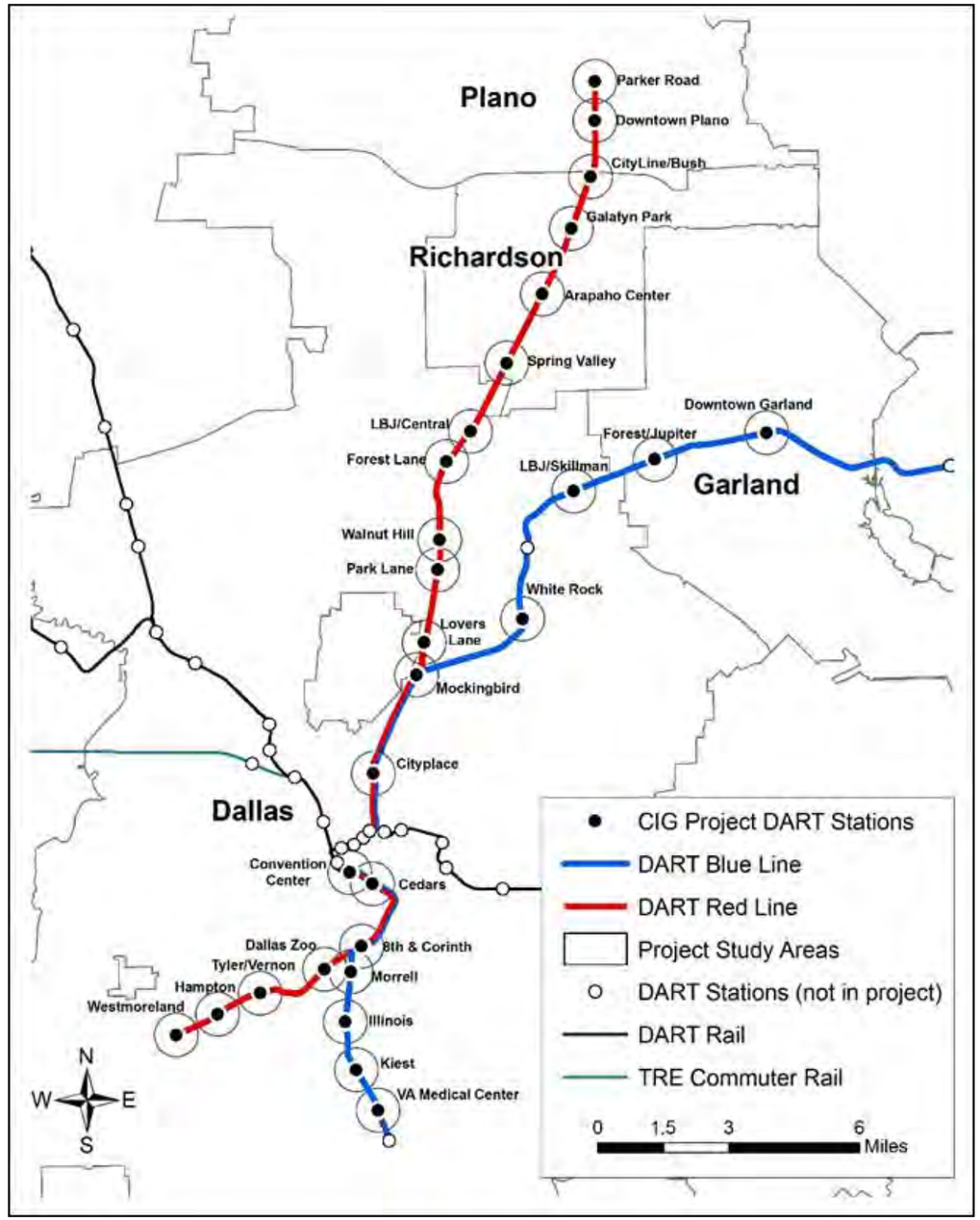
The project's objective is to provide opportunities for the greatest number of additional people to walk or bike to DART stations by identifying necessary sidewalk, shared use path, crosswalk connections, and related infrastructure within and surrounding the various DART stations. This was accomplished by:

- Conducting field investigation of existing pedestrian and bicycle infrastructure in the study area.
- Verifying the need for recommended pedestrian and bicycle improvements in priority corridors identified by NCTCOG to improve access and connectivity to light rail stations for the greatest number and density of residents and workers, thus increasing potential transit ridership.
- Identifying additional improvements based on field review, as necessary.
- Reviewing and updating NCTCOG's prior draft project prioritization of improvements based on information gathered during field review, engineering judgment, and criteria to be coordinated with City and DART staff stakeholders.
- Developing opinions of probable cost, and schematics for key pedestrian and bicycle improvements at rail stations and along prioritized routes to stations.

1.2 Study Area

The study area focused on the twenty-eight DART light rail stations built prior to 2004, included in the Red and Blue Line Platform Extension Project corridors, as shown in Figure 1.

Figure 1: Map of Study Area DART Stations



These stations are part of the Federal Transit Administration (FTA) Core Capacity Enhancement Capital Investment Grant, which made them eligible for FTA planning funds. Per FTA guidance, the one-half mile radius from the station is the effective planning area for transit-oriented development (TOD). These DART rail stations and their adjacent developed areas are located in the cities of Dallas, Garland, Plano, and Richardson.

While the intent of the planning work was to create corridor-level planning recommendations, not all areas surrounding all stations were reviewed using the same level of detail as part of this study; rather, strategic streets and sites within a broad selection of stations that were expected to be most cost effective were targeted for more thorough review.

1.3 Station Numbering & Report Organization

The system developed to organize improvements identified in the deliverables is illustrated in Figure 2. Each red or blue colored box in the figure represents a Red or Blue Line DART station respectively, arranged geographically from north to south. Purple boxes represent stations where the Red and Blue Lines run concurrently on the same alignment. Two-digit alpha-numeric codes assigned to each station are shown to the left of each box.

This report is organized for specific use by DART and NCTCOG. Other volumes of this report have been provided to specific project stakeholders (Dallas, Garland, Plano and Richardson) which include a sub-set of similar details relevent to their jurisdictions. Figures common to all volumes of the report are numbered 1, 2, 3, etc. Figures specific to the station areas within individual cities have figure numbers beginning with the code (1A, 1B, 1C, etc.) assigned to each station.

1.4 Station Area Half-Mile Boundaries

The CityLine Bush station is the only station half-mile area in the project that is divided by a City boundary. As such, information about this station is repeated in both the Plano and Richardson versions of the report.

The half-mile radii of some stations overlap. In most cases, the overlapping areas were divided equally between the two (or three) station areas for ease of reporting.

In the case of the small overlap between the Parker Road and Downtown Plano Stations, the entire overlap area was assigned to Downtown Plano, due to the proximity to the terminus of the Red Line and the logical flow of ridership.

Figure 2: Project Station Numbering Schematic

City	Station ID	Red Line	Station ID	Blue Line
Plano	1A	Parker Road		
	1B	Downtown Plano		
	1C	City Line/Bush		
Richardson	2A	Galatyn Park		
	2B	Arapaho Center		
	2C	Spring Valley		
Garland			3A	**Downtown Garland***
			3B	**Forest/Jupiter***
Dallas	3C	LBJ/Central		
	3D	Forest Lane		
	4A	Walnut Hill		
	4B	Park Lane	4E	LBJ/Skillman
	4C	**Lovers Lane***	4F	White Rock
	4D	Mockingbird		
	8A	Cityplace		
	8B	Convention Center		
	8C	Cedars		
	5A	8th & Corinth		
	5B	**Dallas Zoo***	5C	Morrell
	6A	Tyler Vernon	7A	Illinois
	6B	Hampton	7B	Kiest
	6C	Westmoreland	7C	VA Medical Center

*** Station with high priority improvements for 15% design**

2. Methodology

The consultant group conducted field investigations for each of the twenty-eight DART station properties and surrounding one-half mile areas within the study area to examine existing conditions of pedestrian and bicycle infrastructure and to determine potential improvements. Field visits for each station were made between July 2018 and January 2019. Specific dates are listed in Appendix A.

2.1 Field Survey (DART Station Properties)

The consultant group documented the existing pedestrian, bicycle, bus, and motor vehicle circulation and patterns, as well as the wayfinding, signage, and lighting at each station. Potential station-area improvements were then identified, including sidewalks, curb cuts, crosswalks, shared use paths, lighting and wayfinding, among others.

In many locations, signage for motorized and nonmotorized users needs to be updated in order to conform with the Manual on Uniform Traffic Control Devices (MUTCD).

Many pedestrian facilities were observed to be non-compliant with Americans with Disabilities Act (ADA) regulations. While a full inventory of all ADA infrastructure was outside the scope of this study, some example problems have been identified in the recommendations. It is recommended that DART conduct complete accessibility reviews to identify and correct all such concerns within DART station properties.

Review of the Downtown Plano and CityLine Bush Stations was conducted while remaining cognizant of future connectivity to the DART Silver Line Commuter Rail (Cotton Belt) Project, currently in development.

2.2 Field Survey (Half-Mile Radii)

Inventories were developed of all proposed improvements within one-quarter mile of each station. Streets within one-quarter mile where existing sidewalks had been preliminarily identified as acceptable condition by NCTCOG were reviewed quickly by a combination of walking, biking, and/or driving. Within one-half mile of each station, the consultant team also reviewed corridors labeled as "Primary Routes" on NCTCOG's prior in-house mapping. Of the Primary Routes, certain corridors in Dallas and Garland (that will be identified later in this report) had been identified by NCTCOG for preliminary

engineering with 15 percent design schematic development. These select corridors received special attention during the field surveys to verify feasibility of construction.

The primary focus of data collection efforts was information about major barriers to walking or biking to the stations. These included:

- Missing sidewalk links
- Unprotected crossings
- Multi-lane crossings
- Fences & landscaping
- Proximity to high-speed auto traffic

Map data from previous projects was reviewed revealing many locations where existing conditions had changed since NCTCOG's initial analysis. For example, recent sidewalk damage resulted in some additional gaps. Other gaps previously inventoried by NCTCOG had since been constructed by adjacent development or City/TxDOT projects.

2.3 Sidewalk Condition Classification

Existing sidewalk conditions were classified as acceptable or unaccaptable. As shown by the examples in Figure 3 on page 4, acceptable sidewalk was categorized as either "Excellent/Good" or "Fair." Unacceptable conditions included both "Poor" and "Nonexistent" sidewalk.

2.4 Incorporation of Other Data Sources

In some cases, additional improvements were constructed *after* the field work and were identified while conducting further review for prioritization on Google Maps aerial or Street View images. When such improvements were identified, the ArcGIS files were updated accordingly. However, other changes may have occurred between this review in Summer 2019 and the date of this report.

Information on several other sidewalk characteristics was compiled using Google Maps Street View in the office prior to the field visits and then verified by field personnel. For sidewalk segments, these characteristics included:

- Actual and effective sidewalk widths (accounting for obstructions such as utility poles)
- Type & width of buffer between sidewalk & street
- Presence & width of on-street parking, bike lanes & shoulder
- Presence of curb & gutter
- Posted speed limit
- Presence of lighting
- Number of adjacent travel lanes
- Adjacent land use category

The consultant team identified where sidewalk gaps are planned to be filled with shared use paths by reviewing NCTCOG's 2045 Regional Veloweb alignments adopted by the Regional Transportation Council. These were updated based on input from each city stakeholder about their most recent plans.

2.5 Identifying Crosswalks for Improvements

NCTCOG's prior in-house work identifying sidewalk gaps did not make any special considerations for crosswalks as distinct types of gaps in the pedestrian network. As part of this study, the consultants evaluated crosswalks at key locations, including:

- Existing signed and/or marked crosswalks crossing streets without signal or stop-sign control on the approaches being crossed.
- Unmarked/unsigned crossings of arterial or collector streets along radial lines to/from the station.
- Unmarked/unsigned crossings of arterial or collector streets not along radial lines to/from the station, but adjacent to significant pedestrian generators such as DART bus stops with significant levels of ridership, estimated by daily boarding and alighting data provided by DART.

Different types of field data were collected for signalized and unsignalized crosswalks during the field visits. At traffic signals, data collection included the number of lanes crossed in each direction, as well as the presence or absence of:

- Lighting
- Median refuge area
- Pedestrian ramps
- Countdown pedestrian signals
- Accessible pedestrian signals (APS)
- Pushbuttons (and if they were functional)

At unsignalized crosswalks, additional data collection items included:

- Whether the crosswalk had stop control for vehicular traffic or was uncontrolled.
- A two-minute count of traffic volumes crossing the crosswalk for locations where other daily traffic data from City or TxDOT sources was not available.
- Notes on any existing traffic control devices already present (such as signs, markings, or rectangular rapid flashing beacon (RRFB) assemblies.

Each input for both sidewalk segments and crosswalks were considered later for use in evaluating and prioritizing improvements, though some data were ultimately not utilized in order to simplify the prioritization process. Data collection forms (including handwritten notes taken on maps and pre-filled tables) are found in Appendix B.

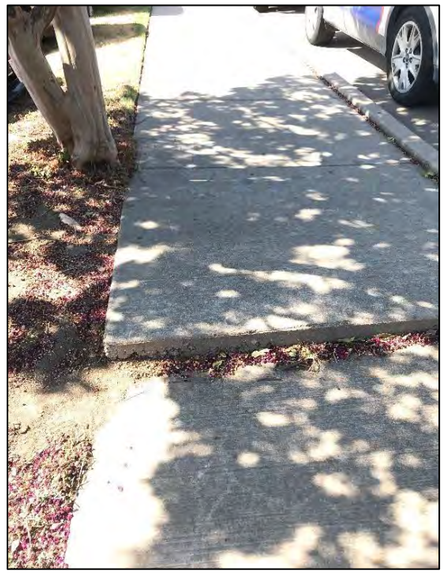
2.6 Crosswalk Improvement Selection

At existing or proposed crosswalks without existing stop sign or signal control, potential improvements were evaluated based on guidance in the Federal Highway Administration's (FHWA) recent publication, "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" (July 2018). This publication includes enhanced guidance on countermeasures that can or should be considered for uncontrolled crosswalks with various combinations of vehicular speed, traffic flow, and number of lanes to be crossed. A selection table reproduced from this publication and additional details about how the consultant team used it to develop crosswalk improvement recommendations are found in Appendix C.

Improvement options evaluated by this methodology include high visibility crosswalk markings, parking restrictions on the crosswalk approach, upgrading lighting, pedestrian crossing warning signs, "Advance Yield Here for Pedestrian" signs, curb extensions, median pedestrian refuge islands, rectangular rapid-flashing beacons (RRFB's), road diets, and pedestrian hybrid beacons. Road diets were only recommended if roadways would likely still have excess capacity after the lane reductions.

A Microsoft Excel spreadsheet was created to automate the methodology and quickly produce a list of potentially recommended improvements given the inputs entered for each candidate crosswalk improvement location to be considered for the project. The analyst in each case still used engineering judgment to select which countermeasure options would ultimately be recommended. The inputs, options, recommendations, and notes are tabulated in Appendix D.

Figure 3: Sidewalk Condition Classification



Excellent/Good

- Functional for all users
- Meet all City & ADA standards (based on a superficial visual inspection only)

Fair

- May not be functional for some users, including those needing full ADA accessibility.
- Do not constitute gaps in the pedestrian network that would warrant replacement under funding programs designed to foster increased travel choices by walking and biking.
- May have moderate cracking & flaking with minimal uprooting or cracking.
- Minimal uplift by tree roots or other sources (estimated to be < 2" based on quick visual inspection)
- May warrant funding for accessibility upgrades under other programs designed specifically for that purpose or as part of cities' ADA Transition Plans
- Acceptable for the purposes of this project as being useful for a significant portion of the public who may be able to use them to travel to/from DART station.

Poor

- Poses potential hazards for all users.
- Severe cracking & flaking, with major uprooting & more significant trip hazards (vertical elevation differences > 2")
- Difficult to use by those pushing a wheelchair, cart, or stroller.
- Would require complete removal & replacement of at least one sidewalk panel.
- A few locations where steps had been consciously built into the sidewalk were also considered gaps.

Nonexistent

- Includes longer gaps of a City block or more
- Also some locations where individual panels were completely missing

- For vertical incongruities < 2", assumed that maintenance programs can make sidewalk passable to wheelchairs & strollers by providing asphalt wedges and/or grinding off corners < half depth of typical four-inch sidewalk slab.
- Since this project is targeting improvements that can be addressed by funding for new construction rather than maintenance funding, any trip hazards < 2" were assumed to be corrected by maintenance activities & therefore did not counts as gaps

2.7 Stakeholder Involvement

Coordination meetings were conducted with all technical stakeholders including staff from the cities of Dallas, Plano, Garland, and Richardson, as well as staff from DART and NCTCOG to review the recommendations, and for information specific to their jurisdiction and background knowledge of study locations, as needed. Meetings with the public were not held as part of this work.

2.8 Half-Mile Area Improvement Prioritization – Initial Trial Method

To provide opportunities for the greatest number of additional people to walk or bike to DART stations by constructing sidewalk, shared use path, crosswalk connections, and related infrastructure, the prioritization of identified improvements was structured to provide balance between estimating this objective accurately and applying the methodology to a large study area.

Initially, a prioritization approach that attempted to track as closely as possible to potential ridership increases was tested for the Parker Road Station in Plano, with adjustments for safety, key destination access, and equity. Though some of the elements of this initial prioritization methodology were ultimately not included in this study, they are documented in Appendix E as being potentially useful for later studies on a smaller scale. Also, many of the assumptions and methodologies explained in Appendix E were retained in the ultimate methodology.

2.9 Half-Mile Area Improvement Prioritization – Final Methodology

The prioritization process used to score potential projects placed significant emphasis upon distance to/from the station and the number of (density) of persons on parcels that could be connected by constructing new infrastructure—the potential new riders who could access the DART station. The study did not attempt to correlate how many people would actually use DART if the walking and bicycling routes to the rail station were improved.

Table 1 on page 6 identifies the criteria and weighting applied to rank potential projects. Additional details about the final methodology scoring process, including figures illustrating scoring for Plano's Parker Road Station, are provided in Appendix F. Highlights for each category and percent weight in the scoring system are as follows:

Figure 4: **Employment and Population "Tributary" to Sidewalk & Crosswalk Improvements**

Tributary Employment & Population (50%): Each sidewalk and crosswalk improvement was scored based on the total employment plus population that would be "tributary" to the station via the improvement once all proposed improvements are constructed.

Figure 4 illustrates the concept of tributary employment and population. It shows the parcels in the Parker Road Station area, with darker shades of gray representing higher population/employment totals. Note that, while some of the improvements shown in Figure 4 differ from the final recommendations, the principles illustrated still apply.

In the figure, each sidewalk and crosswalk improvement link is shown in different colors depending on the total employment plus population that would be "tributary" to the station via the improvement once all proposed improvements are constructed. The tributary employment plus population values are shown next to each link, with red links nearest the station having the highest values.

Distance (25%): Each improvement was scored based on distance to the station, measured linearly "as the crow flies" for simplicity. Improvements that connect directly to the station have a distance of 0.0 miles.

Trip Length Reduction (5%): Each improvement was evaluated based on the percentage reduction in walking distance to the station that would occur for the population of a representative reference parcel.

Access (5%): Land uses with a high proportion of visitors to employees and locations near bus routes received priority in the scoring for this criterion.

Crash History (5%): A GIS shapefile was used containing the point location of all reported bicycle and pedestrian crash locations for the study area from 2013 to 2017. While the scope of this project did not include pedestrian volume data collection, the crash data was observed to serve as somewhat of a surrogate for pedestrian demand. Therefore, a cluster of crashes may be more indicative of a place where many people walk than of a place that's more dangerous to walk in terms of the risk to individual pedestrians.

Table 1: Weighting Criteria for Scoring Sidewalk and Crosswalk Improvements

Category	Tributary Employment & Population	Distance	Trip Length Reduction	Access		Safety		Equity
						Crash History	Systemic Safety	
Weight	**50%**	**25%**	**5%**	**5%**		**5%**	**5%**	**5%**
Inputs	Parcel population & jobs, GIS Network Analyst runs	Distance from Station	% Change in Pedestrian Trip Length	Other Nearby Destinations	Bus Routes	Number of nearby crashes in 5-year period	Posted Speed Limit	Environmental Justice Index
Description	Potential riders "upstream" of specific sidewalk or crosswalk improvements	Distance from individual improvements to station, measured "as the crow flies"	Measured for densest or farthest reference parcel tributary to each specific sidewalk or crosswalk improvement	Number of key destinations (hospitals, clinics, urgent care, schools, government buildings, courthouses, senior living, community centers, gardens, grocery stores, malls, supercenters, hotels, motels, entertainment, fine arts, parks, landmarks, athletic facilities, places of worship, libraries, museums, bus stops with > 25 daily boardings) within 250 feet of each improvement	Number of bus routes within 50 feet of each improvement that are also > 1/4 mile from station (Up to 3 points from bus routes but max. 5 points overall for key destinations and bus routes)	Number of crashes within 250 ft of improvement in 5-year period	Posted speed limit of parallel street or street being crossed	Designation of Above/Below Regional Average Percentage for Minority & Low-Income Populations
High Criteria/ Scoring Range	9,430 - 11,787 (20 to 25 points)	0 to 1/8 mile (25 to 19 points)	40-100% (5 points)	5+ destinations (5 points)	3+ routes (3 points)	5+ crashes (5 points)	≥ 45 mph (5 points)	Above Average for Both Minority and Low-Income (5 points)
Medium High Criteria/ Scoring Range	7,073 - 9,429 (15 to 20 points)	1/8 to 1/4 mile (18 to 13 points)	20-40% (3-4 points)	3-4 destinations (3-4 points)	2 routes (2 points)	3-4 crashes (3-4 points)	35-40 mph (3-4 points)	Above Average for Minority or Low-Income (3 points)
Medium Low Criteria/ Scoring Range	2,358 - 7,072 (5 to 15 points)	1/4 to 3/8 mile (12 to 6 points)	1-20% (1-2 points)	1-2 destinations (1-2 points)	1 route (1 point)	1-2 crashes (1-2 points)	25-30 mph (1-2 points)	
Low Criteria/ Scoring Range	0 - 2,357 (0 to 5 points)	3/8 to 1/2 mile (5 to 0 points)	0% (0 points)	No other destinations (0 points)	0 routes (0 points)	0 crashes (0 points)	≤ 20 mph (0 points)	Below Average for Minority and Low-Income (0 points)

Systemic Safety (5%): A more recent development in transportation safety that is designed to combat the drawbacks of traditional crash analysis is the concept of "systemic safety" which refers to approaches that are data driven and network-wide. This approach considered improvements at locations with similar characteristics to high crash locations, even if the locations where improvements are to be considered or proposed don't themselves have significant crash history.

As a measure of systemic safety, the project team opted to use the posted speed limit of the roadway adjacent to sidewalk improvements or crossed by crosswalk improvements. Vehicular speed is regarded as correlating well to safety outcomes in bicycle and pedestrian crashes.

Equity (5%): The equity criterion emphasized improving communities with populations that have not historically received equal access to resources. The consultants were provided spatial data for the project area with NCTCOG's Environmental Justice Index (EJI) to comply with federal rules for identifying Environmental Justice populations. The EJI is based on data from the 2013-2017 American Community Survey, aggregated at the census block level. Each census block is categorized if the percentage of its residents is higher than the regional average for minority population, low income, or both.

2.10 Gaps to Remain

The consulting team categorized some locations where gaps in the pedestrian network had been identified by NCTCOG during preliminary GIS work to be gaps to remain for the final project listing. This decision was based on field conditions that would be impractical or undesireable to implement or would make sidewalk construction extremely cost-prohibitive. Examples are detailed in Appendix F.

2.11 Improvement Numbering

Each proposed improvement, usually consisting of a single crosswalk or segment of sidewalk along a single city street block, was assigned a unique project-wide identification number for reference. The identification number consisted of:

- A two-digit code for the station area, matching the codes shown in Figure 2 earlier (For example, 1A for Parker Road, 1B for Downtown Plano, 1C for CityLine Bush).
- A two-letter abbreviation for the station name for easier reference (For example, PR for Parker Road, DP for Downtown Plano, CB for CityLine Bush).
- A two-letter code for the type of improvement (SW for sidewalk, CW for crosswalk, RP for repair, VW for Regional Veloweb, SP for shared use path, GP for gap to remain).
- A two- or three-digit number unique to identify the improvement location on project mapping. In addition to the VW improvement type code described in the bullet above, Regional Veloweb shared use path links have an improvement location number beginning with the letter V (V01, V02, etc.) to differentiate them from other improvements since they were numbered separately beginning at 1.

2.12 Prioritization Scoring

The consulting team evaluated each proposed improvement for the seven criteria described in Section 2.9 and Table 1. The proposed improvements were scored, and then sorted based the combined overall score. Possible total values ranged from 0-100 points. Additional details are included in Appendix F.

For each city (Dallas, Garland, Plano, and Richardson) separate scales were set for dividing improvements of varying scores into high, medium, and low-priority categories, but remained consistent for all stations within that city. The thresholds between high- and medium priority and medium- and low-priority were set such that approximately one-third of improvements for each city were allocated into each category. For half-mile areas surrounding DART rail stations in the different cities, the scoring ranges were similar, but with slight differences as follows:

	Plano	Richardson	Garland	Dallas
• High Priority =	23 to 100 pts	22 to 100 pts	21 to 100 pts	22 to 100 pts
• Medium Priority =	17 to 22 pts	15 to 21 pts	15 to 20 pts	15 to 21 pts
• Low Priority =	0 to 16 pts	0 to 14 pts	0 to 14 pts	0 to 14 pts

The highest scoring improvement evaluated project-wide was 8B-CC-CW-17, a crosswalk in Dallas at the intersection of Memorial Dr and Lamar Street, below the Convention Center building structure. This improvement received a score of 89 points.

3. Improvement Recommendations

The following sections include project mapping and opinions of probable construction costs for existing and proposed conditions, and improvements that have been identified to improve pedestrian and bicyclist access to the stations.

3.1 DART Station Property Recommendations & Opinions of Probable Construction Cost (OPCC)

Summaries of recommended improvements follow for each station beginning on page 8. The first figure in each set for individual station properties on pages 9 through 111 illustrates the station area including DART property limits, existing sidewalks, Regional Veloweb shared use paths and local shared use paths in and around each station. Existing facilities are shown with solid lines, while proposed facilities are shown in dashed lines.

The other figure(s) in each set on pages 10 through 111 show photographs of existing conditions at the same locations, referenced by matching, numbered orange stars. In many cases, the field photographs are enhanced with graphics to illustrate the proposed signing, pavement markings, or other traffic control devices that are recommended.

For each station, opinions of probable construction cost (OPCC's) were developed for each improvement, unless otherwise noted. The following cost components (totaling 25%) were applied to all costs, as directed and approved by both NCTCOG and DART:

- 10% design fee
- 4% mobilization
- 4% for landscaping allowance
- 2% for Erosion & Sediment Control Allowance
- 3% for traffic control
- 2% extra contingency for federal aid project

Table 2 on page 8 summarizes the OPCC's on DART property at each of the stations. For additional details about the OPCC's, see Appendix G and Section 3.3 later in this report.

Table 2: Summary Opinion of Probable Construction Cost for DART Station Improvements

Station No.	Station Area	DART Station Property OPCC	Station No.	Station Area	DART Station Property OPCC
1A	Parker Road	$361,650	4E	LBJ Skillman	$40,000
1B	Downtown Plano	$12,350	4F	White Rock	$59,400
1C	CityLine Bush	$152,600	5A	Eighth & Corinth	$59,200
2A	Galatyn Park	$0	5B	Dallas Zoo	$72,700
2B	Arapaho Center	$169,800	5C	Morrell	$2,000
2C	Spring Valley	$239,900	6A	Tyler Vernon	$258,300
3A	Downtown Garland	$174,500	6B	Hampton	$62,400
3B	Forest Jupiter	$188,400	6C	Westmoreland	$145,400
3C	LBJ Central	$36,200	7A	Illinois	$34,400
3D	Forest Lane	$15,400	7B	Kiest	$58,800
4A	Walnut Hill	$214,800	7C	VA Medical Ctr	$70,800
4B	Park Lane	$290,300	8A	CityPlace/Uptown	$0
4C	Lovers Lane	$95,400	8B	Convention Ctr	$0
4D	Mockingbird	$109,500	8C	Cedars	$33,300
Project Total					*$2,957,500*

3.1.1 Parker Road Station (on DART Property)

Figure 1A-1.1 on page 9 shows the 18 improvements recommended for Parker Road Station within DART right-of-way. Figures 1A-1.2, 1A-1.3, and 1A-1.4 on pages 10-12 illustrate existing conditions at the 18 improvement locations.

A basic challenge for pedestrian and bicycle access to this station is the lack of direct connections to and from property to the east. The entire east boundary of the DART property is fenced and signed to prohibit pedestrian access. Despite this, the fencing near the station platform is low, allowing some pedestrians the ability to jump it to reach the platform after crossing the parking lot for the Plano Super Bowl bowling alley to the east.

A new Regional Veloweb shared use path had earlier been anticipated to connect to the east of the station on the north side of the Plano Super Bowl property, across K Ave at a pedestrian hybrid beacon, and along a creek greenway to the existing Santa Fe Trail, whose western terminus is about 2/3 mile east of the station platform. This alignment is indicated in the figures in Appendices E and F. This shared use path alignment would provide a significantly shorter walking or biking distance to the station for residents of the 1201 Park Apartments (with over 600 residents) on the east side of Dobie Dr, as well as single-family neighborhoods farther east.

However, City of Plano staff indicated that the right-of-way easements for this shared use path had proven too difficult to obtain, and so it had been removed from the City's 2018 update to the Bicycle Transportation Plan. Consequently, the path was removed and substituted with a new local shared use path (#15 in Figures 1A-1.1 and 1A-1.3 on pages 9 and 11, respectively) extending east from the south end of the station platform through property owned by the City of Plano. More information on the portion of this improvement extending farther away from the station is shown in Figure 1A-2, in Section 3.2.1 on page 113.

The shared use path connection to the station platform south of the Plano Super Bowl would be complemented by a taller, anti-climb fence along the remainder of the station's eastern boundary to discourage crossing of the northbound tracks at unauthorized locations (shown as #18 in Figures 1A-1.1, 1A-1.3, and 1A-1.4 on pages 9, 11 and 12). An example of this type of fencing, built recently along Lancaster Ave in Fort Worth, is shown in Figure 1A-1.4 on page 12.

Other more direct connections to areas northeast and southeast of the station would be provided by constructing the north-south Regional Veloweb shared use path on the west side of the station platform, parallel to the tracks, shown as improvements #3 and #14 in the mapping and existing conditions figures on pages 9-11. More information on the portion of this improvement extending farther away from the station is shown in Figure 1B-2 referenced in Section 3.2 on page 115.

Other recommended improvements include:

- Adding pedestrian lighting for the sidewalk in the wooded area northwest of the bus loop
- Improving the crosswalks crossing Archerwood St
- Adding and improving existing bicycle parking
- Moving ADA parking closer to the accessible sidewalk routes to the station platform
- Modifying landscaping to better channelize pedestrian movements and provide clear, full sidewalk width for pedestrians.
- Making signing and pavement markings consistent with the Manual on Uniform Traffic Control Devices (MUTCD) for compliance and for improved motorist, pedestrian, and bicyclist understanding of multi-modal conflict areas.

Refer to the figures for additional details.

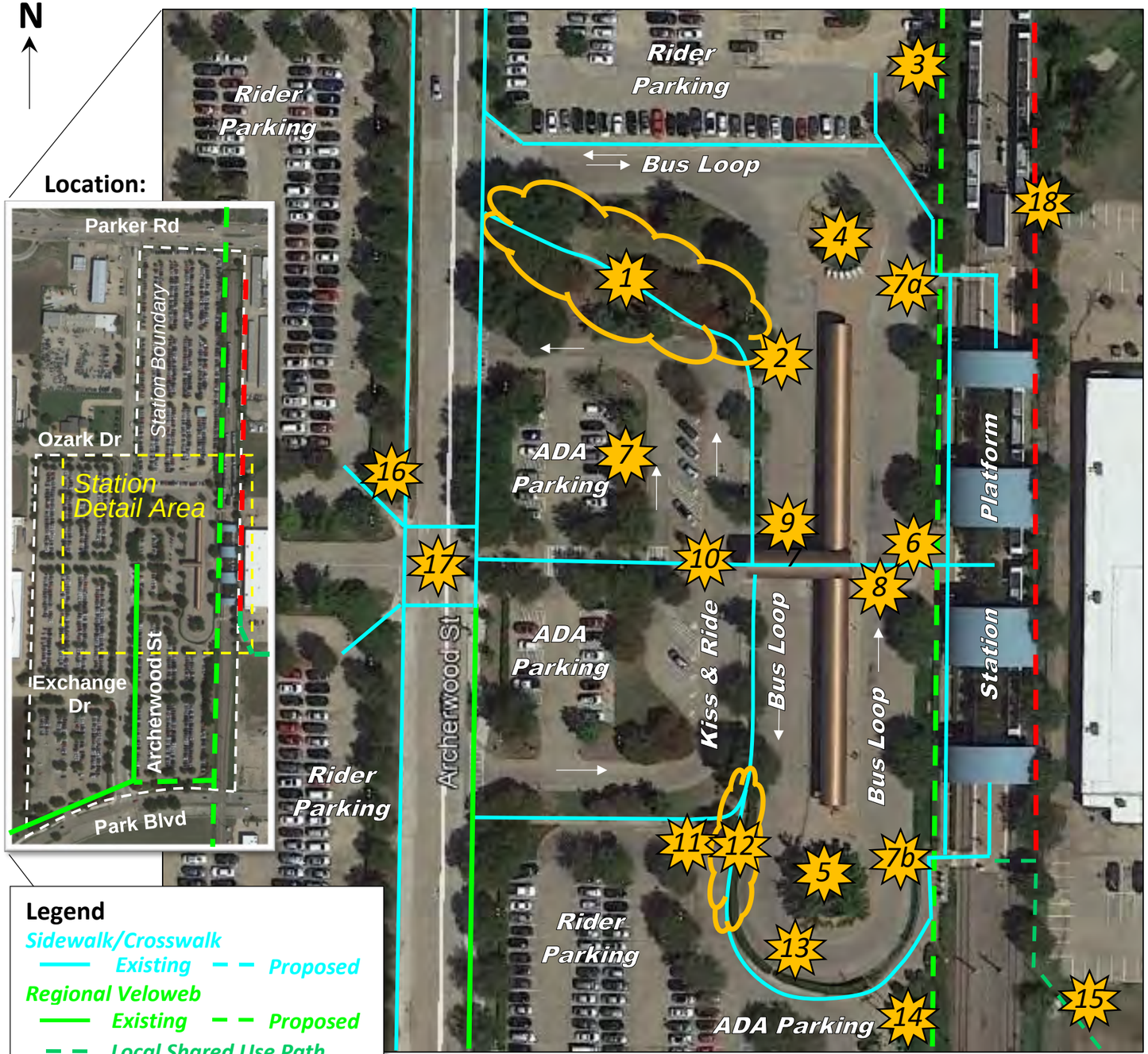
The total OPCC for the improvements on the Parker Road Station DART property is approximately $362,000. This excludes the cost of the Regional Veloweb and local shared use paths crossing DART property (1A-PR-ST-03 and 1A-PR-ST-14 and 1A-PR-ST-15), which are assumed to be separate projects itemized later under Section 3.2.1. Matrix tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Parker Road Station Recommended Access Improvements

Total for All Recommendations at Station: **$361,650**

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1	Add pedestrian lighting for area where tree cover makes for dark nighttime conditions.
2	Close gap in hedges that appears to imply this as a valid location for crossing the bus loop. Consider fencing to redirect pedestrians. The lack of ramps or a crosswalk across the bus loop here makes this an inappropriate location for a crossing. A fire hydrant here is likely the reason for the gap in the hedges, so fire hydrant access from the bus loop should be preserved.
3	Add Regional Veloweb shared use path to connect platform more directly to Parker Road to the north. Will require grading, new fence between parking lot and tracks, and drainage modifications. Concrete drainage swales drain parking lot downhill toward the east at several locations across proposed path alignment, so additional study will be required.
4-5	Add educational signing at all covered bike parking locations regarding rules of use. Existing covered bike parking lids were locked. Several of the locked lids were empty without bikes inside or were storing personal belongings. The locking of empty lids indicates a shortage of available covered bike parking.
6	Add additional covered bike parking, preferably closer to train platform (at Location 4).
7	Relocate ADA parking from Location 7 closer to the north crosswalk to the train platform (near Location 3). Reasons for this change are: • Ramps are absent for crossing the southbound tracks east of the bus loop (near Location 6). • Much of the ADA parking for the station is in the small parking lot immediately west of the bus loop (Location 7 and southwest of Location 10). Some ADA parking is already located southwest of the platform near Location 14. • The lack of ramps near Location 6 requires passengers in wheelchairs to travel to the compliant crosswalks at the north or south ends of the platform (Locations 7a or 7b) rather than the more direct route via the central crosswalk.
8-9	Add 12” white markings on each side of brick paver crosswalks. Bus loop crosswalks are stop-controlled, but need white markings outside the brick area to be legal crosswalks.
10	Add pedestrian warning signs and 12” white markings outside brick pavers for Kiss & Ride crosswalk. (Crosswalk is raised to slow drivers but not signed or marked.)
11	Correct trip hazard on sidewalk.
12	Trim hedges or replace with easier maintenance plants so they don’t encroach on sidewalk.
13	Close hedge gap that provides access to existing covered bike parking (at Location 5), Gap in hedges is convenient for bicycle access to existing covered parking, but lacks ramps and conflicts with bus loop. Provide bike parking closer to platform as indicated at Location 4 above.
14	Add new shared use path connecting platform more directly to Park Blvd to the south on planned Regional Veloweb alignment. May require relocation of utilities or removal of trees and/or parking spaces.
15	Add connection via City-owned property south of platform. Additional study will be required.
16	Trim tree blocking flashing light for crosswalk.
17	Improve the visibility of the two crosswalks across Archerwood Street: • Add pushbuttons at each ramp so the flashing warning lights on Archerwood St don’t need to operate only on a time-of-day peak hour schedule. (They were observed inactive during off-peak hours). • Add advance yield lines and “Yield Here to Pedestrians” signing. • Consider converting to Rapid Rectangular Flashing Beacon (RRFB).
18	Add taller anti-climb fence along east DART property line from north end of tail track to southeast corner of platform to channelize pedestrian crossings to new connection via Plano City property to the southeast.

Not for Construction

FIGURE 1A-1.1 NOT TO SCALE **JULY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Parker Road Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Not for Construction

Sample Bike Parking sign:

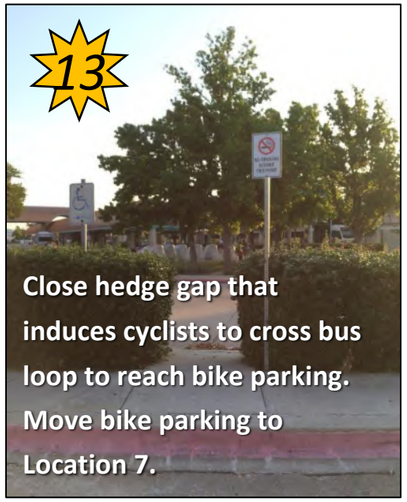
FIGURE 1A-1.2 **JULY 2020**

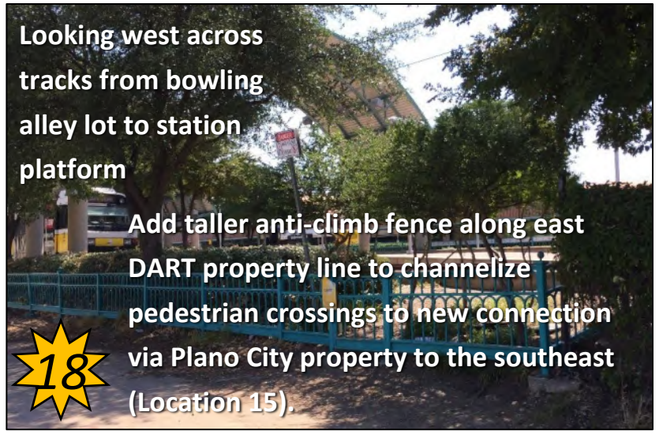
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Parker Road Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections





Not for Construction

FIGURE 1A-1.3 **JULY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Parker Road Station Existing Conditions at Improvement Locations

An example of the anti-climb fence in Fort Worth, which is located on Lancaster Ave between Sargent Ave and Oakland Blvd (shown below).

https://dfw.cbslocal.com/2019/07/26/txdot-installs-metal-fence-address-fort-worth-pedestrian-issue/

Not for Construction

3.1.2 Downtown Plano Station (on DART Property)

Figure 1B-1.1 on page 14 identifies two recommended improvements as well as existing conditions at the Downtown Plano Station. This station has a small geographic footprint without a DART-controller Park & Ride lot, so the number of on-site improvement opportunities are limited.

The two recommended improvements include additional bike parking and improving the crosswalk across 15th St immediately south of the station. The City of Plano notes that this second improvement is already planned under upcoming CIP project 6993. The total OPCC for the improvements for Downtown Plano Station on DART property is approximately $12,400, for the bicycle parking (1B-DP-ST-02).

The OPCC excludes any widening of the existing sidewalk (already about 8' wide or more in most places) on the west side of the DART tracks to convert it into a future shared use path on the Regional Veloweb system, since this widening would not be necessary for basic pedestrian access and could therefore occur later than other improvements as a separate project without having a significant impact on multi-modal access to the station. The City and DART could implement a separate dedicated bicycle facility (such as through Haggard Park) rather than widening the existing sidewalk, which could be retained for pedestrian only accommodations, The existing parking lot west of the station could also be reconfigured to accommodate a shared use path or dedicated bikeway.

Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.3 CityLine Bush Station (on DART Property)

Figure 1C-1.1 on page 15 identifies ten improvements recommended at CityLine Bush Station on DART property. Note that only those improvements located north of the President George Bush Tpk (PGBT) centerline are located in the City of Plano, with the station platform itself and all other improvements in Richardson. Figures 1C-1.2 and 1C-1.3 on pages 16-17 illustrate existing conditions at the ten improvement locations. Several of the improvements discussed are at the boundary of DART's right-of-way and would therefore require coordination between DART, TxDOT, NTTA and/or the Cities of Plano and Richardson. (TxDOT maintains the PGBT frontage roads as SH 190). These improvements are also discussed in Section 3.2 and the accompanying Figure 1C-2 on page 116) detailing off-station improvements.

The recommended improvements include:

- Constructing enhanced crosswalks for crossing the PGBT westbound frontage road at Crawford Rd/Topridge Dr and just east of the DART track crossing. See items 7 and 10 in Figure 1C-1.1. Enhanced conspicuity for crossing pedestrians and bicyclists is needed due to the high speeds permitted on the frontage roads and the large apartment complexes recently constructed on the north side of the PGBT. The crossing east of the DART tracks is being constructed as part of the Cotton Belt Trail construction.
- Providing short, more direct sidewalk paths connecting to adjacent private property to follow observed worn paths in the grass indicating existing pedestrian demand. See items 3 and 6 in Figure 1C-1.1. Coordination with adjacent property owners would be required.
- Adding and improving ADA ramps for better wheelchair access on the station platform.
- Adding pedestrian warning signs at crosswalks to the station platform.

Refer to the figures for additional details.

DART's Silver Line project will provide future commuter rail service beginning in late 2022 between DFW Airport and the new Shiloh Road Station east of the CityLine Bush Station. Many of the sidewalk connections in and around the existing CityLine Bush Station platform, including the last two items in the bulleted list above, will be reconstructed in the near future as part of the Silver Line project.

The total OPCC for the DART improvements is approximately $153,000. This includes about $70,000 in Plano and about $83,000 in Richardson. This excludes costs for improvements 1C-CB-ST-01 through 1C-CB-ST-06, which are located in the City of Richardson, some assumed to be mostly on private property. The $70,000 total for Plano includes a portion of costs for improvements 1C-CB-ST-07 through 1C-CB-ST-10, which were also integral to the half-mile area analysis undertaken in Section 3.2 and are therfore quantified more completedly together with off-site improvements as shared costs between DART, the City of Plano, and the City of Richardson.

Tables listing the estimated costs for individaul improvements, as well as line item calculations, are included in Appendix H.

3.1.4 Galatyn Park Station (on DART Property)

Figure 2A-1.1 on page 18 identifies one improvement recommended at the Galatyn Park Station on DART property, as well as existing conditions at the improvement location.

A new sidewalk connecting the existing Central Trail on the south end of the DART train platform is needed. This connection is already planned and funded under DART's ongoing Red and Blue Line Platform Extension Project. Refer to the figure for additional details. There is no estimated cost for this improvement since it is already included in a funded project.

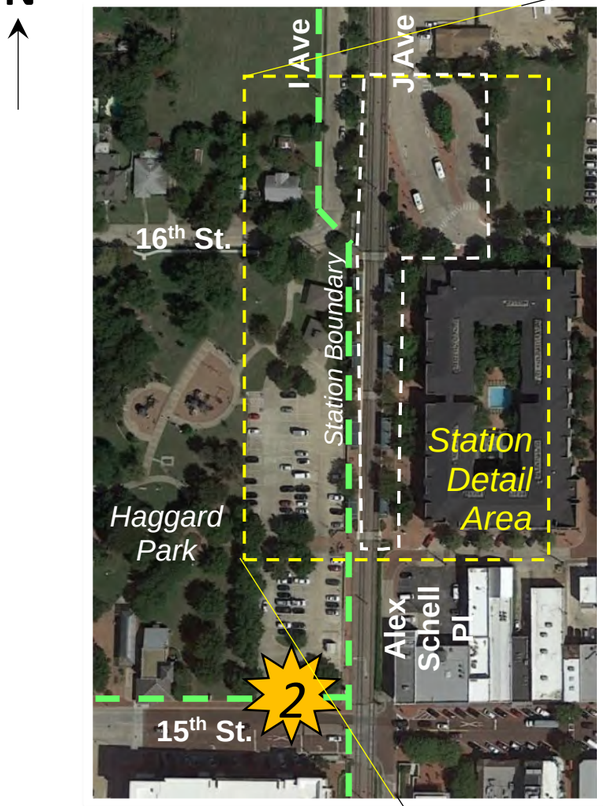
Downtown Plano Station Recommended Access Improvements

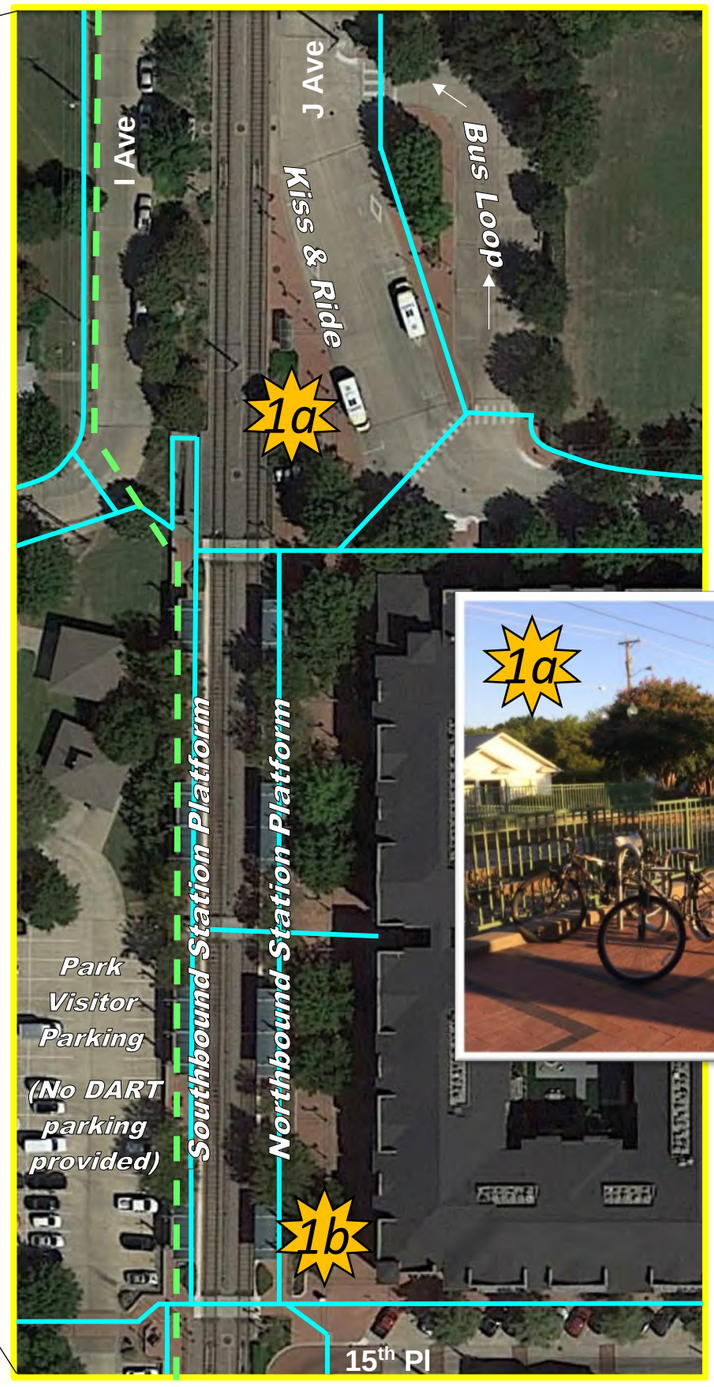
Total for All Recommendations at Station: **$12,350**

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Location:





Number	Description
1	Increase supply of covered bike parking. Three covered bike spaces at Location 1a north of the platform were observed locked but empty at 7 am, indicating unmet demand. Locate new bike parking near south end of platform (near Location 1b) for improved access for cyclists traveling to and from the south. At both locations, add signing to discourage improper use of covered bike parking.
2	Build multi-use trail on proposed Regional Veloweb alignment west of DART tracks and on north side of 15th Street west of tracks. Where the future trail alignment crosses 15th Street, existing pedestrian demand already exists, as shown in the photo for Location 2. Crosswalk signs & markings, a median cut-through island, and ADA ramps are needed here. Pedestrians, including one wheelchair user, were observed crossing 15th Street between the tracks and the railroad crossing gates due to the lack of an accessible path.

DRAFT – Not for Construction

NOT TO SCALE

Legend

Sidewalk/Crosswalk

Existing

Regional Veloweb

Proposed

Sample Bike Parking sign:

FIGURE 1B-1.1 **JULY 2020**

LEE ENGINEERING

30 YEARS OF EXCELLENCE

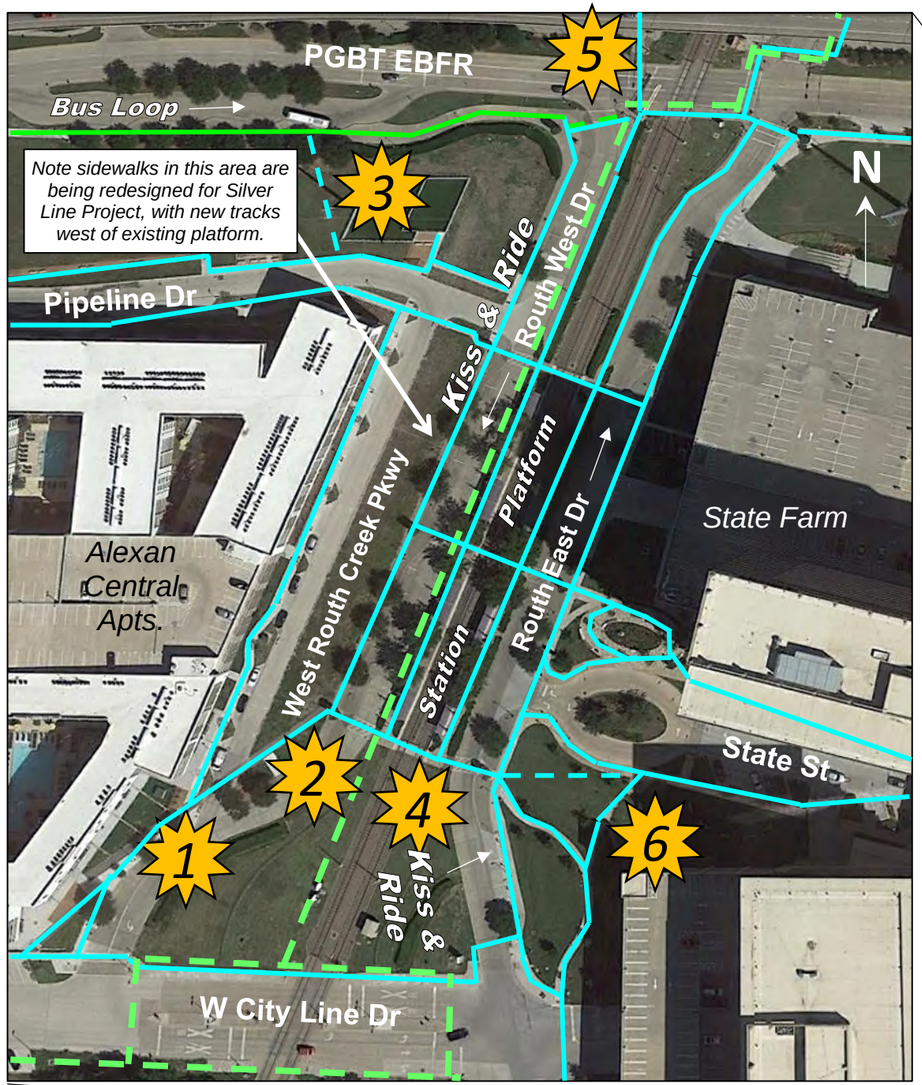
CityLine/Bush Station Recommended Access Improvements

Total for All Recommendations at Station: **$152,600 (=$69,600 in Plano + $83,000 in Richardson)**

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Number	Description
1	The Dallas tourism "BiG" sign on Routh West Dr just south of the station should be reversed to face the opposite direction or the sign should be relocated to a safer position. The sign faces the street, a poor orientation since those taking photographs of others posing at the sign will be tempted to stand in the travel lanes.
2	Widen the ADA ramp to Routh West Dr from the south end of the platform to allow wheelchair users to bypass the large vine sculpture blocking the top of the ramp.
3	Coordinate with adjacent property owner to add a direct sidewalk connection between train platform & bus loop. A worn path in the grass ("goat trail") exists between the southwest corner of the Alexan Central Apartments dog park on Pipeline Dr and the DART bus stops along the PGBT eastbound frontage road. This is the most direct route between the train station platform and the bus stops, shorter than walking north along Routh West Dr and the frontage road. See improvement 1C-CB-SW-071.
4	Add pedestrian warning signs on the right-hand side of the roadway at the six crosswalks to the station platform across Routh East Dr and Routh West Dr. Existing signs are mounted on the left-hand side only. Add missing ADA ramps at two of the same locations.
5	Repair the sidewalk panel where settlement has created a trip hazard near the pedestrian pushbutton on the north side of the President George Bush Turnpike (PGBT) eastbound frontage road at Routh West Dr.



NOT TO SCALE

Legend

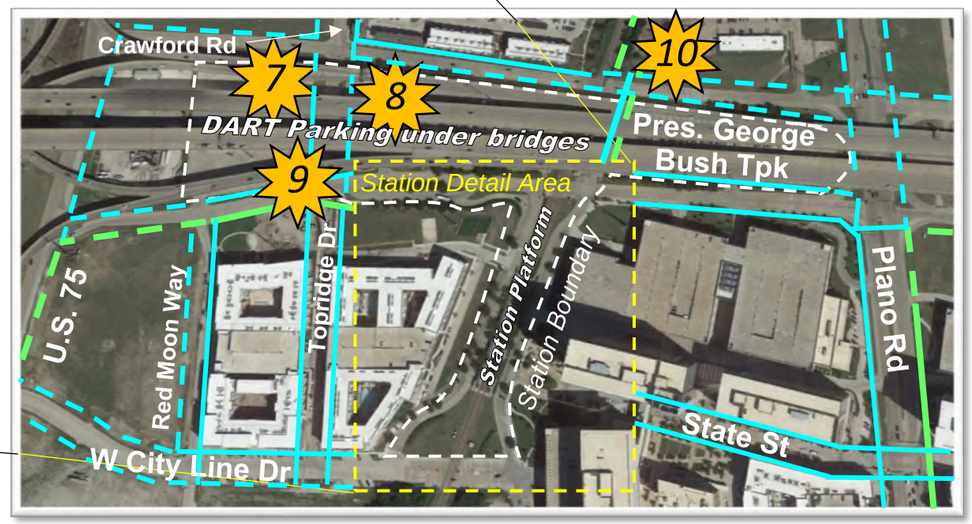
Sidewalk/Crosswalk
- *Existing*
- *Proposed*

Regional Veloweb
- *Existing*
- *Proposed*

Number	Description
6	Coordinate with the adjacent property owner to construct a short segment of sidewalk for more direct travel between the southern crosswalk to the train platform and the south sidewalk along State St. A "goat trail" cuts the corner where the existing sidewalk is offset from the crosswalk, indicating existing pedestrian demand.

Number	Description
7	Construct a new, short segment of sidewalk on the west side of the Crawford Rd/Topridge Dr crossing under the PGBT, near the north end of the underpass adjacent to the PGBT westbound frontage road (WBFR). Add marked, signed crosswalks across both legs of the WBFR. The existing sidewalk on the west side extends north from the EBFR but ends just south of the WBFR. Provide pedestrian hybrid beacon with advance "Yield Here to Pedestrians" signing for crossing PGBT westbound frontage road. See also half-mile area improvements 1C-CB-CW-042 and 1C-CB-CW-043 for more information.
8	Add sidewalk on east side of Crawford Rd/Topridge Rd between PGBT frontage roads. See also improvement 1C-CB-CW-056 in the half-mile improvements map & matrix.
9	Add a crosswalk across the east leg of the PGBT Eastbound Frontage Road (EBFR) at Topridge Dr. Provide pedestrian hybrid beacon with advance "Yield Here to Pedestrians" signing. See also half-mile area improvement 1C-CB-CW-059.
10	Construct a crosswalk across the PGBT WBFR just east of the track crossing. Also, consider adding a traffic signal here similar to the existing signal on the PGBT EBFR, with care taken to coordinate with the adjacent railroad crossing gates. A crosswalk west of the tracks that will be removed with the Silver Line construction currently has only pedestrian warning signs and ramps. These changes will provide safer access to the DART station for residents of apartments on the north side of the westbound frontage road. See half-mile area improvement 1C-CB-CW-045 for more information.
General	Many pedestrian ramps in the station area are missing detectable warning surfaces, which should be added.

Location:



Not for Construction

FIGURE 1C-1.1 **JULY 2020**

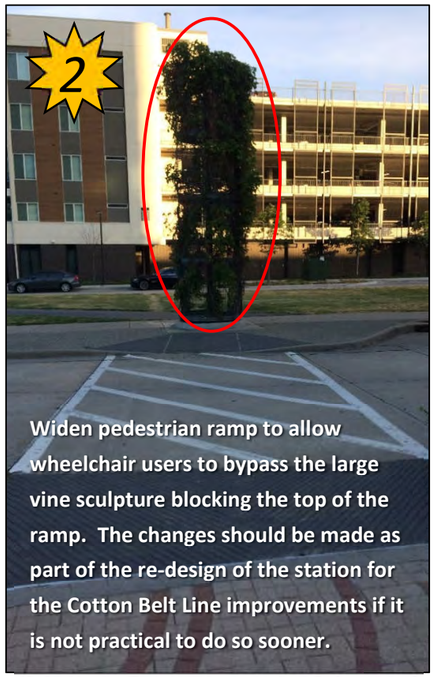
LEE ENGINEERING

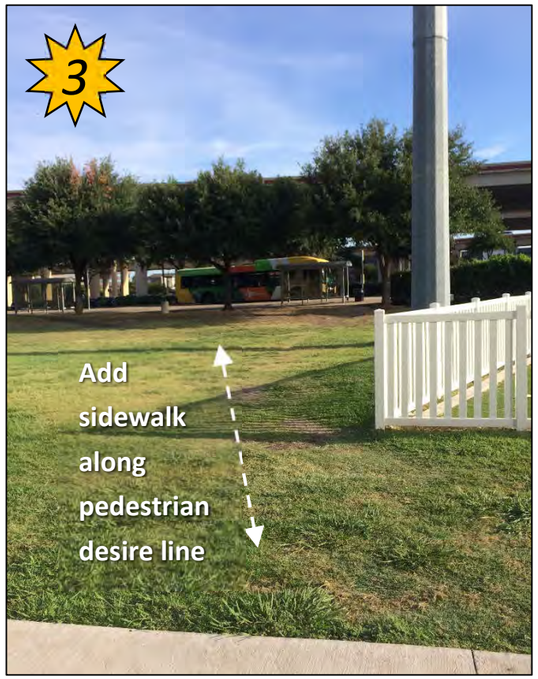
30 YEARS OF EXCELLENCE

CityLine/Bush Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



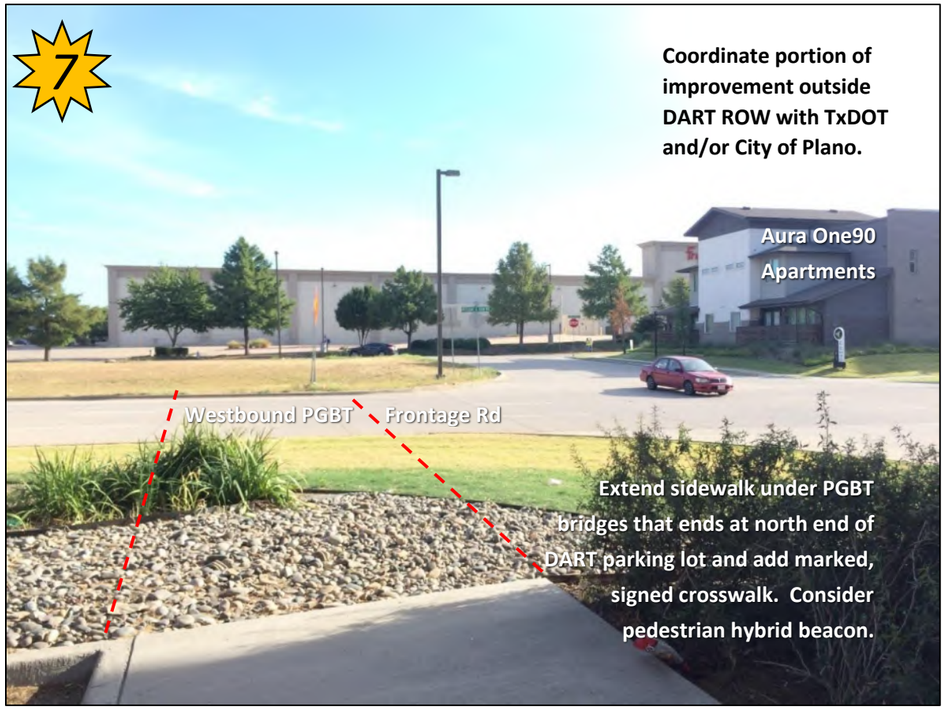


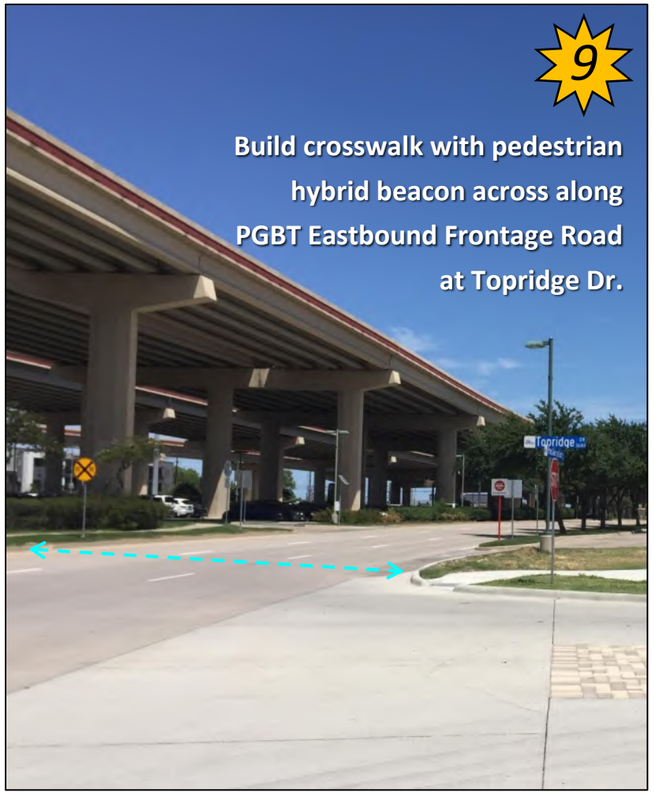
Not for Construction

FIGURE 1C-1.2 **DECEMBER 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

CityLine/Bush Station Existing Conditions at Improvement Locations





Not for Construction

FIGURE 1C-1.3 **JULY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Galatyn Park Station Recommended Access Improvement

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Number	Description
1	Build sidewalk connection to the existing Central Trail on the south end of the DART train platform. This connection is already planned and funded under DART's ongoing Red and Blue Platform Extension Project.

DRAFT – Not for Construction

FIGURE 2A-1.1 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.5 Arapaho Center Station (on DART Property)

Figure 2B-1.1 on page 20 identifies thirteen improvements recommended at Arapaho Center Station on DART property. Figures 2B-1.2 through 2B-1.4 on pages 21-23 illustrate existing conditions at the thirteen improvement locations.

A worn path in the landscaping between the west end of the bus loop and the pedestrian tunnel indicates existing demand for more convenient movement improvement 2B-AC-ST-09). A direct path and new crosswalks are recommended, along with consolidating the existing bus stops to make space.

The existing pedestrian ramps to the station platform on the west side of the deep tunnel under Greenville Ave (location 10a) have too long of an uninterrupted grade for people using manual wheelchairs. DART should coordinate with the City of Richardson to revise the recent addition of an at-grade crosswalk across Greenville Ave to include an accessible path to the station on the west side to bypass or replace the recently-built stairs (location 10b).

The under-utilized parking lot on the east side of the site should be developed as a Transit-Oriented Development (TOD), consistent with recent City of Richardson Innovation Quarter Plan. DART and the City of Richardson are considering moving the Kiss & Ride and Bus Loops to the west side of Greenville Ave as part of the station redevelopment.

Other recommended improvements include:

- Building new sidewalk connecting the train platform to the U.S. 75 northbound frontage road, including new safety fence between the sidewalk and the tracks (improvement 2B-AC-ST-13).
- Updating or relocating signs to meet MUTCD standards and adding or refreshing crosswalk striping.
- Installing pedestrian lighting for areas where tree cover makes for dark nighttime conditions (improvements 2B-AC-ST-04 and 2B-AC-ST-05).
- Relocating existing bike parking located far from the train platform (location 2a) to the locations near the station (location 2c). A few parking spaces may need to be removed.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $170,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.6 Spring Valley Station (on DART Property)

Figure 2C-1.1 on page 24 identifies nine improvements recommended at Spring Valley Station on DART property. Figures 2C-1.2 through 2C-1.3 on pages 25-26 illustrate existing conditions at the nine improvement locations.

Some pedestrians were observed crossing Spring Valley Rd, a busy six-lane arterial, directly below the rail overpass instead of at the adjacent signalized crosswalks at Lingco Dr to the west or Spring Valley Rd to the east. DART should coordinate with the City of Richardson to consider installing anti-climb median fencing (improvement 2C-SV-ST-9) along the median of Spring Valley Rd in front of the DART station to ensure pedestrians cross at the crosswalks.

DART should also coordinate relocation of the bus stop on Lingco Dr to the downstream side of the crosswalk between the station platform and the Park & Ride lot (improvement 2C-SV-ST-2). The current location of the bus stop upstream of the crosswalk creates unnecessary potential for visibility obstructions between bus drivers and crossing pedestrians.

Other recommended improvements include:

- Installing pedestrian lighting for an area where tree cover makes for dark nighttime conditions (improvement 2C-SV-ST-6).
- Updating or relocating signs to meet MUTCD standards.
- Fixing pedestrian trip hazards.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $240,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.7 Downtown Garland Station

Figure 3A-1.1 on page 27 shows the 10 improvements recommended for Downtown Garland Station within DART right-of-way. Figures 3A-1.2, 3A-1.3, 3A-1.4, and 3A-1.5 on pages 28-31 illustrate existing conditions at the 10 improvement locations.

Many pedestrians were observed crossing Walnut St, a busy four-lane arterial, in front of DART station instead of adjacent signalized crosswalks at 4th St and 5th St intersections. DART should coordinate with the City of Garland to consider installing anti-climb median fencing mounted on top of concrete traffic barrier along Walnut St in front of the DART station to ensure pedestrians cross at the crosswalks.

A "goat trail" that exists between the bus loop and the northeast corner of the Walnut St/5th St intersection indicates pedestrian demand for a more direct route. A new sidewalk with crosswalk across the bus loop should be built to accommodate this demand. A section of fence adjacent to the bus loop will need to be removed as part of this improvement.

Other recommended improvements include:

- Updating or addingting signs to meet MUTCD standards.
- Adding or refreshing crosswalk striping.
- Adding landscaping to remove goat trails.
- Adding covered bike parking near the southeast corner of Walnut St and 5th St intersection (location 8).

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $175,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Arapaho Center Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Number	Description
1	Change the arrow direction of "PEDESTRIANS USE UNDERPASS" sign to pointing "through" instead of pointing to the left.
2a-2c	Move the existing bike parking that is located far from the train platform (location 2a) to the corner of the lot near the station and the grassy area between the fence for the tracks and the trail south of the platform (location 2c). A few parking spaces may need to be removed. Bikes chained on the fence near the ticket machine (location 2b) are evidence of demand for more conveniently located bike parking.
3	Redevelop the under-utilized parking lot on the east side of the site as a Transit-Oriented Development (TOD), consistent with recent City of Richardson Innovation Quarter Plan. The City of Richardson and DART are also considering moving the Kiss & Ride and Bus Loops to the west side of Greenville Ave as part of the station redevelopment.
4-5	Add pedestrian lighting for area where tree cover makes for dark nighttime conditions.
6	Update "DO NOT ENTER" signs to meet MUTCD standards. Increase the size of STOP SIGN to obscure the shape of signs mounted on the other side.
7-8	Add crosswalk striping parallel to and on either side of the decorative brick crosswalks to make them high-visibility crosswalks and to properly define them as legal crosswalks where pedestrians have the right-of-way.
9	Create a more direct path between west end of bus loop and pedestrian tunnel to encourage its use. Worn path in landscaping here shows pedestrian desire line. Build new crosswalk across bus loop and stairs down to pedestrian tunnel path (longer path already exists for ADA compliance). Consolidate existing bus stops along the bus loop if necessary to make space for crosswalk.
10	The existing pedestrian ramp from the tunnel under Greenville Avenue to the station platform (location 10a) has too long of an uninterrupted grade for people using manual wheelchairs. Since level platform breaks for resting locations would require lengthening the ramp and necessitate extensive additional excavation, the City of Richardson and DART are instead planning to revise the recent addition of an at-grade crosswalk across Greenville Ave to include an accessible path to the station on the west side to bypass or replace the recently-built stairs (location 10b).
11	Replace the existing "Rail Station Access" sign with a fence-mounted sign with an arrow pointing diagonally down and reading "Pedestrians Use Tunnel." (The existing sign appears to direct pedestrians to jump the fence).
12	Update the "PEDESTRIANS USE UNDERPASS" sign to make the arrow a "U-Turn" instead of pointing to the left.
13	Build sidewalk connecting train platform to U.S. 75 frontage road. Pedestrian safety fencing will need to be installed between the new sidewalk and tracks. See half-mile area improvements 2B-AC-SW-037 for more details.

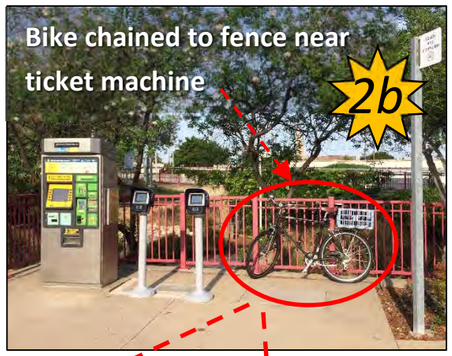
Not for Construction

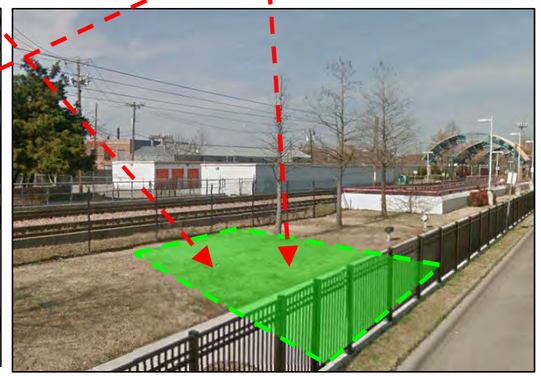
FIGURE 2B-1.1 NOT TO SCALE **DECEMBER 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

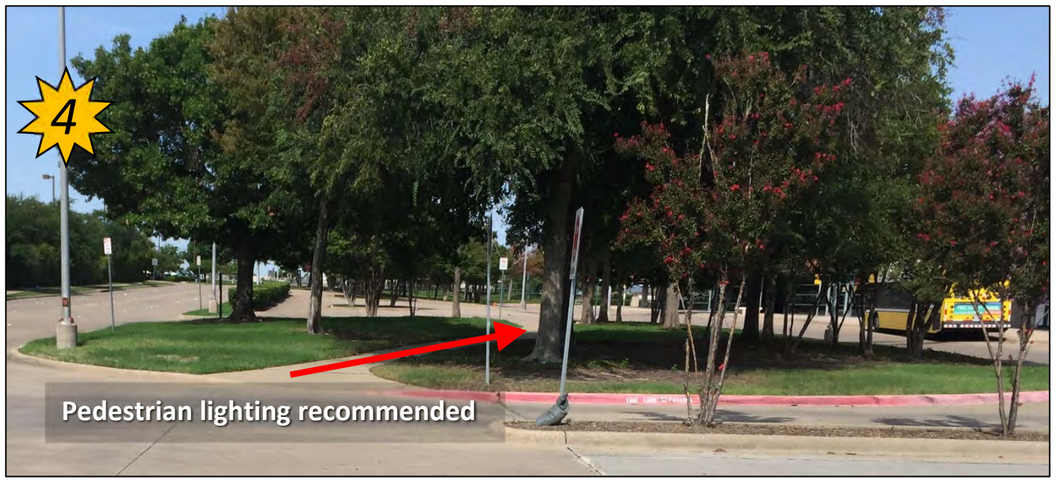
Arapaho Center Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections





Move bike parking to the corner of the lot near the station (closer to train platform)



Not for Construction

FIGURE 2B-1.2 **DECEMBER 2020**

LEE ENGINEERING

Arapaho Center Station Existing Conditions at Improvement Locations

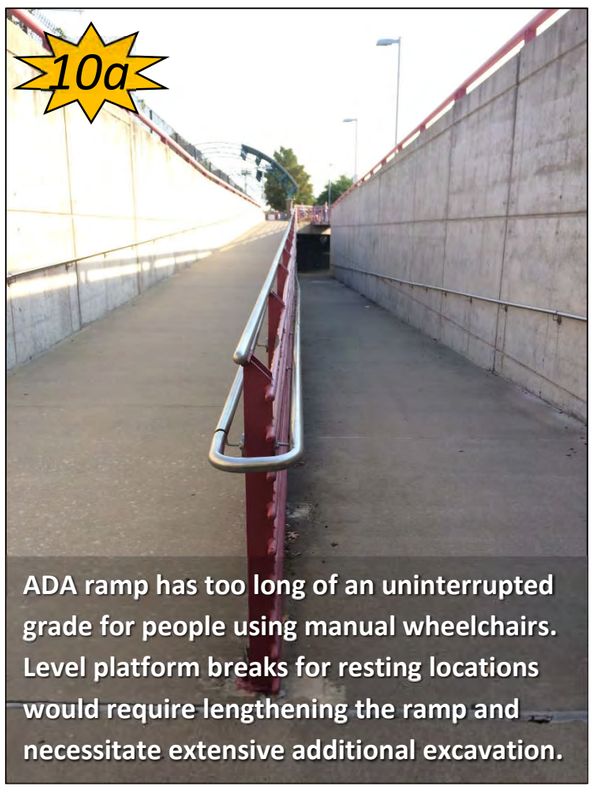
North Central Texas Council of Governments

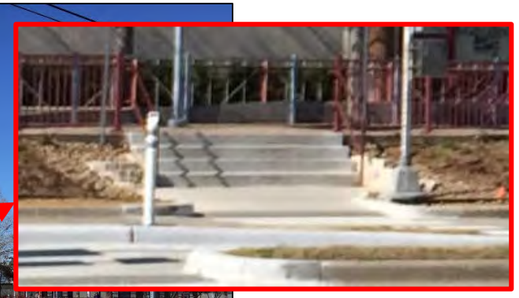
DART Red & Blue Line Corridors Last Mile Connections

Create a more direct path between west end of bus loop and pedestrian tunnel to encourage its use. Worn path in landscaping here shows pedestrian desire line. Build new crosswalk across bus loop and stairs down to pedestrian tunnel path (longer path already exists for ADA compliance). Consolidate existing bus stops along the bus loop if necessary to make space for crosswalk.

R5-1

Replace the existing "Rail Station Access" sign with a fence-mounted sign. Mount the sign parallel to the fence facing the sidewalk instead of perpendicular to the fence. (The existing sign appears to direct pedestrians to jump the fence or go around it).





The City of Richardson/DART are instead planning an accessible path to replace or bypass the stairs at the new at-grade crosswalk across Greenville Ave.

Not for Construction

FIGURE 2B-1.3 **DECEMBER 2020**

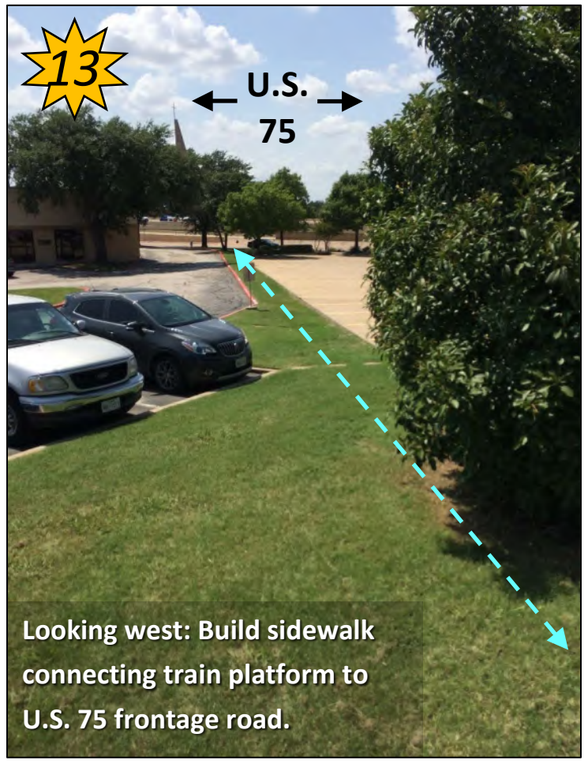
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Arapaho Center Station Existing Conditions at Improvement Locations

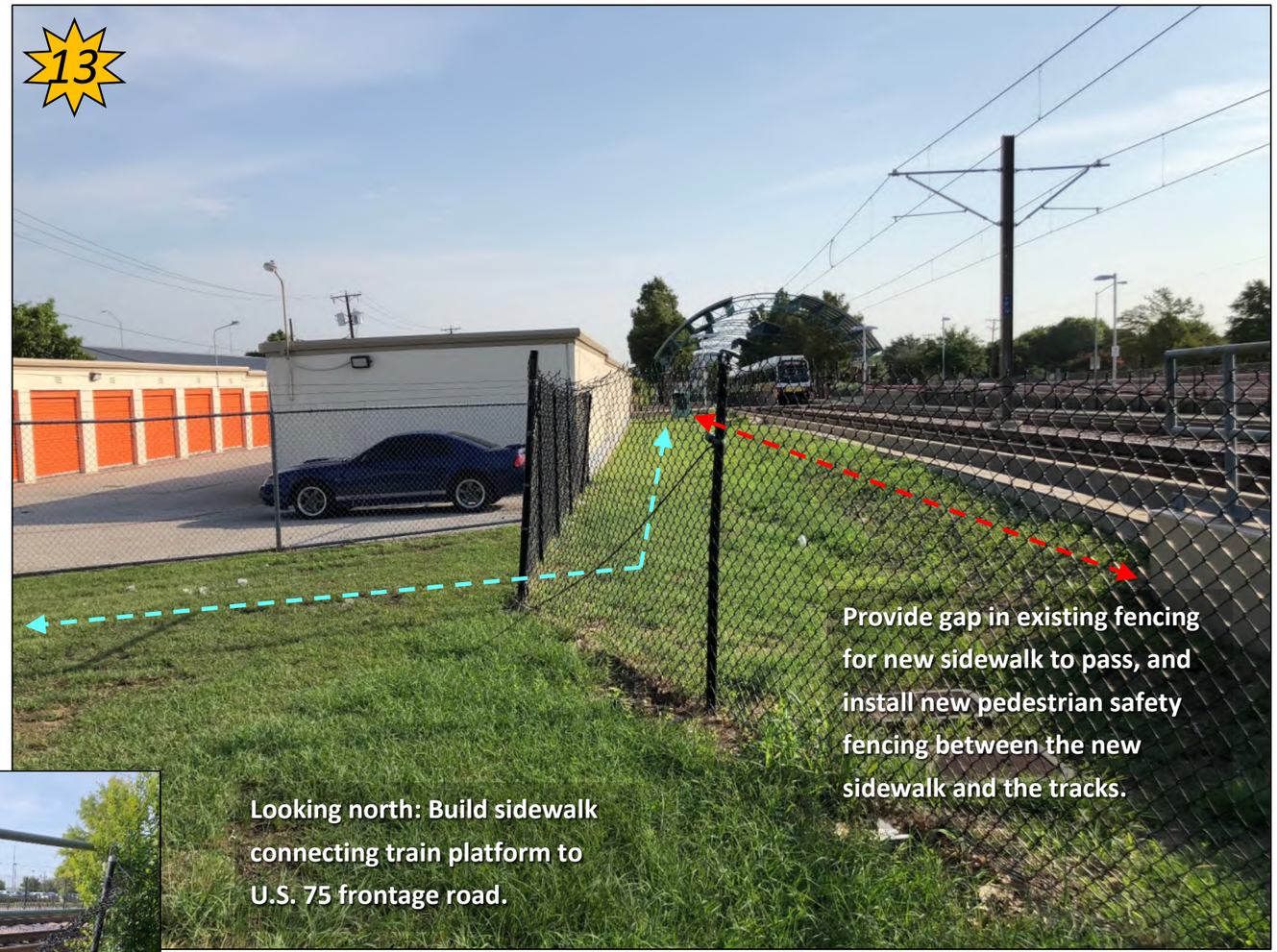
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Arrow direction of "PEDESTRIANS USE UNDERPASS" sign should be "U-Turn" instead of pointing to the left



Looking west: Build sidewalk connecting train platform to U.S. 75 frontage road.



Looking north: Build sidewalk connecting train platform to U.S. 75 frontage road.

Provide gap in existing fencing for new sidewalk to pass, and install new pedestrian safety fencing between the new sidewalk and the tracks.

➢ Picture at upper right taken from this location at left, where damaged fence and box used as stepping stool indicate existing pedestrian demand for this travel route.

FIGURE 2B-1.4 **MAY 2020**

Not for Construction

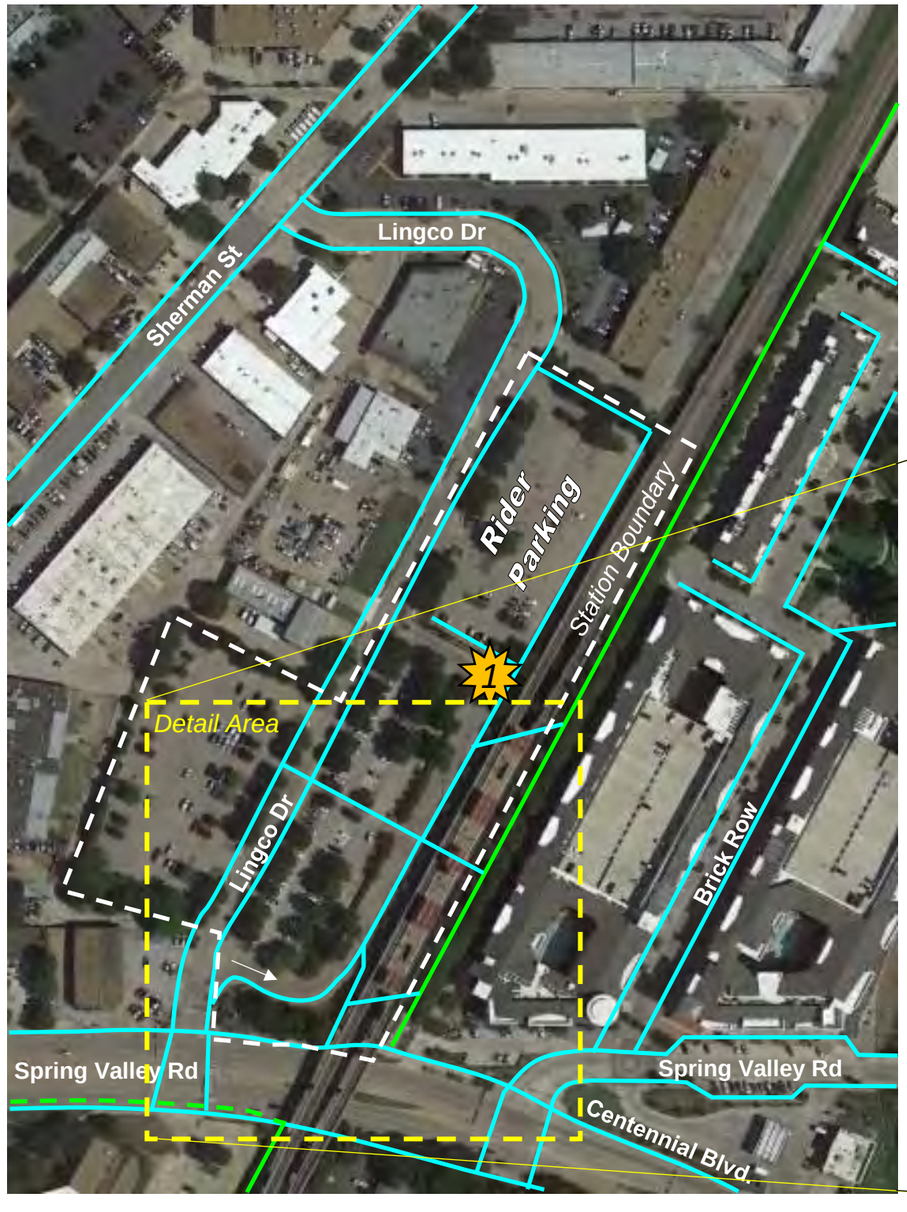
LEE ENGINEERING 30 YEARS OF EXCELLENCE

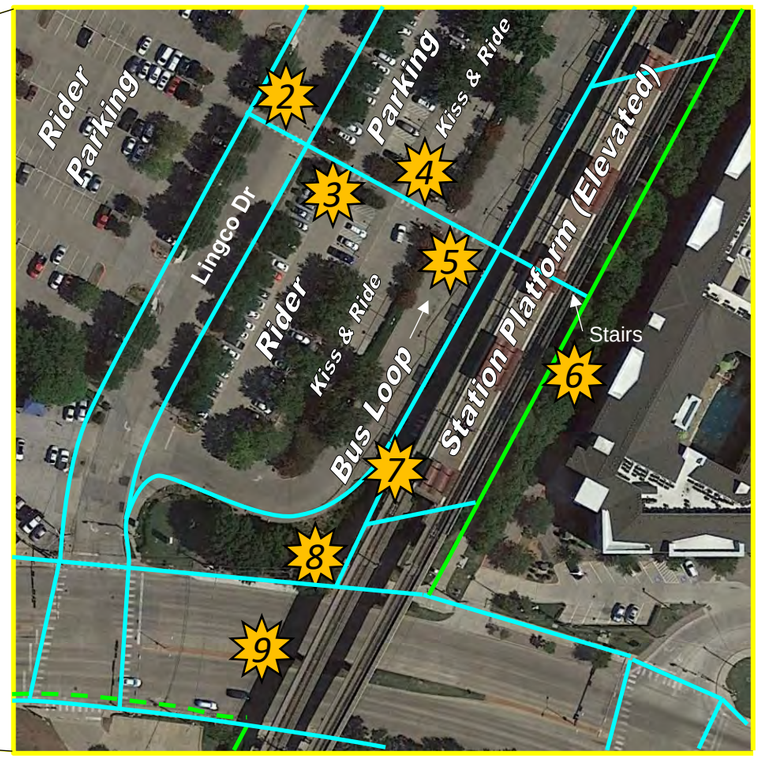
Spring Valley Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

N





Number	Description
1	Correct pedestrian trip hazard.
2	Relocate bus stop to the far side of the crosswalk to ensure pedestrian safety.
3-5	Update pedestrian warning signs to meet MUTCD standards. The existing signs are fading, have the wrong panel shape, and do not have supplemental arrow plaques as required to meet MUTCD standards.
6	Install pedestrian lighting along the Central Trail near the station.
7	Update “DO NOT ENTER” signs to meet MUTCD standards.
8	Correct pedestrian trip hazard.
9	Install median fence along Spring Valley Road in front of DART station to ensure pedestrians cross at the crosswalks.

Legend

Sidewalk/Crosswalk

Existing

Regional Veloweb

Existing

Proposed

DRAFT – Not for Construction

FIGURE 2C-1.1 NOT TO SCALE **MAY 2020**

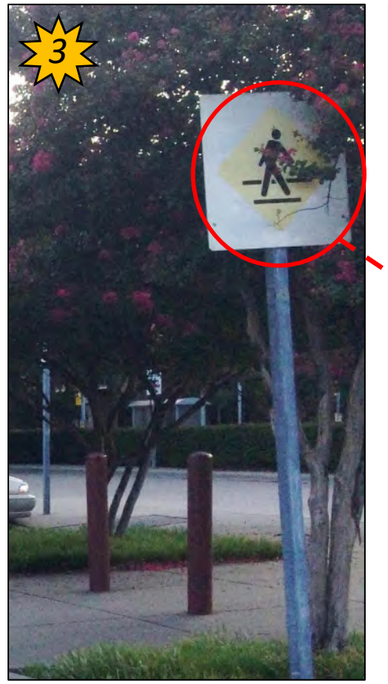
LEE ENGINEERING 30 YEARS OF EXCELLENCE

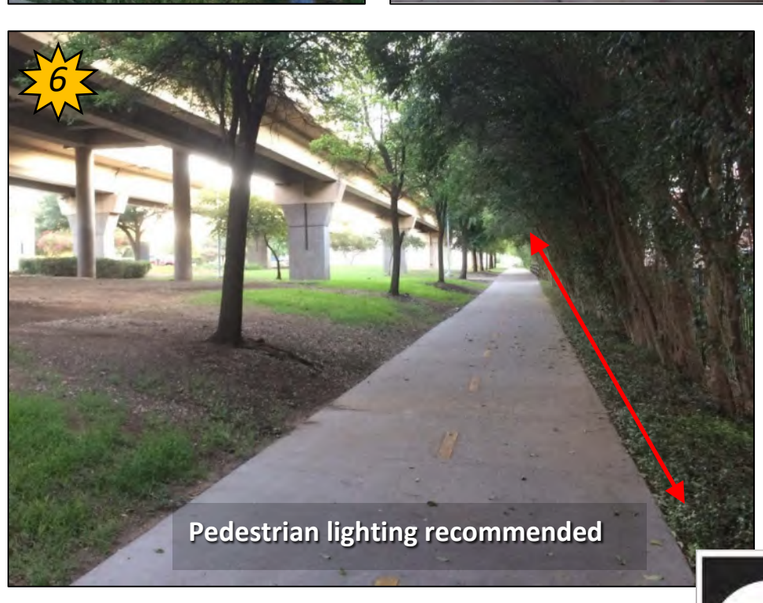
Spring Valley Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Relocate bus stop on southbound Lingco Drive to the far side of the crosswalk so buses do not obstruct visibility of crossing pedestrians.





W11-2
W16-7P

Replace non-standard signs with R2-1 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

DRAFT – Not for Construction

FIGURE 2C-1.2 **MAY 2020**

LEE ENGINEERING

30 YEARS OF EXCELLENCE

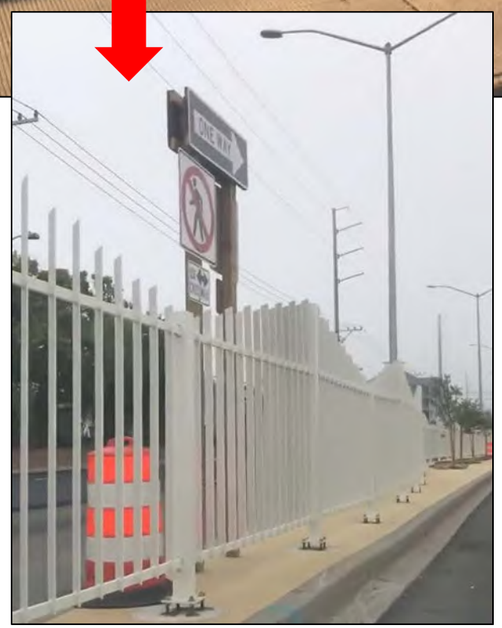
Spring Valley Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

EXCEPT BUSES

R5-1



➢ Example of median fencing on arterial. (Note that the picture shown is only an example for reference, and no specific vendors are endorsed).

Image from Seagull Concrete and Fence, Ocean City, MD. https://www.facebook.com/SeagullFenceConcrete LLC/videos/1749627818436692/

DRAFT – Not for Construction

FIGURE 2C-1.3 **MAY 2020**

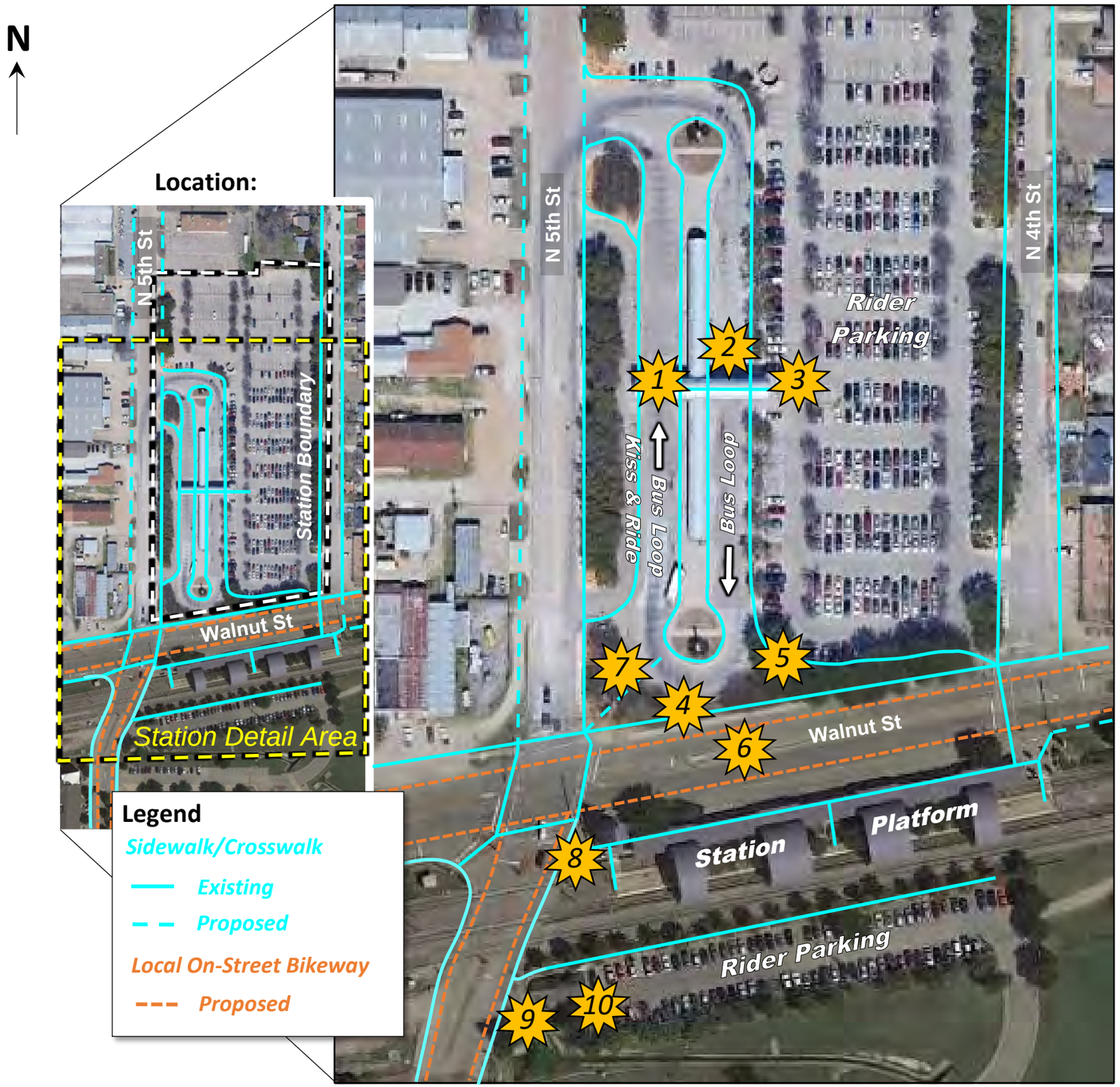
LEE ENGINEERING

30 YEARS OF EXCELLENCE

Downtown Garland Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

Number	Description
1-2	Add crosswalk striping just outside and parallel to the decorative brick crosswalks. Add stop bar striping ahead of the stop signs in advance of each crosswalk.
3	Add pedestrian signs ahead of pedestrian crosswalk.
4-5	Remove goat trails that encourage mid-block crossings by adding landscaping.
6	Add median fence along Walnut Street in front of DART station to restrict mid-block crossings and channelize pedestrians to signalized crosswalks at 4th Street and 5th Street intersections.
7	Add a more direct crosswalk/sidewalk connection between the bus loop and the northeast corner of the Walnut Street/5th Street intersection to encourage pedestrians to cross at the signalized crosswalk. Install crosswalk markings and stop signs for bus loop crossing. A "goat trail" exists along the path of the proposed sidewalk presently, indicating demand for a more direct pedestrian route. A section of fence adjacent to the bus loop will need to be removed as part of this improvement.
8	Add covered bike parking near the southeast corner of Walnut Street and 5th Street intersection. This will put bike parking closer to the train platform so that bicyclists do not have to cross north of Walnut Street or to the east end of the platform to park.
9	Restripe faded crosswalk on the east leg of DART driveway and 5th Street intersection.
10	Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retroreflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.

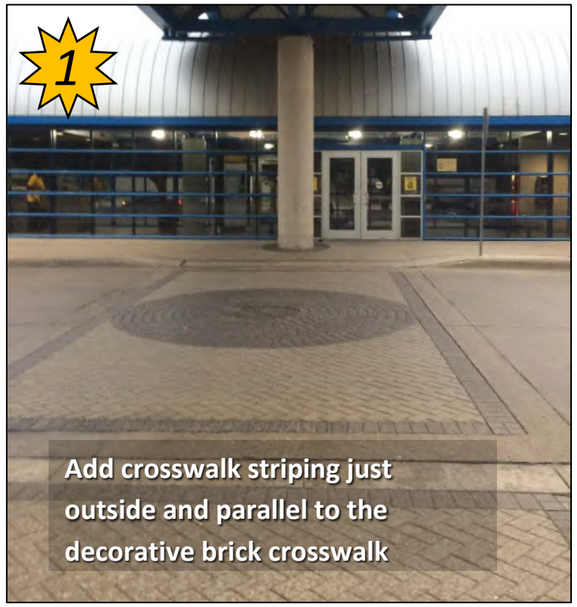
FIGURE 3A-1.1 NOT TO SCALE **FEBRUARY 2020**

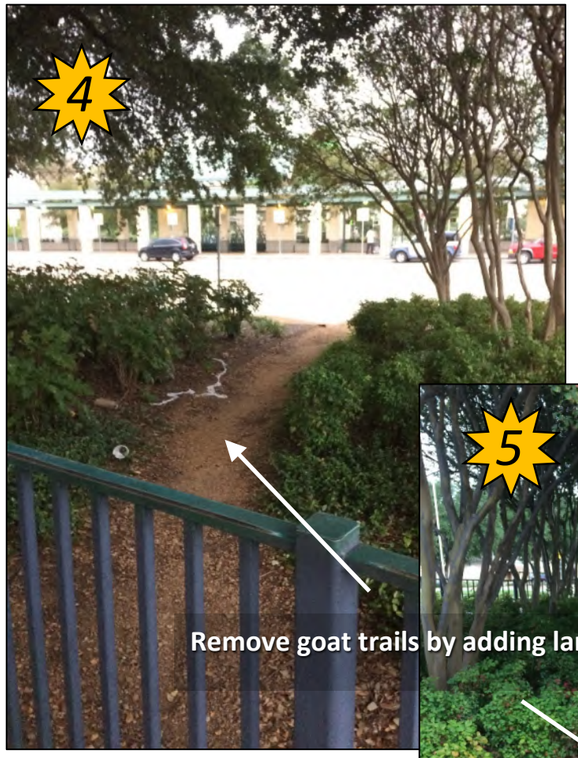
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Downtown Garland Station Existing Conditions and Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections





W11-2
W16-7P

*** Sign should be retroreflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.**

Not for Construction

FIGURE 3A-1.2 **FEBRUARY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Downtown Garland Station Existing Conditions and Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

➘ Example of median fencing on arterials. (Note that the picture shown is only an example for reference, and no specific vendors are endorsed.)

Image from Cochrane USA

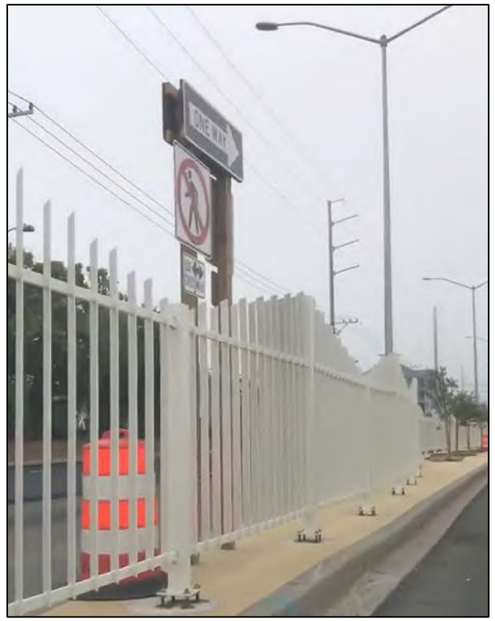


Image from Seagull Concrete and Fence, Ocean City, MD. https://www.facebook.com/SeagullFenceConcreteLLC/videos/1749627818436692/

➘ Example of median fencing on arterial. (Note that the picture shown is only an example for reference, and no specific vendors are endorsed).

➘ Median fencing recently installed by TxDOT on Lancaster Avenue between Sargent Ave and Oakland Blvd in Fort Worth.

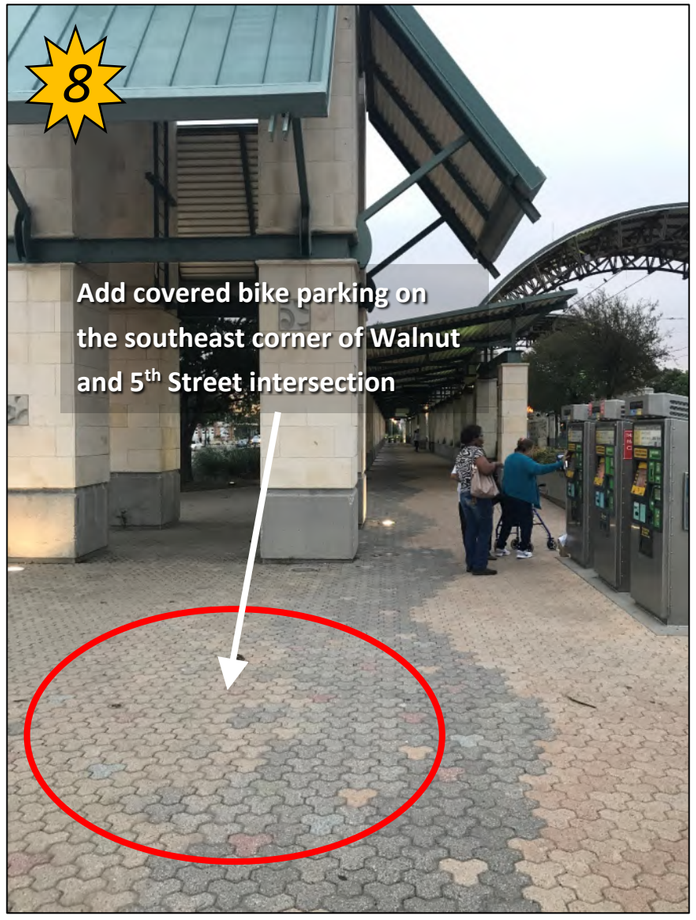
https://dfw.cbslocal.com/2019/07/26/txdot-installs-metal-fence-address-fort-worth-pedestrian-issue/

Not for Construction

Downtown Garland Station Existing Conditions and Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

FIGURE 3A-1.4 **FEBRUARY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Downtown Garland Station Existing Conditions and Improvements

R2-1

*** Replace non-standard sign with R2-1 sign with all capital letters from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.**

Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.8 Forest Jupiter Station

Figure 3B-1.1 on page 33 shows the 14 improvements recommended for Forest Jupiter Station within DART right-of-way. Figures 3B-1.2 through 3B-1.6 on pages 34-38 illustrate existing conditions at the 10 improvement locations.

To the west of the station platform, a worn path in the grass indicates demand for a sidewalk along the rail alignment for more direct access to and from Jupiter Rd to the south. DART should cordinate with the City of Garland and the adjacent Union Pacific railroad to install sidewalk and fencing between the sidewalk and tracks. For pedestrian safety, lighting and security cameras may be needed.

Other recommended improvements include:

- Updating signs to meet MUTCD standards.
- Adding crosswalk striping.
- Installing pedestrian push buttons.
- Widening existing sidewalks or building new sidewalks.
- Adding ADA ramps for better wheelchair access to the station platform.
- Relocating existing signs or installing new signs for better guidance.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $190,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.9 LBJ Central Station (on DART Property)

Figure 3C-1.1 on page 39 shows the seven improvements recommended for LBJ Central Station within DART right-of-way. Figures 3C-1.2 and 3C-1.3 on pages 40-41 illustrate existing conditions at the seven improvement locations.

A passcode-locked gate at the northeast boundary of the station property provides access to and from the station by residents of the adjacent apartment complex. The sidewalk leading across the north edge of the parking lot from this gate currently ends at the north end of the lot. Improvement 3C-LC-ST-01 is recommended to add sidewalk and crosswalk to connect this sidewalk to existing sidewalk near the station platform.

Other recommended improvements include building ADA ramps for crosswalks and making signing and pavement markings consistent with the Manual on Uniform Traffic Control Devices (MUTCD) for compliance and for improved motorist, pedestrian, and bicyclist understanding of multi-modal conflict areas. Refer to the figures for additional details.

The total OPCC for the improvements on the LBJ Central Station DART property is approximately $36,000. Matrix tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.10 Forest Lane Station (on DART Property)

Figure 3D-1.1 on page 42 identifies 13 recommended improvements at the Forest Lane Station within DART right-of-way. Figures 3D-1.2 and 3D-1.3 on pages 43-44 illustrate existing conditions at the 13 improvement locations.

The station generally has good bicycle and pedestrian access from each direction. Recommended improvements include:

- Resolving a conflict between buses turning right into the station from Forest Ln. The radius at this signalized intersection is too tight, causing buses to encroach into the pedestrian space. Landscaping rocks have been placed near the curb to discourage encroachment, but evidence of encroachment was still observed. Restriping the station driveway to reduce the number of lanes exiting from two to one would provide more space for wider bus turns while providing greater pedestrian safety and comfort.
- Relocating the stone pillars near the tops of the ADA ramps to the station platform so they do not pose barriers to wheelchair passage.
- Moving parking aisle stop bars behind unmarked crosswalks and marking the crosswalks.
- Relocating bike parking closer to the station platform so it is more convenient for bicyclists.
- Making signing and pavement markings consistent with the Manual on Uniform Traffic Control Devices (MUTCD) for compliance and for improved motorist, pedestrian, and bicyclist understanding of multi-modal conflict areas.

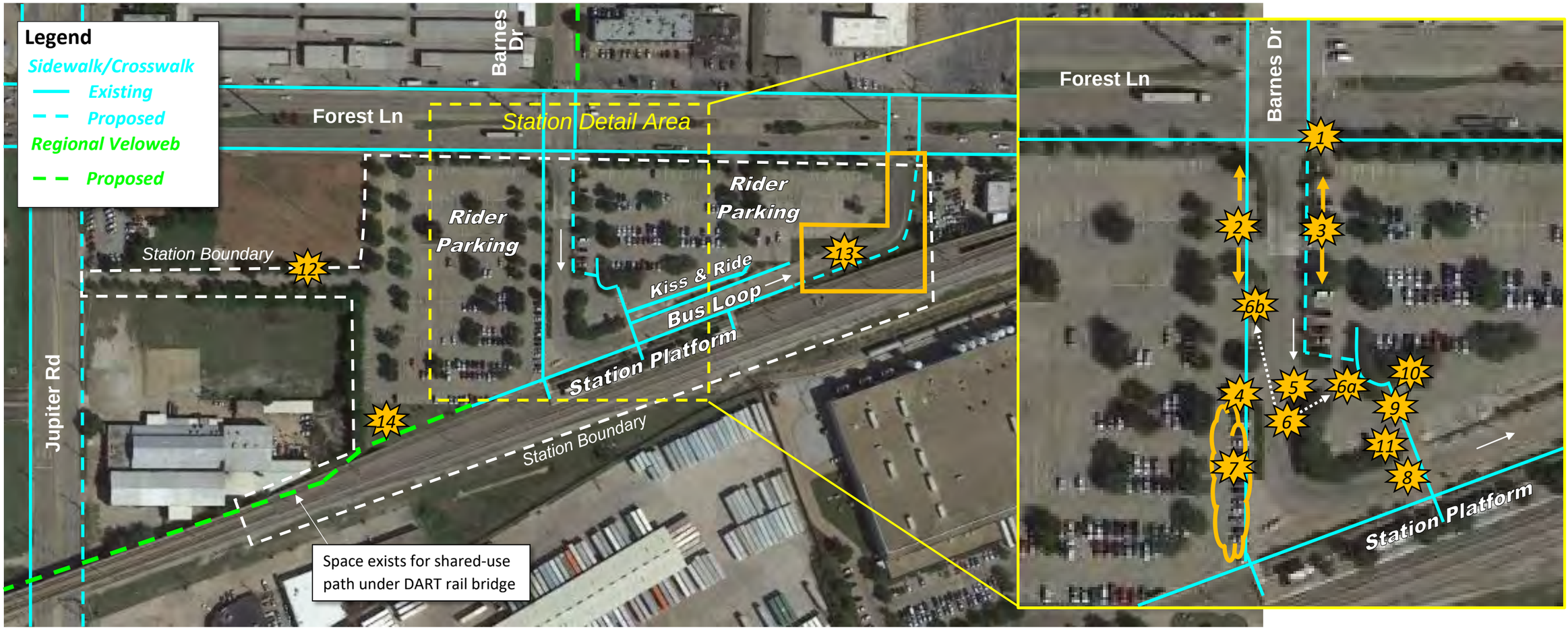
The total OPCC for the improvements for Forest Lane Station on DART property is approximately $15,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Forest Jupiter Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

N



Number	Description	Number	Description
1	Install missing pedestrian pushbuttons on the southeast corner of Forest Lane and Barnes Drive.	***8***	Add crosswalk striping parallel to and on either side of the existing crosswalk.
2	Widen existing sidewalk from 3 feet to minimum 5 feet to accommodate pedestrian needs.	***9***	Build ramps to the existing crosswalk.
3	Build new sidewalk on the east side of the DART entrance south of Barnes Drive.	***10-11***	Update pedestrian signs to meet MUTCD standards.
4-5	Update “DO NOT ENTER” signs to meet MUTCD standards.	**12**	Update speed limit signs to meet MUTCD standards.
6	Relocate handicap parking sign and passenger loading directional sign to avoid inadvertent entry to the bus loop by non-bus drivers. If implementing recommendation 7 below, new, separate directional signs will be required. A sign for passenger loading would be appropriate at location 6, while a sign for handicap parking should be provided facing southbound driveway traffic on the west side of the entry driveway, north of the bus loop entry (location 6b).	**13**	Build new sidewalk connecting station platform with Forest Lane to the east. A worn path in the grass indicates existing pedestrian demand in this location.
7	Relocate handicap parking spaces from their current position near the central sidewalk access to the train platform (near location 8) to the spaces near the western sidewalk access to the platform (location 7). The current location of the handicap parking spaces requires disabled pedestrians to travel farther since the crossing to the platform does not include pedestrian ramps.	**14**	Build new shared use path along rail alignment for more direct access to and from Jupiter Road to the south. For pedestrian safety, add fencing to separate pedestrians from the railroad tracks. Lighting, and security cameras may be needed where the path alignment is obscured from view under the rail bridge and immediately south of the adjacent building.

DRAFT – Not for Construction

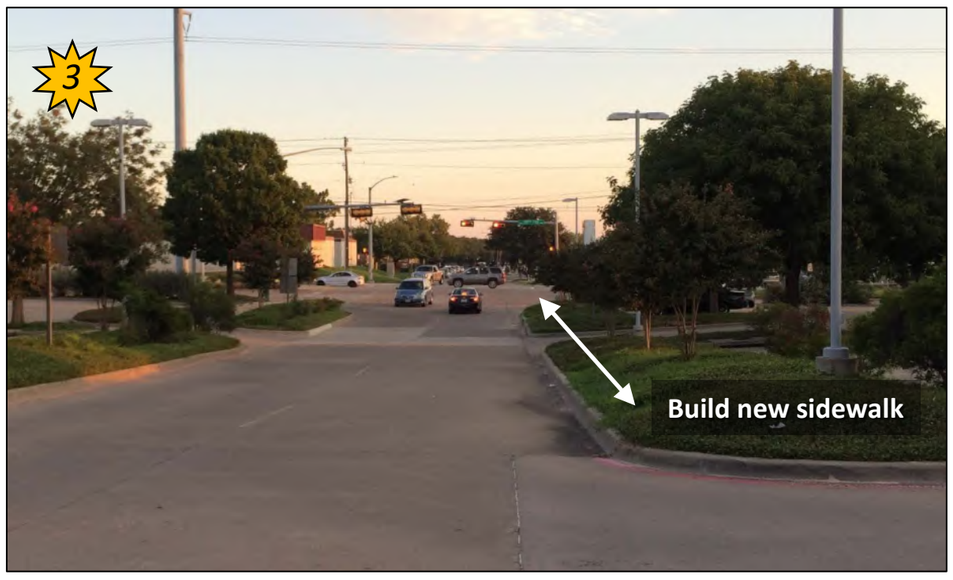
FIGURE 3B-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING

Forest Jupiter Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



DRAFT – Not for Construction

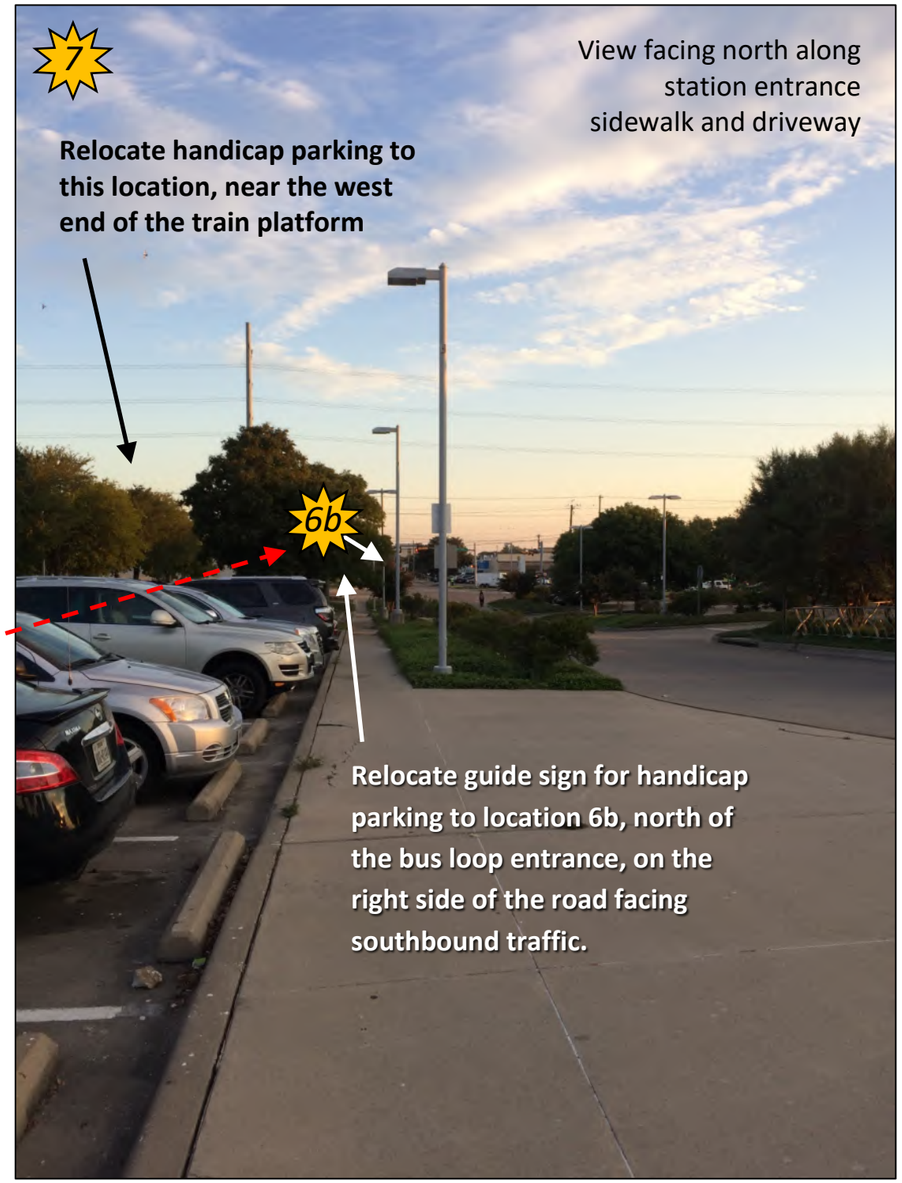
FIGURE 3B-1.2 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Forest Jupiter Station Existing Conditions at Improvement Locations

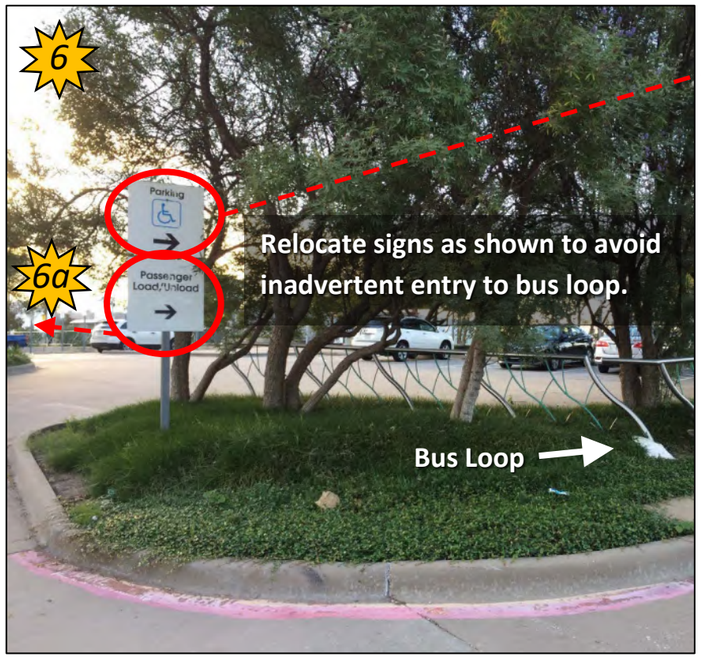
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



R5-1

Replace non-standard signs with R5-1 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall have all capital letters. Uniform signs reinforce driver respect as legitimate traffic control devices.



DRAFT – Not for Construction

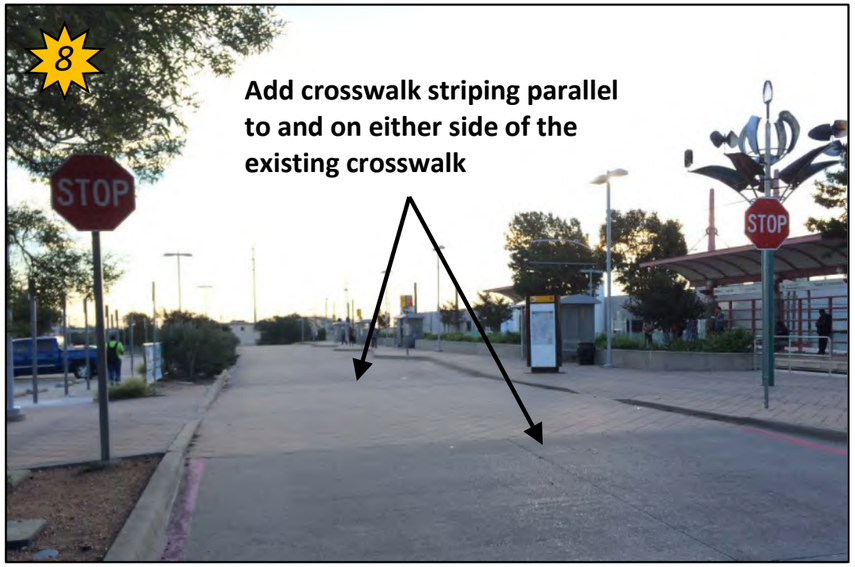
FIGURE 3B-1.3 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Forest Jupiter Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Replace non-standard signs with W11-2 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

DRAFT – Not for Construction

FIGURE 3B-1.4 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

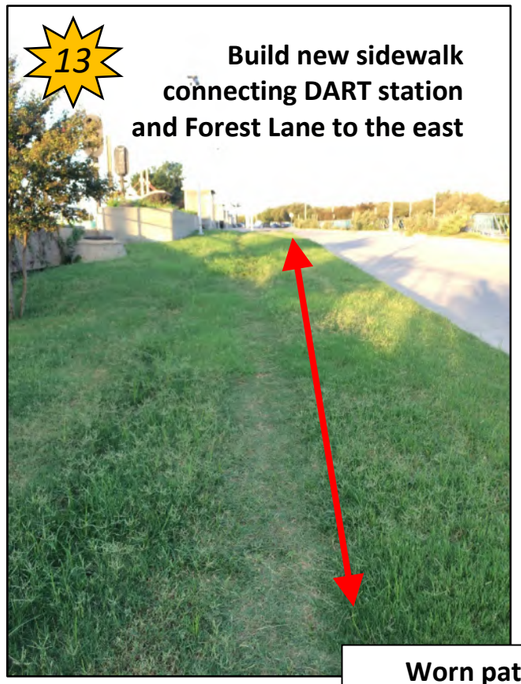
Forest Jupiter Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

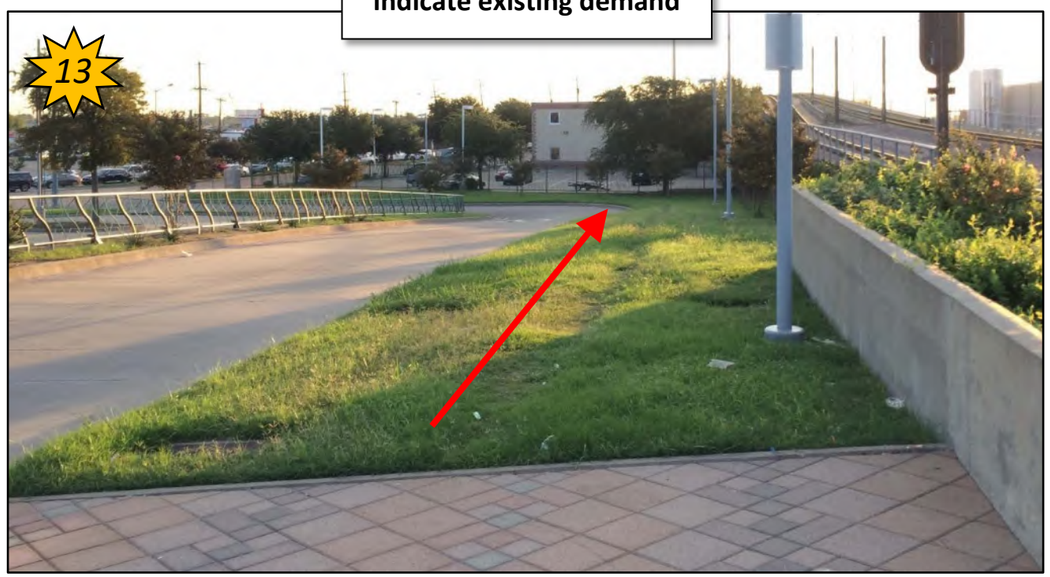
DART Red & Blue Line Corridors Last Mile Connections

R2-1

Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.



Worn paths in grass indicate existing demand



DRAFT – Not for Construction

FIGURE 3B-1.5 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Forest Jupiter Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Build new shared use path along rail alignment for more direct access to and from Jupiter Road to the south. For pedestrian safety, add fencing to separate pedestrians from the railroad tracks. Lighting, and security cameras may be needed where the path alignment is obscured from view under the rail bridge and immediately south of the adjacent building. Drainage culvert between DART rail bridge and adjacent fenced property will need to be covered to provide adequate sidewalk width, as may removal of existing trees. Worn path in grass indicates existing pedestrian demand along this route.

DRAFT – Not for Construction

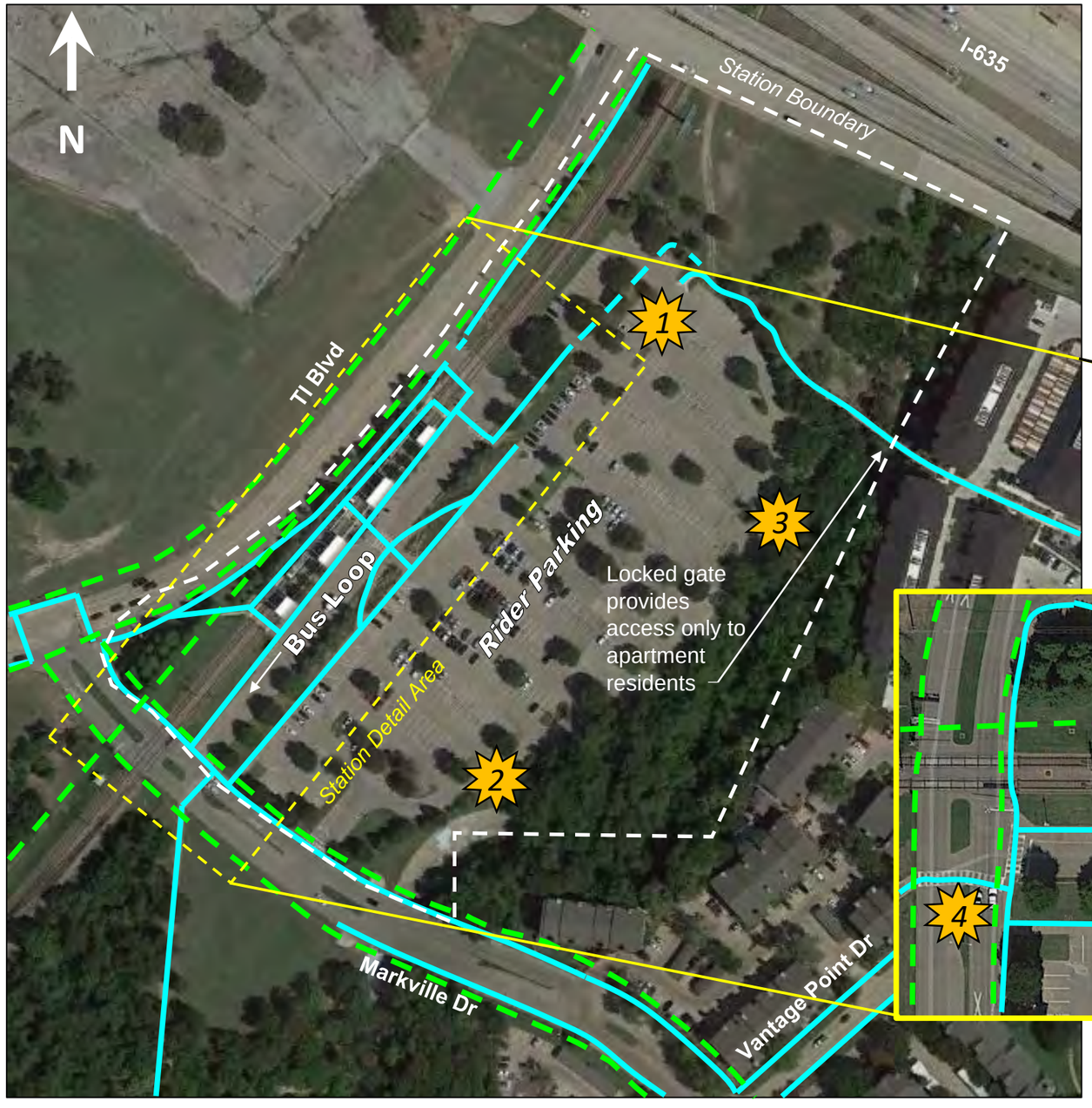
FIGURE 3B-1.6 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

LBJ Central Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Legend

Sidewalk/Crosswalk

Existing

Proposed

Regional Veloweb

Existing

Proposed

Number	Description
1	Add sidewalk and crosswalk to connect the existing station sidewalk to the LBJ Station Apartments. The current sidewalk ramp at the end of the sidewalk from the apartments that ends at the parking lot should be relocated to avoid a diagonal crosswalk across the parking lot aisle. Two to three parking spaces would be removed, but parking demand for this station appears to be well below capacity.
2-3	Update speed limit signs to meet MUTCD standards.
4-5	Build ADA ramps for crosswalks.
6	Add marked pedestrian crosswalk
7	At the bus loop entrance, update pedestrian warning signs to meet MUTCD standards. The existing signs have the wrong shape panel and do not have supplemental arrow plaques as required. Replace “DO NOT ENTER” signs with new signs including all capital letters to meet MUTCD standards.

DRAFT – Not for Construction

FIGURE 3C-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

LBJ Central Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Relocate ramp and add sidewalk and crosswalk to connect apartments to train platform.

R2-1

Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.

DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

LBJ Central Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

W11-2
W16-7P

Replace non-standard sign with W11-2 sign from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

Update "DO NOT ENTER" signs to MUTCD standard with all CAPS lettering

EXCEPT BUSES

R5-1

DRAFT – Not for Construction

FIGURE 3C-1.3 **MAY 2020**

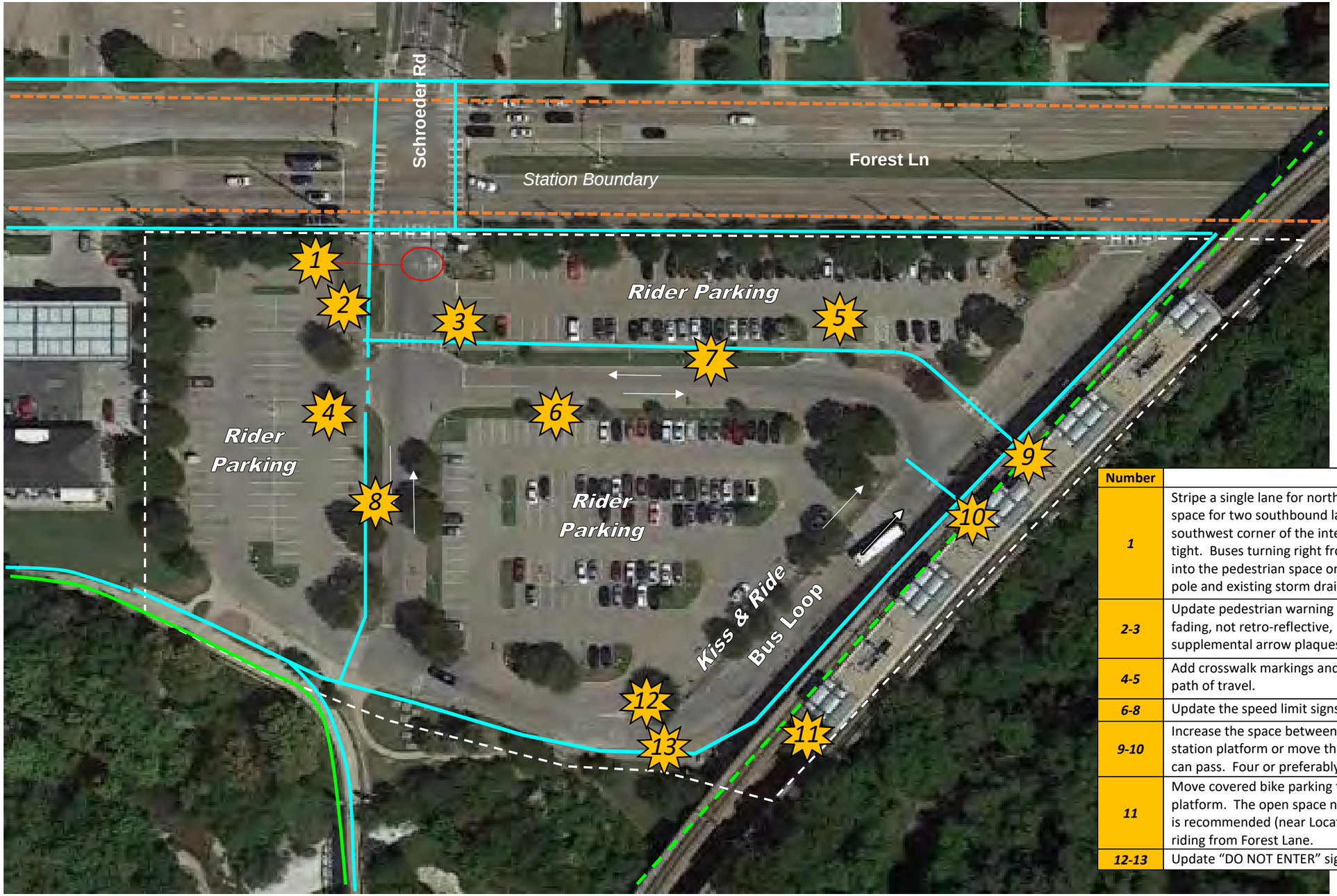
LEE ENGINEERING

30 YEARS OF EXCELLENCE

Forest Lane Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



N

Legend

Sidewalk/Crosswalk

Existing

Proposed

Regional Veloweb

Existing

Proposed

Local On-Street Bikeway

Planned

Number	Description
1	Stripe a single lane for northbound traffic exiting the park & ride lot. This would allow space for two southbound lanes entering the lot. The reason is that the radius on the southwest corner of the intersection of Forest Lane and the station entrance is too tight. Buses turning right from eastbound Forest Lane were observed encroaching into the pedestrian space on the intersection corner. A high mast overhead electric pole and existing storm drain inlet constrain the radius from being enlarged.
2-3	Update pedestrian warning signs to meet MUTCD standards. The existing signs are fading, not retro-reflective, have the wrong shape panel, and do not have supplemental arrow plaques as required to meet MUTCD standards.
4-5	Add crosswalk markings and move the existing STOP bar back behind the pedestrian path of travel.
6-8	Update the speed limit signs to meet MUTCD standards.
9-10	Increase the space between the stone pillar seats at the top of the ADA ramps to the station platform or move them farther back from the ramp so that wheelchair users can pass. Four or preferably five foot clearances are recommended.
11	Move covered bike parking to a more convenient location for cyclists close to the platform. The open space near the stairs within the security camera monitoring area is recommended (near Locations 9 and 10). This will be more convenient for cyclists riding from Forest Lane.
12-13	Update “DO NOT ENTER” signs to meet MUTCD standards.

DRAFT – Not for Construction

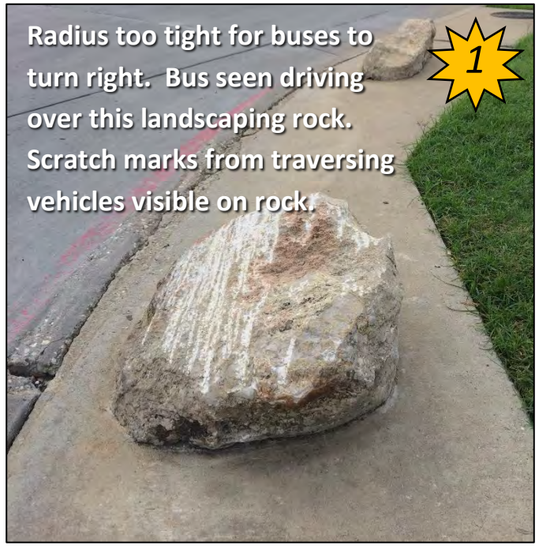
FIGURE 3D-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Forest Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

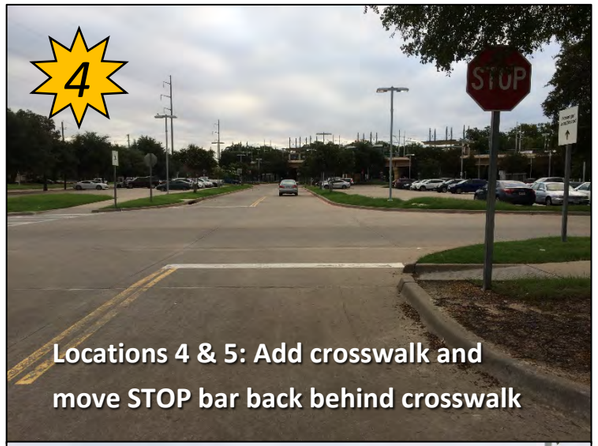
DART Red & Blue Line Corridors Last Mile Connections



W11-2
W16-7P

*** Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.**

DRAFT – Not for Construction



R2-1

*** Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Forest Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Stone pillar seats too close to each other and to top of ADA ramps to let wheelchair users through.

EXCEPT BUSES

R5-1

DRAFT – Not for Construction

FIGURE 3D-1.3 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.11 Walnut Hill Station (on DART Property)

Figure 4A-1.1 on page 46 identifies 12 improvements recommended at Walnut Hill Station on DART property. Figures 4A-1.2 through 4A-1.5 on pages 47-50 illustrate existing conditions at the 12 improvement locations.

Walnut Hill Ln, a busy six-lane divided arterial, is a barrier to bicycle and pedestrian travel near the station that is overcome for rail passengers by the grade separated platform that crosses the street overhead. However, DART passengers who don't ride the train but instead use the street-level bus stops and cross Walnut Hill Ln to or from their destination on the other side of the street were observed crossing mid-block underneath the rail bridge.

Aesthetic, closely-spaced fence posts located between the sidewalk and DART property seem to have been placed in an attempt to discourage mid-block crossings. While the fencing may encourage rail passengers to use the correct set of stairs or elevators to access their destination, the location of the fencing behind the sidewalk does not discourage bus passengers from crossing. Furthermore, the fencing placement requires a more circuitous route for bicyclists and pedestrians to access stairs and elevators on the correct side of the street. Worn paths in the landscaping and one rider seen jumping the fence posts indicates existing demand for more convenient movement.

The recommended improvements include:

- Removing fence posts to provide more direct sidewalk connections between the sidewalk and platform stairs and elevators.
- Adding aesthetic anti-climb fencing in the median of Walnut Hill Ln to redirect at-grade crossings to the signalized intersection of Walnut Hill Ln and Glen Lakes Dr, which is located about 350 feet to the east at the Texas Health Presbyterian Hospital Entrance.
- Adding covered bike parking on the south side of Walnut Hill Ln near the station stairs so riders do not need to cross to the north side to park.
- Adding landscaping north of Glen Lakes Dr to discourage park-and-ride users from crossing away from the striped crosswalk.
- Adding sidewalk south of Walnut Hill Ln between the station platform stairs and an office building to the west where a worn path in the grass was present and several riders were observed walking.
- Updating signs to meet MUTCD standards and adding or refreshing crosswalk striping.

Refer to the figures for additional details. Several of the improvements discussed are at or near the boundary of DART's right-of-way and would therefore require coordination between DART and the City of Dallas. The median fencing improvement, while entirely within City of Dallas right-of-way, is included here since it's design should be coordinated closely with the other recommended improvements within DART right-of-way.

The total OPCC for the DART improvements is approximately $215,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.12 Park Lane Station (on DART Property)

Figure 4B-1.1 on page 51 identifies ten improvements recommended at Park Lane Station on DART property. Figures 4B-1.2 through 4B-1.5 on pages 52-55 illustrate existing conditions at the ten improvement locations.

Pedestrian and bicycle access between the station and the Caruth Plaza shopping center to the west is indirect, with a low aesthetic fence and row of shrubs west of the station property separating the stairs and elevators to the platform above from the shopping center parking lot. To access the shopping center, riders must either jump the fence and cut through the shrubs (which many appear to do based on the shrubs' condition) or travel about 500 feet farther south to Park Ln before doubling back to the north. A more direct connection is recommeded by coordinating with the Caruth Plaza owner to provide a break in the fence and a crosswalk with signing across the parking lot to the sidewalk fronting the stores.

Pedestrian and bicycle access is also indirect to significant trip generators south and west of Park Ln. Several pedestrians were observed crossing Park Ln, a busy four-lane arterial, directly below the rail overpass south of the platform instead of crossing at signalized crosswalks at the Caruth Plaza driveway 500 feet to the west or at Greenville Ave 300 feet to the east. A convenience store immediately to the south was observed to be one destination for such pedestrians. There may also be demand for trips on foot to and from the new Galleries at Park Lane apartments immediately to the southwest of the rail crossing over Park Ln, whose residents and visitors may be tempted to make a similarly direct crossing.

Long term, DART should consider constructing a pedestrian bridge over Park Ln from the elevated station platform for increased safety and convenience of riders traveling to and from the south. As an interim measure, DART should consider coordinating with the City of Dallas to provide an at-grade crossing with a pedestrian hybrid beacon, coordinated with the adjacent traffic signals. A slight reconfiguration of turning lanes and tapers for car traffic at this location could help create a median refuge area for travelers in conjunction with the improvement.

Other recommended improvements include updating signs and vehicular pavement marking striping to meet MUTCD standards. Refer to the figures for additional details.

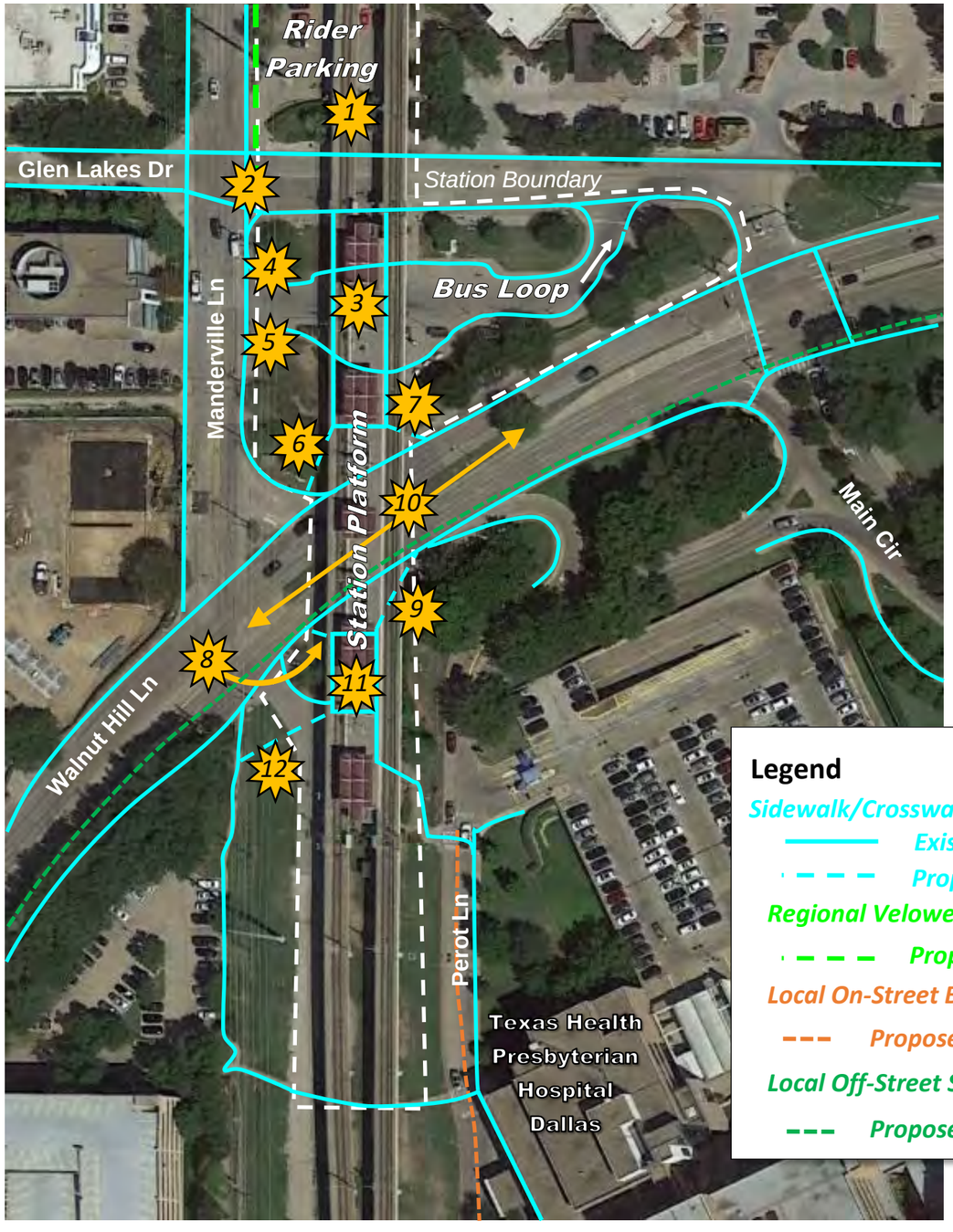
The total OPCC for the DART improvements is approximately $290,000. This excludes costs for any future pedestrian bridge over Park Ln and includes only the at-grade solution described above for improvement 4B-PL-ST-10 discussed in Figures 4B-1.1 and 4B-1.5 on pages 51 and 55. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Walnut Hill Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

N



Number	Description
1	Add landscaping to close “goat trail” and discourage people from crossing mid-block across Glen Lakes Drive between the parking lot and the stairs/elevator to the train platform.
2	Restripe faded crosswalk across Glen Lakes Drive at Manderville Lane.
3	Stripe crosswalk across bus loop under the bridge.
4-5	Update “DO NOT ENTER” signs to meet MUTCD standards.
6-9	Remove fence posts along Walnut Hill Lane sidewalk to provide more direct sidewalk connections between the Walnut Hill Lane sidewalk and the stairs & elevators to the train platform. Worn paths in some of the landscaping and one rider jumping the fence posts indicate existing demand for a more convenient movement.
10	Install median fence along Walnut Hill Lane in conjunction with the improvements at Locations 6-9 to continue to discourage pedestrians from crossing Walnut Hill Lane mid-block near the rail bridge.
11	Add covered bike parking on south side of Walnut Hill Lane near station stairs so riders do not need to cross to north side to park.
12	Build sidewalk to replace the existing “goat trail” and provide a better connection between the DART station and a large adjacent office building. Riders were observed walking in the worn path in the grass at this location.

Not for Construction

FIGURE 4A-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Walnut Hill Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Not for Construction

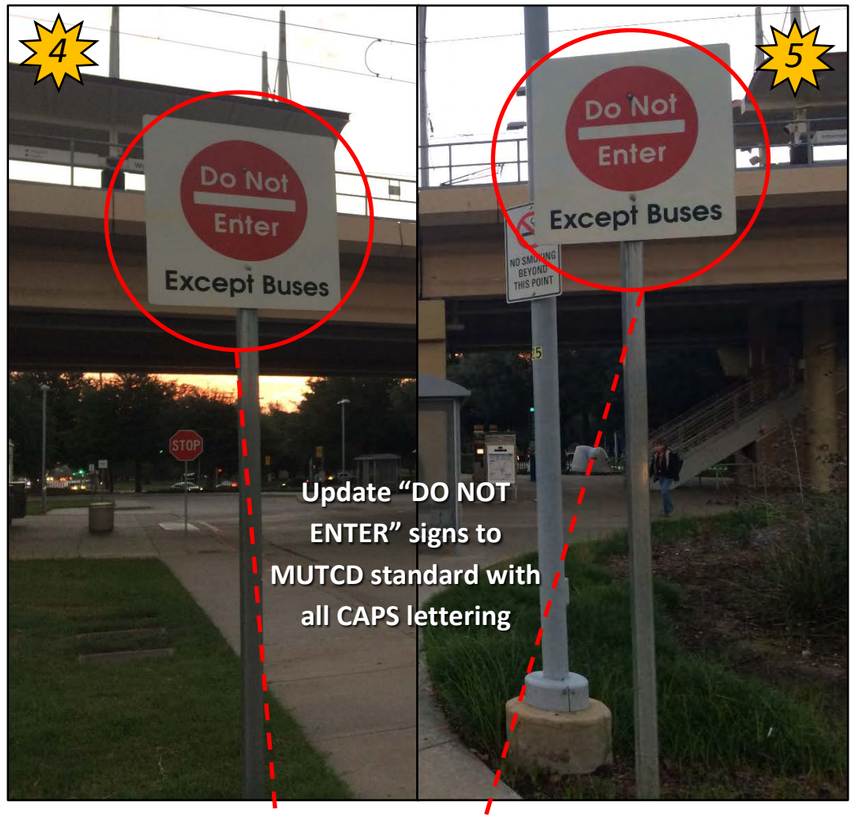
FIGURE 4A-1.2 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Walnut Hill Station Existing Conditions at Improvement Locations

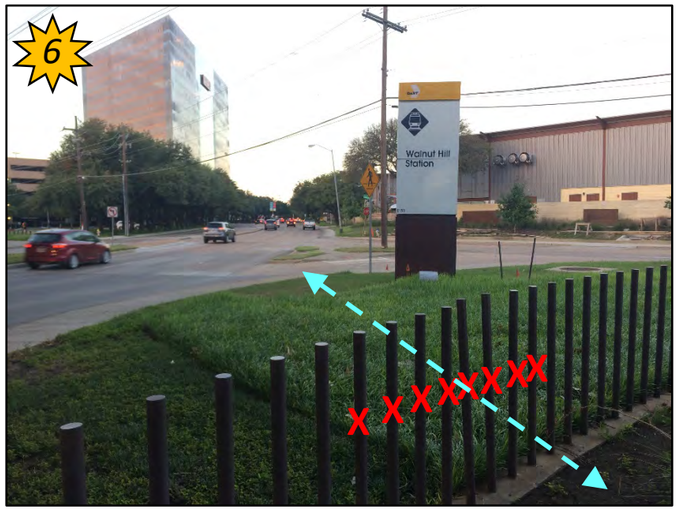
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



R5-1

Not for Construction



Remove segments of the existing fence at Locations 6-9 and add sidewalk to provide more direct connections between the sidewalk along Walnut Hill Lane and the stairs to the elevated train platform. Install median fence along Walnut Hill Lane (Location 10 at right & on next sheet) in conjunction with the improvements at Locations 6-9 to continue to discourage pedestrians from crossing Walnut Hill Lane mid-block near the rail bridge.

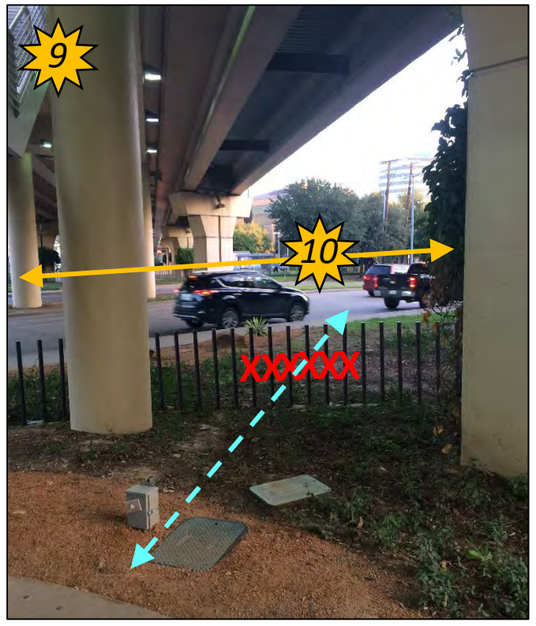
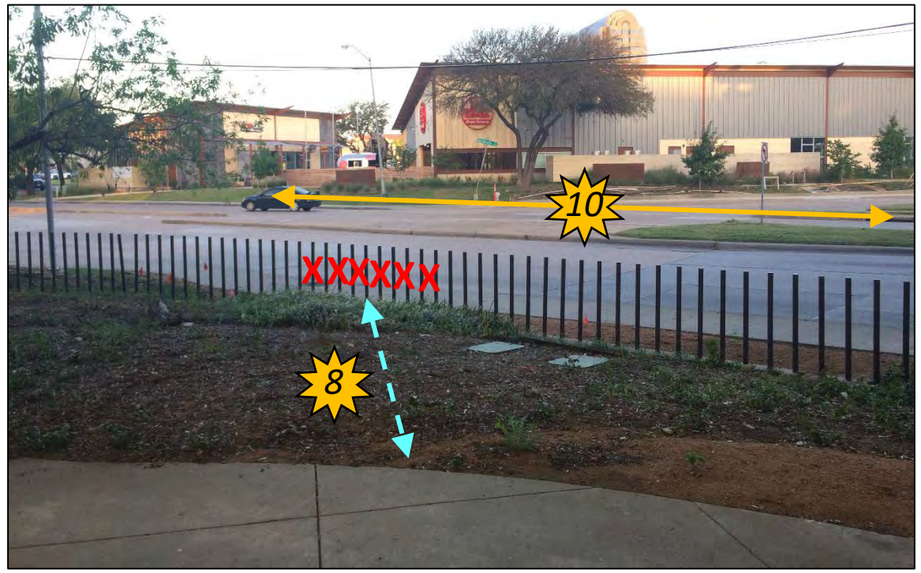


FIGURE 4A-1.3 **MAY 2020**

LEE ENGINEERING

30 YEARS OF EXCELLENCE

Walnut Hill Station Existing Conditions at Improvement Locations



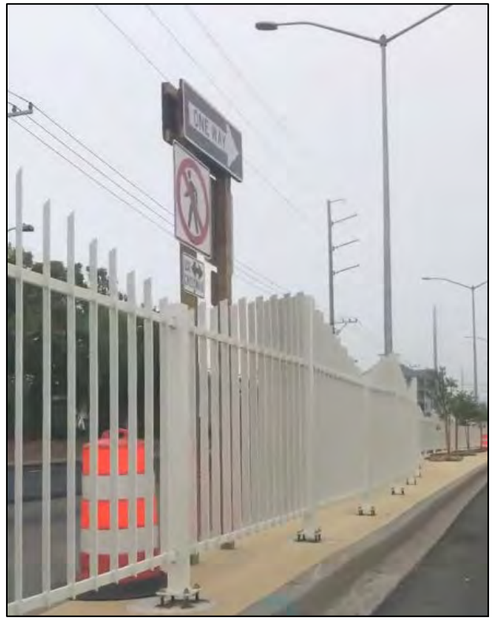
➢ Install median fence along Walnut Hill Lane in conjunction with the improvements at Locations 6-9 (see 8 at left & previous sheet) to discourage pedestrians from crossing Walnut Hill Lane mid-block near the rail bridge.

10

Image from Cochrane USA

➢ Examples of median fencing on arterials. (Note that the pictures shown are only examples for reference, and no specific vendors are endorsed.)

10



➢ Example of median fencing on arterial. (Note that the picture shown is only an example for reference, and no specific vendors are endorsed).

Image from Seagull Concrete and Fence, Ocean City, MD. https://www.facebook.com/SeagullFenceConcreteLLC/videos/1749627818436692/

10

➢ Median fencing recently installed by TxDOT on Lancaster Avenue between Sargent Ave and Oakland Blvd in Fort Worth.

https://dfw.cbslocal.com/2019/07/26/txdot-installs-metal-fence-address-fort-worth-pedestrian-issue/

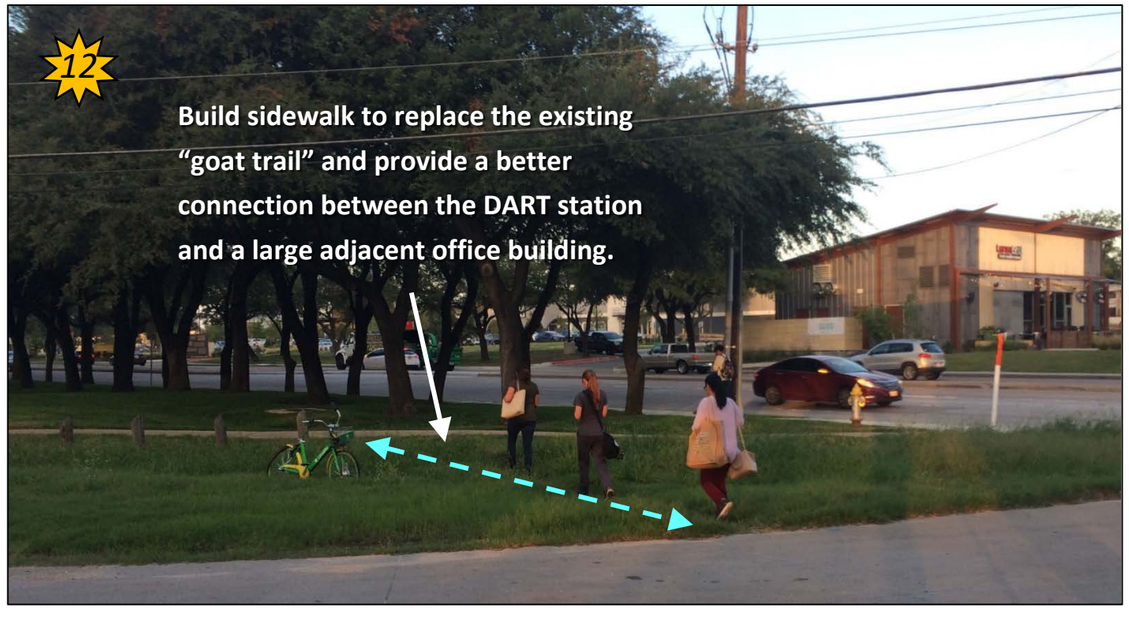
Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Walnut Hill Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

FIGURE 4A-1.5 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Park Lane Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Legend

Sidewalk/Crosswalk

Existing

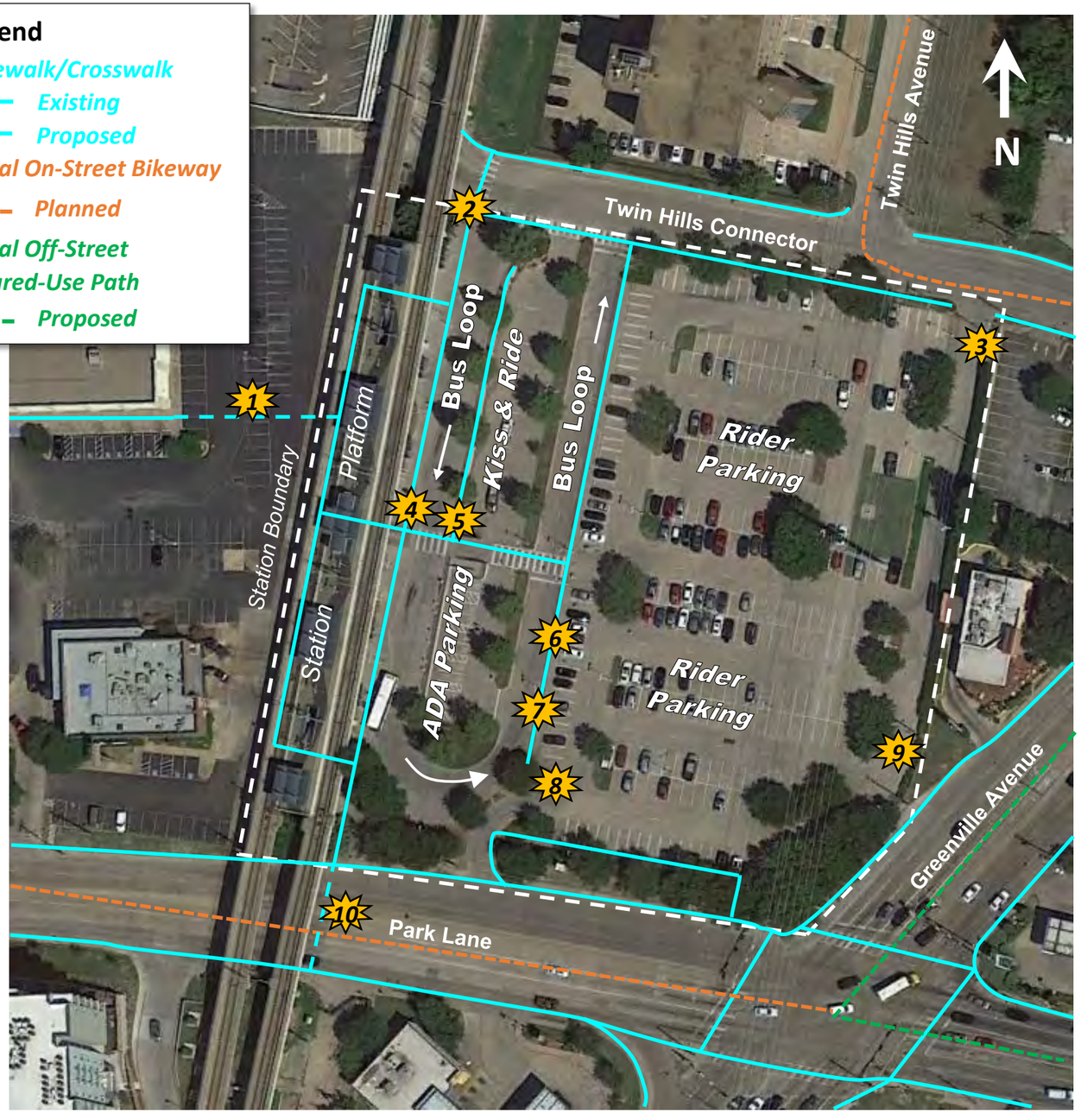
Proposed

Local On-Street Bikeway

Planned

Local Off-Street Shared-Use Path

Proposed



Number	Description
1	Create a pedestrian connection to the Caruth Plaza shopping center west of the station. Add a break in the existing station platform fencing and a crosswalk with signing across the parking lot to the sidewalk fronting the stores. Breaks in the bushes next to the fencing indicate existing demand.
2	Update "DO NOT ENTER" signs to meet MUTCD standards.
3	Replace dashed white pavement marking on driveway at east side of DART property with double yellow line. Dashed white lines incorrectly imply one-way traffic flow (contrary to existing signs directing drivers to enter here) that could result in hazardous conditions for both drivers and pedestrians.
4-5	Update pedestrian warning signs to meet MUTCD standards. The existing signs have the wrong panel shape, and do not have supplemental arrow plaques as required to meet MUTCD standards. Also, the sign at Location 3 (right-hand sign as facing southbound bus loop traffic) should be relocated closer to the crosswalk.
6	Update Speed Limit sign to meet MUTCD standards.
7	Update "ONE WAY" sign to meet MUTCD standards.
8	Update "DO NOT ENTER" signs to meet MUTCD standards.
9	Update Speed Limit sign to meet MUTCD standards.
10	Consider, as a long-term solution, constructing a pedestrian bridge over Park Lane from the elevated station platform for increased safety and convenience of riders traveling to and from the south. A large apartment building is located closer to the station on the south side of Park Lane. Pedestrians were observed crossing Park Lane mid-block under the bridge at this location, which is about 300 feet from the signalized crosswalk at Greenville Avenue to the east and 500 feet from the signalized crosswalk at the Caruth Plaza shopping center entrance to the west. As an interim measure, install a crosswalk and pedestrian hybrid beacon on Park Lane near the rail crossing and coordinate with the adjacent signals for a two-stage pedestrian crossing. This improvement will strengthen the connection to the existing employment and recreational facilities south and west of the station. A taper transitioning the number of westbound lanes from three to two exists at this location. The third lane could instead be dropped at the right turn entrance to the DART parking lot to create more space for a median pedestrian refuge. (Cost estimate provided for interim crosswalk/pedestrian hybrid beacon option).

DRAFT – Not for Construction

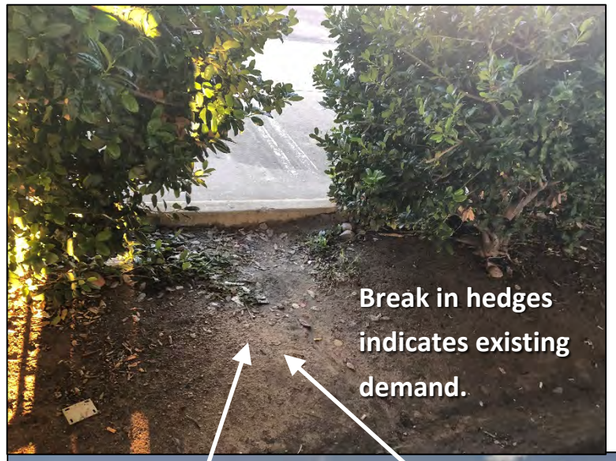
FIGURE 4B-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Park Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



R5-1

DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Park Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Replace non-standard signs with W11-2 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

The right-hand sign should also be relocated closer to the crosswalk.

W11-2
W16-7P

Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.

R2-1

R6-1

R6-2

Replace non-standard sign with R6-1 or R6-2 sign from MUTCD, which are used to indicate streets or roadways upon which vehicular traffic is allowed to travel in one direction only.

DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Park Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R2-1

Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.

DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Park Lane Station Existing Conditions at Improvement Locations

Install a crosswalk and pedestrian hybrid beacon on Park Lane near the rail crossing and coordinate with the adjacent signals for a two-stage pedestrian crossing. This improvement will strengthen the connection to the existing employment and recreational facilities south and west of the station.

For long term improvement, construct a pedestrian bridge over Park Lane from the elevated station platform for increased safety and convenience of riders traveling to and from the south.

3.1.13 Lovers Lane Station (on DART Property)

Figure 4C-1.1 on page 57 identifies six improvements recommended at Lovers Lane Station on DART property. Figures 4C-1.2 and 4C-1.3 on pages 58-59 illustrate existing conditions at the six improvement locations. Since U.S. 75 abuts the western edge of the station property, bicycle and pedestrian access is only available from the north, south, and east.

To the west, bent fences indicate motorists using the U.S. 75 northbound frontage road as a drop-off/pick up location. Adding landscaping adjacent to the existing fences is suggested to discourage this behavior and encourage loading and unloading at the designated location at the west end of Milton St.

To the north, a worn path in the grass indicates demand for a diagonal sidewalk under the rail overpass to connect the intersection of U.S. 75 and Lovers Ln more directly with the sidewalk south to the station.

The existing sidewalk along the south side of Milton St ends abruptly a short distance east of the station. DART should coordinate with the adjacent property owner and/or the City of Dallas to build sidewalk and crosswalks across the existing business driveway at this location.

Other recommended improvements include updating signs to meet MUTCD standards and adjusting the location of a bus stop shelter to provide adequate clearance for wheelchair users to pass. Refer to the figures for additional details.

The total OPCC for the DART improvements is approximately $95,000. Of this total, approximately $11,000 is estimated for Improvement 4C-LL-ST-04 to fill the City/private property gap on the south side of Milton St. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.14 Mockingbird Station (on DART Property)

Figure 4D-1.1 on page 60 identifies 30 improvements recommended at Mockingbird Station on DART property. Figure 4D-1.2 on page 61 lists the improvements in tablular format. Figures 4D-1.3 through 4D-1.11 on pages 62-70 illustrate existing conditions at the 30 improvement locations.

The station is very well connected by sidewalks and trails to the surrounding area. With a large rider parking lot and multiple roadways circulating throughout the site, opportunities to improve access for bicyclists and pedestrians still abound.

The recommended improvements include adding or upgrading signing for MUTCD compliance and enhanced pedestrian visibility, as well as:

- Adding sidewalk for a waiting area for the bus stop on Worcola St at the southeast corner of the Park & Ride lot (location 4D-MB-ST-03 on Figures 4D-1.1 to 4D-1.3 on pages 60-62).
- Installing bike parking near the shared use trail at the bottom of the stairs below the station platform (location 4D-MB-ST-05 on Figures 4D-1.1, 4D-1.2 and 4D-1.4 on pages 60, 61 & 63).
- Reconstructing and upgrading pedestrian ramps with accessible slopes and detectable warning surfaces (locations 4D-MB-ST-18, 20, 21 & 30 on Figures 4D-1.1, 4D-1.2, 4D-1.8 and 4D-1.11 on pages 60, 61, 67 and 70).
- Providing parking bumpers and trimming vegetation to prevent parked cars from encroaching too far over the sidewalk leading between the station and points to the southeast through the Park & Ride lot (location 4D-MB-ST-19 on Figures 4D-1.1, 4D-1.2 and 4D-1.8 on pages 60, 61 and 67).
- Installing pedestrian lighting for an area where tree cover makes for dark nighttime conditions (location 4D-MB-ST-22 in Figures 4D-1.1, 4D-1.2 and 4D-1.9 on pages 60, 61 & 68).
- Fixing trip hazards and building short segments of new sidewalk where worn paths in the grass indicate existing pedestrian demand (locations 4D-MB-ST-26, 28 and 29 in Figures 4D-1.1, 4D-1.2, 4D-1.10 and 4D-1.11 on pages 60, 61 and 68).

Refer to the figures on pages 60-70 for additional details.

The total OPCC for the DART improvements is approximately $110,000. This does not include the addition of detectable warning surfaces to pedestrian ramps where missing, since these locations were numerous and not inventoried. Some improvements may need to be coordinated with adjacent property owners and/or the City of Dallas. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Lovers Lane Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Number	Description
1	Add sidewalk under U.S. 75 bridge at Lovers Lane intersection. A worn path in the grass shows existing demand here. Lighting and security cameras may need to be added as well.
2	Update “DO NOT ENTER” signs to meet MUTCD standards.
3	The bus shelter location and/or the curb line need to be adjusted to provide a minimum sidewalk width of 4 feet for a wheelchair to be able to pass. Only 2.5 feet of sidewalk width is existing.
4	Build new sidewalk to connect the existing sidewalk to the DART station platform.
5-6	Add landscaping adjacent to existing fences to discourage motorists from dropping off passengers from the U.S. 75 frontage road. Bent fences show evidence of this behavior.

DRAFT – Not for Construction

FIGURE 4C-1.1 NOT TO SCALE **MAY 2020**

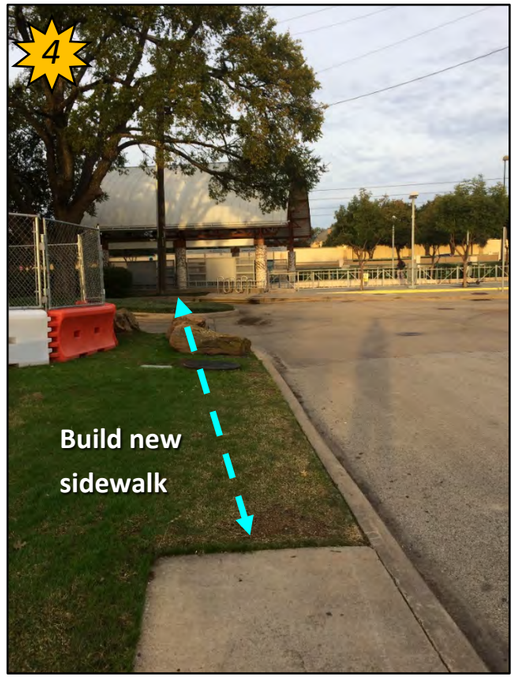
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Lovers Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R5-1



DRAFT – Not for Construction

FIGURE 4C-1.2 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Lovers Lane Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Add landscaping to discourage passenger drop-offs from U.S. 75 frontage road travel lanes. Bent fences indicate existing passenger crossings from Locations 5 and 6.

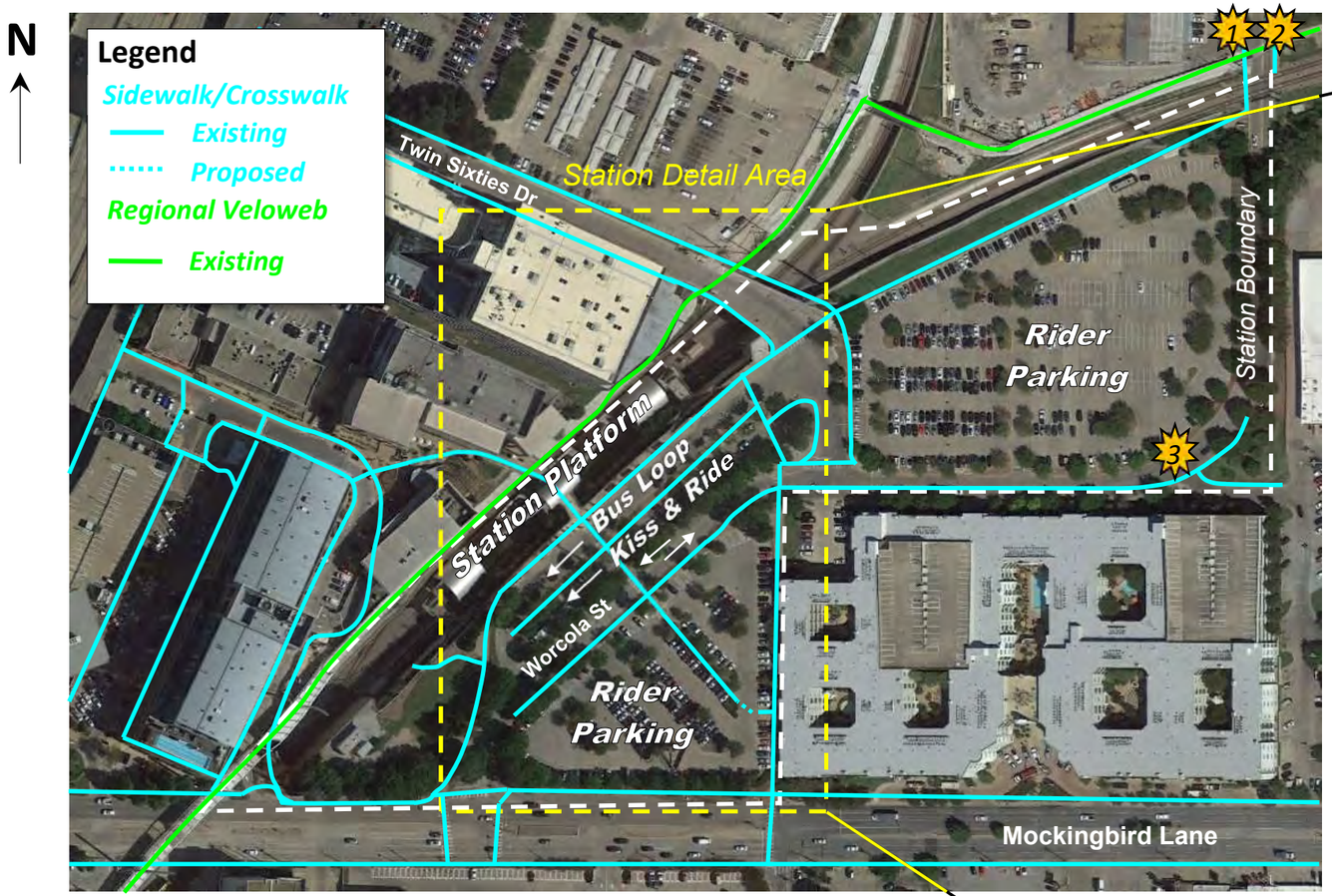
DRAFT – Not for Construction

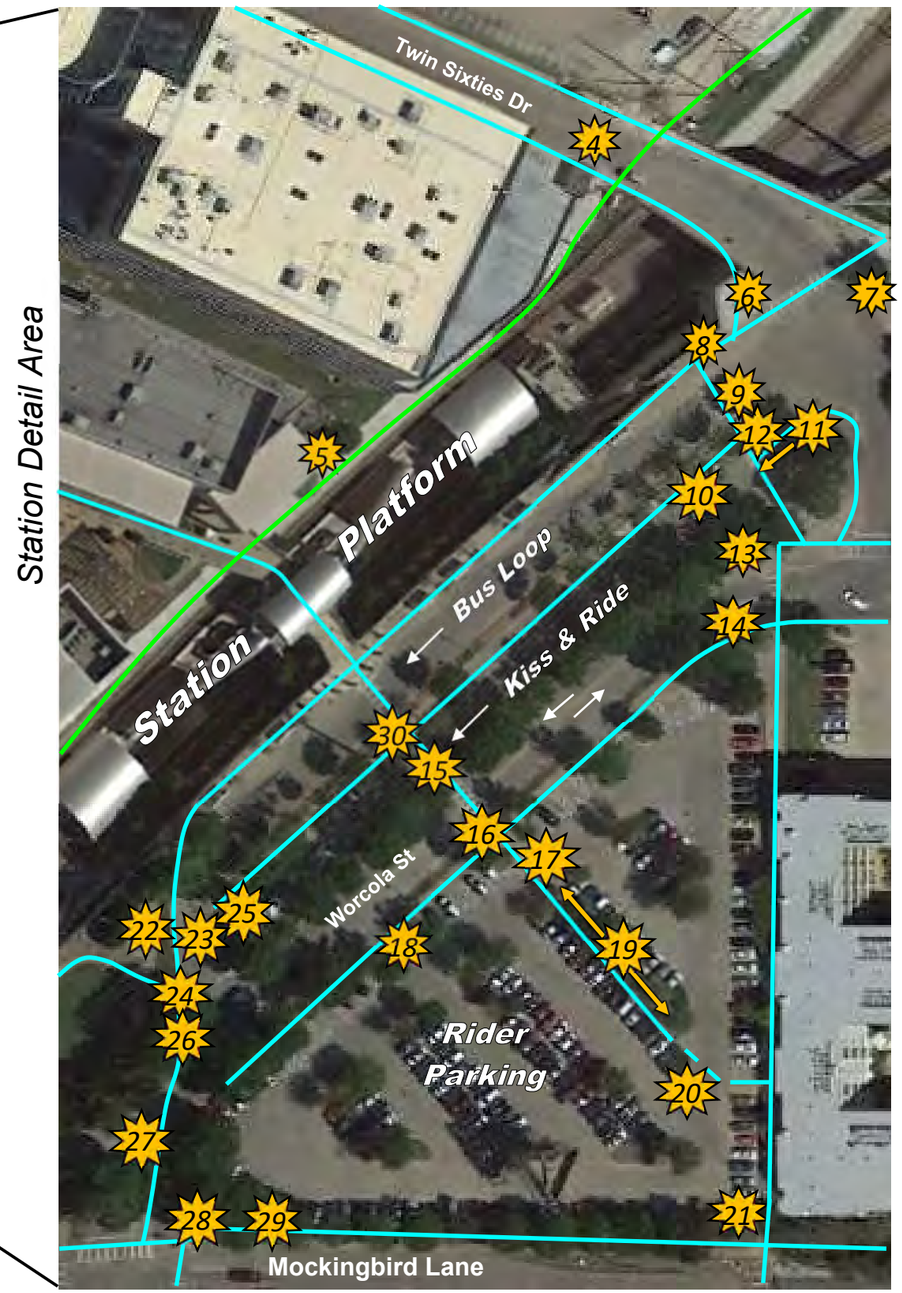
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections





See next sheet for improvements table.

DRAFT – Not for Construction

FIGURE 4D-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Recommended Improvements (Continued)

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Number	Description	Number	Description
1	Move “Yield To Pedestrian Sign” to the yield line. Add pedestrian crossing warning signs at crosswalk.	***17***	Add pedestrian crossing warning signs at crosswalk.
2	Mount “Bike Route” sign plaque and “STOP Sign” plaque on separate posts as per MUTCD.	***18***	Reconstruct pedestrian ramps to have shallower slope compliant with ADA. The existing ramps are too steep for use by manual wheelchair users. ADA parking southwest of this driveway may be under-utilized as a result of inadequate ramps.
3	Build sidewalk pad at bus stop.		
4	Add pedestrian signs at crosswalk.		
5	Add a new bike parking area near the trail at the bottom of the stairs.	***19***	Trim hedges and add parking bumpers to provide a minimum 4 feet width for wheelchairs. Only 3.5 feet width existing.
6-7	Add a diagonal downward pointing arrow (W16-7P) plaque mounted to the existing pedestrian sign posts.	***20***	Add marked crosswalk with pedestrian warning signs and detectable warning surfaces for pedestrian ramps.
8-9	Update “DO NOT ENTER” signs to meet MUTCD standards. Mount left-hand pedestrian warning sign on a separate post and provide a new pedestrian warning sign on the right-hand side. Add diagonal downward arrow (W16-7P) supplemental plaques below the pedestrian crossing warning signs.	***21***	Relocate ramp to connect to existing crosswalk.
		22	Add pedestrian lighting for area where tree cover makes for dark nighttime conditions.
10	Remove non-standard “ONE WAY” sign that is not necessary.	***23***	Update “DO NOT ENTER” signs to meet MUTCD standards. Remove “Except Buses” plaque.
11-12	Relocate pedestrian crossing sign #11 closer to crosswalk. Add diagonal downward arrow (W16-7P) supplemental plaques below the pedestrian crossing warning signs.	***24***	Add “DO NOT ENTER” sign.
13	Update pedestrian crossing sign to meet MUTCD standards. Add diagonal downward arrow (W16-7P) supplemental plaque below the pedestrian crossing warning sign.	***25***	Enlarge the size of “STOP” sign to obscure the shape of signs mounted on the other side.
14	The current STOP sign facing eastbound traffic is not visible for a sufficient distance around the horizontal curve. Add “Stop Ahead” (W3-1) sign ahead of “STOP” sign and the preceding curve. Remove pedestrian sign at crosswalk facing eastbound approach since it competes for attention with more important stop sign message. Add “ALL-WAY” (R1-3P) plaques below existing STOP signs. Add a new STOP sign with R1-3P plaque facing the northbound apartment driveway approach to this intersection.	***26***	Fix trip hazard.
		27	Replace faded “DO NOT ENTER” sign.
		28	Build sidewalk at the existing worn path in grass.
		29	Fix trip hazard where sidewalk has settled around storm drain inlet.
15-16	Add diagonal downward pointing arrow (W16-7P) supplemental plaques below the pedestrian crossing warning signs. Repair the southbound LED lights in sign border (currently not functioning), repair pedestrian detection, and/or trim trees for more solar power.	***30***	Add detectable warning surfaces to pedestrian ramps where missing. The location shown is one example. Several others exist throughout the station area.

DRAFT – Not for Construction

FIGURE 4D-1.2 NOT TO SCALE **MAY 2020**

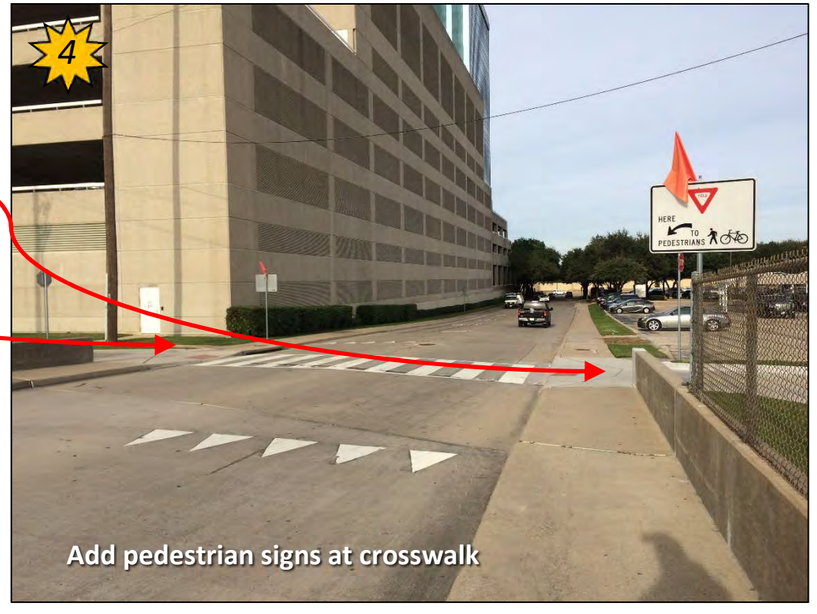
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

W11-2
W16-7P



*** Sign should be retroreflective for increased nighttime visibility. The sign panel shall be diamond-shaped. Uniform signs reinforce driver respect as legitimate traffic control devices.**

DRAFT – Not for Construction

FIGURE 4D-1.3 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Add a diagonal downward pointing arrow (W16-7P) plaque mounted to the existing pedestrian sign posts.

W16-7P

DRAFT – Not for Construction

FIGURE 4D-1.4 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

EXCEPT BUSES

R5-1

W11-2
W16-7P

*** Signs should be retroreflective for increased nighttime visibility. The sign panel shall be diamond-shaped. Uniform signs reinforce driver respect as legitimate traffic control devices.**

DRAFT – Not for Construction

FIGURE 4D-1.5 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

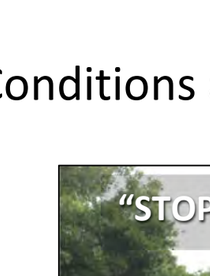
Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

W3-1

R1-3P



W11-2
W16-7P

Replace non-standard sign with W11-2 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices. Add W16-7P panel as required.

Add a new STOP sign with R1-3P "ALL-WAY" plaque facing the northbound apartment driveway approach to this intersection.

DRAFT – Not for Construction

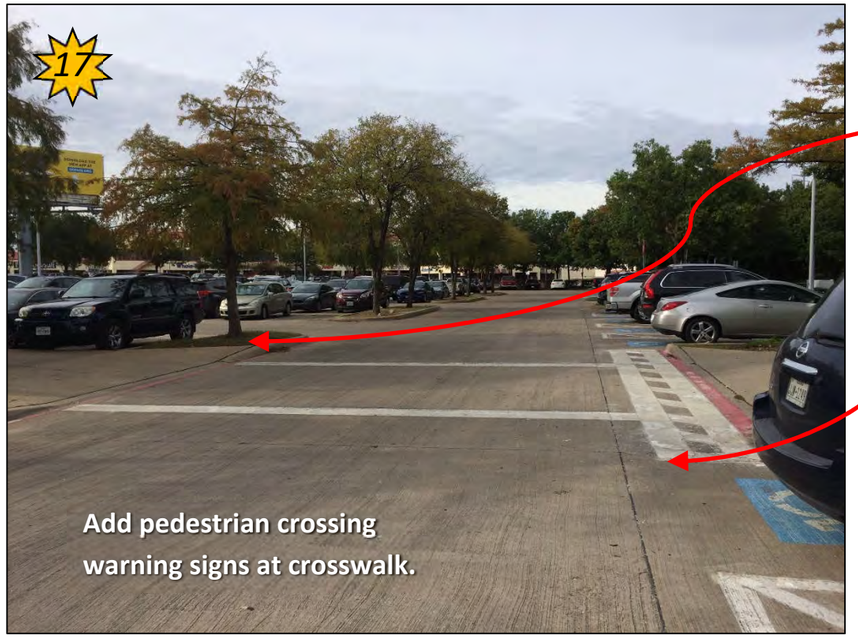
FIGURE 4D-1.6 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



W11-2
W16-7P

*** Signs should be retroreflective for increased nighttime visibility. The sign panel shall be diamond-shaped. Uniform signs reinforce driver respect as legitimate traffic control devices.**

W11-2
W16-7P

Add diagonal downward pointing arrow (W16-7P) supplemental plaques below the pedestrian crossing warning signs. Repair the southbound LED lights in sign border (currently not functioning), repair pedestrian detection, and/or trim trees for more solar power.

DRAFT – Not for Construction

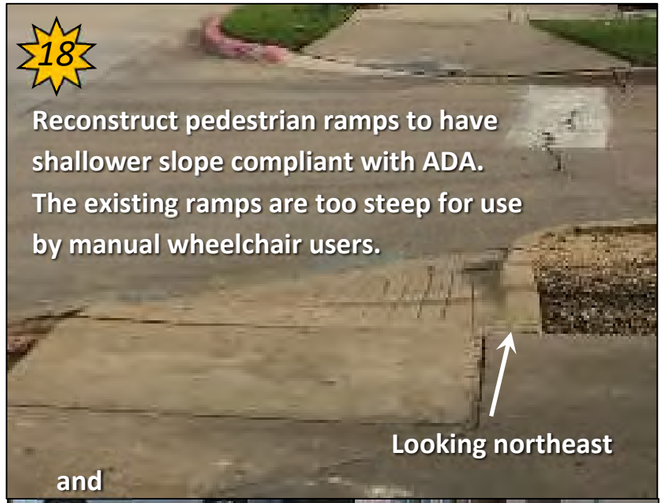
FIGURE 4D-1.7 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

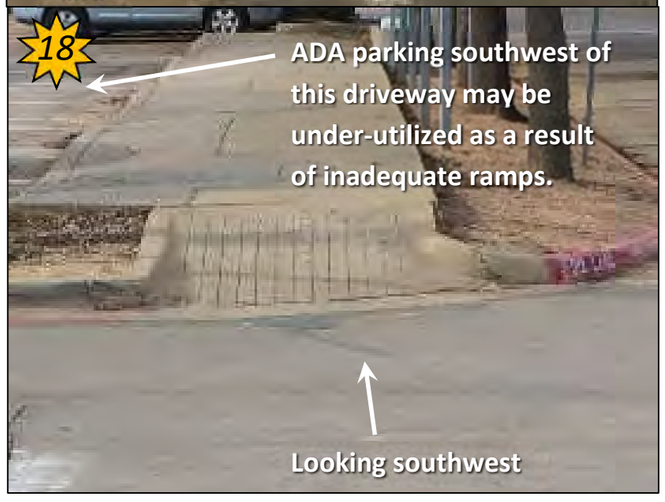
Mockingbird Station Existing Conditions at Improvement Locations

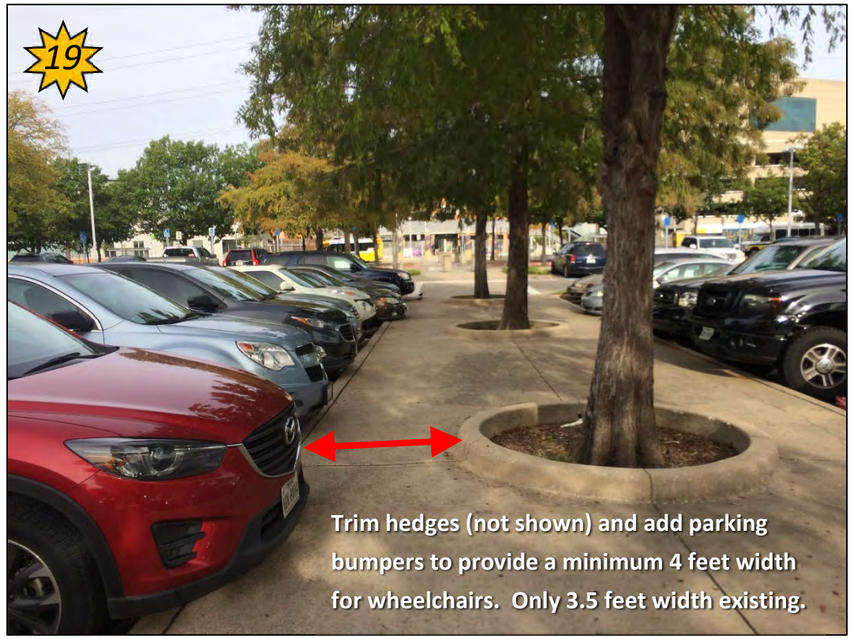
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



and





DRAFT – Not for Construction

FIGURE 4D-1.8 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R5-1

DRAFT – Not for Construction

FIGURE 4D-1.9 NOT TO SCALE **MAY 2020**

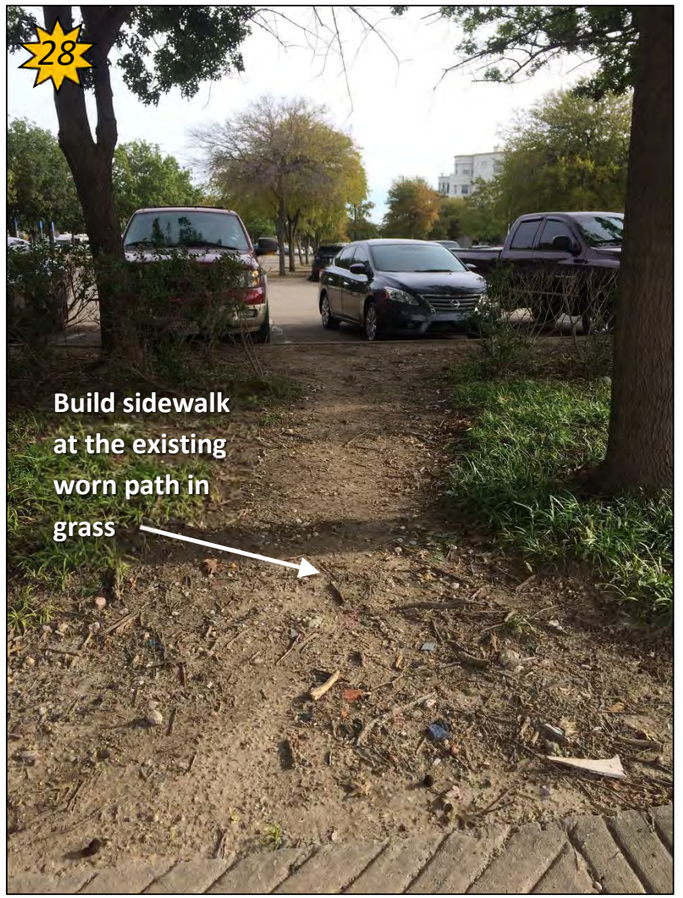
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R5-1

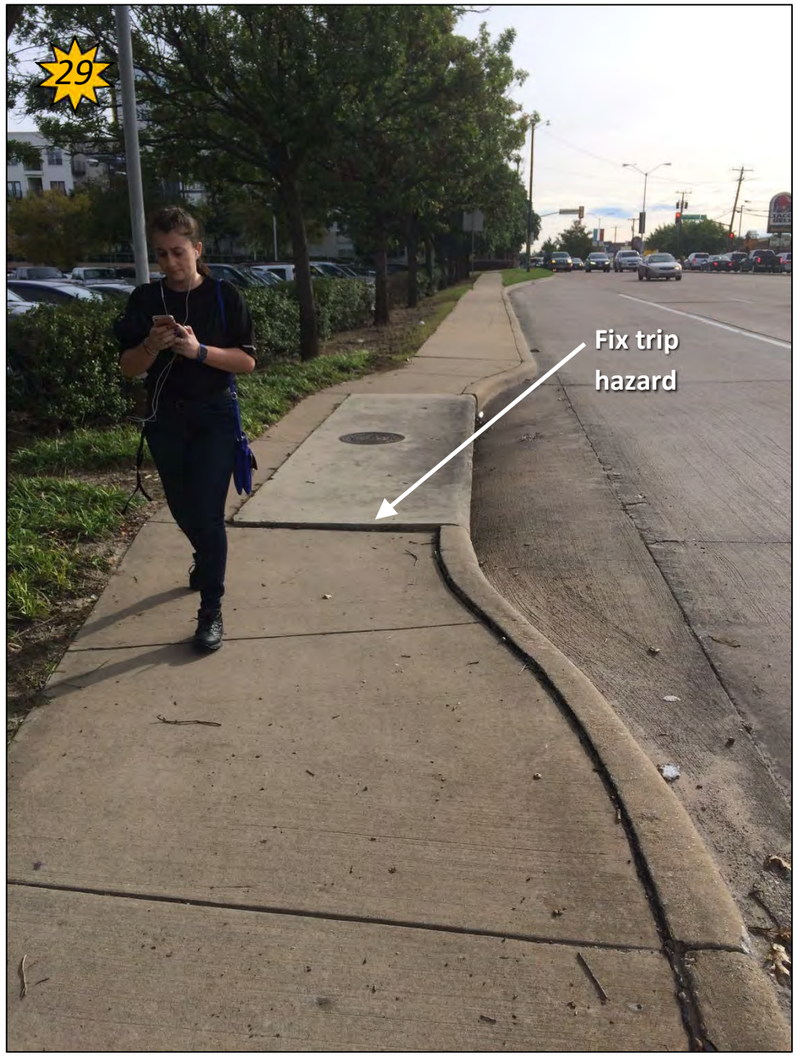


DRAFT – Not for Construction

FIGURE 4D-1.10 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Mockingbird Station Existing Conditions at Improvement Locations



Add detectable warning surfaces to pedestrian ramps where missing. The above location is one example. Several others exist throughout the station area.

DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.15 LBJ Skillman Station (on DART Property)

Figure 4E-1.1 on page 72 identifies eight improvements recommended at LBJ Skillman Station on DART property. Figures 4E-1.2 and 4E-1.3 on pages 73-74 illustrate existing conditions at the eight improvement locations.

The recommended improvements include:

- Building new ramps and crosswalks.
- Updating signing to MUTCD standards.
- Installing covered bike parking near the southeast corner of the train platform to better accommodate bicyclists to and from the south.

Refer to the figures for additional details.

DART staff indicated that the vacant area north of the rail line has been proposed for development. However, further details about the proposals are not known. Two worn paths in the grass across this vacant area connecting the Park & Ride lot to Adleta Blvd are evident in the aerial photo on the left side of Figure 4E-1.1 on page 72. As these properties develop, DART should ensure during the plan review process that sidewalks are built to allow reasonably direct access to continue for residents of the neighborhoods to the north along Adleta Blvd and beyond.

Since these new sidewalks will likely be off DART property in the future after development, they were inventoried with improvements for the half-mile area, and their costs are estimated with other half-mile improvements in Appendix J. See details for half-mile area improvements 4E-LS-SW-35 and 4E-LS-SW-37 in Figure 4E-2 on page 134 and the associated entries in Appendix J, which shows the tentatively estimated cost of these sidewalk links at $42,300 and $14,600, respectively.

The total OPCC for the DART improvements is approximately $40,000. This excludes costs for improvements 4E-LS-SW-35 and 4E-LS-SW-37 described in the prevoius paragraph, which are assumed to be borne by either a developer or the City of Dallas. If development will be delayed, DART should consider constructing the sidewalks sooner to provide dedicated, accessible routes where there is clearly existing demand. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.16 White Rock Station (on DART Property)

Figure 4F-1.1 on page 75 identifies eight improvements recommended at White Rock Station on DART property. Figures 4F-1.2 and 4F-1.3 on pages 76-77 illustrate existing conditions at the eight improvement locations.

Access to the White Rock Station is relatively straightforward for pedestrians and bicyclists arriving from the south east, and west. However, the residents along Walling Ln and other parts of the neighborhood northwest of the station must exit their neighborhood and travel along Northwest Highway to reach the station, adding up to a half mile to their trip.

Walling Cir connects to Walling Ln and dead ends at the fence surrounding the DART property. DART should consider working together with the City of Dallas to provide a pedestrian break in the fencing to connect to existing sidewalk on the east side of Walling Cir. The City may also decide to build sidewalk along the west side of Walling Cir (see improvement 4F-WR-SW-40 on Figure 4F-2 on page 136.

While this recommended improvement would shorten the walking distance between the station and many homes, care should be taken not to incentivize park and ride patrons from parking along Walling Ln or Walling Cir, since this may be closer than available spaces in the station's rider parking lot. The City may therefore need to consider implementing a parking management program to restrict parking along some portions of Walling Ln unless a residential parking permit is displayed in the vehicle.

Other recommended improvements include:

- Adding and improving pedestrian ramps for better accessibility along the main sidewalk between the rider parking lot and the station platform, as well as at the station entrance intersection.
- Updating signing to MUTCD standards.

Refer to the figures for additional details.

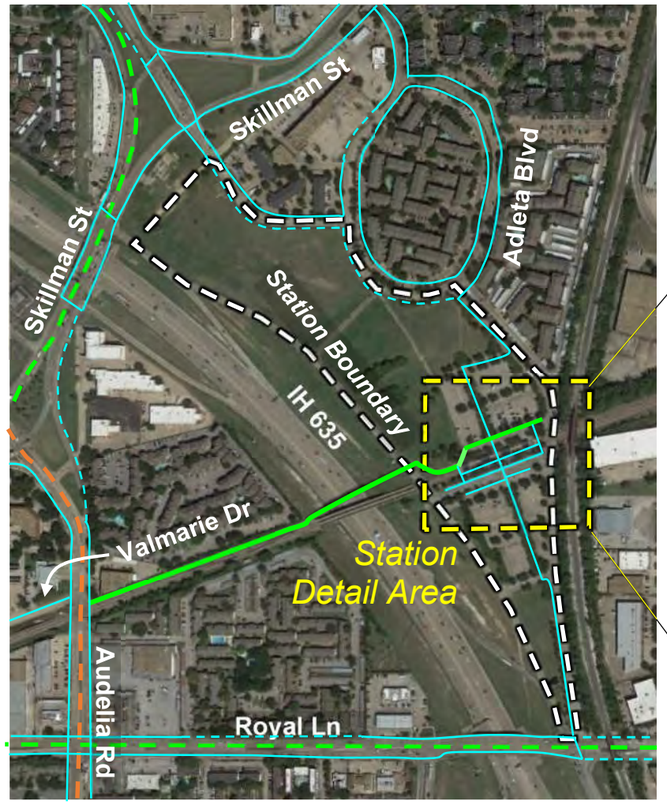
The total OPCC for the DART improvements is approximately $59,000. This excludes costs for improvement 4F-WR-SW-40, and includes only improvements shown within DART right-of-way. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

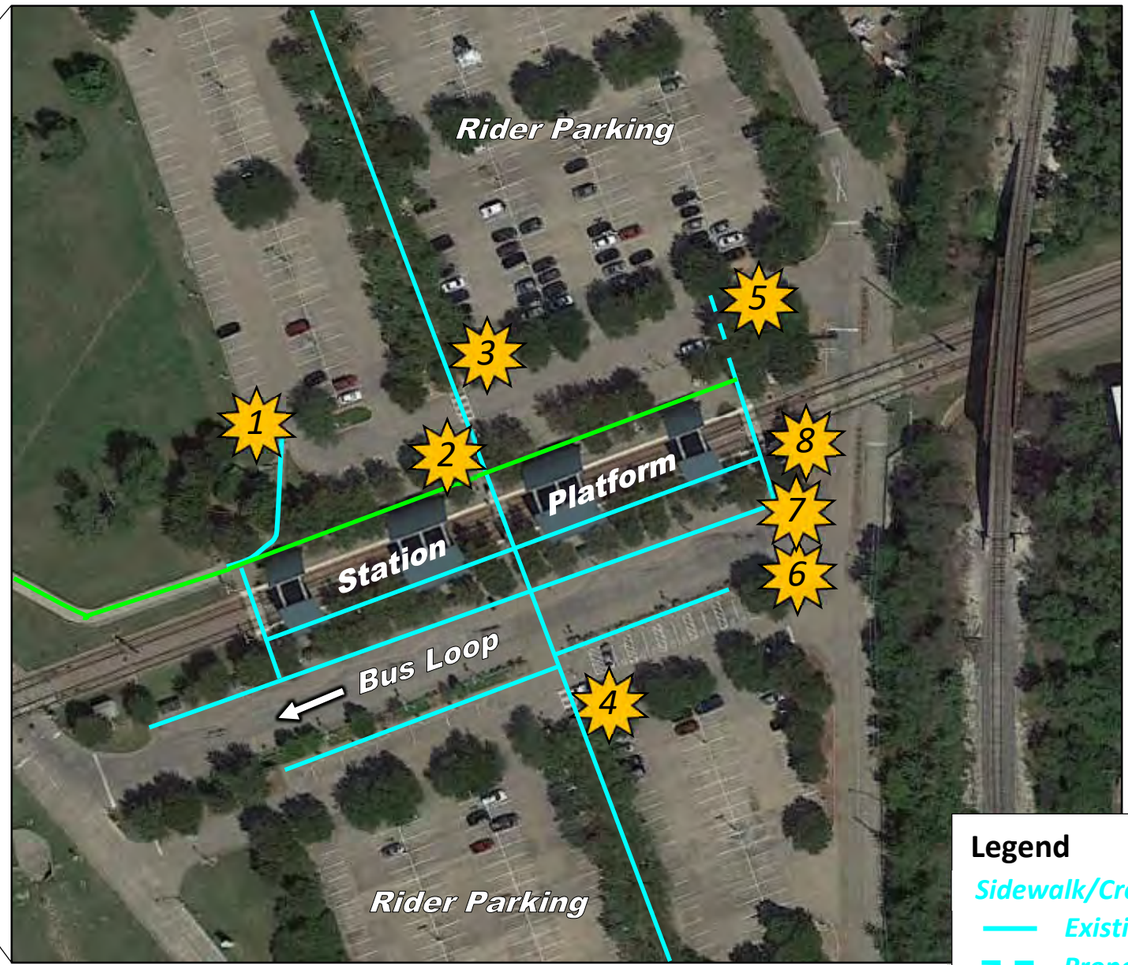
LBJ Skillman Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Location:





Number	Description
1	Build new ADA ramp.
2-4	Update pedestrian warning signs to meet MUTCD standards. The existing signs are fading, have the wrong panel shape, and do not have supplemental arrow plaques as required to meet MUTCD standards.
5	Build new crosswalk and ramps to connect the DART station platform and the northern parking lot.
6-7	Update “DO NOT ENTER” signs to meet MUTCD standards.
8	Add new bike parking near the open space at the southeast corner near the train platform to accommodate bicyclist from south.

Legend

Sidewalk/Crosswalk

Existing

Proposed

City of Dallas On-Street Bikeways

Proposed

City of Dallas Shared-Use Paths

Existing

Proposed

DRAFT – Not for Construction

FIGURE 4E-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

LBJ Skillman Station Existing Conditions and Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Replace non-standard signs with W11-2 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

W11-2
W16-7P

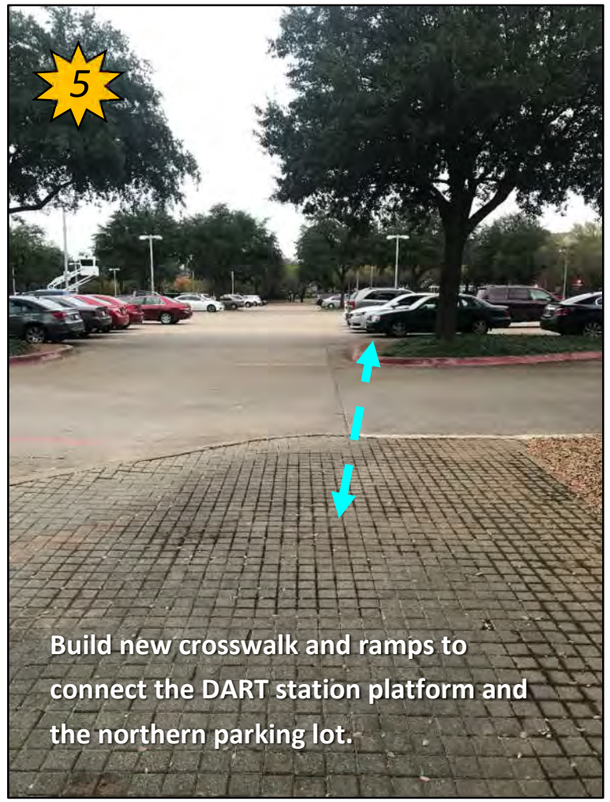
DRAFT – Not for Construction

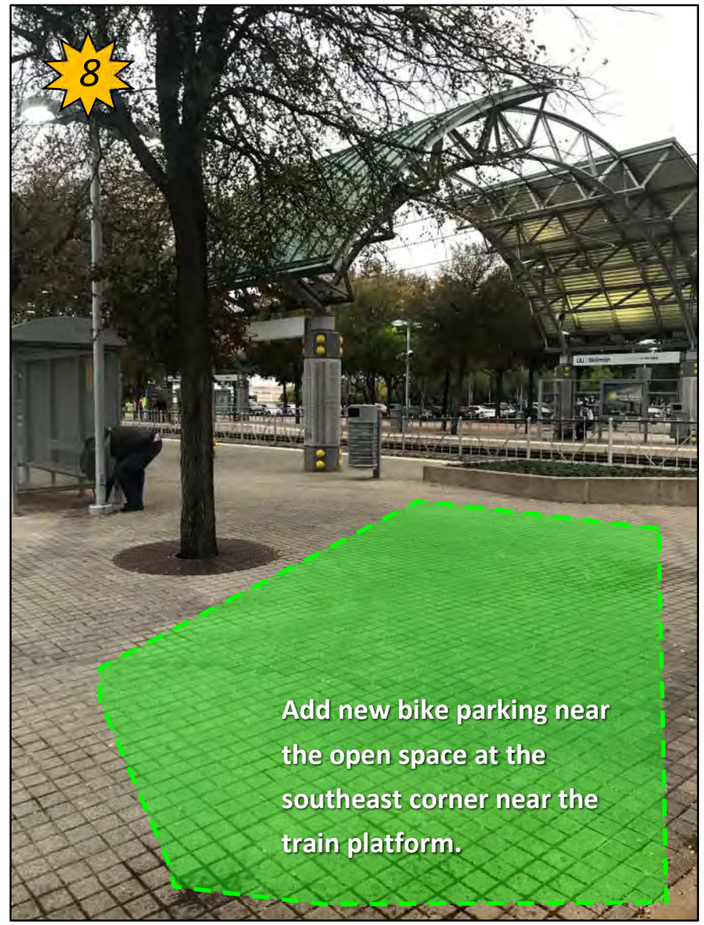
FIGURE 4E-1.2 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

LBJ Skillman Station Existing Conditions and Improvements

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections





R5-1

FIGURE 4E-1.3 NOT TO SCALE **MAY 2020**

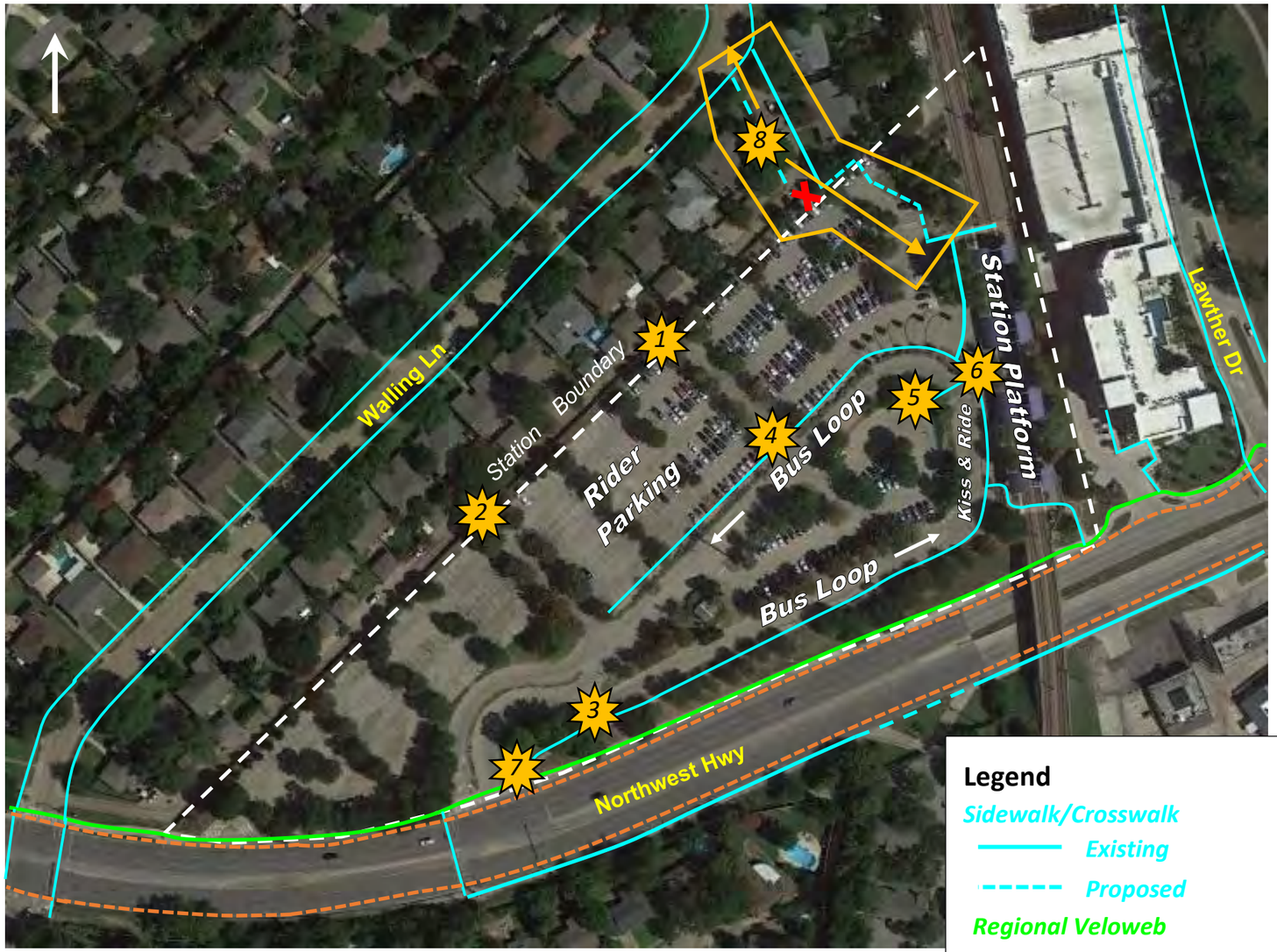
DRAFT – Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

White Rock Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1-2	Update speed limit signs to meet MUTCD standards.
3	Update “DO NOT ENTER” signs to meet MUTCD standards.
4	Add pedestrian ramps to existing sidewalk at parking aisle intersection. Move stop bar and stop sign north behind unmarked crosswalk, then provide crosswalk markings to discourage drivers from stopping across pedestrian path.
5-6	Add detectable warning surfaces to the pedestrian ramps at the crosswalk connecting the parking lot and the station platform.
7	Pedestrian ramps need to be reconstructed parallel to the crosswalk. Move the pedestrian warning sign closer to the crosswalk, and add diagonal arrow signs below it.
8	Remove the fence at the north end of the station lot and provide a pedestrian connection to Walling Circle and Walling Lane for neighborhood residents. A parking management program may be needed to prevent non-neighborhood residents from parking on the streets.

Legend

Sidewalk/Crosswalk

Existing

Proposed

Regional Veloweb

Existing

Local On-Street Bikeway

Proposed

Not for Construction

FIGURE 4F-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

White Rock Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R2-1

Replace non-standard signs with R2-1 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.

R5-1

Replace non-standard sign with R5-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. The sign panel shall have all capital letters. Uniform signs reinforce driver respect as legitimate traffic control devices.

Update "DO NOT ENTER" signs to MUTCD standard with all CAPS lettering

Add pedestrian ramps to existing sidewalk. Move stop bar and stop sign north behind unmarked crosswalk and add crosswalk markings.

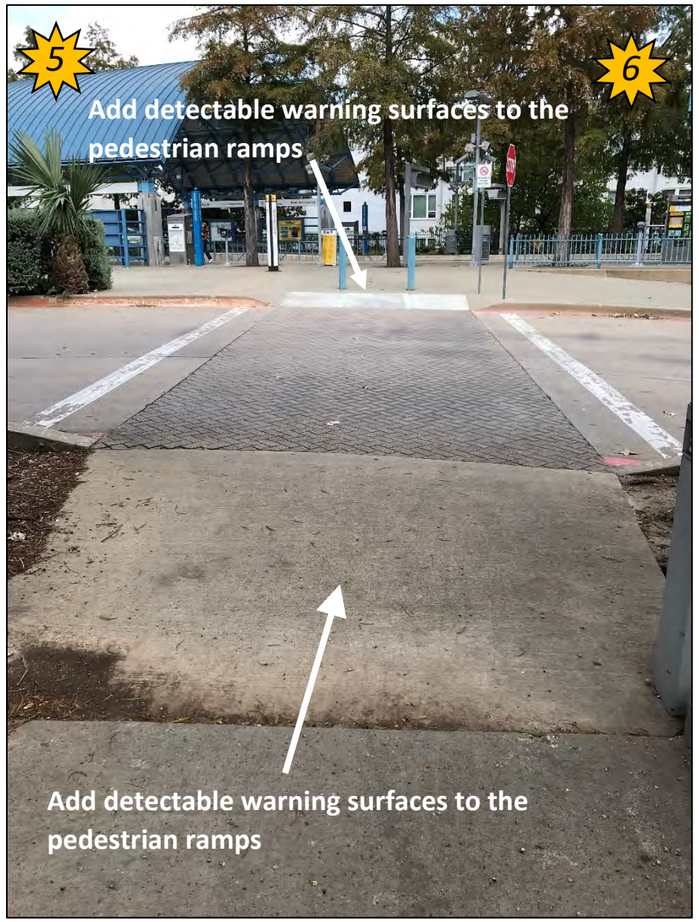
Not for Construction

LEE ENGINEERING 30 YEARS OF EXCELLENCE

White Rock Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

FIGURE 4F-1.3 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.17 Eighth & Corinth Station (on DART Property)

Figure 5A-1.1 on page 79 identifies eight improvements recommended at Eighth & Corinth Station on DART property. Figures 5A-1.2 and 5A-1.3 on pages 80-81 illustrate existing conditions at the eight improvement locations.

Multi-modal access to this station is generally good from all directions. However, DART and the City of Dallas should coordinate to make the existing crosswalk across Eighth St east of the station platform more visibile to motorists. This crosswalk is part of the Santa Fe Trestle Trail alignment that connects to the Trinity Skyline Trail and currently ends at Eighth & Corinth Station.

The recommended improvement is shown at location 5A-EC-ST-08 on Figure 5A-1.1 on page 79 and Figure 5A-1.3 on page 81. Add advance yield lines and "Yield Here to Pedestrians" signing 20 to 50 feet in advance of the crosswalk in each direction. This will improve visibility when a driver in one lane yields to pedestrians, potentially blocking the view of the pedestrian to drivers in the adjacent lane if yielding does not occur far enough in advance. Relocate the existing bus stop downstream of the crosswalk. Consider installing pushbutton-activated rectangular rapid flashing beacons (RRFB's) to the pedestrian warning signs. Upgrade other elements of signing on the approach as detailed in the figures.

Other recommended improvements include updating signing and crosswalk striping to MUTCD standards at other locations around the station property. Refer to the figures for additional details.

Note that the Santa Fe Trestle Trail alignment is proposed to continue to the southwest of the station across Corinth Street Rd to Moore St, parallel to the DART Red Line tracks. These improvements just off DART station property are presumed to be the responsibility of the City of Dallas, so they are detailed in the half-mile area improvements illustrated in Figure 5A-2.1 on page 137. Refer to location 5A-EC-VW-V01, 5A-EC-VW-V02, and 5A-EC-CW-084 on that figure and in Appendix J for more details and cost information. Nevertheless, coordination between DART and the City will be required due to the proximity to DART right-of-way and the existing rail overpass over Corinth Street Rd.

The total OPCC for the DART improvements (excluding the Santa Fe Trestle Trail extension) is approximately $59,000. This includes costs for improvement 5A-EC-ST-08, since a portion of the improvements may be located within DART right-of-way. However, some cost sharing with the City of Dallas may be appropriate. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.18 Dallas Zoo Station (on DART Property)

Figure 5B-1.1 on page 82 identifies seven improvements recommended at Dallas Zoo Station on DART property. Figure 5B-1.2 on page 83 illustrates existing conditions at the seven improvement locations.

Sidewalk connections to and from the Dallas Zoo Station are generally good in each direction, though there are no connections to/from the Marsalis Ave sidewalks on the bridge overpassing Clarendon Dr. DART could consider adding stairway and/or elevator access to the sidewalk on the bridge above, which would shorten walking and biking trips to the station for some destinations to the northwest. However, further evaluation of stairway and elevator improvements were considered outside the scope of this study and are not included in the cost estimates.

DART should coordinate with the City of Dallas to improve the existing crosswalk across Clarendon Dr for better visibility. Add advance yield lines and "Yield Here to Pedestrians" signing 20 to 50 feet in advance of the crosswalk in each direction. This will improve visibility when a driver in one lane yields to pedestrians, potentially blocking the view of the pedestrian to drivers in the adjacent lane if yielding does not occur far enough in advance. Other signs and pavement markings need to be added, and DART and the City should consider pedestrian-actuated Rectangular Rapid-Flashing Beacons (RRFB's) for better pedestrian visibility and driver yielding compliance.

Other recommended improvements include adding and updating signs and crosswalk striping to comply with MUTCD requirements. Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $73,000. This excludes any costs for future elevator or stairway access to the sidewalk on Marsalis Ave. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.19 Morrell Station (on DART Property)

Figure 5C-1.1 on page 84 identifies five improvements recommended at Morrell Station on DART property, as well as the existing conditions at improvement locations.

Multi-modal access to this station is generally good from all directions. However, DART and the City of Dallas should coordinate to install signed and marked crosswalks across Morrell Ave. Consideration should also be given to constructing median refuge islands to shorten the crossing distance and separate conflicts for crossing pedestrians. These improvements just off DART station property are presumed to be the responsibility of the City of Dallas, so they are detailed in the half-mile area improvements illustrated in Figure 5C-2.1 on page 142. Refer to location 5A-MO-CW-066, 5A-MO-CW-067, 5A-MO-CW-068, and 5A-MO-CW-069 on that figure and in Appendix J for more details and cost information. Nevertheless, coordination between DART and the City will be required due to the proximity to DART right-of-way

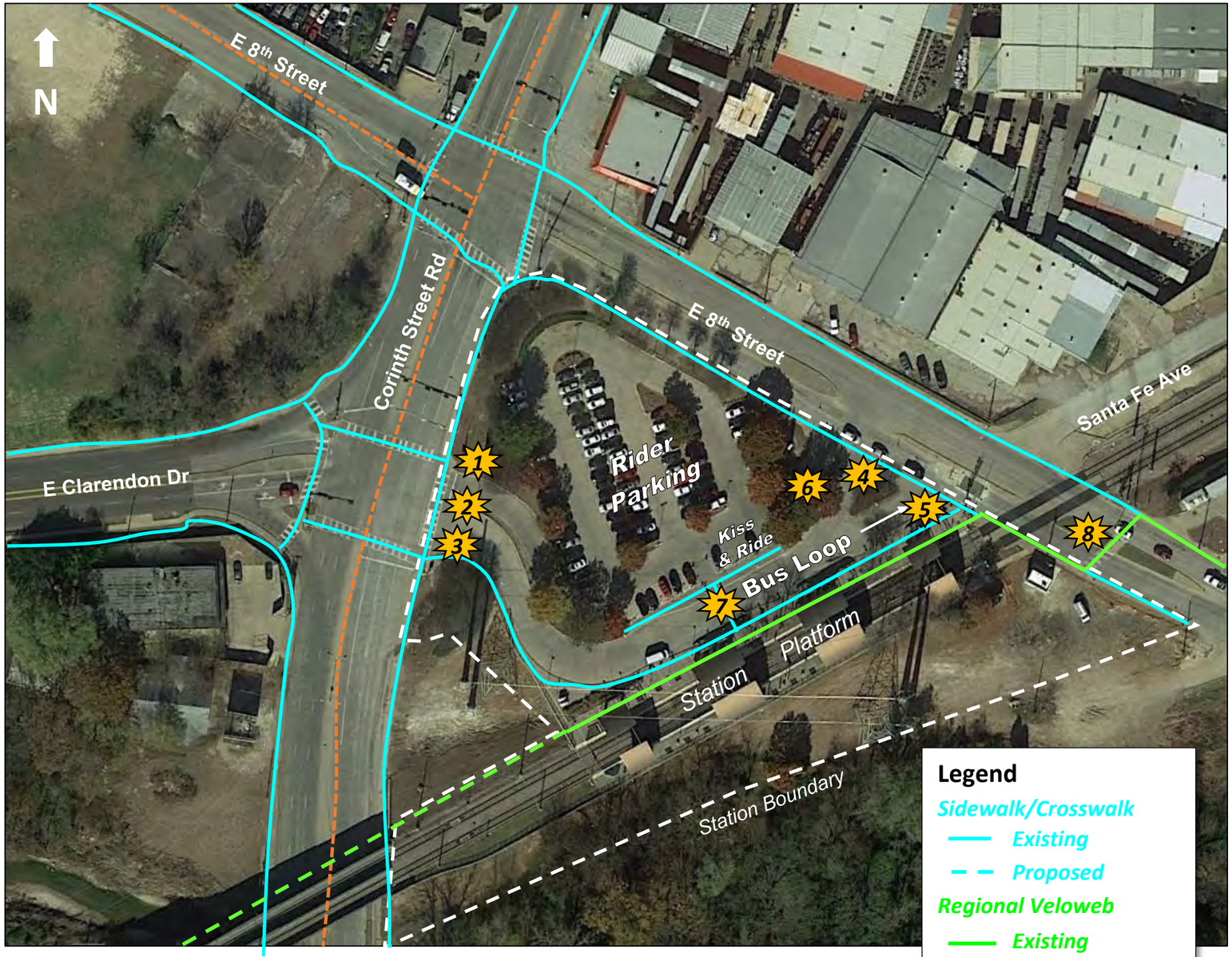
Other recommended improvements include minor signing changes and relocation of a sign out of the sidewalk near the southeast corner of the station. Refer to the figures for additional details.

The total OPCC for the DART improvements is approximately $2,000. This excludes costs for improvements 5C-MO-ST-03 and 5C-MO-ST-04, the crosswalks across Morrell Ave which are quantified together with off-site improvements and assumed to be the City of Dallas' cost responsibility. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

8th and Corinth Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1-5	Update "DO NOT ENTER" signs to meet MUTCD standards. Signs at Locations 1, 4, and 5 should be replaced with signs without the "Except Buses" message beneath, since they control driveways where buses should not enter either. Enlarge the size of "STOP" signs at Locations 4 and 5 to obscure the shape of signs mounted on the other side.
6	Update speed limit sign to meet MUTCD standards.
7	Add crosswalk striping parallel to and on either side of the decorative brick crosswalk to make it a high-visibility crosswalk and to properly define it as a legal crosswalk where pedestrians have the right-of-way.
8	Add advance yield lines and "Yield Here to Pedestrians" signing at the existing crosswalk across Eighth Street. Update pedestrian warning sign in eastbound direction to be fluorescent yellow with diagonal arrow panel pointing to crosswalk. Add pedestrian warning signs in the median refuge island. Relocate "Stop Here on Red" sign on westbound approach below new upstream "Yield Here to Pedestrians" sign. Prevent buses from stopping just upstream of the crosswalk. Consider pushbutton-activated rectangular rapid flashing beacons (RRFB's) attached to the pedestrian warning sign assemblies.

DRAFT – Not for Construction

FIGURE 5A-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

8th and Corinth Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

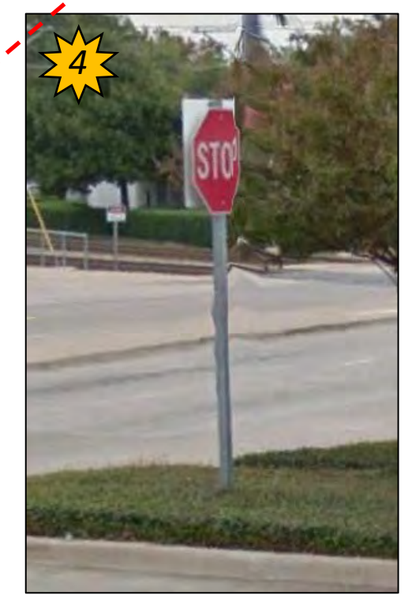
DART Red & Blue Line Corridors Last Mile Connections

Remove "Except Buses" message from Signs at 4 & 5 since no vehicles should enter the one-way bus loop from the wrong direction.

Remove "Except Buses" message from this sign since no vehicles should enter on the left side of the median here.

R5-1

Update "DO NOT ENTER" signs to MUTCD standards with all CAPS lettering



Enlarge the size of "STOP" signs to obscure the shape of signs mounted on the other side.

DRAFT – Not for Construction

FIGURE 5A-1.2 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

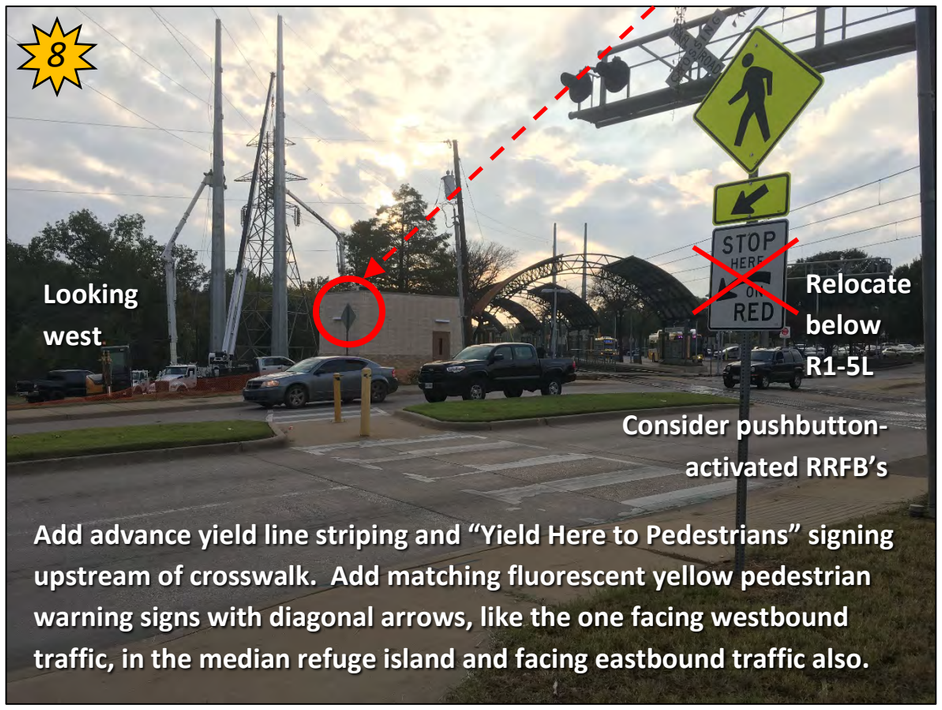
8th and Corinth Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R2-1

Replace non-standard sign with R2-1 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. Uniform signs reinforce driver respect as legitimate traffic control devices.



R1-5R

R1-5L

Install "Yield Here to Pedestrians" signs (R1-5L & R1-5R) 20 to 50 feet upstream of crosswalk lines at Location 8 for better visibility of crossing pedestrians.

DRAFT – Not for Construction

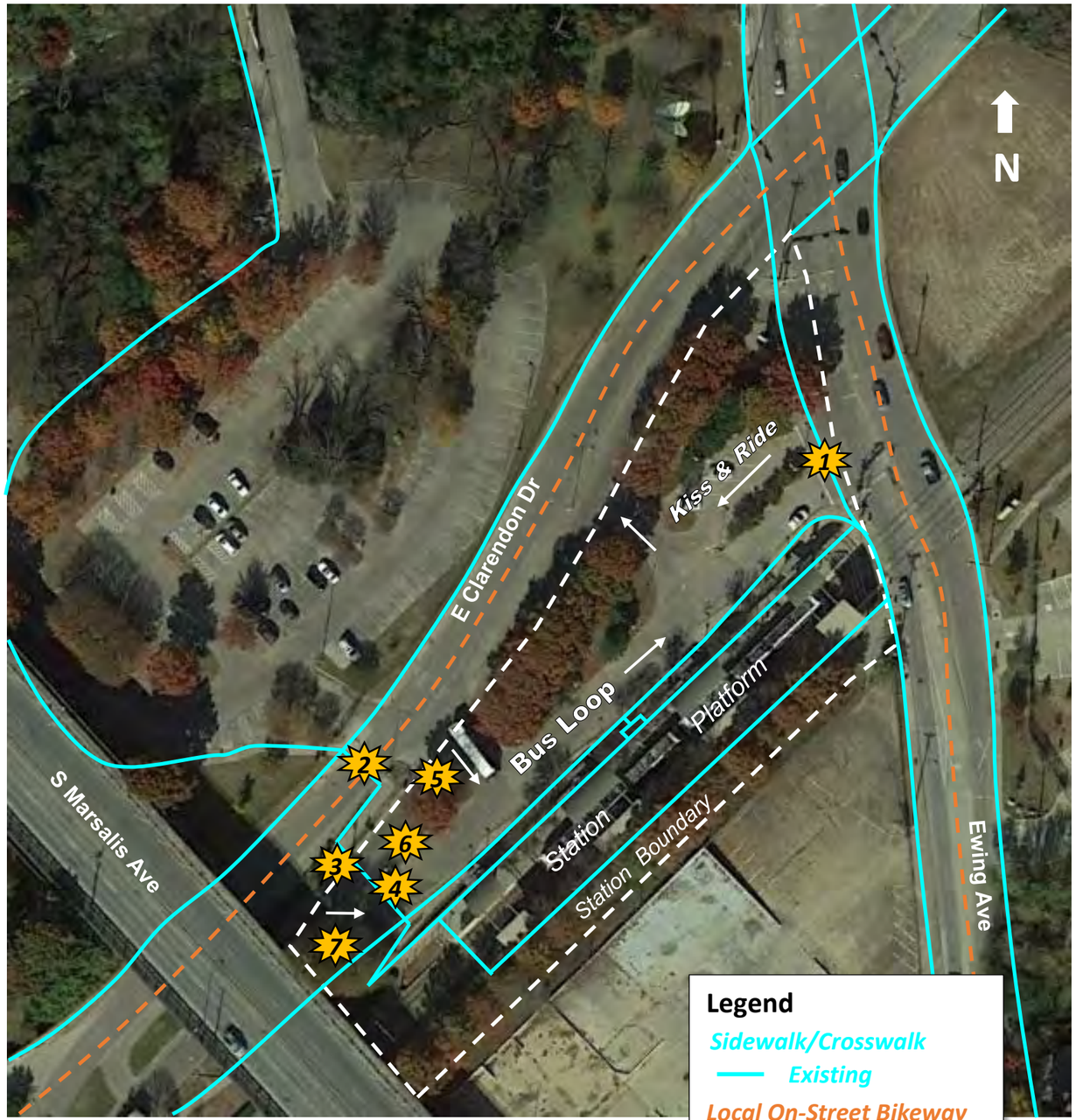
FIGURE 5A-1.3 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Dallas Zoo Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1-3	Add crosswalk striping parallel to and on either side of the decorative brick crosswalks to make them high-visibility crosswalks and to properly define them as legal crosswalks where pedestrians have the right-of-way.
2-3	Add advance yield warning lines and “Yield Here to Pedestrians” signing in advance of crosswalks.
2	Add pedestrian warning signs and pedestrian-actuated Rectangular Rapid Flashing Beacons (RRFB’s) on southbound Clarendon Drive approach. Approach currently has one advance warning sign, but no warning signs at the crosswalk and no beacons.
3	Add pedestrian warning signs and pedestrian-actuated Rectangular Rapid Flashing Beacons (RRFB’s) on northbound Clarendon Drive approach. Approach currently has one warning sign with flashing yellow beacon mounted in the median, but no warning signs on the outside of the roadway and no advance warning sign.
4	Install pedestrian warning sign for crosswalk across bus loop.
5	Replace the existing DO NOT ENTER sign that has been knocked down.
6-7	Update “DO NOT ENTER” signs to meet MUTCD standards.

DRAFT – Not for Construction

FIGURE 5B-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Dallas Zoo Existing Conditions at Improvement Locations

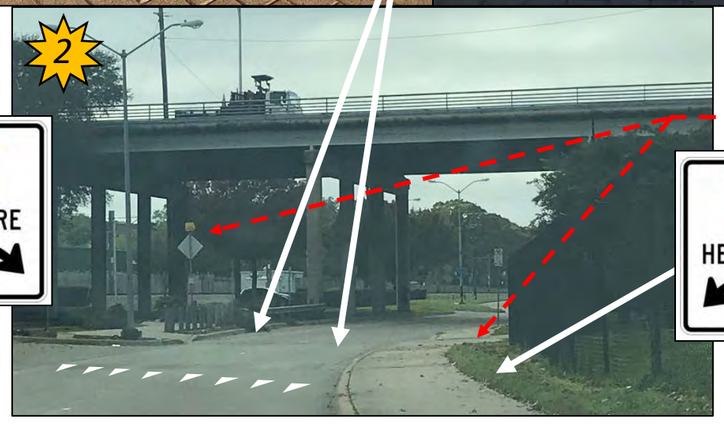
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Update "DO NOT ENTER" signs to MUTCD standards with all CAPS lettering

EXCEPT BUSES

R5-1



R1-5R

R1-5L

W11-2
W16-7P

Add advance pedestrian warning signs and pedestrian warning signs with pushbutton-activated Rectangular Rapid Flashing Beacons (RRFB's) for greater pedestrian conspicuity at crosswalk across Clarendon Ave. (Locations 2 & 3).

Install pedestrian warning sign for crosswalk across bus loop (Location 4).

Install "Yield Here to Pedestrians" signs (R1-5L & R1-5R) and triangular yield line pavement markings 20 to 50 feet upstream of crosswalk lines for better visibility of crossing pedestrians at Locations 2 and 3 (only 2 shown).

DRAFT – Not for Construction

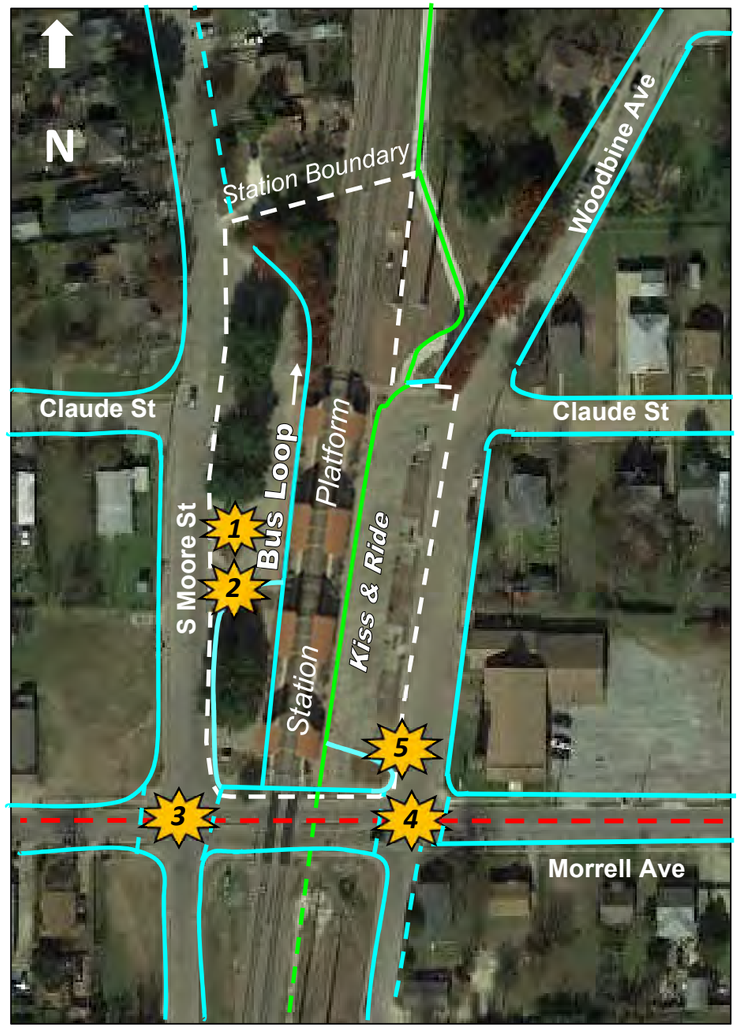
FIGURE 5B-1.2 **MAY 2020**

LEE ENGINEERING

30 YEARS OF EXCELLENCE

Morrell Station Recommended Access Improvements

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1-2	Update "DO NOT ENTER" signs to meet MUTCD standards.
3-4	Install signed and marked crosswalks across Morrell Avenue at the southwest and southeast corners of DART station, across the east and west legs of its intersections with Moore St and Woodbine Ave. Consider constructing median refuge islands in coordination with the City of Dallas to shorten the crossing distance and separate conflicts for crossing pedestrians.
5	Relocate stop sign from sidewalk to adjacent grass.

Legend

Sidewalk/Crosswalk
Existing
Proposed

Regional Veloweb
Existing
Proposed

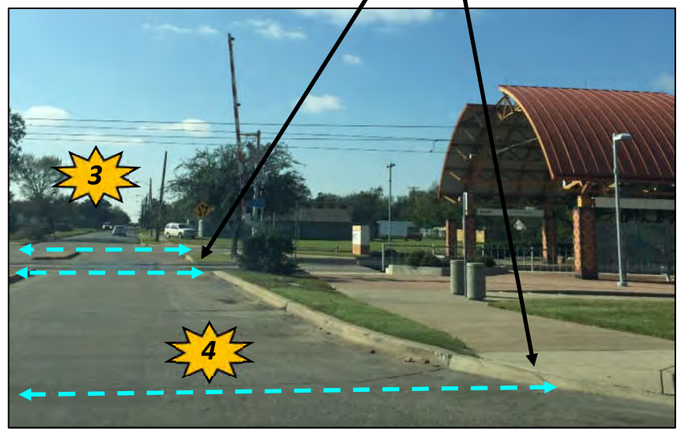
Local On-Street Bikeway
Existing

R5-1

Update "DO NOT ENTER" signs to MUTCD standards with all CAPS lettering.

W11-2
W16-7P

Add advance pedestrian warning signs, pedestrian warning signs, crosswalk markings and median refuge islands for greater pedestrian conspicuity crossing Morrell Ave.



Relocate stop sign from sidewalk and add crosswalk across Morrell Avenue.

DRAFT – Not for Construction

FIGURE 5C-1.1 NOT TO SCALE **JULY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.20 Tyler Vernon Station (on DART Property)

Figure 6A-1.1 on page 86 identifies nine improvements recommended at Tyler Vernon Station on DART property. Figures 6A-1.2 through 6A-1.4 on pages 87-89 illustrate existing conditions at the nine improvement locations.

The recommended improvements include:

- Triming trees for a clear view of the signs.
- Updating signs to meet MUTCD standards and adding or refreshing crosswalk striping.
- Building new sidewalk on the north side of Lebanon Ave from the DART station and fixing the steep slope on the pedestrian ramp.
- Relocating existing pedestrian crossing signs on Tyler St and adding pedestrian warning signs at crosswalks to the station platform.

DART should coordinate with the City of Dallas to add advance yield lines, "Yield Here to Pedestrians" signs and a full traffic signal at the crosswalk crossing S Tyler St.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $131,900. This excludes costs for improvement 6A-TV-ST-09 for the crosswalk across Tyler St, which was integral to the half-mile area analysis undertaken in Section 3.2 and is therfore quantified together with off-site improvements as a cost assumed to be borne by the City of Dallas. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.21 Hampton Station (on DART Property)

Figure 6B-1.1 on page 90 identifies seven improvements recommended at Hampton Station on DART property. Figures 6B-1.2 and 6B-1.3 on pages 91-92 illustrate existing conditions at the seven improvement locations.

The recommended improvements include:

- Removing decorative brickwork and replacing with standard pavement in areas of the station parking lot where the bricks may be misinterpreted as crosswalks.
- Adding pedestrian ramps and high visibility crosswalks at the intersection of Wright St and Hollywood Ave immediately north of the station. Fence removal will be needed to provide connections to these crosswalks.
- Updating signs to meet MUTCD standards and adding or refreshing crosswalk striping.

Refer to the figures for additional details.

The total OPCC for the DART improvements is approximately $62,000. This includes only the portion of improvements 6B-HA-ST-05 and 6B-HA-ST-06 estimated to be within DART right-of-way on the south side of Wright St. The remaining cost for these improvements is assumed to be the responsibility of the City of Dallas. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.22 Westmoreland Station (on DART Property)

Figure 6C-1.1 on page 93 identifies sixteen improvements recommended at Westmoreland Station on DART property. Figures 6C-1.2 through 6C-1.6 on pages 94-98 illustrate existing conditions at the sixteen improvement locations.

The recommended improvements include:

- Adding or improving ADA ramps for better wheelchair access to the station platform.
- Adding or relocating pedestrian warning signs at crosswalks to the station platform.
- Installing stone pillar bollards between the south side of the station platform and the station parking area to prevent motorized vehicle entry.
- Building new sidewalk connections from the southwest end of the station platform for passengers walking to/from the south along Westmoreland Rd and from the east end of the platform south to Glenfield Ave.
- Updating or relocating signs to meet MUTCD standards and adding or refreshing crosswalk striping.

To the west, pedestrians who were observed walking on the entrance driveway indicate demand for a sidewalk connecting through the south side to the station. Some trees and abandoned BNSF tracks need to be removed assosiated with this construction.

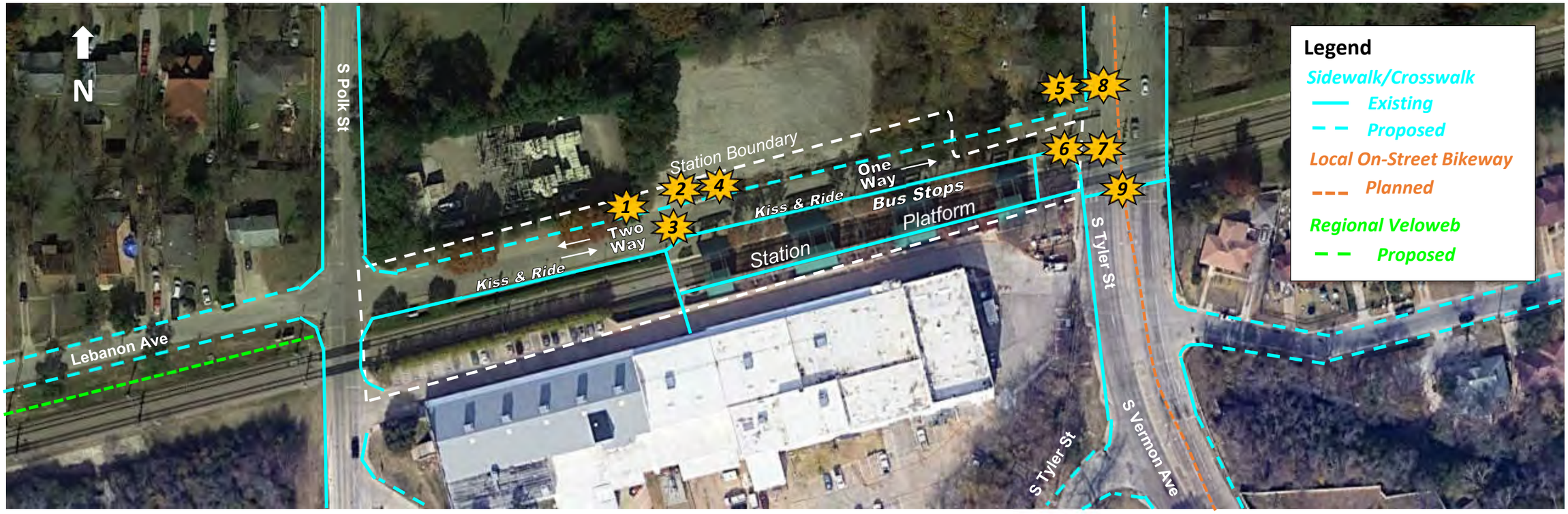
A new sidewalk through the DART Park & Ride lot to properties to the south along Glenfield Dr would connect riders more directly to employment in the area. DART should coordinate with the adjacent property owner and the City of Dallas to build sidewalk and crosswalks across the existing business driveway at this location.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $145,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Tyler Vernon Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1	The pedestrian crossing sign is blocked by tree branches. Trim the tree branches for a clear view of the sign.
2	The existing pedestrian ramp slope is too steep. Build sidewalk on the north side of the street, which would require reconstruction of the sloped retaining wall between the street and the fence at the boundary of the vacant lot above. The sidewalk construction would also require removal of or root damage to several trees and would require either regrading of slopes or construction of short retaining walls. It may be acceptable to delay this improvement until development of the property to the north. See also half-mile area improvement 6A-TV-SW-66.
3	Restripe faded pedestrian crosswalk. It may be acceptable to delay this improvement until development of the property to the north.
4	Update “ONE WAY” sign to meet MUTCD standards.

Number	Description
5	The stop sign is blocked by tree branches. Trim the tree branches for a clear view of the sign.
6	The size of the STOP sign needs to be increased to obscure the shape of signs mounted on the other side.
7-8	Update “DO NOT ENTER” signs to meet MUTCD standards.
9	Relocate the existing pedestrian crossing signs on Tyler Street closer to the pedestrian crosswalk for both the northbound and southbound directions. Install new pedestrian advance crossing warning signs and pedestrian crossing signs so there are two of each facing each direction, one in the median and one on the right side of the roadway. Also, add yield lines, “Yield Here to Pedestrians” signs, and a full traffic signal at the crosswalk. A traffic signal should be considered since RRFB flashing yellow lights or pedestrian hybrid beacon wig-wag red lights might be confusing adjacent to the flashing red railroad crossing beacon.

DRAFT – Not for Construction

FIGURE 6A-1.1 NOT TO SCALE **AUGUST 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

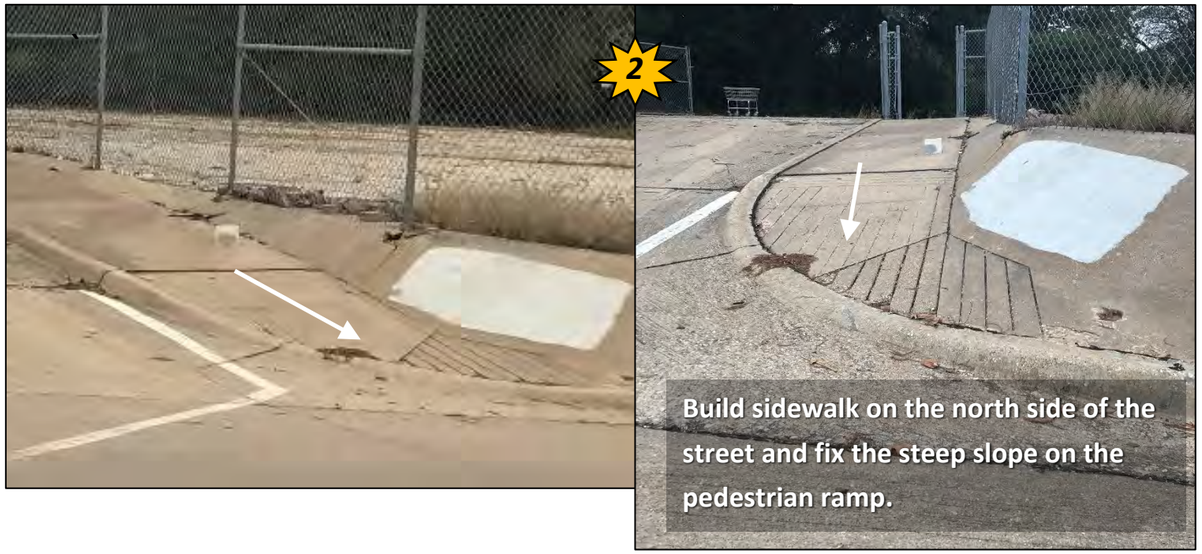
Tyler Vernon Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

W11-2
W16-7P

Replace non-standard signs with W11-2 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.



DRAFT – Not for Construction

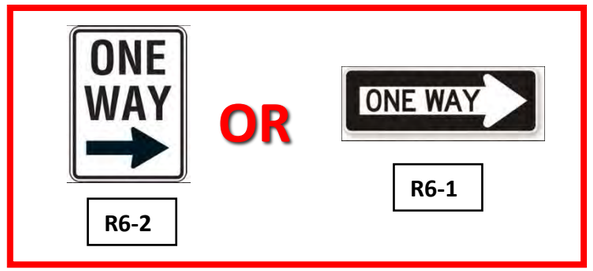
FIGURE 6A-1.2 NOT TO SCALE **AUGUST 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Tyler Vernon Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



R5-1

DRAFT – Not for Construction

FIGURE 6A-1.3 NOT TO SCALE **AUGUST 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Tyler Vernon Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Move the existing pedestrian crossing sign to the north, closer to the crosswalk. Install a pedestrian crossing sign in the median. Install pedestrian advance crossing warning signs ahead of the existing pedestrian crossing sign.

Add yield lines, “Yield Here to Pedestrians” signs, and a full traffic signal at the crosswalk. A traffic signal should be considered since RRFB flashing yellow lights or pedestrian hybrid beacon wig-wag red lights might be confusing adjacent to the flashing red railroad crossing beacon.

Add “AHEAD” plaque under the existing advance pedestrian warning sign in the median. Install pedestrian advance crossing warning sign on the right side. Relocate the existing pedestrian warning sign in the median to the south, closer to the crosswalk. Install a pedestrian crossing sign at the crosswalk on the right.

DRAFT – Not for Construction

FIGURE 6A-1.4 NOT TO SCALE **AUGUST 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Hampton Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Legend

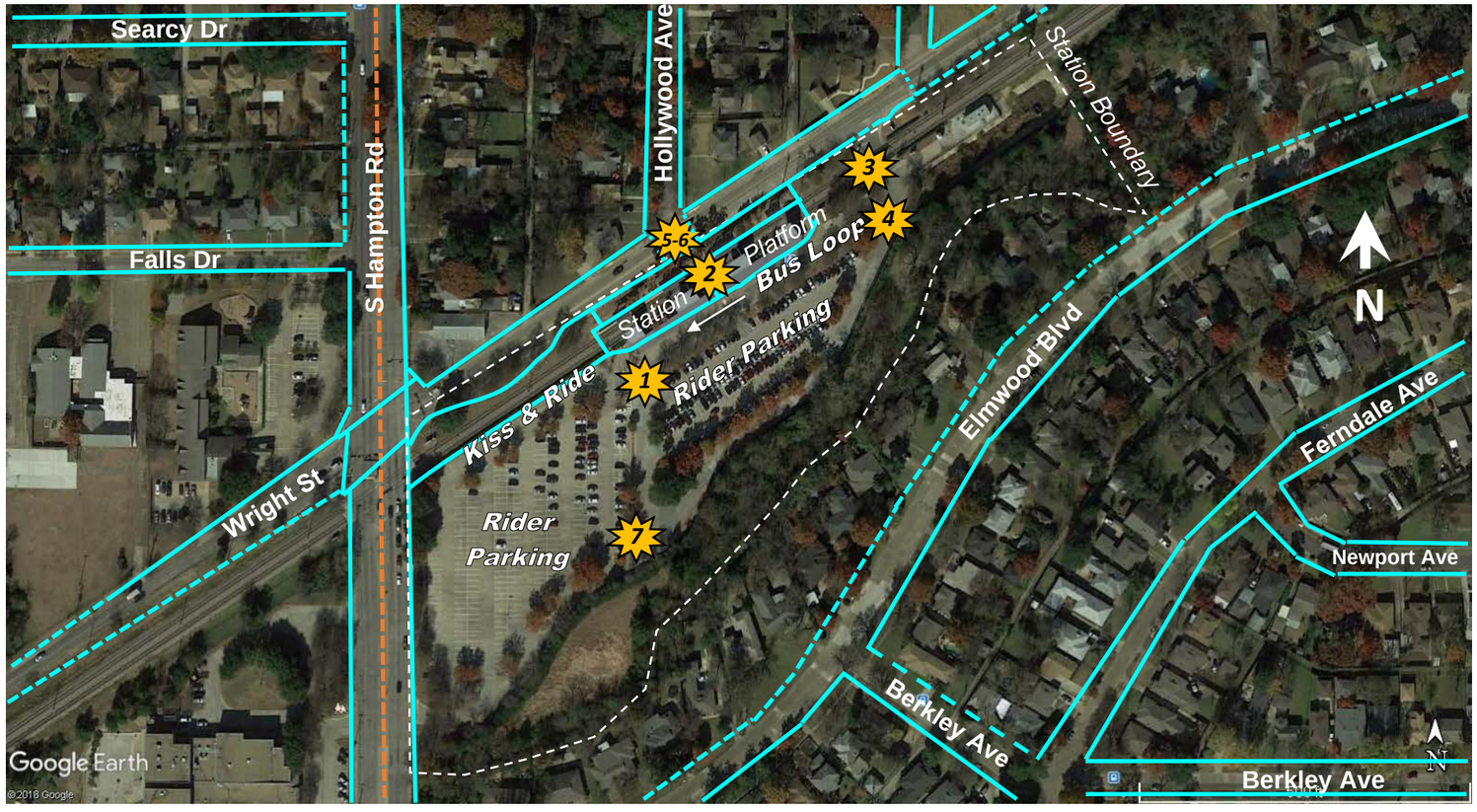
Sidewalk/Crosswalk

Existing

Proposed

Local On-Street Bikeway

Proposed



Number	Description
1	Remove decorative brick work and replace with standard pavement wherever it overlaps or intersects a marked crosswalk. Decorative brick work completely outside of marked crosswalks should either be removed and replaced with standard pavement (which is what has been priced for the cost estimate) or removed and replaced with architectural features that do not mimic the brick work also found in other actual crosswalks designed for pedestrian use in and adjacent to the station area. For example, similar brick work is used for crosswalks at Location #2 and at the signalized intersection of Hampton Rd and Wright St. (White lines bordering the signalized crosswalks are being recommended to the City of Dallas). The presence of similar materials in locations where crosswalks are not intended may temporarily confuse distracted pedestrians. A design for crosswalks in the area that is consistent, legal, and distinct from architectural flourishes is recommended for proper emphasis of correct pedestrian crossing locations. Extend the existing crosswalk pavement markings across the area where pavers were removed.
2	Put white lines parallel to and outside of the existing brick crosswalk.
3-4	Update “DO NOT ENTER” signs to meet MUTCD standards.
5-6	Coordinate with City of Dallas to add two signed and marked, high-visibility crosswalks across Wright St at Hollywood Avenue. In conjunction with this improvement, some fence removal will be needed to provide gaps. Provide pedestrian ramps on the south side of Wright St to connect the new crosswalks to the existing sidewalk that is set back from the street by a grass strip.
7	The existing STOP sign needs to be removed and replaced with a STOP sign on an octagonal panel that does not have the rectangular white background.

FIGURE 6B-1.1 NOT TO SCALE **MAY 2020**

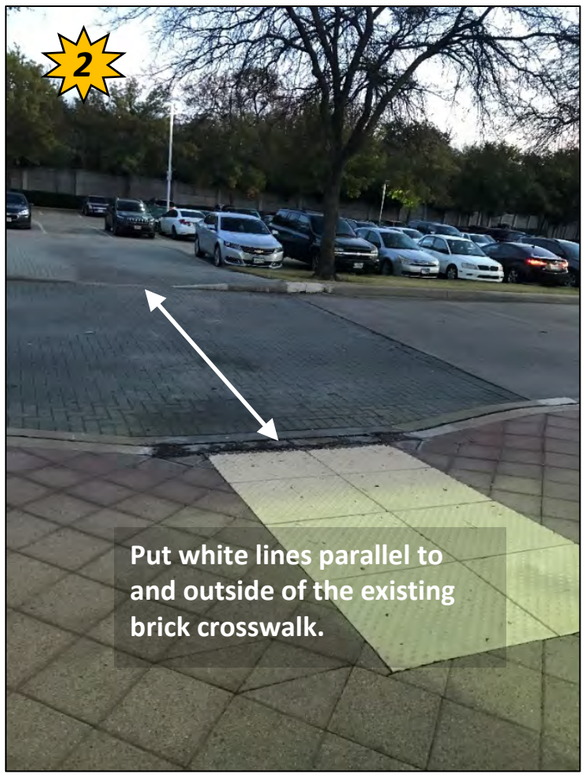
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Not for Construction

Hampton Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



EXCEPT BUSES

R5-1

Not for Construction

FIGURE 6B-1.2 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Hampton Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

R1-1

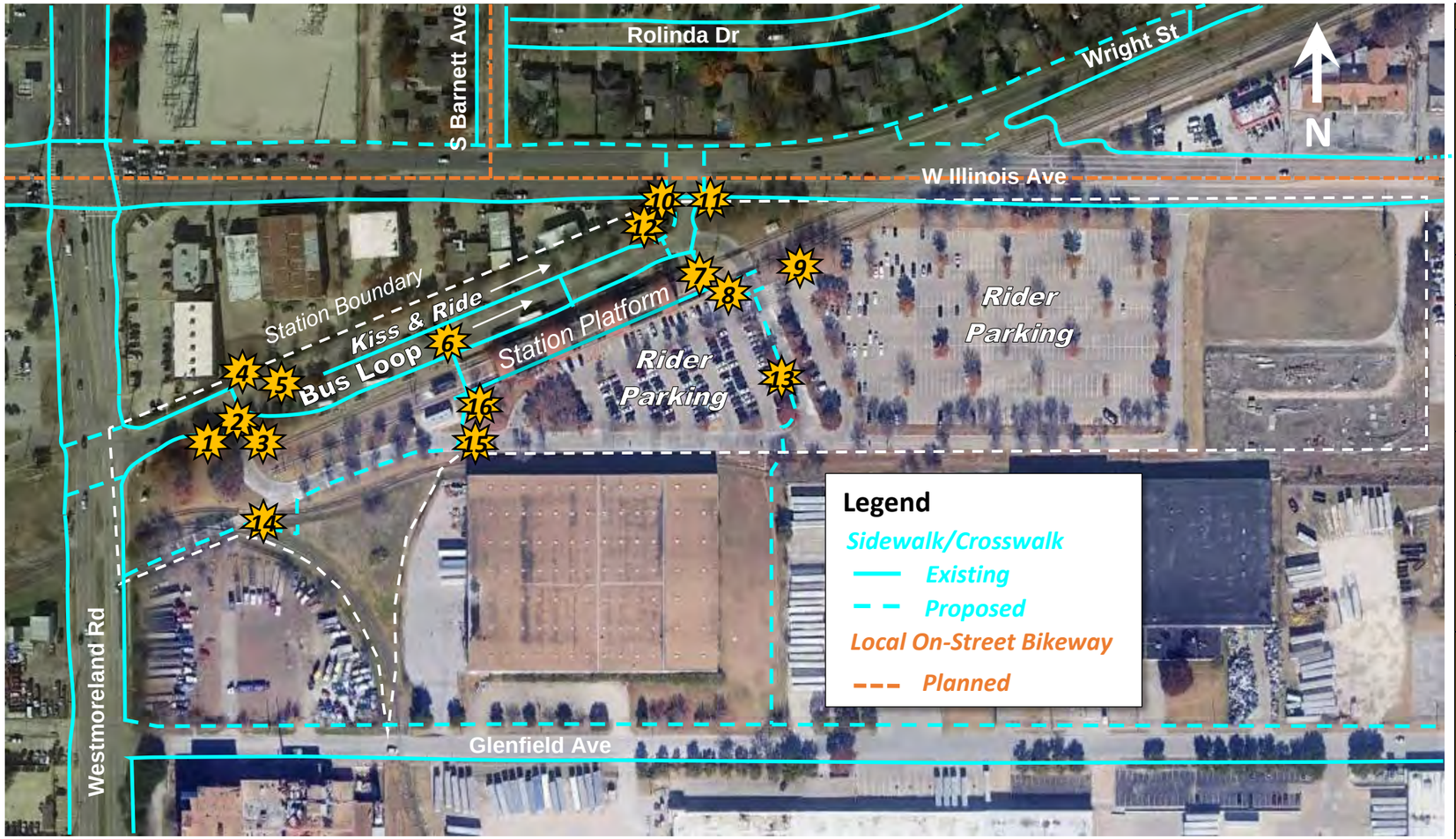
Not for Construction

FIGURE 6B-1.3 NOT TO SCALE **MAY 2020**

Westmoreland Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Number	Description
1	Add pedestrian warning signs.
2	Stripe new pedestrian crosswalk.
3	Fix trip hazard where pedestrian ramp has loose bricks.
4	Update westbound pedestrian warning sign to meet MUTCD standards. The existing signs have the wrong panel shape, and do not have supplemental arrow plaques as required to meet MUTCD standards. Add a new pedestrian warning sign facing eastbound traffic.
5	Update "DO NOT ENTER" sign to meet MUTCD standards.
6	Stripe new pedestrian crosswalk and add 2 new STOP signs.
7	Install stone pillar bollards between the south side of the platform and the station parking area, similar to how they're present between the north side of the platform, to prevent motorized vehicles from trying to enter.

Number	Description
8	Stripe a new crosswalk with new pedestrian ramps crossing from the northwest to northeast corner of the intersection. Relocate two pedestrian warning signs away from the stop-controlled crosswalks where they aren't needed (and where one partially obstructs the sidewalk). Relocate them adjacent to the new crosswalk across the north leg. Restripe the existing crosswalk from the southwest to southeast corner that has been mostly covered with new pavement. Add two new pedestrian ramps and two more pedestrian warning signs adjacent to it.
9	Relocate pedestrian light pole by moving it out of the sidewalk to the north on the grass.
10-11	Relocate the "STOP" and "DO NOT ENTER" signs off of the sidewalk so pedestrian travel will not be impeded.
12	Add new sidewalk. Relocation of the existing streetlighting pole will be necessary. Add new crosswalk connecting to the north side of the station platform.
13	Provide a new sidewalk connection through the DART Park & Ride lot to properties to the south along Glenfield Dr. Narrow the driveway aisle from the current 24 feet to 14 feet, making it one-way southbound, and use the extra 10 feet on the west side to provide a new sidewalk. Add two "DO NOT ENTER" signs at the south end of the driveway aisle. Coordinate with City of Dallas and private property owner to the south regarding connection to potential sidewalk on private property connecting to Glenfield Ave.
14	Pedestrians were observed walking on the entrance driveway here in the absence of sidewalk. New sidewalk is recommended to be built to accommodate pedestrian needs. Root damage to three trees may occur when building sidewalk near Westmoreland Rd. The abandoned, skewed BNSF freight rail spur tracks would need to be removed where they cross the proposed sidewalk alignment. The tracks are clearly no longer in use since they have been removed where they previously crossed Westmoreland Rd just to the west. Sidewalk near the east end of the segment may require removing a portion of the abandoned freight rail spur line to the south to avoid impacts to existing trees planted along the curb line.
15	Add a signed and marked high-visibility crosswalk across the DART station driveway south of the platform.
16	Add sidewalk from the south west end of the station platform for passengers walking to/from the south along Westmoreland Rd. Some regrading may be needed, and root damage could occur to a few trees depending on the sidewalk alignment.

Not for Construction

FIGURE 6C-1.1 NOT TO SCALE **MAY 2020**

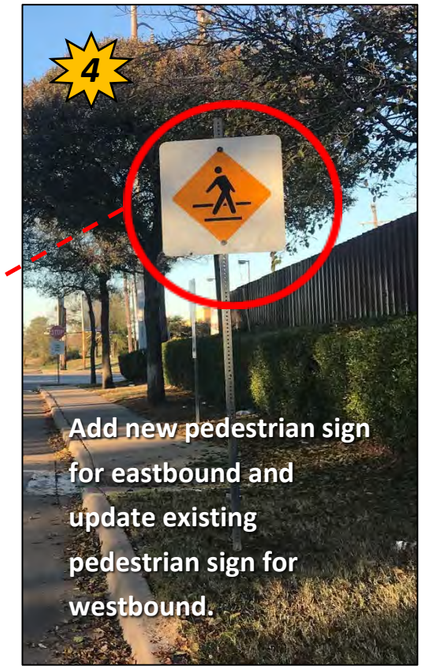
LEE ENGINEERING 30 YEARS OF EXCELLENCE

Westmoreland Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

W11-2
W16-7P



EXCEPT BUSES

R5-1

*** Replace non-standard sign with W11-2 sign from MUTCD. Sign should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.**

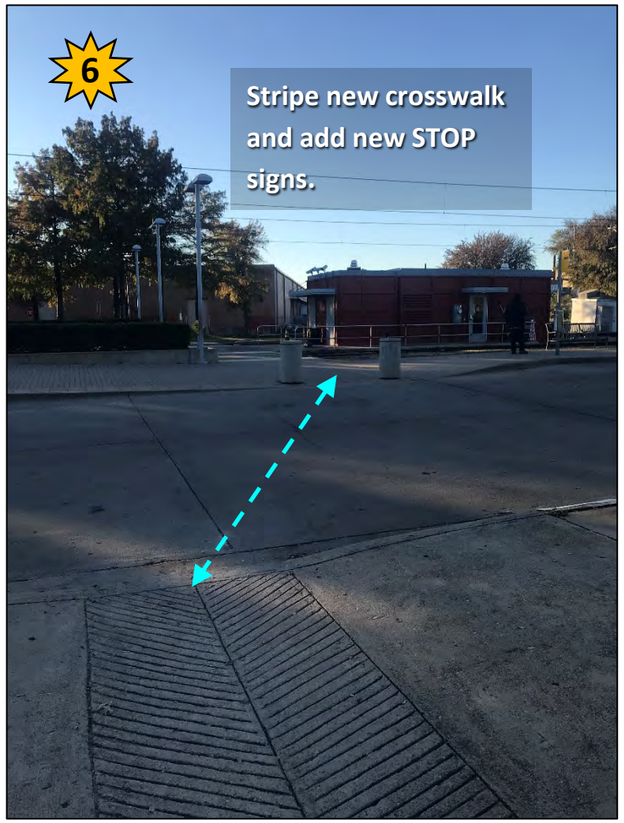
Not for Construction

FIGURE 6C-1.2 NOT TO SCALE **MAY 2020**

Westmoreland Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Relocate pedestrian sign from this location to new crosswalk as described above

W11-2
W16-7P

*** Add a diagonal arrow panel beneath the existing pedestrian sign.**

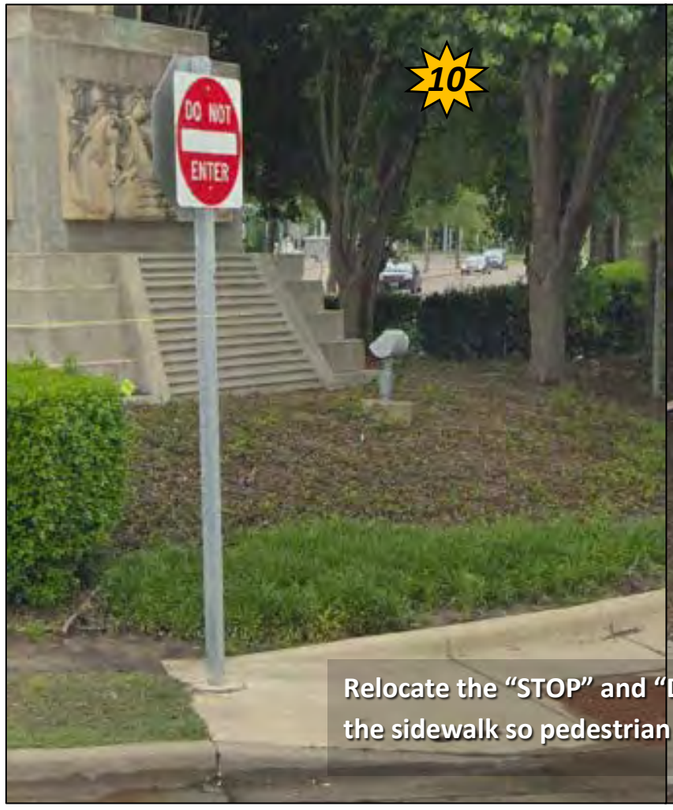
Not for Construction

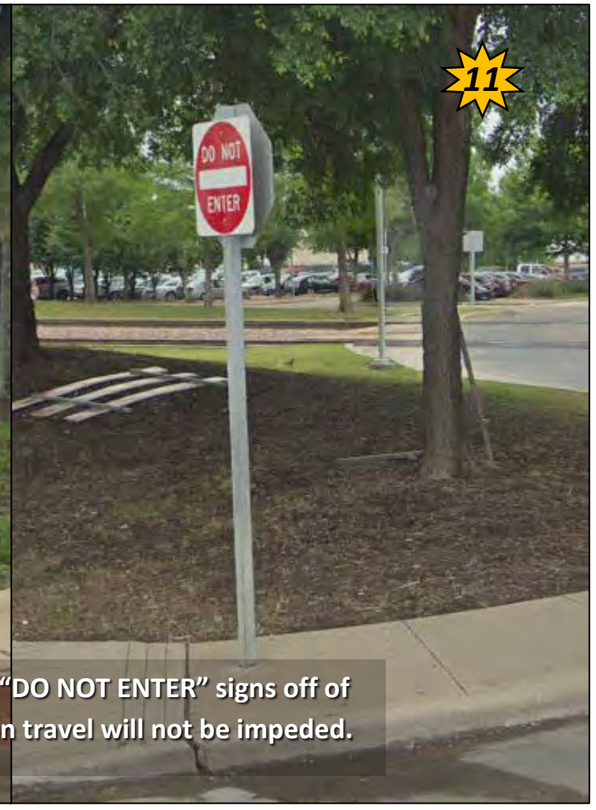
FIGURE 6C-1.3 NOT TO SCALE **MAY 2020**

Westmoreland Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections





Not for Construction

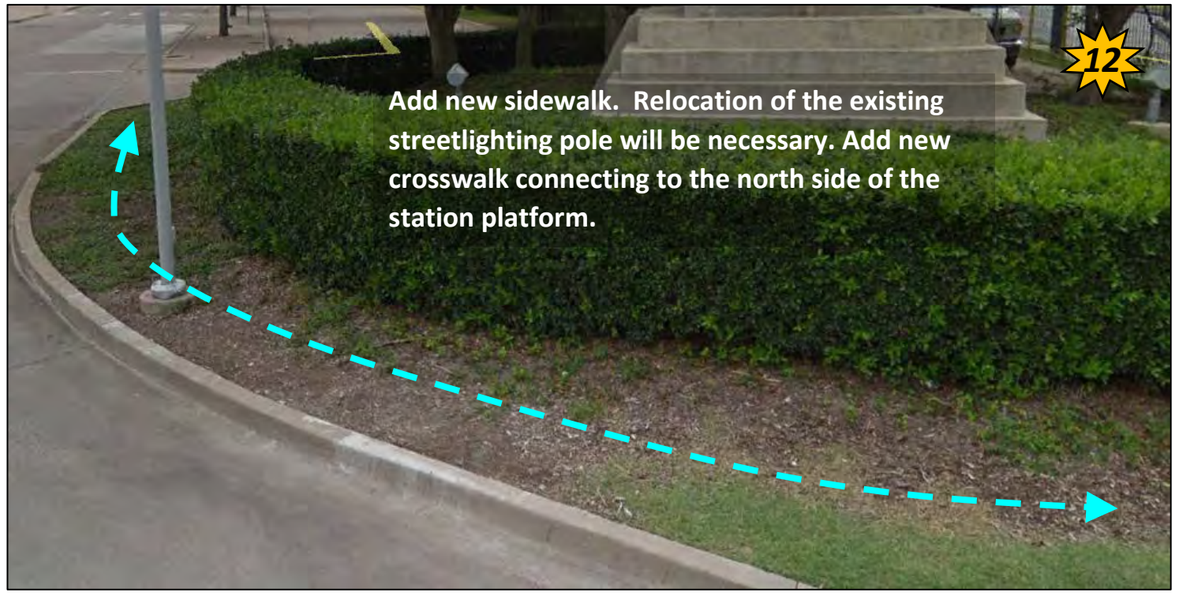
FIGURE 6C-1.4 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Westmoreland Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

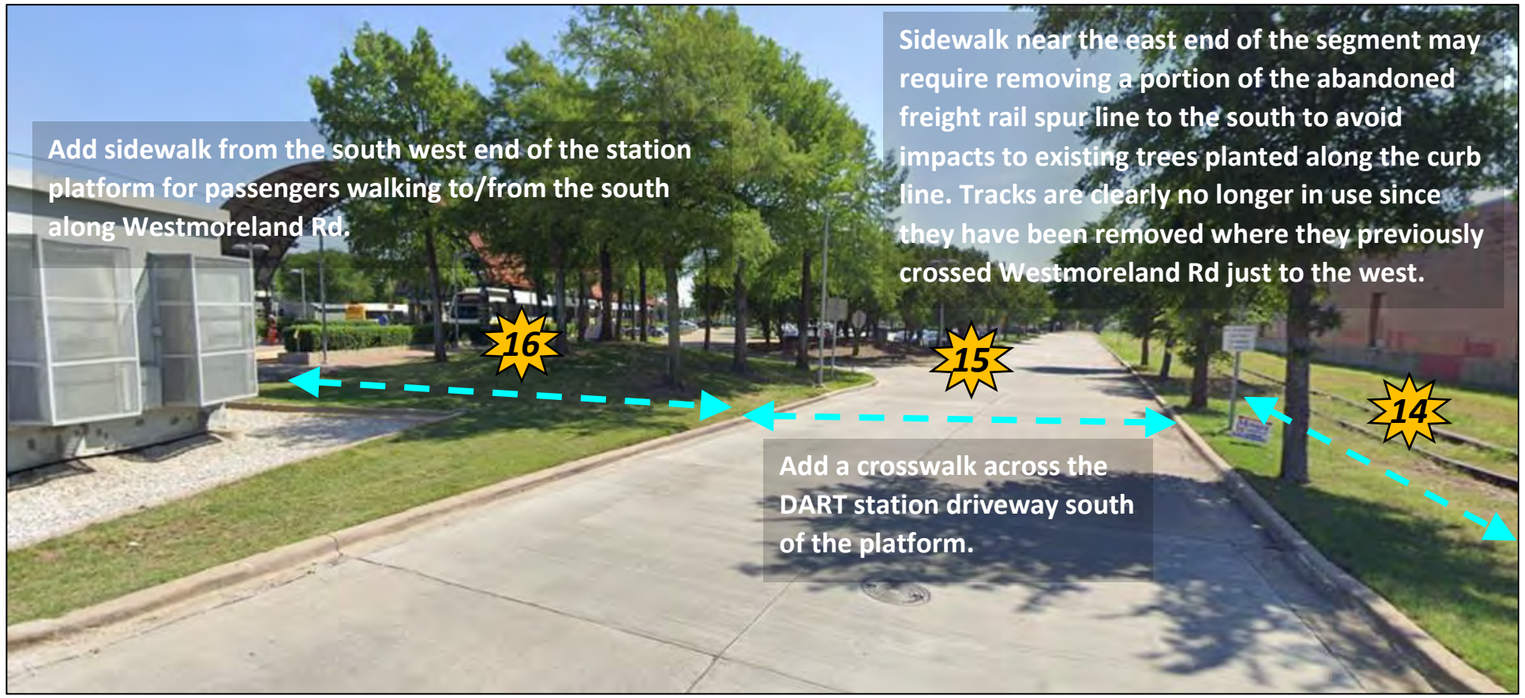
FIGURE 6C-1.5 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Westmoreland Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



Not for Construction

FIGURE 6C-1.6 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.1.23 Illinois Station (on DART Property)

Figure 7A-1.1 on page 100 identifies eleven improvements recommended at Illinois Station on DART property. Figures 7A-1.2 through 7A-1.4 on pages 101-103 illustrate existing conditions at the eleven improvement locations.

The recommended improvements include:

- Constructing new sidewalk segments to connect the station platform more directly to Louisiana Ave, S Corinth Street Rd and a future shared use path on the Regional Veloweb. Tree and fence removal may be needed as part of these connections.
- Adding ADA ramps for better wheelchair access on the station platform.
- Adding pedestrian warning signs at crosswalks to the station platform.
- Updating or relocating signs to meet MUTCD standards.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $34,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

3.1.24 Kiest Station (on DART Property)

Figure 7B-1.1 on page 104 identifies one improvement recommended at Kiest Station on DART property. Figure 7B-1.2 on page 105 illustrates existing conditions at the one improvement location. The pushbutton to activate the crosswalk across southbound Lancaster Rd is located in a dangerous location and needs to be removed from the pole and reinstalled on a separate pole. Accessible pedestrian signal (APS) pushbuttons are recommended. The traffic signal controller needs to Integrate with the light rail constant warning time equipment. DART will need to coordinate with the City of Dallas for the pedestrian pushbutton installation and traffic signal integration.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $59,000. Tables listing the estimated costs for this improvement, as well as line item calculations, are included in Appendix H.

3.1.25 VA Medical Center Station (on DART Property)

Figure 7C-1.1 on page 106 identifies one improvement recommended at VA Medical Center Station on DART property, as well as existing conditions at the improvement location.

Due to the higher need for accessibility adjacent to the VA Medical Center, DART should coordinate with the City of Dallas to replace all existing pedestrian pushbuttons at the intersection of Lancaster Rd with Mentor Ave/Ave of Flags with accessible pedestrian signal (APS) pushbuttons, relocated to accessible locations. Refer to the figures for additional details.

The total OPCC for the DART improvements is approximately $71,000. Tables listing the estimated costs for this improvement, as well as line item calculations, are included in Appendix H.

3.1.26 CityPlace/Uptown Station (on DART Property)

Figure 8A-1.1 on page 107 identifies that no improvements are needed at CityPlace/Uptown Station on DART property. The station itself is underground beneath U.S. 75, and the above ground access points provide good access from both the east and west sides.

3.1.27 Convention Center Station (on DART Property)

Figure 8B-1.1 on page 108 identifies that no improvements are needed at Convention Center Station on DART property. The station is at ground level underneath the Convention Center building structure, with good connections to the adjacent public sidewalks.

3.1.28 Cedars Station (on DART Property)

Figure 8C-1.1 on page 109 identifies six improvements recommended at Cedars Station on DART property. Figures 8C-1.2 and 8C-1.3 on pages 110-111 illustrate existing conditions at the six improvement locations.

The recommended improvements include:

- Striping existing crosswalks that are currently composed of decorative brickwork only.
- Updating or relocating signs to meet MUTCD standards.
- Adding ADA ramps for better wheelchair access on the station platform.

Refer to the figures for additional details. The total OPCC for the DART improvements is approximately $33,000. Tables listing the estimated costs for individual improvements, as well as line item calculations, are included in Appendix H.

Illinois Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Number	Description
1-2	Update “DO NOT ENTER” signs to meet MUTCD standards. Increase the size of STOP signs to obscure the shape of signs mounted on the other side. For #1, tree trimming or STOP sign relocation is needed to avoid branches obscuring the sign.
3-4	Update “DO NOT ENTER” signs to meet MUTCD standards.
5-6	Update pedestrian warning signs to meet MUTCD standards. The existing signs have the wrong panel shape, and do not have supplemental arrow plaques as required to meet MUTCD standards.
7-8	Update “DO NOT ENTER” signs to meet MUTCD standards.
9	Build new ramp to accommodate pedestrian needs. A short segment of new sidewalk may be needed to connect the new ramp to the existing sidewalk.
10	Build new connection from #4 to sidewalk on north side of Louisiana Ave. The improvement would include a small segment of sidewalk (including ramps), crosswalk striping and removal of a segment of existing fence. One or two trees may experience root damage or need to be removed. Add 2 pedestrian warning signs.
11	Build pedestrian ramps, short sidewalk segment, and provide break in fence at DART property boundary to connect station platform to future Regional Veloweb trail. Remove existing crosswalk inside fenced police station parking lot. Add new crosswalk outside of fenced lot with 2 pedestrian warning signs.

Not for Construction

FIGURE 7A-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Illinois Station Existing Conditions at Improvement Locations

R5-1

Update “DO NOT ENTER” signs to MUTCD standards with all CAPS lettering and remove "EXCEPT BUSES" legend since wrong-way buses should also be prohibited.

Update “DO NOT ENTER” signs to MUTCD standards with "EXCEPT BUSES" legend on separate lower panel.

R5-1

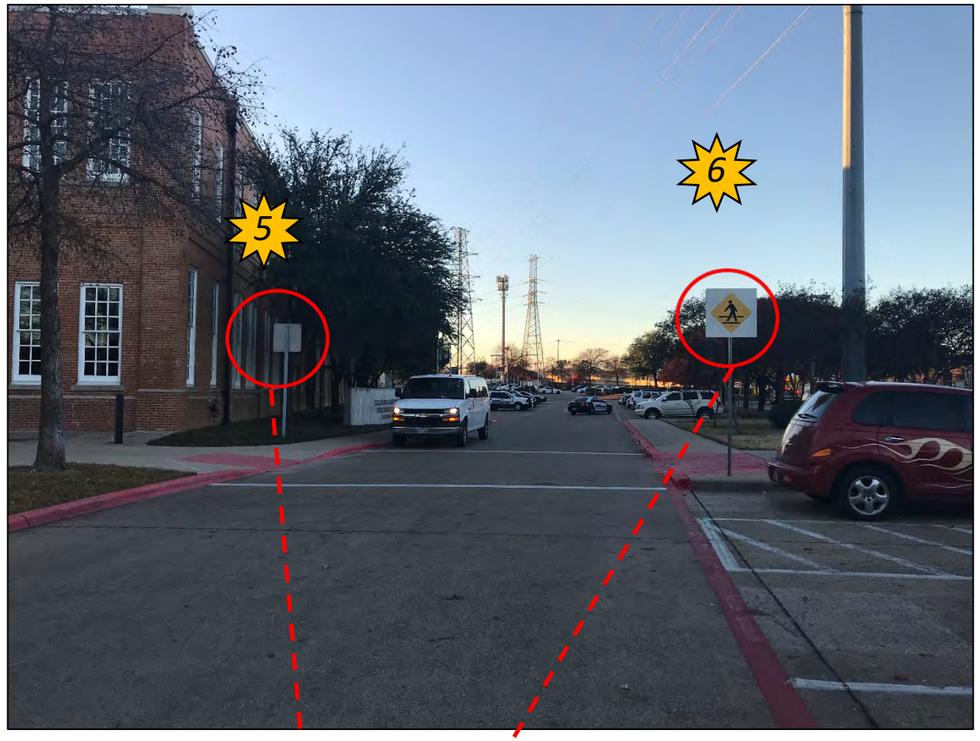
Not for Construction

FIGURE 7A-1.2 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Illinois Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections



W11-2
W16-7P

Replace non-standard signs with W11-2 signs from MUTCD. Signs should be retro-reflective for increased nighttime visibility. The sign panel shall be diamond-shaped instead of having an image of a diamond-shaped sign on a rectangular panel. Uniform signs reinforce driver respect as legitimate traffic control devices.

R5-1

Update “DO NOT ENTER” signs to MUTCD standard with "EXCEPT BUSES" legend on separate lower panel.

Not for Construction

FIGURE 7A-1.3 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Illinois Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Not for Construction

FIGURE 7A-1.4 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Kiest Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

N

Legend

Sidewalk/Crosswalk

Existing

Proposed

Local On-Street Bikeway

Planned

Number	Description
1	The pushbutton to activate the crosswalk across southbound Lancaster Rd from the station platform is located in a dangerously narrow 2.5' wide space between the dynamic envelope of the southbound light rail trains and the southbound travel lanes on Lancaster Rd. Coordinate with City of Dallas to remove the pushbutton from this pole and install a new pushbutton on a separate pole from the pedestrian signal, which should remain in its existing location. The new pushbutton should be located on the station platform, east of the southbound track. Due to proximity to another pushbutton for crossing the northbound lanes, all existing pushbuttons at the crossing of both northbound and southbound lanes will need to be replaced with accessible pedestrian signal (APS) pushbuttons, and voice messages will need to be used to differentiate between the crossings each pushbutton serves. Integrate the traffic signal controller with the light rail constant warning time equipment so that pedestrian calls across the southbound Lancaster Rd lanes are not served when trains are present or approaching.

DRAFT – Not for Construction

FIGURE 7B-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

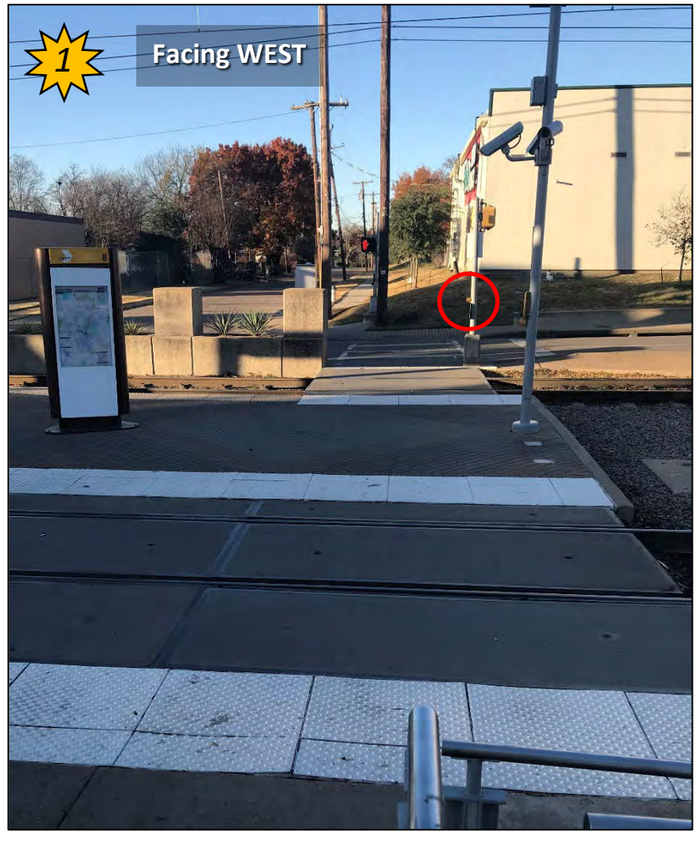
Kiest Station Existing Conditions at Improvement Locations

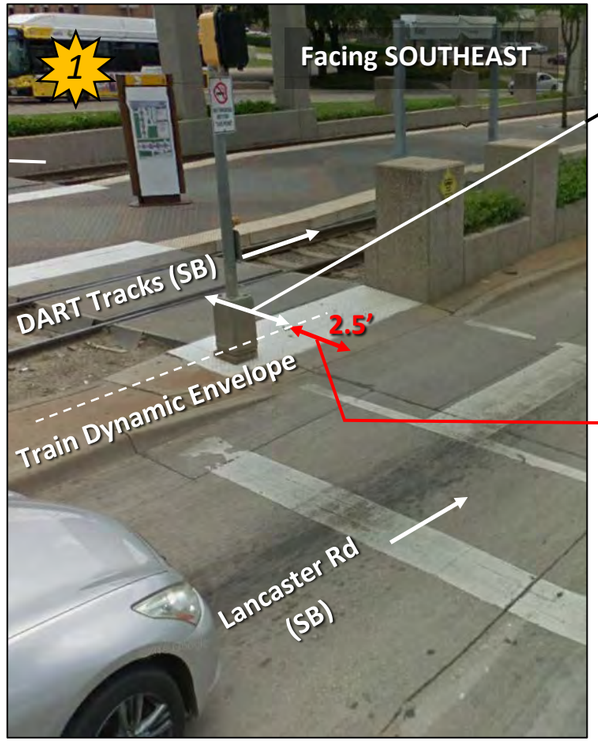
North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Remove pedestrian pushbutton from existing pedestrian signal pole where there is insufficient space to wait between the light rail tracks and the southbound lanes of Lancaster Rd. Replace all existing pushbuttons for the crossing with new APS pushbuttons, including a second pushbutton on the station platform to call the walk phase for the crosswalk across the southbound lanes of Lancaster Rd.

Integrate the traffic signal controller with the light rail constant warning time equipment so that pedestrian calls across the southbound Lancaster Rd lanes are not served when trains are present or approaching.





DRAFT – Not for Construction

FIGURE 7B-1.2 NOT TO SCALE **MAY 2020**

VA Medical Center Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Legend

Sidewalk/Crosswalk

Existing

Proposed

Number	Description
1	Coordinate with City of Dallas to replace all existing pedestrian pushbuttons at the intersection of Lancaster Rd with Mentor Ave/Ave of Flags with accessible pedestrian signal (APS) pushbuttons, relocated to accessible locations. These improvements are important given the higher need for accessibility adjacent to the VA Medical Center.

FIGURE 7C-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

DRAFT – Not for Construction

Cityplace/Uptown Station Existing Conditions

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Legend

Sidewalk/Crosswalk

Existing

Proposed

Underground Station

No necessary access improvements identified on DART property

DRAFT – Not for Construction

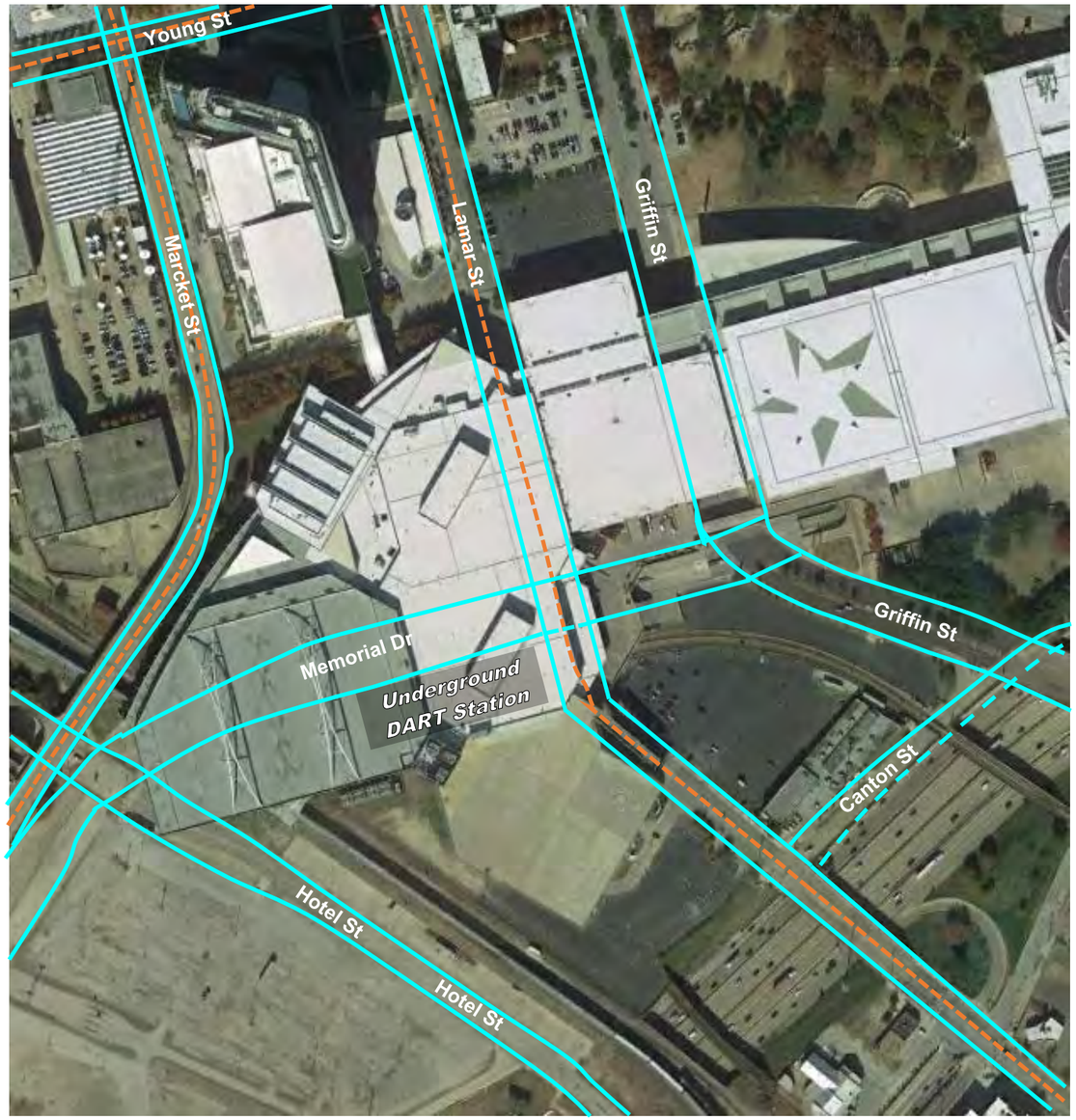
FIGURE 8A-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Convention Center Station Existing Conditions

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



N

Legend

Sidewalk/Crosswalk

Existing

Proposed

Local On-Street Bikeway

Planned

Underground Station

No necessary access improvements identified on DART property

DRAFT – Not for Construction

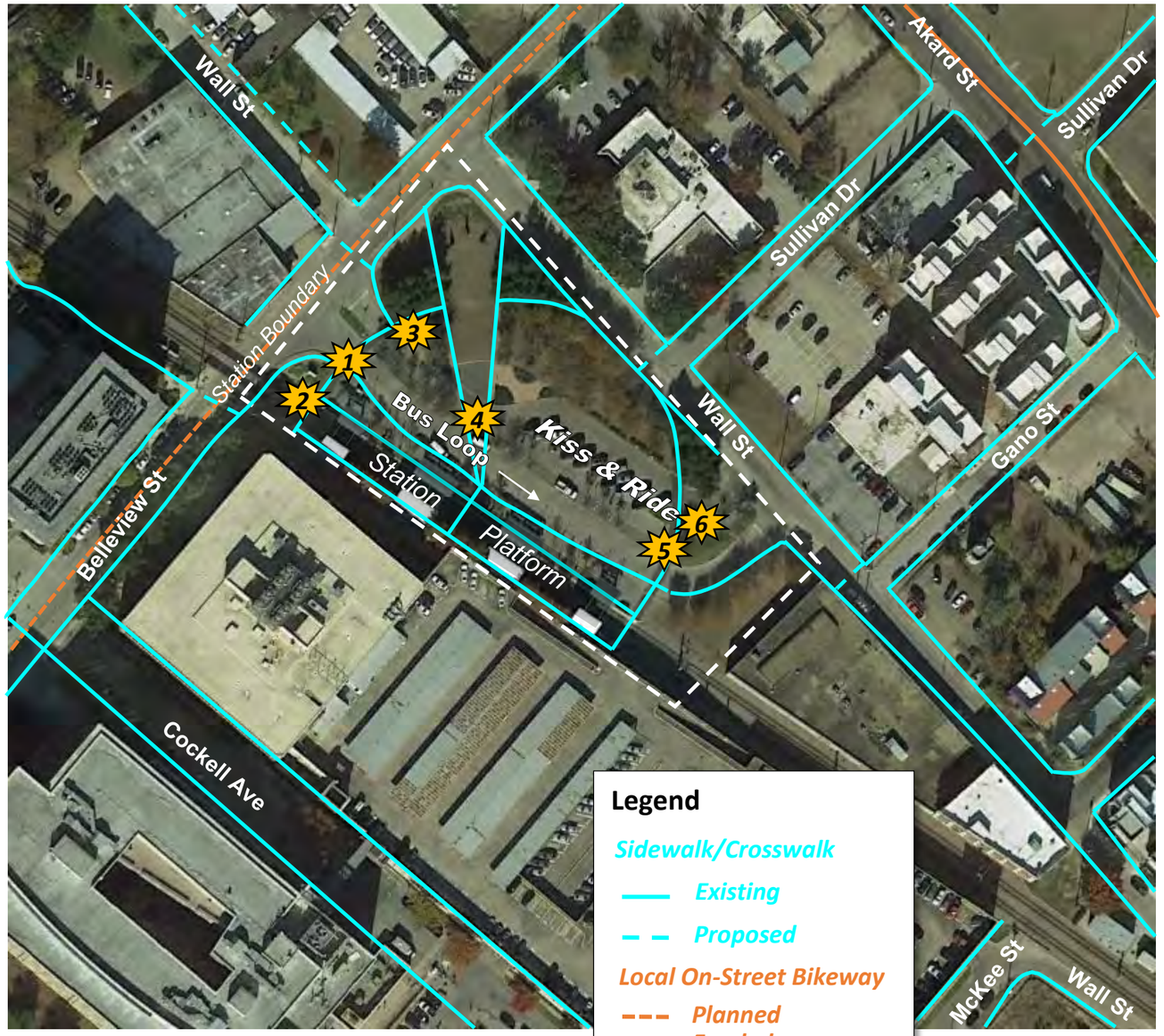
FIGURE 8B-1.1 NOT TO SCALE **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Cedars Station Recommended Access Improvements

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections



N

Number	Description
1	Add crosswalk striping parallel to and on either side of the decorative brick crosswalks to make them high-visibility crosswalks and to properly define them as legal crosswalks where pedestrians have the right-of-way.
2-3	Update pedestrian warning signs to meet MUTCD standards. The existing signs do not have supplemental arrow plaques as required to meet MUTCD standards.
4	Install white lines at existing crosswalk. Add pedestrian ramps, median cut-throughs, and pedestrian warning signs.
5	Add crosswalk striping parallel to and on either side of the decorative brick crosswalks to make them high-visibility crosswalks and to properly define them as legal crosswalks where pedestrians have the right-of-way.
6	Add pedestrian warning signs and update the existing sign to meet MUTCD standards. The existing sign does not have a supplemental arrow plaque as required to meet MUTCD standards. Relocate the white “theft or damage" sign elsewhere on a separate post, as this is not a traffic control device.

DRAFT – Not for Construction

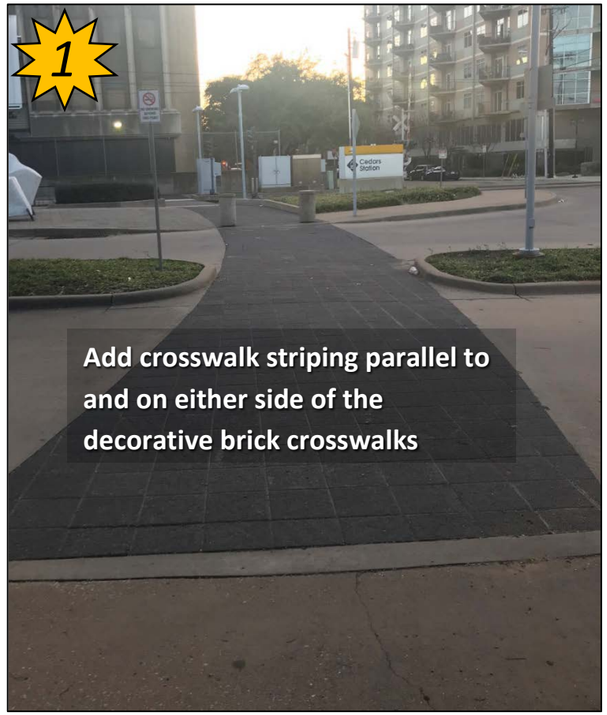
FIGURE 8C-1.1 NOT TO SCALE **MAY 2020**

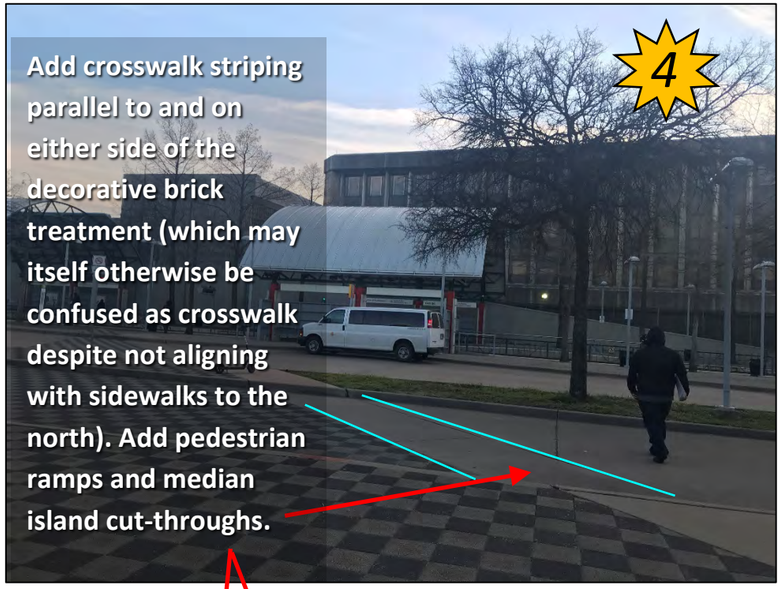
LEE ENGINEERING 30 YEARS OF EXCELLENCE

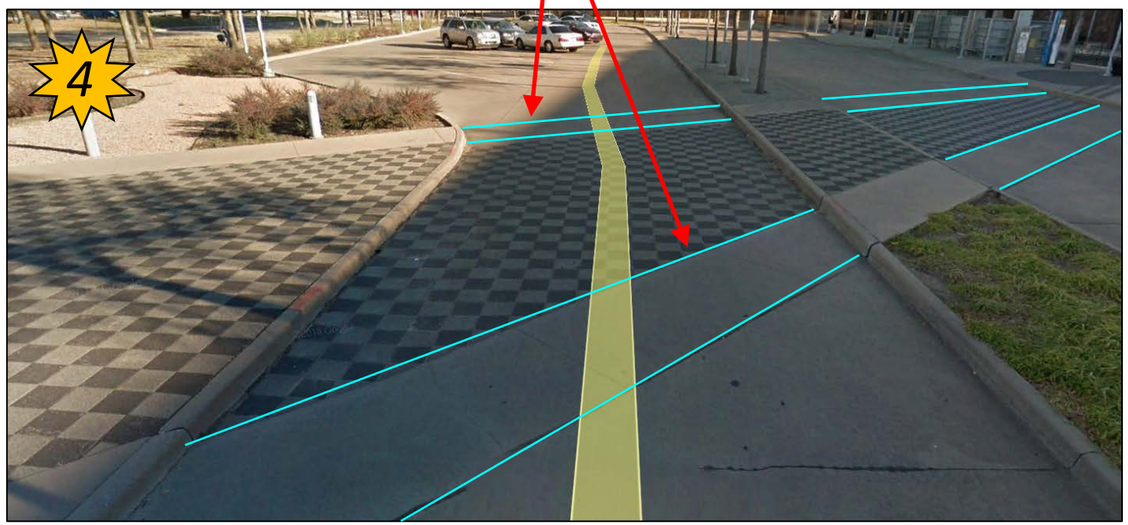
Cedars Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections







Add supplemental arrow plaques as required to meet MUTCD standards

W11-2
W16-7P

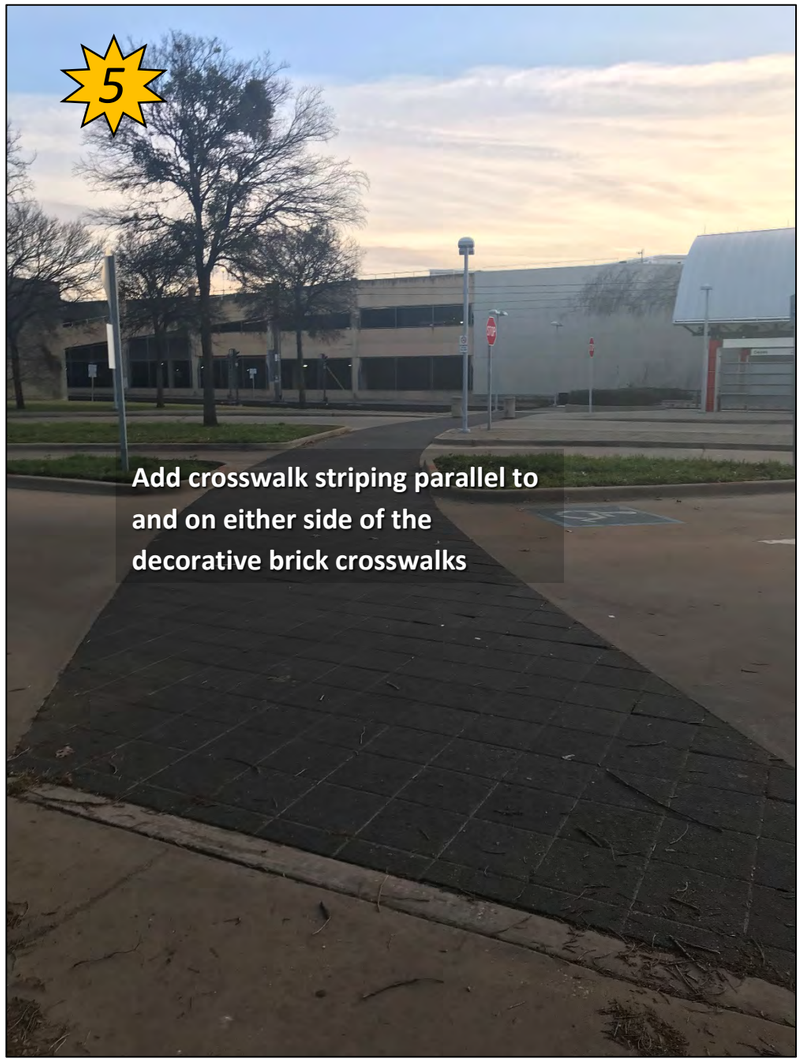
DRAFT – Not for Construction

FIGURE 8C-1.2 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

Cedars Station Existing Conditions at Improvement Locations

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections



W11-2
W16-7P

Add supplemental arrow plaques as required to meet MUTCD standards. Also, add two more pedestrian signs (one for each end of the crosswalk).

DRAFT – Not for Construction

FIGURE 8C-1.3 **MAY 2020**

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.2 Half-Mile Area Recommendations

Figures 1A-2 through 8C-2.2 on pages 113-163 identify recommended high-, medium- and low-priority improvements as separate construction packages for each station's half-mile area in Dallas. These figures are collectively referred to as phasing maps. High-priority improvements should be considered for Phase 1 of construction at each station. As funding is available the medium and low-priority improvements should be implemented either with the Phase 1 improvements or as part of future phases.

The legend for each map includes a brief summary of opinions of probable construction cost for each phase and station, which are described in greater detail in Section 3.3.

For additional context, Appendix I contains detailed maps of the recommendations for each station's half-mile area, including existing, planned, and funded regional and local shared use paths, as well as existing, planned and funded on-street bicycle networks.

In each phasing map, existing sidewalks are shown in light blue. The density of individual parcels' population plus employment are shown in grayscale, with darker colors representing higher values.

Proposed sidewalk and crosswalk improvements are shown in multiple colors, according to the assigned priority: red for high-priority (Phase 1), orange for medium-priority (Phase 2), and light pink for low-priority (Phase 3). Gaps to remain are shown in dark pink. For more details about these categories, refer to Appendix F.

Each high- medium- and low-priority improvement, along with all gaps to remain, are indicated by the boxed number labels near each improvement location. The lower right corner of each phasing map includes a legend that describes the abbreviations in the improvement ID codes, which can be used to cross-reference the improvement matrices that appear in Appendix J.

For solid red, orange, or light pink lines, the recommended improvement for a sidewalk gap is either a new or repaired 5-foot wide sidewalk or a new 10-foot shared use path along the length shown. Repairs are noted in the matrix notes for each improvement in Appendix J, and assume full removal of damaged, existing sidewalk prior to replacement.

For crosswalk gaps, the type of improvement recommended is shown with numbered circles located near each crosswalk. The numbers in the circles correspond to the legend of possible pedestrian safety countermeasures appearing at the upper right of the figure. More details about these improvements can be found in Section 2.6, as well as in Appendix C, Appendix D, and Appendix J. Treatments recommended somewhere on the phasing maps have a red box around them in the legend for easier reference.

The "Half Mile Area Improvements Matrices" appearing in Appendix J for each station list for each improvement the owner, improvement type, location, length, notes, priority score, and (in the case of high priority improvements not built by others) the opinion of probable construction cost. Additional information useful for interpreting the tables in Appendix J may be found in Appendix I.

3.2.1 Parker Road Station (Half-Mile Area)

Figure 1A-2 on page 113 shows the recommended improvements in the half-mile area around the Parker Road Station. Central Expy (U.S. 75), Parker Rd, Park Blvd, and K Ave are all arterials that provide barriers to multi-modal travel to and from the station. Due to a lack of collector streets east of the station, multi-modal travel to and from that direction is significantly more circuitous, though planned shared use paths will improve the situation.

Note that a portion of the half-mile radius for Parker Road Station to the south overlaps with the northern half-mile radius for the Downtown Plano Station. Improvements for the overlapping area were considered together with the Downtown Plano Station area, as discussed in the following section.

As noted in Section 3.1.1, a challenge for pedestrian and bicycle access to this station is the lack of direct connections to and from property to the east. Pedestrians are routinely observed jumping the low fence to reach the station platform from the bowling alley parking lot to the east.

A new local shared use path (1A-PR-VW-V5 in Figure 1A-2) is proposed extending east from the south end of the station platform along the north side of property owned by the City of Plano. At its intersection with K Ave, a pedestrian hybrid beacon (1A-PR-CW-26) would facilitate crossing six lanes of high-speed traffic. While a dedicated sidewalk alignment would not continue farther east for direct access to the apartments east of Dobie Dr due to existing businesses between K Ave and Dobie Dr here, many apartment residents would still likely be able to traverse the business parking areas on foot.

Other more direct connections to areas northeast and southeast of the station would also be provided by constructing the north-south Regional Veloweb shared use path on the west side of the station platform, parallel to the tracks, shown as improvements 1A-PR-VW-V2 and 1A-PR-VW-V3 in Figure 1A-2.

A pedestrian hybrid beacon would serve multi-modal users crossing Parker Rd to the north of the station, while a traffic signal would accomplish the same purpose for crossing Park Blvd to the south. The pedestrian hybrid beacon (PHB, also known as a HAWK beacon) has the advantage of stopping traffic only for the duration necessary for pedestrians to clear a driver's travel lane, rather than requiring a stop for the whole duration of the walk and flashing don't walk intervals.

Additional details about other improvements recommended in Figure 1A-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Parker Road Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Parker Rd Station
November 2020

Figure 1A-2 Construction Packages

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,305,200
Medium	$730,000
Low	$258,000
	$3,293,200 *(2020 $)*

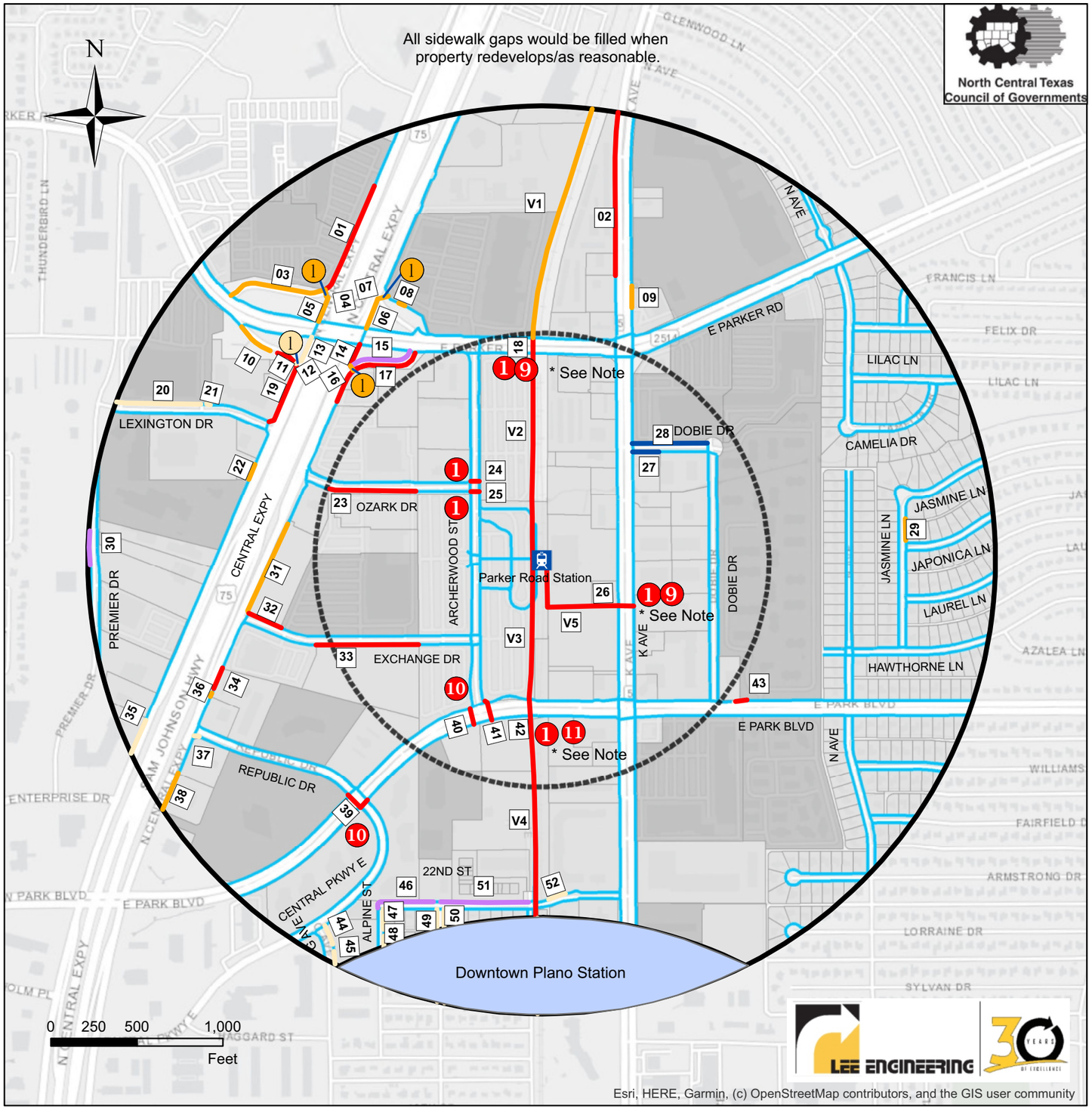
- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Need Contingent on Shared Use Path Construction



Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
1A-PR-SW-01
1A ← Station Number
PR ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.2 Downtown Plano Station (Half-Mile Area)

Figure 1B-2 on page 115 identifies the recommended improvements in the half-mile area around the Downtown Plano Station. Downtown Plano is pedestrian friendly, with on-street parking and lower speeds along 15th St south of the station promoting a friendlier crossing environment. However, some improvements can be made along 15th St, including new or improved crosswalks. The one-way couplet of K Ave and Municipal Ave also carries a higher speed and volume of traffic that presents somewhat of a barrier to the safety and level of comfort of pedestrian travel, as does 14th St two blocks south of the station, where transit-oriented development is occurring, with more expected in the future.

Recommended improvements include new or improved crosswalks across 15th St at I Ave, at the proposed Regional Veloweb shared use path parallel to the DART tracks, and mid-block between J Ave and K Ave. Similarly, crossings across K Ave at 16th St, 15th Place and south of 15th St can provide improved safety.

A common need at many of these locations is advance "Yield Here to Pedestrians" signing and yield line striping (Item #3 in the "Possible Pedestrian Safety Countermeasures" legend).

City of Plano CIP project 6993 will construct improvement 1B-DP-CW-59 immediately south of the station where pedestrian ramps and a median cut-through are missing for a significant demand of bike and pedestrian travel between the station and apartments immediately to the southwest.

Proposed improvements 1B-DP-SW-62, 1B-DP-SW-63, 1B-DP-CW-63, and 1B-DP-RP-64, which cross the Plano Municipal Center and K Ave to the east, would connect apartment complexes and single-family residential neighborhoods to the northeast more visibly and directly to the station.

Crosswalks across 14th St at I Ave, at the future Regional Veloweb alignment described in the previous paragraph, and/or at J Ave are also recommended for better multi-modal access. A PHB is recommended at I Ave (#93 and #94), while a pedestrian traffic signal is recommended at the Veloweb crossing in close proximity to J Ave (1B-DP-CW-95 and 1B-DP-CW-96).

In the southern part of the study area, the existing rail tracks parallel to 12th St will be the location of the future 12th Street Station on DART's Silver Line Commuter Rail Project. Many of the sidewalk and shared use path connections in and around the future 12th Street Station platform will be built or reconstructed in the near future as part of the Silver Line project.

Additional details about other improvements recommended in Figure 1B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Downtown Plano Station that can be found in Appendix I and Appendix J.

3.2.3 CityLine Bush Station (Half-Mile Area)

Figure 1C-2 on page 116 identifies the recommended improvements in the half-mile area around the CityLine Bush Station. Central Expy (U.S. 75), the President George Bush Tpk (SH 190) and K Ave/N Plano Rd all pose boundaries to multi-modal access to the station. While the station is located just south of the Richardson City line formed by the PGBT, new transit-oriented residential development has occurred north of the PGBT in Plano, with other undeveloped parcels expected to bring more such development. The current configuration of the Park & Ride lots located below the PGBT bridge structures is oriented primarily to serve DART riders driving to the station, with fewer accomodations for pedestrian and bicycle trips through the large parking lots.

Several sidewalks and connecting crosswalks should be built through and around the Park & Ride lots below the PGBT bridges. The high posted speed limits along the PGBT frontage roads create the need for high-visibility crosswalks. Therefore, pedestrian hybrid beacons are recommended at the Crawford Rd/Topridge Dr crossings of the PGBT frontage roads (1C-CB-CW-42, 1C-CB-CW-43, and 1C-CB-CW-59). Also, a pedestrian traffic signal is recommended for the crossing of the PGBT westbound frontage road just east of the DART tracks (1C-CB-CW-45). The existing crosswalk across the WBFR west of the tracks will be removed as part of the Silver Line Construction, which is still under design but will reconfigure other existing sidewalks and crosswalks in and around the station.

Three existing signalized intersections should receive pedestrian access improvements. Marked crosswalks and countdown, accessible pedestrian signals should be added at the intersections of Plano Pkwy with F Ave/Executive Dr and with K Ave. Though pedestrian indications are already present at the K Ave/N Plano Rd intersection with the PGBT frontage roads, sidewalks (1C-CB-SW-046, 1C-CB-SW-047, and 1C-CB-SW-061) need to be added so that pedestrian travel through these intersections can occur during all weather and for DART riders of different abilities.

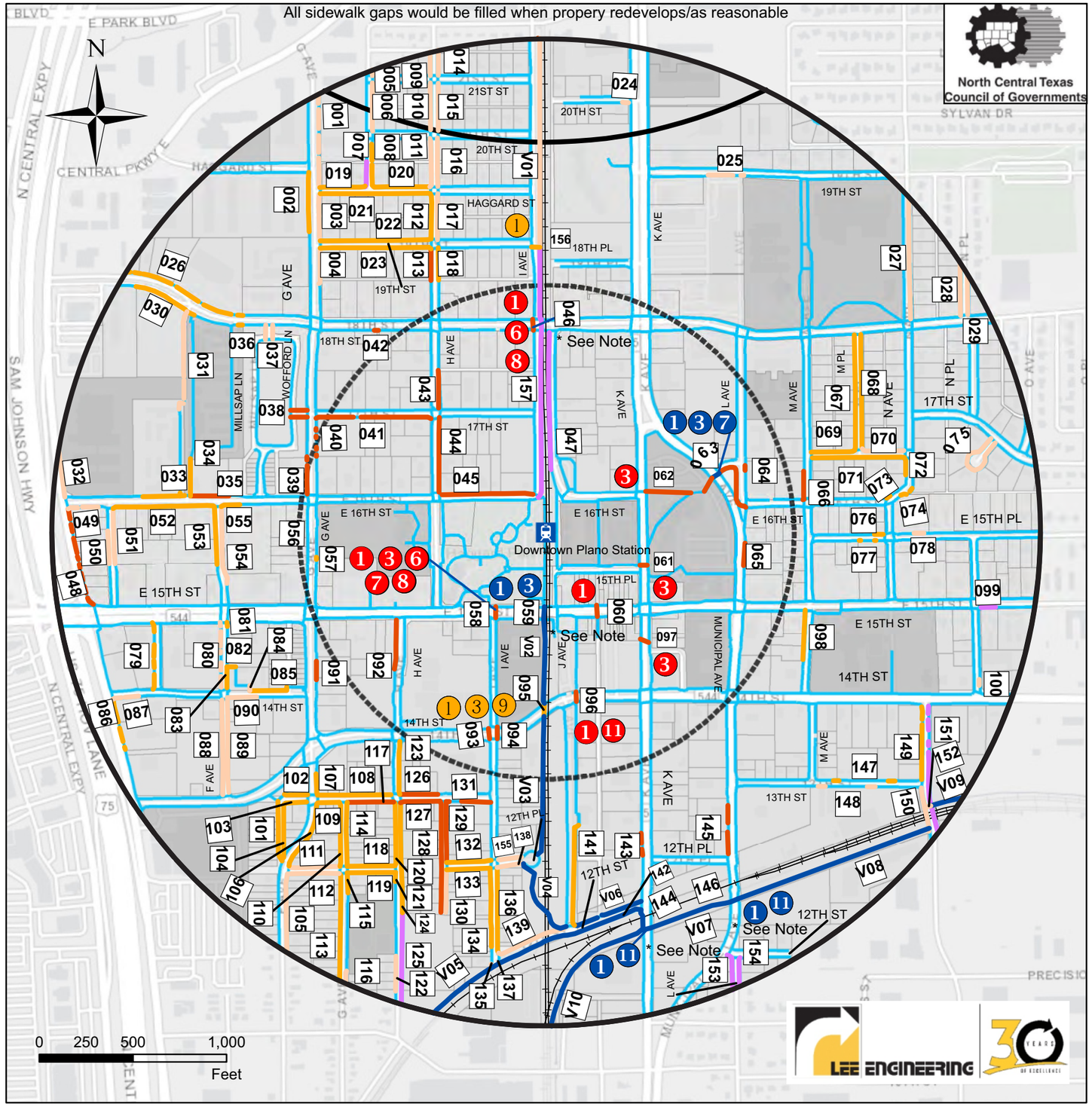
Most of the recommended improvements south of the station in Richardson are anticipated for construction by others, either as part of the Silver Line project, the ongoing development of CityLine, or other projects by the City of Richardson.

*Additional details about other improvements recommended in Figure 1C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for CityLine Bush Station that can be found in **Appendix I** and **Appendix J**.*

FTA DART Stations
Last Mile Connections
Downtown
Plano Station
November 2020

Figure 1B-2 Construction Packages

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,927,100
Medium	$2,595,500
Low	$2,011,300
	$6,533,900 *(2020 $)*

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Need Contingent on Veloweb Construction

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

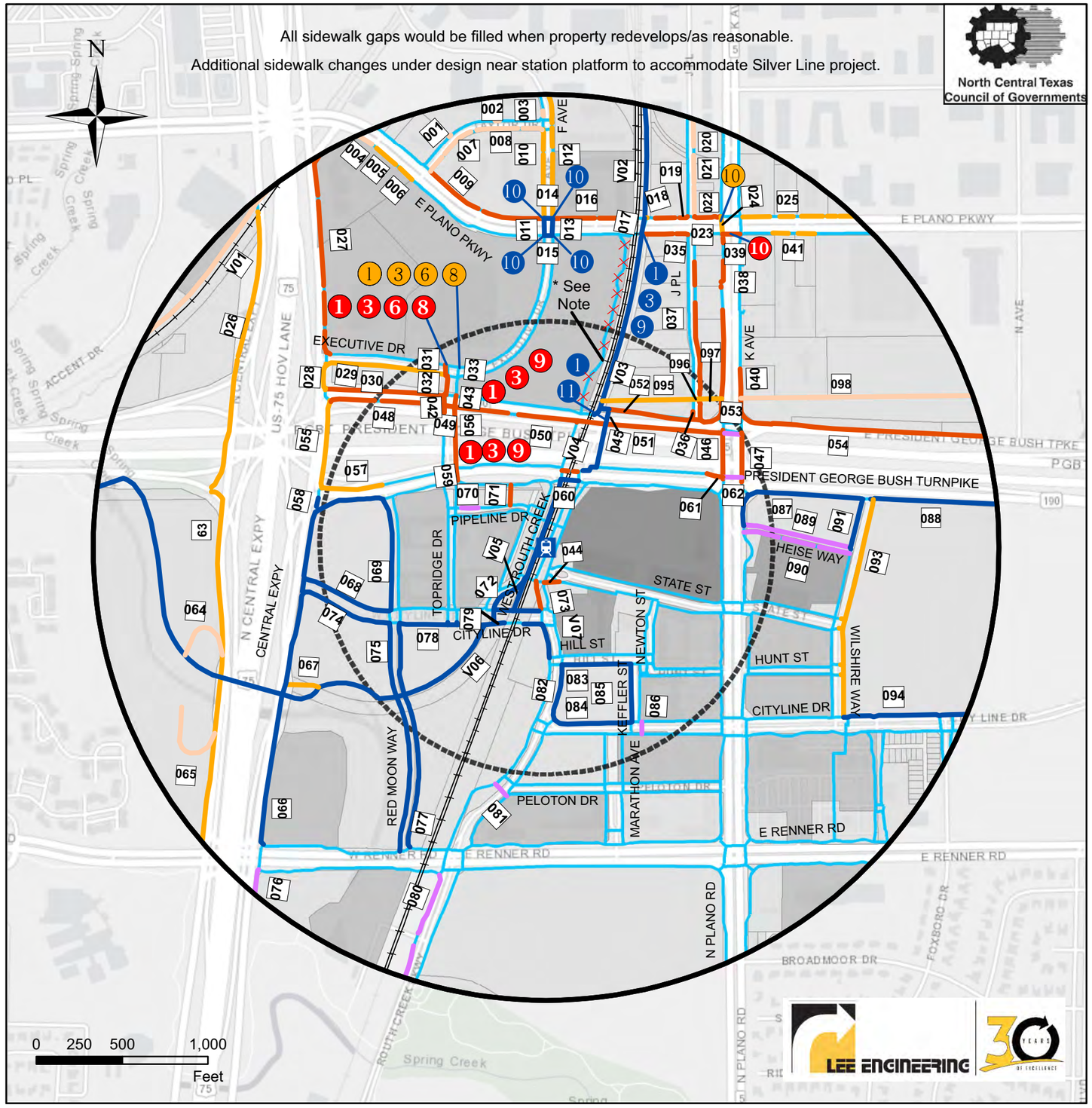
10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
1B-DP-SW-01
1B ← Station Number
DP ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
City Line Bush Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 1C-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Overall Construction Cost Estimate
High	$1,760,350
Medium	$2,373,200
Low	$990,400
	$5,123,950 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Sidewalk to be removed to make way for DART Silver Line tracks.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

1C-CB-SW-01

- 1C ← Station Number
- CB ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches [1] on Map)

3.2.4 Galatyn Park Station (Half-Mile Area)

Figure 2A-2 on page 118 identifies the recommended improvements in the half-mile area around the Galatyn Park Station. Central Expy (U.S. 75) currently blocks all bicycle and pedestrian travel to and from the west since the only bridge that crosses it within the half-mile area, on Galatyn Pkwy, does not include sidewalk. A DART shuttle (Route 824) connects the station to areas west of U.S. 75 at 15- to 20-minute intervals during weekday peak hours.

The City of Richardson should consider improved bicycle and pedestrian access across U.S. 75. Many pedestrians and cyclists would likely prefer the increased convenience of a sidewalk connection over the 15- to 20-minute intervals provided by DART Bus Route 824. A sidewalk connection would also be available at mid-day, night or on weekends.

The Galatyn Pkwy bridge bridge would either need to be widened to provide sidewalk, or a road diet would need to be implemented. Narrowing lanes from 11 feet wide to 10 feet wide could provide space for a minimal 4-ft wide sidewalk on one side of the bridge only.

A better alternative for a road diet may be to reconsider the lane geometry of the tight-diamond interchange. Northbound and southbound vehicular through movements from the ramps are unnecessary and can be eliminated. The interchange could then potentially be converted to a diverging diamond interchange (DDI) configuration with a single lane in each of the eastbound and westbound directions.

This configuration would require a median, but sidewalk could then be provided either along one side of the bridge or (as is relatively common in the DDI configuration) in the median between opposing lanes, each traveling in a counterflow direction. Drainage, lane striping, and signal phasing changes would also be neeed on the bridge approaches and ramp intersections.

Geometric and capacity studies would be needed to validate the concept, incorporating projected future conditions with build-out of adjacent developments. However, the concept holds potential since DDI's frequently outperform traditional tight diamond interchanges by a large margin and/or with fewer lanes.

In addition to the bridge improvement and new sidewalk in some locations to fill network gaps, other recommended improvements include:

- New crosswalks with rectangular rapid-flashing beacons (RRFB's) for crossing Glenville Dr at two locations (improvement 2A-GP-CW-67 and 68) across a long stretch where the street has no other controlled crossings. The northern location would connect existing sidewalk from the station to the Infosys corporate campus, but would require coordination with the private property owner to extend sidewalk to the building front doors.
- Marked crosswalks, pedestrian ramps, pedestrian warning signs, yield lines, advanced yield signing and/or crosswalk lighting for several locations along N Collins Blvd, E Lookout Dr and Lakeside Blvd (improvements 2A-GP-CW-08-09, 12-13, 58, 80 and 83). In several of these locations, white crosswalk lines are required parallel to existing brick crosswalks to establish a visible and legally enforceable crosswalk.
- Marked, signed, and lit crosswalks across Palisades Blvd at South Gate Dr (improvements 2A-GP-CW-26 and 27). Consider curb extensions or a median refuge island in the wide 34-ft roadway. Care should be taken to provide advance warning signs in the eastbound direction due to the crest vertical curve in the roadway to the west. Or, the potential also exists for revising traffic signage to make the north-south route primary. In addition, the Palisades master plan does include the possibility of Palisades Blvd abandonment east of Empire Dr.
- White edge lines on the outside of brick crosswalks at the roundabout entries and exits where Lakeside Blvd intersects Lawnview Dr (improvements 2A-GP-CW-81, 82 and 85). Also, the only way to reach the roundabout crosswalks from adjacent sidewalks is via stairs to/from the sidewalks above. Explore alternatives for ADA-compliant access, and add pedestrian ramps at each crosswalk.

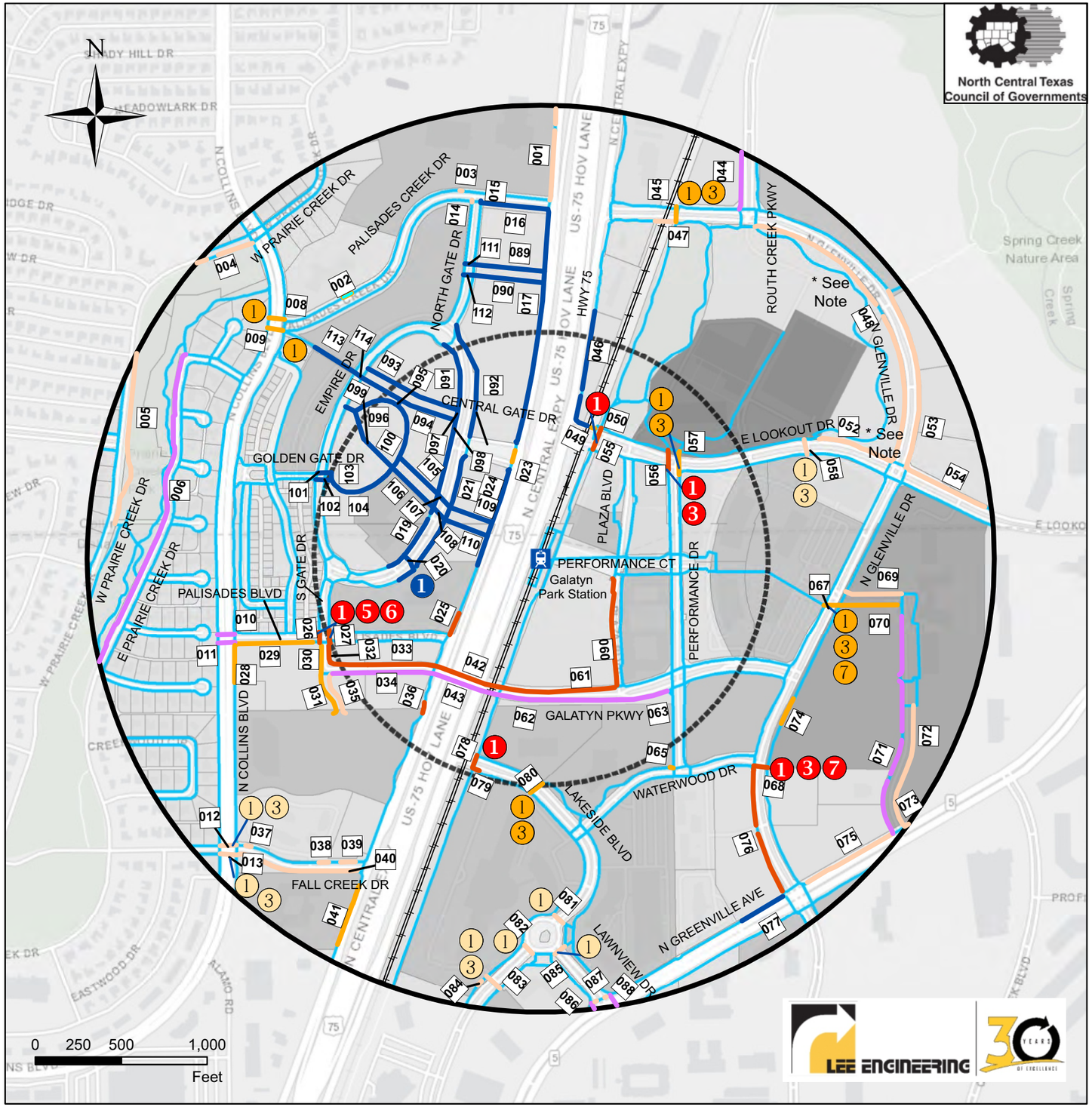
Many missing sidewalks will be constructed by the Palisades development as it is completed just west of Central Expy and the station. The developer will bear the cost for these improvements.

Additional details about other improvements recommended in Figure 2A-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Galatyn Park Station that can be found in Appendix I and Appendix J.

FTA DART Stations Last Mile Connections
Galatyn Park Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 2A-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$3,550,700
Medium	$532,400
Low	$2,529,500
	$6,612,600

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Existing path is a well-graded but soft-surface walking trail. If adjacent development does not upgrade it to a concrete sidewalk, consider upgrading and/or building new sidewalk closer to the Glenville Dr curbline.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
2A-GP-SW-01
2A ← Station Number
GP ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.5 Arapaho Center Station (Half-Mile Area)

Figure 2B-2 on page 120 identifies the recommended improvements in the half-mile area around the Arapaho Center Station. Central Expy (U.S. 75), Collins Blvd, and Arapaho Rd are all arterials that provide barriers to multi-modal travel to and from the station.

Coordination between the City, DART, and adjacent private property owners would be required to construct a sidewalk connection southwest of the train platform to connect more directly to the U.S. 75 northbound frontage road and the businesses located there (improvement 2B-AC-SW-37). Also highly recommended is the construction of sidewalk fronting several of those businesses farther south (improvement 2B-AC-SW-37).

A shared use pathway as part of the Regional Veloweb network is planned along the Kansas City Southern rail line entering the north part of the study area and connecting to Collins Blvd west of U.S. 75 (improvement 2B-AC-VW-V01). A sidewalk connecting this improvement and the existing sidewalk along the west side of Collins Blvd to the sidewalk along the U.S. 75 southbound frontage road should be constructed as well (improvement 2B-AC-SW-03).

The City of Richardson plans to implement a road diet on the Collins Blvd bridge that will allow for wider sidewalks and protected bike lanes. The project should include signed and marked crosswalks with pedestrian-actuated rectangular rapid-flashing beacons (RRFB's) for crossing each of the four ramps between Collins Blvd and the U.S. 75 frontage roads, since the geometry of these ramps is conducive to high vehicular speeds.

Two new crosswalks are recommended for crossing Richardson Dr. One is recommended south of Monte Blaine Ln (improvement 2B-AC-CW-55), where the existing sidewalk on the west side ends, so the crosswalk will provide an alternate route via new and proposed sidewalk on the west side. The other crosswalk location (improvement 2B-AC-CW-53) aligns with an existing break in the hedges that aligns with the east end of Jolee St.

Both crosswalks must be designed carefully to maximize sight distance around the hedges and the tree-lined horizontal curves in the roadway geometry. Both should include yield lines and "Yield Here to Pedestrians" signing in each direction to mitigate risk of dual threat situation for pedestrians. Give strong consideration to installing pedestrian-actuated rectangular rapid flashing beacons (RRFB's), particularly due to the sight distance limitations. A road diet to introduce curb extensions and/or a median refuge island for pedestrians might also be considered to increase available pedestrian sight distance.

Additional details about other improvements recommended in Figure 2B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Arapaho Center Station that can be found in Appendix I and Appendix J.

3.2.6 Spring Valley Station (Half-Mile Area)

Figure 2C-2 on page 121 identifies the recommended improvements in the half-mile area around the Spring Valley Station. U.S. 75, Spring Valley Rd, and Centennial Blvd are major arterials that pose barriers to bicycle and pedestrian travel, though signalized crossings generally provide good access opportunities. Access to the transit-oriented development east of the station is good with new sidewalk, though somewhat indirect. Several gaps in the sidewalk are present along the U.S. 75 frontage roads and along the neighborhood streets east of Greenville Ave.

In addition to building sidewalk to fill gaps in the network, the recommended improvements include:

- At the west end of McKamy Springs Ct, consider providing short break in the existing fence to provide a sidewalk connection to the Central Trail. This would provide a shorter walking distance to the station for many apartment and townhome residents to the east. The City of Richardson indicates they will need to work with the property owner on whether they have a desire for this improvement.

- New or improved crosswalks across Lingco Dr between the station platform and park & ride lot, across Sherman St at Lingco Dr, and across Greenville Ave at Pittman St (improvements 2C-SV-CW-16, 17 and 38). Yield lines and signing, and a pedestrian refuge island are recommended at the Lingco Dr and Greenville Ave crossings, while pedestrian-actuauted RRFB's are recommended at Lingco Dr. The Lingco Dr crossing should be coordinated with DART, as discussed in Section 3.1.6.

- New yield lines and signing for the two lanes in each direction approaching the existing signed and marked crosswalk across Greenville Ave at E Phillips St, near the northeast half-mile area boundary (improvements 2C-SV-CW-30 and 31). Consider adding a pedestrian hybrid beacon if warranted by a study of pedestrian volumes during arrival and dismissal times for the First Baptist Church of Hamilton Park and the Richardson ISD Math Science Technology magnet school, both located nearby to the east.

- White crosswalk lines parallel to the existing patterned concrete crosswalk across Buckngham Rd at the Central Trail crossing (improvement 2C-SV-CW-27). Add pedestrian warning signs and yield lines and signing. Consider a traffic signal, particularly in conjunction with the future extension of the Central Trail south of Buckingham Rd. A full traffic signal should be considered instead of a RRFB or pedestrian hybrid beacon due to the adjacency to the existing DART railroad crossing gates and potential driver confusion with alternative meanings of flashing red lights.

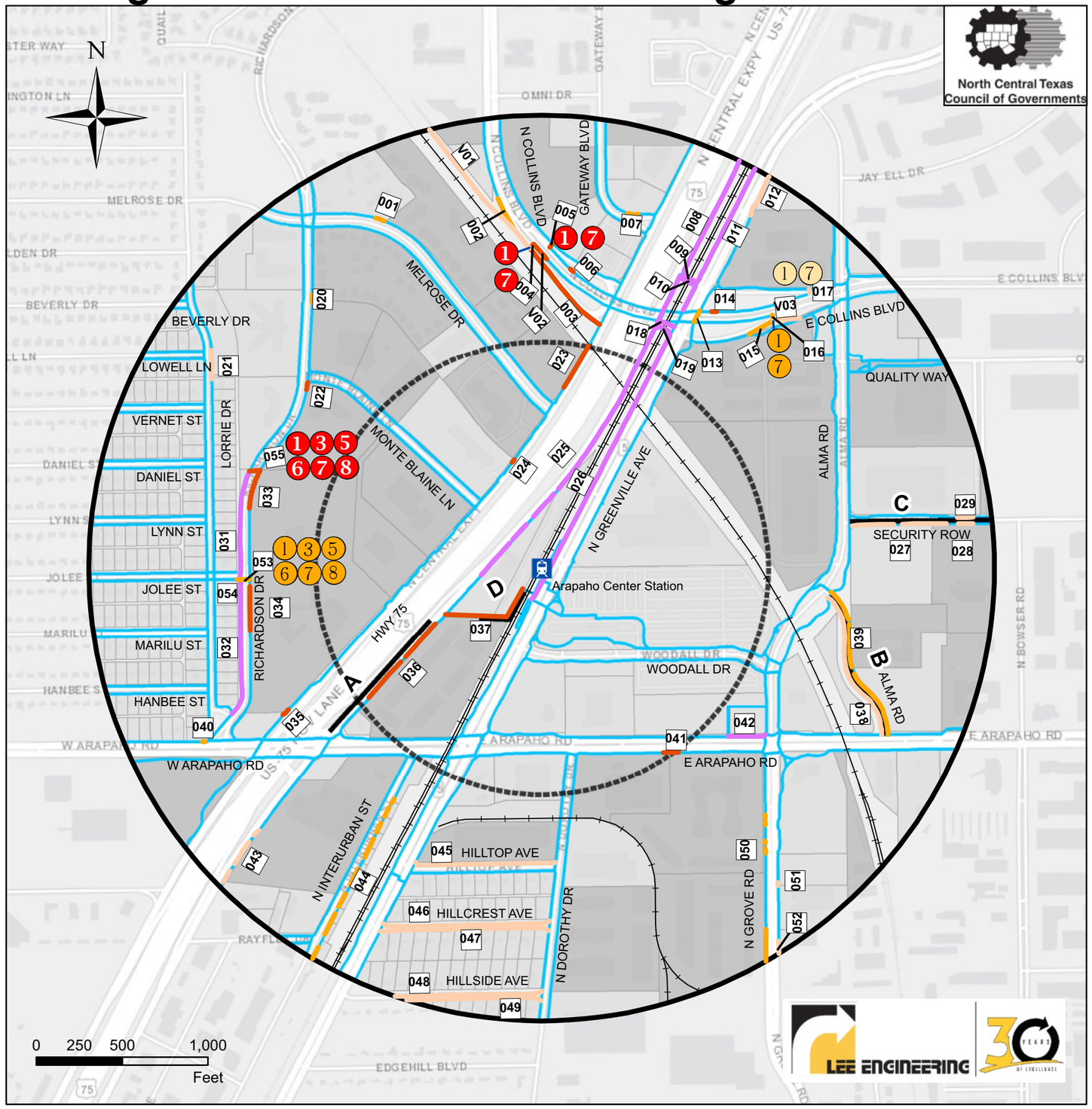
As discussed in Section 3.1.6, some pedestrians were observed crossing Spring Valley Rd directly below the rail overpass instead of at the adjacent signalized crosswalks 200 feet in either direction. A crosswalk improvement for more direct pedestrian travel along the trail would pose an undue constraint on vehicular signal coordination given the short distance to the signalized crosswalks. The City of Richardson should coordinate with DART to consider adjusting the location of bus stops and installing aesthetic anti-climb median fencing (improvement 2C-SV-GR-25) along the median of Spring Valley Rd in front of the DART station to ensure pedestrians cross at the crosswalks.

Additional details about other improvements recommended in Figure 2C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Spring Valley Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Arapaho Center Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 2B-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$481,600
Medium	$513,800
Low	$1,501,100
	$2,496,500

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

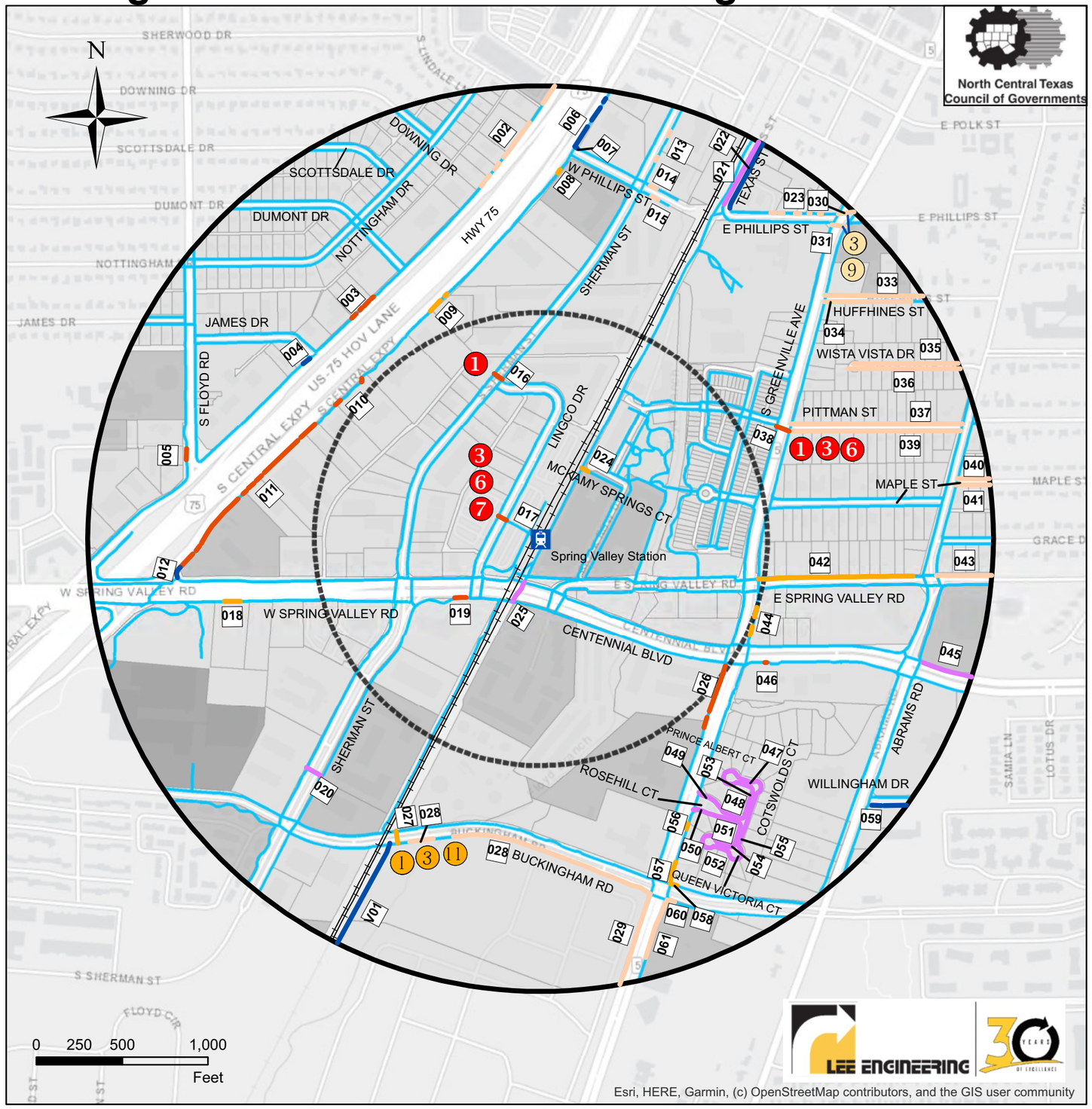
Improvement Code Legend (See Matrix)
2B-AC-SW-01
2B ← Station Number
AC ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING

FTA DART Stations
Last Mile Connections
Spring Valley Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 2C-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$225,500
Medium	$215,500
Low	$1,265,600
	$1,706,600

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
2C-SV-SW-01
2C ← Station Number
SV ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.7 Downtown Garland Station (Half-Mile Area)

Figure 3A-2.1 on page 123 shows the recommended improvements in the half-mile area around the Downtown Garland Station. Figure 3A-2.2 on page 124 provides a zoomed-in view of a portion of the station area with a dense concentration of improvements. The lack of sidewalk along significant portions of Walnut St, N 1st St, and W Ave B pose significant barriers to multi-modal travel along those arterials. Many industrial and downtown streets such as N 5th St and Main St also lack sidewalk. In addition to building sidewalk where absent, recommended improvements include:

- For crossing 5th St just south of the DART tracks (improvement 3A-DG-CW-216), the City should install white crosswalk lines parallel to the existing brick crosswalk. Add yield markings and signing for the southbound direction where the street is merging from two lanes to one.
- For crossing 6th St just south of the DART tracks (improvement 3A-DG-CW-215), the City should add a new marked crosswalk with warning signs and lighting.
- The City should provide high-visibility signed and marked crosswalks along 7th St at its crossings with Austin St, State St, and Main St (improvements 3A-DG-CW-217 to 222).
- For crossing W Ave A at 6th St, (improvements 3A-DG-CW-223 and 224), the City should add advance yield lines and signing in advance of the existing crosswalk in front of the Garland Senior Activity Center. Consider pedestrian-actuated rectangular rapid flashing beacons (RRFB's) and/or a road diet to implement curb extensions or a median refuge.
- Across the east leg of the signalized intersection of 1st St, Main St, Lavon Dr and Bankhead St (improvement 3A-DG-CW-154), the City should consider construction of refuge islands and/or other geometric and signal phasing changes to enable re-introduction of a crosswalk that was removed in recent years.
- Consider adding pedestrian-actuated rectangular rapid flashing beacons (RRFB's) to the existing signed and marked north leg crosswalk near the new mid-rise apartments south of W Ave A between Glenbrook Dr and 7th St (improvement 3A-DG-CW-225).

Finally, the City of Garland should coordinate with DART to improve the safety of crossings between the rail station and the bus station/park and ride lot on opposite sides of Walnut St. Many DART riders were observed crossing mid-block between 4th St and 5th St despite the presence of signalized crosswalks at both intersections. As recommended in Section 3.1.7, anti-climb median fencing mounted on top of concrete traffic barrier should be considered for this location.

Additional details about other improvements recommended in Figure 3A-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Downtown Garland Station that can be found in Appendix I and Appendix J.

3.2.8 Forest Jupiter Station (Half-Mile Area)

Figure 3B-2 on page 125 identifies the recommended improvements in the half-mile area around the Forest Jupiter Station. This station serves an area that is mostly industrial in nature. Sidewalk is present and in good condition along Forest Ln, but Jupiter Rd, International Rd, and Miller Park Dr all have lengthy sidewalk gaps.

The City of Garland is beginning construction on a sidewalk project that will fill sidewalk gaps and make other improvements to existing sidewalk along Barnes Dr north of the station. The improvements will continue east along Edgewood Dr from its intersection with Barnes Dr to points beyond the half-mile station area. Improvement locations 3B-FJ-SW-009 through 011 are thus designated to be "built by others" as part of this project.

The City is also planning a local shared use path along the north side of the DART tracks west of the station (improvement 3B-FJ-SP-033), which will cross Jupiter Rd (at improvement 3B-FJ-CW-034). At this location, the City should add crosswalk markings, signing, and lighting. The City may wish to construct a full pedestrian traffic signal instead of an RRFB or pedestrian hybrid beacon due to the adjacency to railroad crossing gates. The need for this improvement is contingent on construction of both the local shared use-path to the west and the shared use path to the east which will connect to the station platform (improvement 3B-FJ-SP-038). Refer to Section 3.1.8 for more details about the eastern segment.

In addition to building sidewalk where absent, other recommended improvements include:

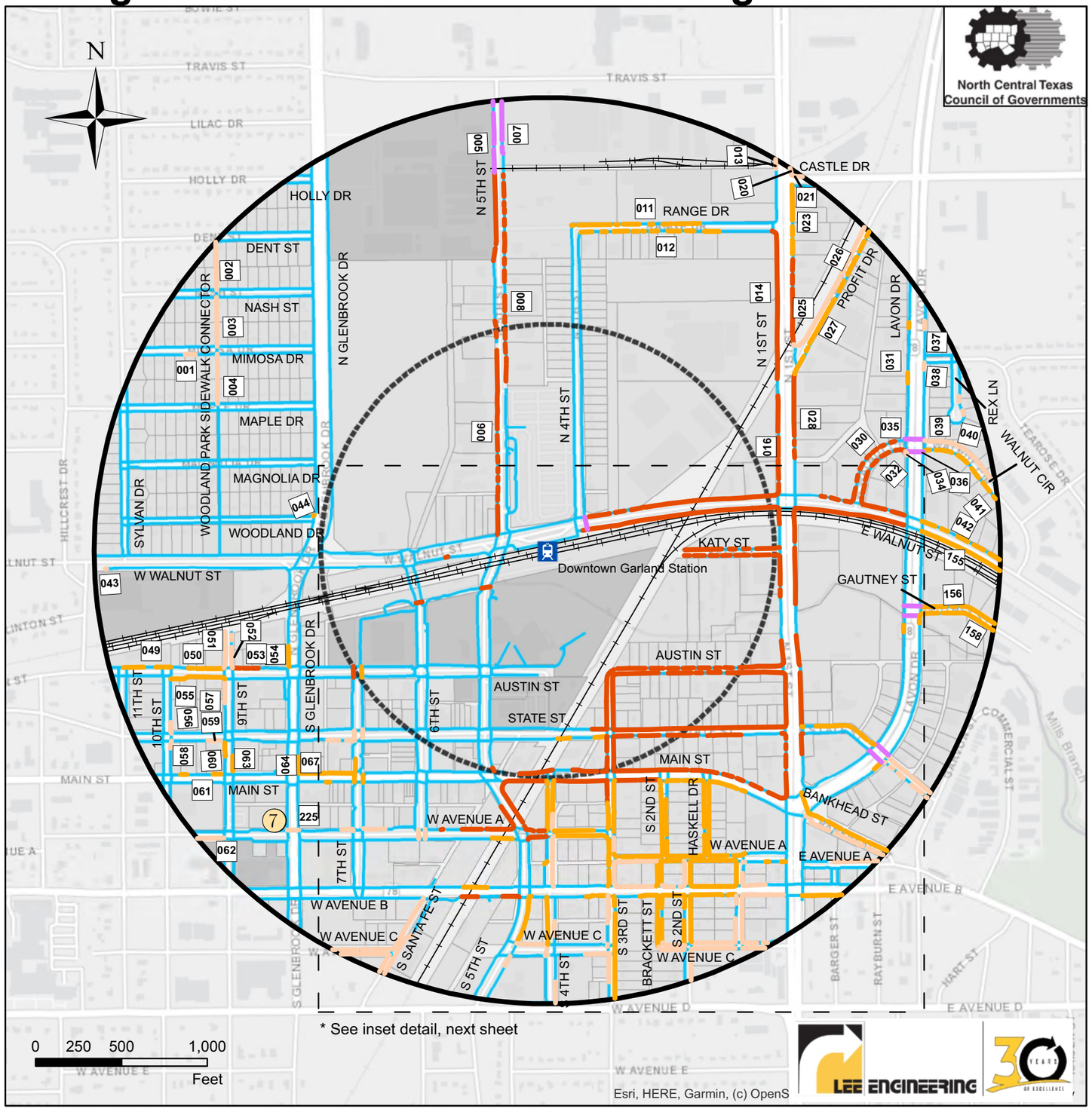
- For the existing signed and marked crosswalk across Jupiter Rd at Edgewood Dr (improvement 3B-FJ-CW-007), the City should consider replacing the existing rapid rectangular flashing beacon (RRFB) system with a pedestrian hybrid beacon. The procedure outlined in the Federal Highway Administration's (FHWA) recent publication, "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" (July 2018) indicates that RRFB's may not be sufficiently visible to drivers on six-lane, high-speed, high-volume streets such as Jupiter Rd.
- Add signed and marked crosswalks across each leg of the Miller Park Dr roundabout (improvements 3B-FJ-CW-047 through 052). Crosswalks should either be placed where existing streetlighting is present, or new streetlighting should be installed. Include sidewalk segments for crossing the wide splitter islands.

Additional details about other improvements recommended in Figure 3B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Forest Jupiter Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Downtown Garland Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 3A-2.1 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$7,134,400
Medium	$4,732,400
Low	$4,017,400
	$15,884,200 (2020 $)

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
3A-DG-SW-01
3A ← Station Number
DG ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations Last Mile Connections
Downtown Garland Station
November 2020

Figure 3A-2.2
Construction Packages Inset Detail

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- **Proposed Sidewalk/ Crosswalk by Priority** 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

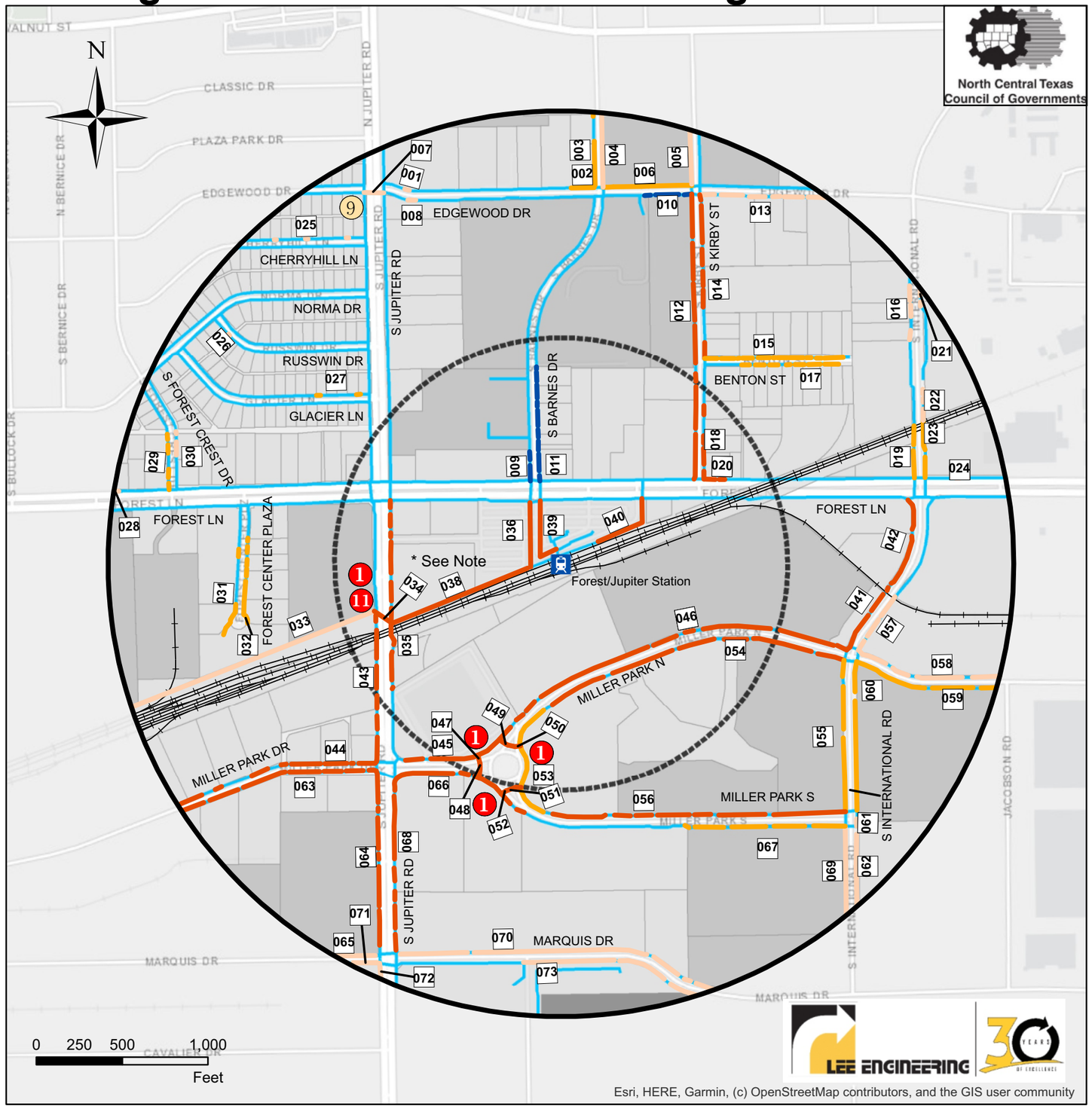
Improvement Code Legend (See Matrix)	
3A-DG-SW-01	
3A	Station Number
DG	Station Abbreviation
SW	Sidewalk (or CW for Crosswalk)
01	Improvement Number (Matches 1 on Map)

LEE ENGINEERING

FTA DART Stations
Last Mile Connections
Forest Jupiter Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 3B-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$3,020,900
Medium	$1,986,400
Low	$2,489,600
	$7,496,900 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Need for improvement contingent on construction of local shared use-path.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
3B-FJ-SW-01
3B ← Station Number
FJ ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.9 LBJ Central Station (Half-Mile Area)

Figure 3C-2 on page 127 shows the recommended improvements in the half-mile area around the LBJ Central Station. IH- 635 forms a significant barrier to multi-modal travel to and from the north. The station has good sidewalk access to one newer apartment complex directly to its east and to the Texas Instruments campus to the south. However, connectivity to other apartment buildings along Markville Dr to the southeast and to the single family residential neighborhood to the west suffers due to sidewalk gaps.

South of the station, a new Regional Veloweb shared use path is proposed in DART right-of-way along the west side of the tracks (3C-LC-VW-V03 and 3C-LC-VW-V04 in Figure 3C-2). Separately, the City of Dallas intends to construct sidewalk along both sides of the meandering alignment of TI Blvd south of the station.

A new crosswalk with a pedestrian refuge island (or at a minimum, advanced yield signing and striping) and rectangular rapid flashing beacons (RRFB's) is recommended to serve users of the Veloweb shared use path where it will cross TI Blvd southwest of the station. A road diet along this section of TI Blvd would further facilitate construction of the refuge island. Similar enhanced crosswalks with advanced yield lines and signing as well as RRFB's are recommended for crossing Markville Dr immediately south of the station and at Vantage Point Dr.

Sidewalk improvements along the south side of Markville Rd will allow more comfortable pedestrian access to and from the station for apartment residents.

Additional details about these and other improvements recommended in Figure 3C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for LBJ Central Station that can be found in Appendix I and Appendix J.

3.2.10 Forest Lane Station (Half-Mile Area)

Figure 3D-2 on page 128 identifies the recommended improvements in the half-mile area around the Forest Lane Station. Recommended improvements include construction of a new Regional Veloweb shared use path in DART right-of-way along the west side of the tracks (3D-FL-VW-V01 and 3D-FL-VW-V02 in Figure 3D-2). The shared use path will intersect Forest Ln over 600 feet from the nearest signalized crosswalk, so many pedestrians and cyclists are likely to avoid this extra travel distance. Therefore, strong consideration should be given to an enhanced crosswalk with a pedestrian hybrid beacon at this location. Pedestrian hybrid beacons should also be considered for mid-block crossings of the U.S. 75 frontage roads near the western limits of the half-mile area boundary.

Each of the crosswalk locations mentioned should have advance "Yield Here to Pedestrians" signing and yield line striping (Item #3 in the "Possible Pedestrian Safety Countermeasures" legend).

Other improvements include sidewalk along both sides of the Forest Central Dr business park roadway and both sides of TI Blvd. Marked crosswalks and countdown, accessible pedestrian signals should be provided at the intersection of Forest Ln and TI Blvd.

Additional details about these and other improvements recommended in Figure 3D-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Forest Lane Station that can be found in Appendix I and Appendix J.

3.2.11 Walnut Hill Station (Half-Mile Area)

Figure 4A-2 on page 129 identifies the recommended improvements in the half-mile area around the Walnut Hill Station. The station is relatively well connected to the surrounding area for pedestrians and bicyclists. However, notable sidewalk gaps exist along Walnut Hill Ln east of the station and within the campus of Texas Health Presbyterian Hospital Dallas to the south. The City of Dallas will need to coordinate with Presbyterian Hospital Dallas to help facilitate sidewalk improvements on their property south of the station.

The City of Dallas will need to coordinate with DART on a recommendation to improve access to the station. The recommendation is for DART to provide gaps in the decorative fence posts between the sidewalk and stairways to the elevated station platform for more direct pedestrian and bicyclist access. However, since this may increase the number of pedestrians who would otherwise attempt to cross Walnut Hill Ln at-grade and mid-block under the elevated station platform, it is also recommended to provide anti-climb median fencing in the median. This will discourage pedestrian crossings except via the overhead station platform or at the signalized crosswalk at Glen Lakes Dr 350 feet to the east. The City will need to coordinate with DART for construction of the anti-climb median fencing. See Section 3.1.11 and station area improvement 4A-WH-ST-10 on Figures 4A-1.1, 4A-1.3 and 4A-1.4 (pages 46, 48 & 49) for more details.

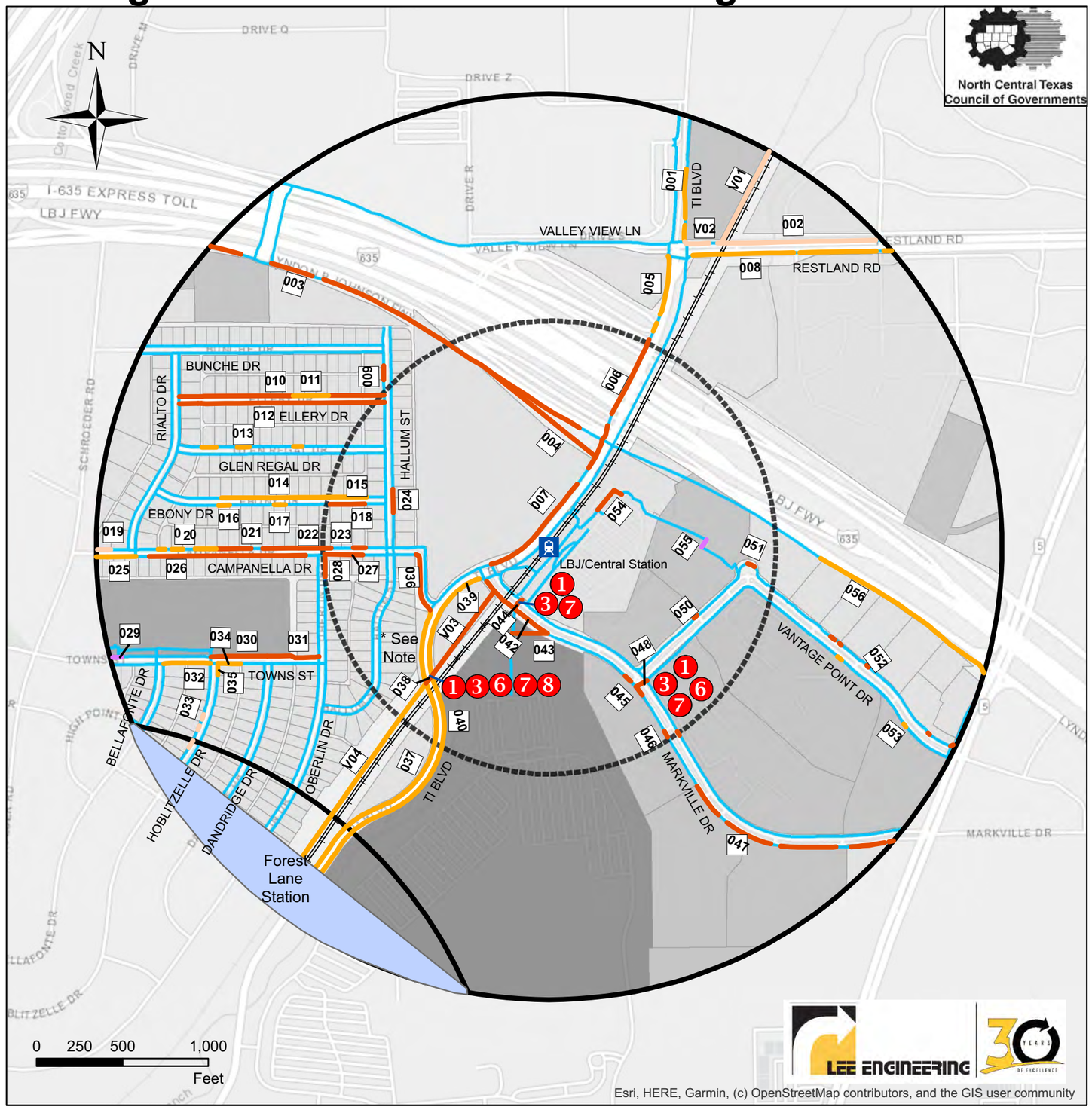
Other improvements of note include adding marked crosswalks, pedestrian ramps, and countdown accessible pedestrian signals at the intersection of Walnut Hill Ln and Rambler Rd at the signalized northern entrance to the hospital, and providing an RRFB for more conspicous pedestrian crossings of Glen Lakes Dr at its intersection with Walnut Hill Ln, where the right "turn" from Walnut Hill Ln has the geometry of a through movement at potentially higher speeds.

Additional details about these and other improvements recommended in Figure 4A-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Walnut Hill Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
LBJ Central Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 3C-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,432,100
Medium	$414,700
Low	$317,000
	$2,163,800 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Crosswalk improvement contingent on construction of Regional Veloweb shared use path.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

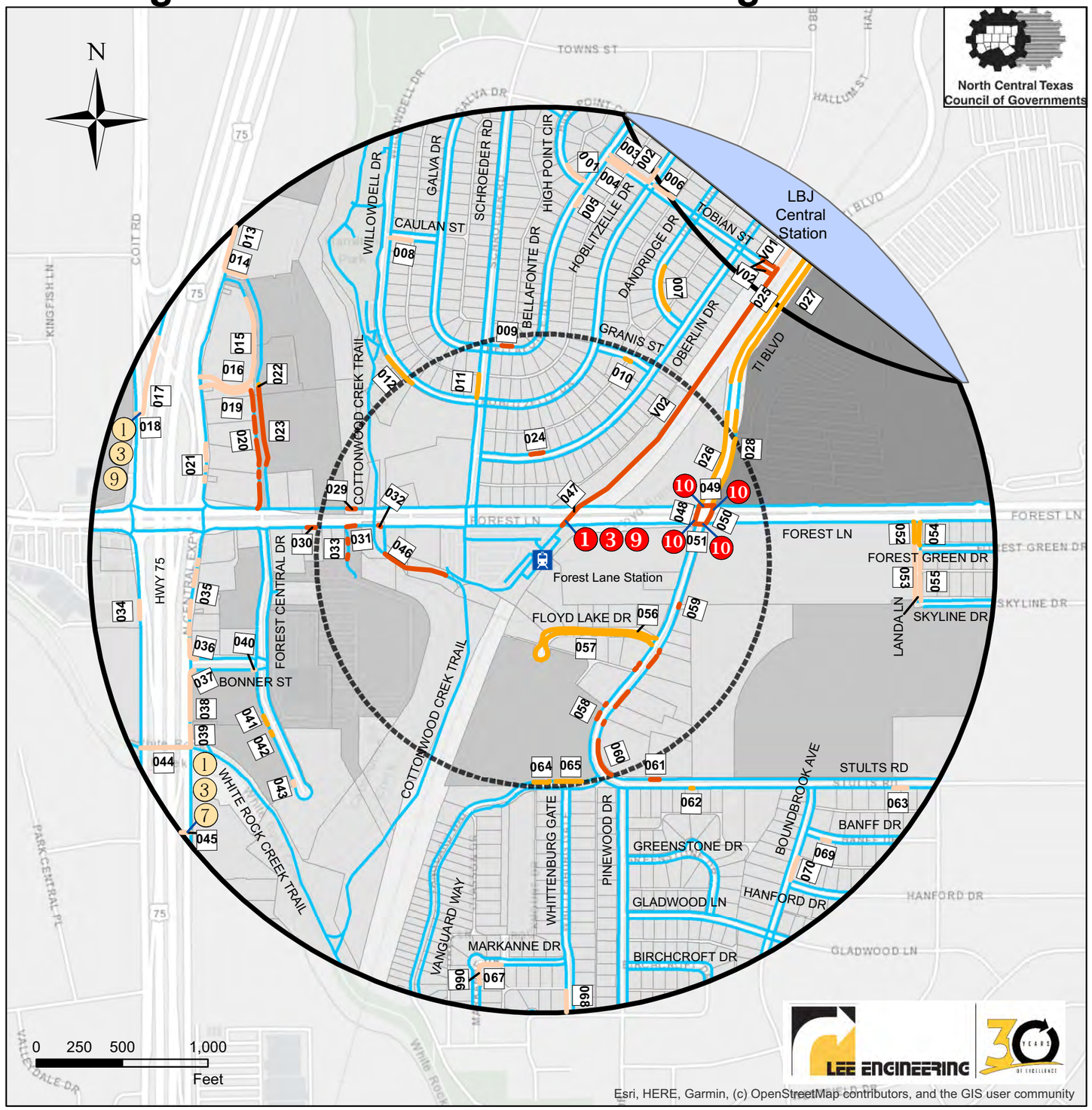
10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
3C-LC-SW-01
3C ← Station Number
LC ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Forest Lane Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 3D-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,081,800
Medium	$94,300
Low	$320,600
	$1,496,700 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

*Note: Need for improvement contingent on construction of local shared use-path.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
3D-FL-SW-01
3D ← Station Number
FL ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Walnut Hill Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4A-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$607,900
Medium	$1,434,900
Low	$576,900
	$2,619,700 (2020 $)

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Primary Routes

Route	Street
A	Wallnut Hill Ln
B	Cntrl Expwy Access
C	Greenville Ave
D	Greenville Ave

Improvement Code Legend (See Matrix)
4A-WH-SW-01
4A ← Station Number
WH ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING

3.2.12 Park Lane Station (Half-Mile Area)

Figure 4B-2 on page 131 identifies the recommended improvements in the half-mile area around the Park Lane Station. The station is somewhat connected to the surrounding area for pedestrians and bicyclists. However, notable sidewalk gaps exist along Greenville Ave and Twin Hills Ave to the north and south, as well as within and around the private Caruth Plaza and North Park shopping centers and the Glen America business park to the west. Park Ln is itself a barrier to access for some multi-modal trips arriving to and from the south, since the overhead station platform bridges over the roadway but is only accessed from the north side.

Two improvements straddling the station property and adjacent City of private right-of-way will need to be coordinated between the City, DART, and the Caruth Plaza property owner. One of these improvements would be a sidewalk connection from the station property west across the Caruth Plaza parking lot to the shopping center building. The other would be a crosswalk with pedestrian hybrid beacon across Park Ln beneath the overhead rail bridge. See Section 3.1.12 for more details.

Other improvements include filling sidewalk gaps along the roadways mentioned above (among others) and adding marked crosswalks and countdown, accessible pedestrian signals at the intersection of Greenville Ave and Blackwell St.

Additional details about these and other improvements recommended in Figure 4B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Park Lane Station that can be found in Appendix I and Appendix J.

3.2.13 Lovers Lane Station (Half-Mile Area)

Figure 4C-2 on page 132 identifies the recommended improvements in the half-mile area around the Lovers Lane Station. Central Expy (U.S. 75) poses a boundary to multi-modal access to the station from the western low-density neighborhoods in Dallas and University Park. Otherwise, multi-modal access is fairly complete along the existing street grid, with a few sidewalk gaps on Greenville Ave, Northway Dr and one small gap on Milton St just east of the station being notable exceptions.

The aforementioned sidewalk gaps would be filled, and marked crosswalks with curb extensions would be built to shorten pedestrian crossing distances across Amesbury Dr at Milton St and Birchbrook Dr, as well as for crossing Matilda St at Milton St.

Additional details about these and other improvements recommended in Figure 4C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Lovers Lane Station that can be found in Appendix I and Appendix J.

3.2.14 Mockingbird Station (Half-Mile Area)

Figure 4D-2 on page 133 identifies the recommended improvements in the half-mile area around the Mockingbird Station. Multi-modal access is good in this area, particularly along pedestrian desire lines to the highest density residential and business land uses. Some sidewalk gaps exist, though typically only where sidewalk is available on the opposite side of the same street. U.S. 75 forms a boundary that makes trips to and from the Southern Methodist University campus more indirect.

Sidewalk should be constructed to fill gaps on the south side of Mockingbird Ln and the north side of Twin Sixties Dr. Advanced yield lines and "Yield Here to Pedestrians" signing should be added to the existing multi-lane crossings of SMU Blvd at Prentice St and Worcola St.

Additional details about these and other improvements recommended in Figure 4D-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Mockingbird Station that can be found in Appendix I and Appendix J.

3.2.15 LBJ Skillman Station (Half-Mile Area)

Figure 4E-2 on page 134 identifies the recommended improvements in the half-mile area around the LBJ Skillman Station. The station is fairly poorly connected to the surrounding land uses, with continuous sidewalk being the exception rather than the rule along area streets.

Many sidewalks will be constructed by upcoming projects. The City of Dallas will reconstruct the intersection of Skillman St and Audelia Rd, with new sidewalk on both sides of each reconfigured approach street. TxDOT will construct continuous sidewalk along the outside of the IH-635 frontage roads. Additional coordination with TxDOT will be required to provide a connection between sidewalk on the west side and the existing pedestrian bridge over IH-635 to the station platform, as illustrated by improvement 4E-LS-SW-055 on Figure 4E-2.

The City of Dallas and DART should coordinate with the owners of adjacent apartment complexes to add short sidewalk connections to their properties (improvements 4E-LS-SW-056 and 4E-LS-SW-059 on Figure 4E-2) to reduce the walking distance to the station for apartment residents.

Worn paths in the grass were observed on the undeveloped DART property north of the station platform, indicating existing pedestrian demand to the apartments located along Adleta Blvd. DART has communicated that proposals have been made for development of the vacant portion of the this property. The sidewalk connections represented as improvements 4E-LS-SW-035 and 4E-LS-SW-037 should be built together with the development construction (if not sooner).

New sidewalk is also proposed along both sides of Miller Rd south of the station and in the industrial areas to the east accessed by Pagemill Rd, Dilworth Rd, Sandhill Rd, and Rockwall Rd to provide more access to employment.

A pedestrian traffic signal should be considered for crossing Audelia Rd to Valmarie Dr west of the existing sidewalk that parallels the north side of the DART tracks and connects to the bridge over IH-635 to the station platform. A pedestrian hybrid beacon should be considered at the existing crosswalk across Miller Rd at Markson Rd for better access to the industrial employment centers on the south side of the intersection.

Additional details about these and other improvements recommended in Figure 4E-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for LBJ Skillman Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Park Lane Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4B-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

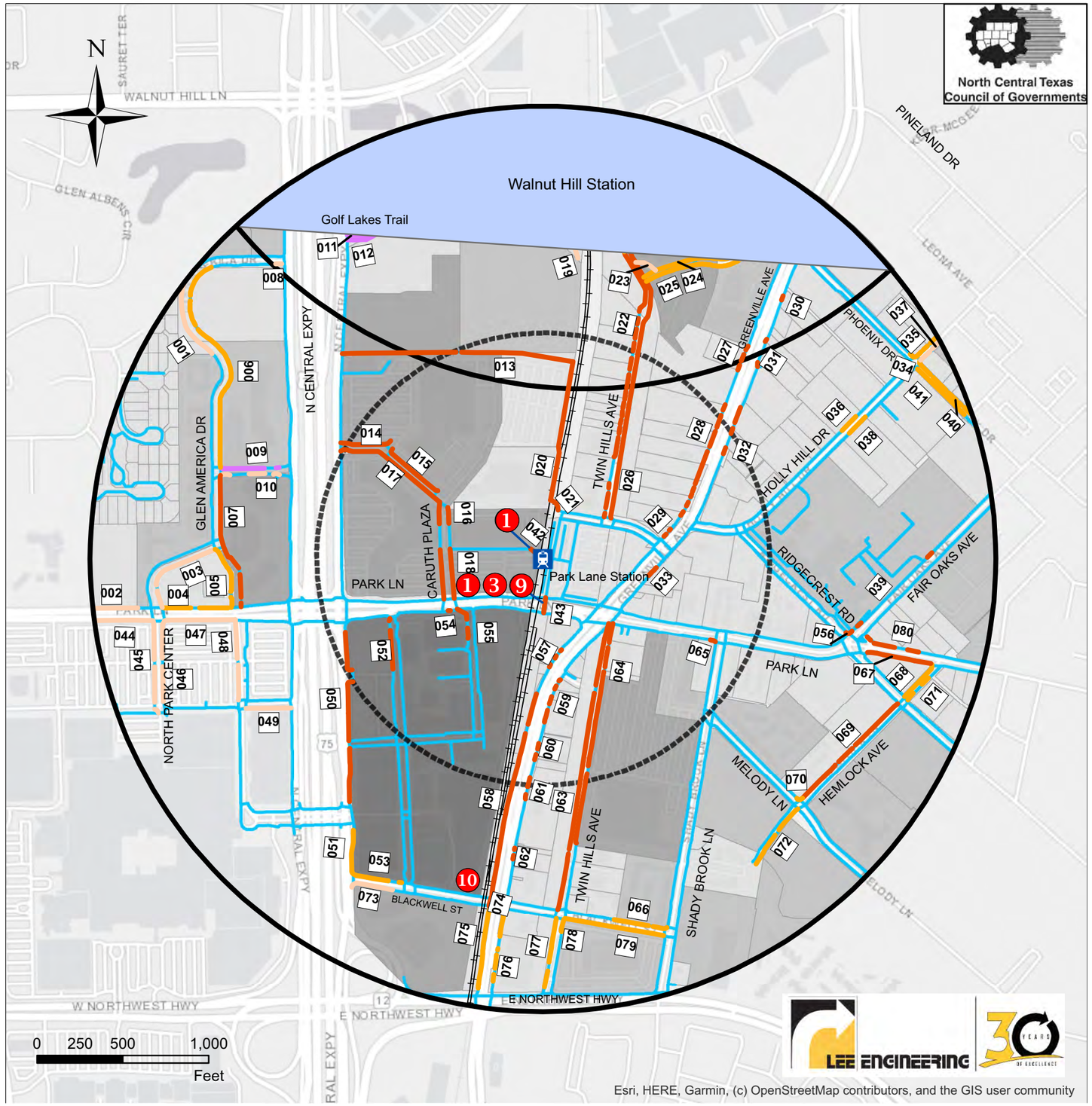
Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,440,100
Medium	$1,109,600
Low	$743,000
	$4,292,700 *(2020 $)*

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339



Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

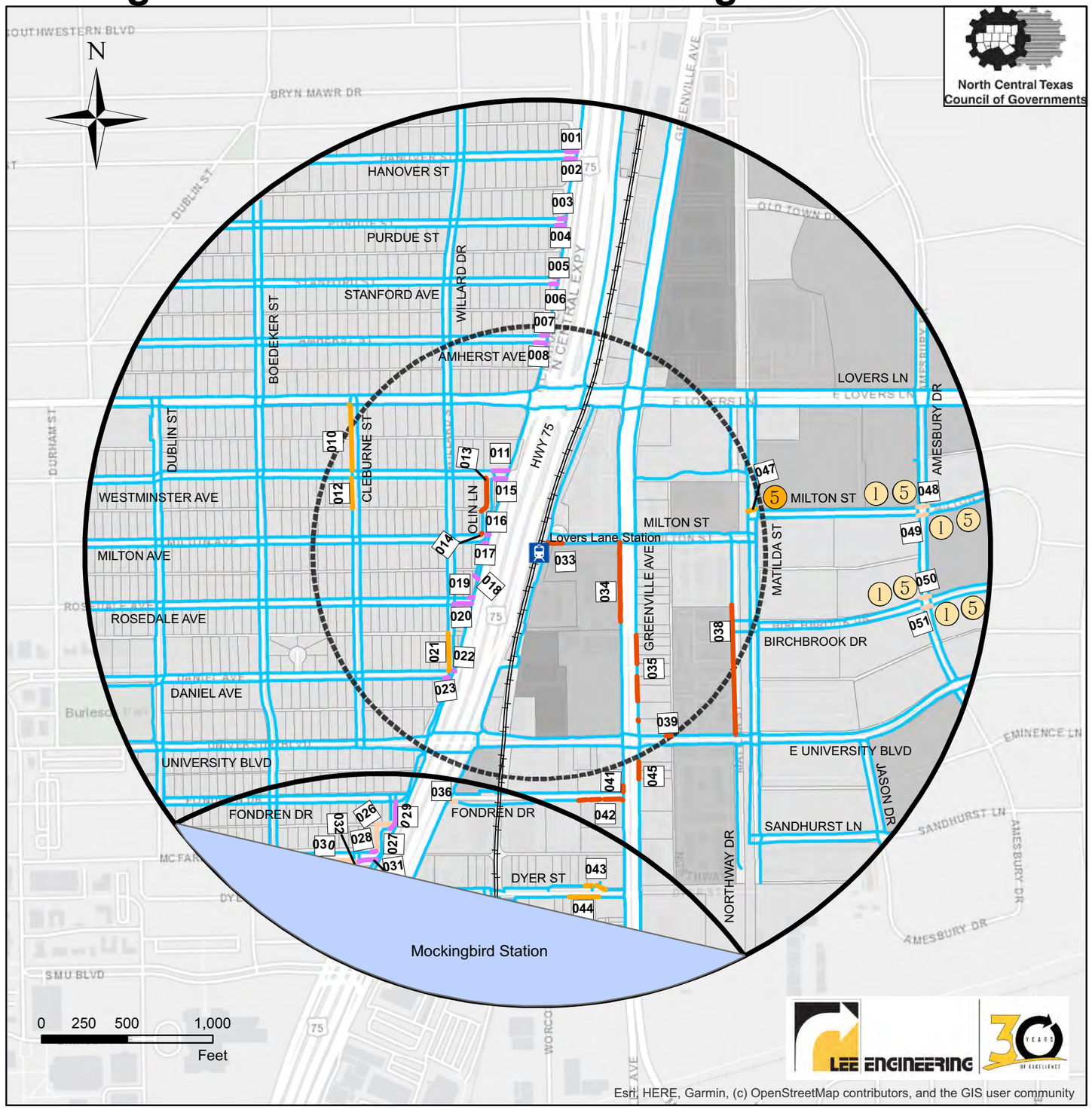
10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
4B-PL-SW-01
4B ← Station Number
PL ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Lovers Lane Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4C-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$369,600
Medium	$241,500
Low	$62,900
	$674,000
Built by Others	*(2020 $)*
Gap to Remain	

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

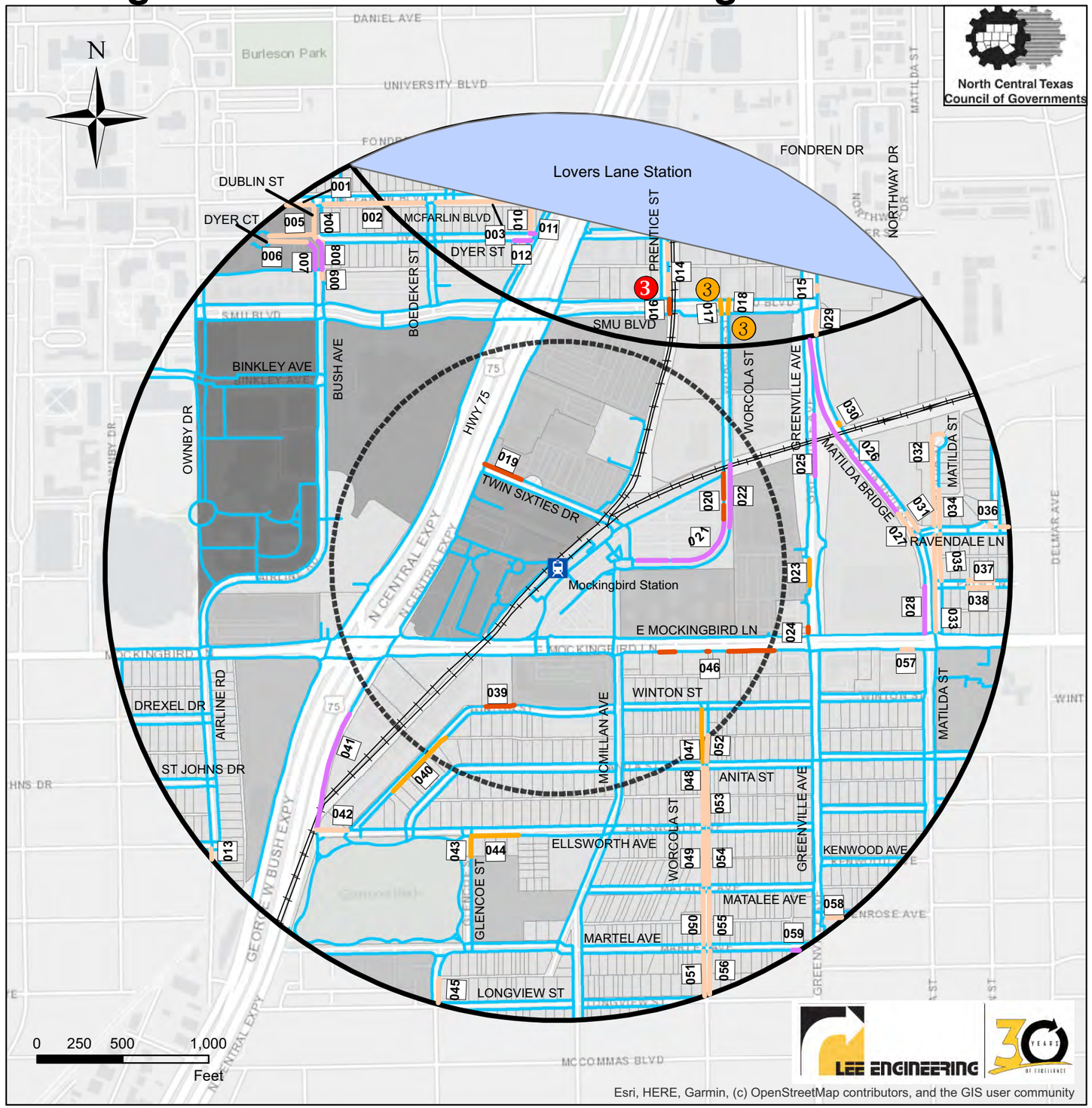
10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
4C-LL-SW-01
4C ← Station Number
LL ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations Last Mile Connections
Mockingbird Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4D-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$513,400
Medium	$214,000
Low	$1,593,800
	$2,321,200 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

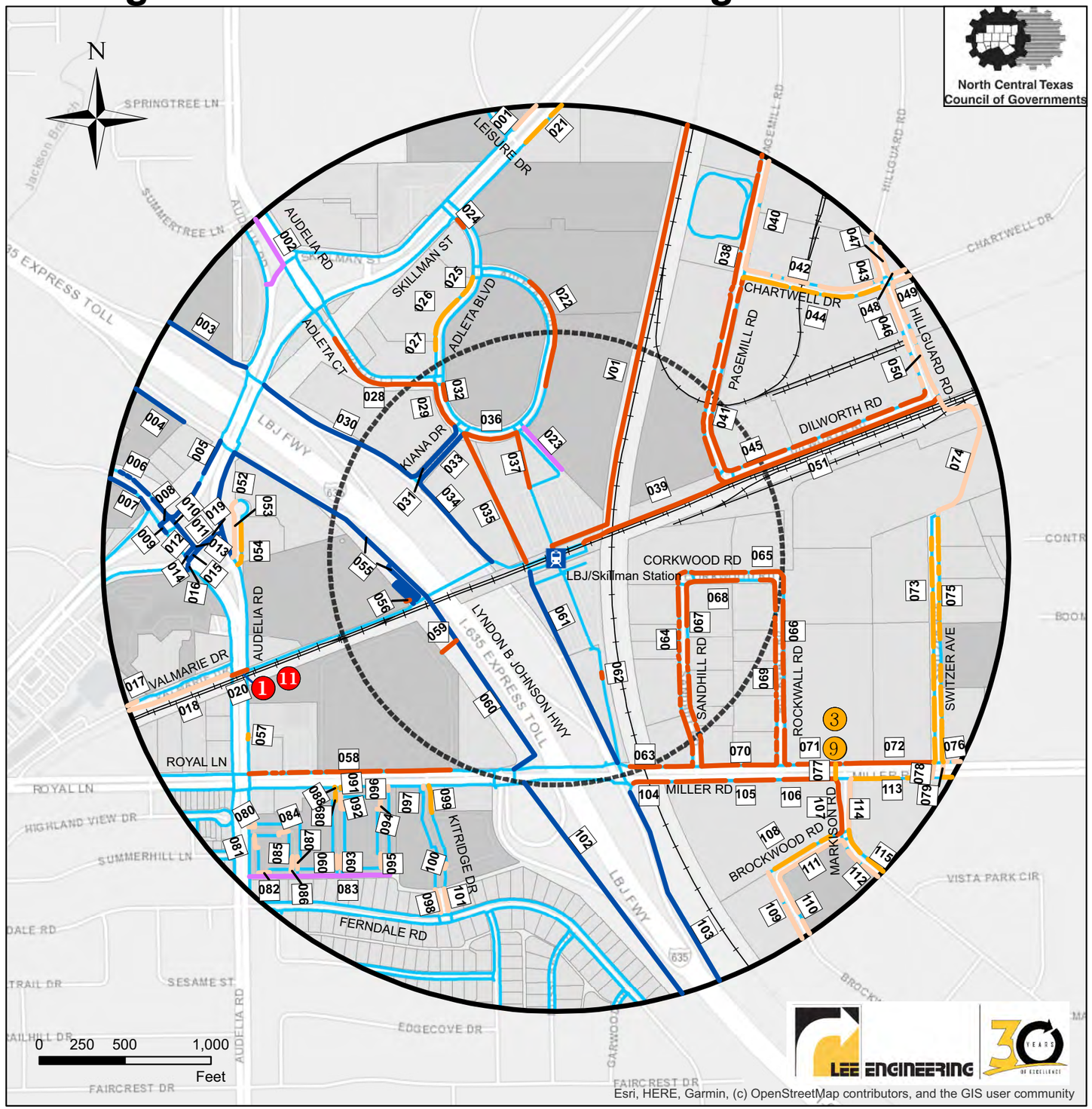
10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
4D-MB-SW-01
4D ← Station Number
MB ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
LBJ/Skillman Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4E-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,578,300
Medium	$860,600
Low	1,241,800
	$4,680,700 *(2020 $)*

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
4E-LS-SW-01
4E ← Station Number
LS ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.16 White Rock Station (Half-Mile Area)

Figure 4F-2 on page 136 identifies the recommended improvements in the half-mile area around the White Rock Station. Good multi-modal connections exist to apartments east and south of the station. The single-family home neighborhoods to the west and southwest lack sidewalk in many cases. A shared use path exists on the north side of Northwest Highway, with connections to the White Rock Creek Trail and White Rock Lake Loop Trail providing access to points beyond the half-mile area.

Improvements 4F-WR-SW-41 through 4F-WR-SW-43 in Figure 4F-2 show the location of a recommended sidewalk connection to Walling Cir, Walling Ln, and the neighborhood west of the station where Walling Circle's sidewalk currently dead ends at the fence surrounding the DART property. The City of Dallas DART should consider working together with DART to provide a pedestrian break in the fencing to connect to new sidewalk recommended on DART property connecting to the station platform. The City may also decide to build sidewalk along the west side of Walling Cir (see improvement 4F-WR-SW-40). See Section 3.1.16 for more details.

Other improvements further distant from the station mainly include sidewalk on several neighborhood residential streets, as well as along the north side of Mockingbird Ln. Enhanced crosswalks should be provided at the intersection of Lawther Dr with the westbound ramps for Mockingbird Ln at their grade-separated interchange. Advance yield lines and a pedestian hybrid beacon are recommended at this intersection due to vehicular traffic speeds and the likely significant volumes of foot and bike traffic crossing to access the White Rock Creek Trail that runs along the east side of Lawther Rd.

Additional details about these and other improvements recommended in Figure 4F-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for White Rock Station that can be found in Appendix I and Appendix J.

3.2.17 Eighth & Corinth Station (Half-Mile Area)

Figure 5A-2.1 on page 137 identifies the recommended improvements in the half-mile area around the Eighth & Corinth Station. Figure 5A-2.2 on page 138 provides a zoomed-in view of a portion of the station area with a dense concentration of improvements. Existing sidewalk connectivity is good along primary streets in the vicinity of the station, with Clarendon Dr west of 10th St and 11th St east of Eighth St/Bonnie View Rd being two exceptions. Many neighborhood streets lack sidewalk or have heavily damaged sidewalk. Much of the area northeast of the station is in the flood plain for the Trinity River, which does not support development but provides access to the station via the Trinity Skyline and Santa Fe Trestle Trails.

In addition to providing or replacing sidewalks, the recommendations include a shared use path along the north side of the DART tracks from the station platform west to Moore St (improvement 5A-EC-VW-V01 and 5A-EC-VW-V02 on Figure 5A-2.1).

Where this shared use path crosses N Corinth Street Rd (improvement 5A-EC-CW-084), the recommended improvement depends on details of the design that are not yet determined. If the crossing of Cedar Creek just west of Moore St can be built to a sufficient elevation to also span directly over S Corinth St Rd, this would be preferred. A ramp or stairs up to this bridge would shorten the walking distance to the station for some residents to the southwest.

However, if the bridge over Cedar Creek can only connect to the west side of S Corinth St Rd at street level, then aesthetic, non-climbable fencing should be built in the median of S Corinth St Rd to discourage mid-block pedestrian crossings and channelize them instead 300 feet to the north to the signalized crosswalk at the intersection with E Clarendon Dr. The estimated cost for this improvement assumes construction of median fencing in lieu of the pedestrian bridge.

Enhanced crosswalks should be provided at three locations:

1. Across Eighth St from the east end of the station platform to connect to the Santa Fe Trestle Trail (improvement 5A-EC-CW-136). Here, advance yield lines and "Yield Here to Pedestrians" signing should be added, pedestrian warning signs should be adjusted, and pushbutton activated rectangular rapid flashing beacons (RRFB's) attached to the pedestrian warning sign assemblies. The City of Dallas should coordinate with DART on these improvements, since some may lie on station right-of-way. See Station Improvement 5A-EC-ST-08 and Section 3.1.9 for more details.

2. Across Eighth St at Denley Dr (improvement 5A-EC-CW-038), add lighting and additional signing to this existing marked school crosswalk. Add advance yield lines and "Yield Here to Pedestrians" signing at the yield lines, and pedestrian warning signs at the crosswalk. The City of Dallas should consider a road diet, pedestrian-actuated rectangular rapid flashing beacons (RRFB's) a median refuge area and/or a pedestrian hybrid beacon.

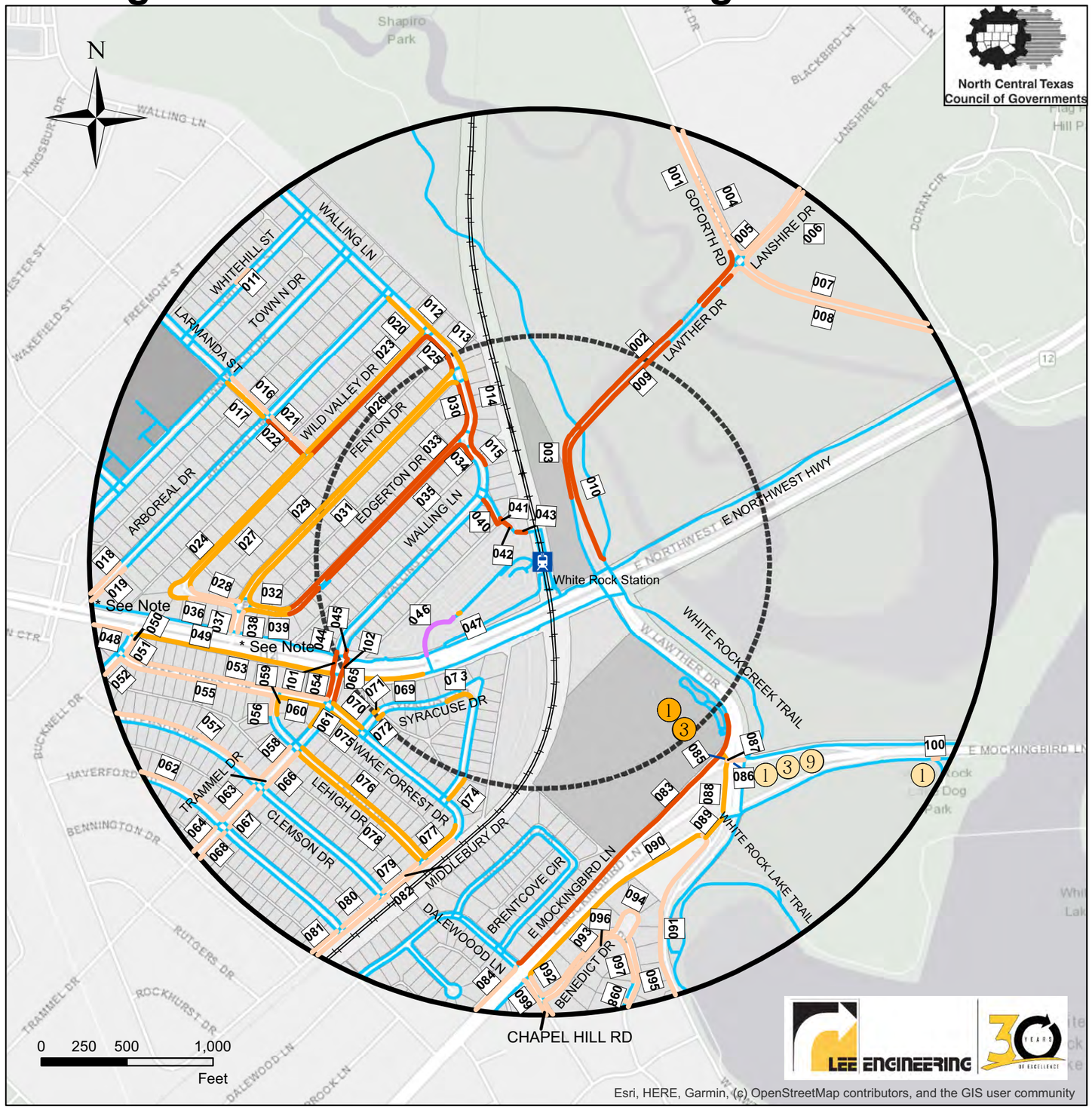
3. Across N Corinth Street Rd at Ave B (improvements 5A-EC-CW-089 and 5A-EC-CW-090), the City should add crosswalk pavement markings and advance warning signs to these existing signed and lit but unmarked school crosswalks. Advance yield lines and "Yield Here to Pedestrians" signing should be added for each approach. The City should also consider a road diet from six lanes to four to allow construction of a median refuge island. Finally, the City should consider a pedestrian hybrid beacon to further enhance visibility of crossing.

Additional details about these and other improvements recommended in Figures 5A-2.1 and 5A-2.2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Eighth & Corinth Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
White Rock Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 4F-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,232,700
Medium	$2,201,600
Low	$2,545,400
	$5,979,700 (2020 $)

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

* Relocate stop sign north of shared use path next to stop bar. Street name signs for Fenton Dr, Arboreal Dr, and Northwest Hwy should remain south of shared use path.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
4F-WR-SW-01
4F ← Station Number
WR ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
8th and Corinth Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 5A-2.1 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$3,536,200
Medium	$1,979,800
Low	$1,100,700
	$6,616,700

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10 10 10 10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11 11 11 11	Traffic Signal

Improvement Code Legend (See Matrix)
5A-EC-SW-01
5A ← Station Number
EC ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING 30 YEARS OF EXCELLENCE

FTA DART Stations
Last Mile Connections
8th and Corinth Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 5A-2.2 Construction Packages Inset Detail

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- Proposed Sidewalk/ Crosswalk by Priority [1]
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
5A-EC-SW-01
5A ← Station Number
EC ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.18 Dallas Zoo Station (Half-Mile Area)

Figure 5B-2.1 on page 140 identifies the recommended improvements in the half-mile area around the Dallas Zoo Station. Figure 5B-2.2 on page 141 provides a zoomed-in view of a portion of the station area with a dense concentration of improvements. The station is highly disconnected from sidewalks in surrounding neighborhoods. The Dallas Zoo itself and Marsalis Ave along its eastern boundary form a barrier which impedes more direct multi-modal travel between the station and neighborhoods on the opposite side of the zoo. Long sidewalk gaps on the south side of IH-35E also contribute to the problem.

Though Marsalis Ave has sidewalks along both sides in some places, no connections are provided from the overpass bridge above to Clarendon Dr or the station platform below. Roughly half of the neighborhood streets lack existing sidewalk in good condition, and there are no existing shared use path or bicycle facilities in the area.

The improvements highlighted in yellow along Marsalis Ave, Clarendon Dr, Ewing Ave, Morrell Ave, Strickland St, and Galloway Ave were selected by NCTCOG for 15% sidewalk design by the consultant team. Several improvements along the IH-35E frontage roads will be included as part of TxDOT's widening of the highway which is currently under construction.

Near the station platform, the City of Dallas should coordinate with DART to add pedestrian warning signs to the existing marked and lit crosswalk from the station platform across Clarendon Dr to the zoo entrance. Refer to improvement 5B-DZ-CW-085 on Figure 5B-4.1. This should include additional signing, striping, a pedestrian and pedestrian-actuated RRFB's. See Section 3.1.18 for more information.

Constructing an elevator and stairway connection between sidewalk on the Marsalis Ave bridge above and Clarendon Dr beneath near the station platform could significantly reduce walking distances to the station for many destinations west of the zoo and/or north of IH-35E, since they would no longer need to travel east out of the way via Ewing Ave. However, estimated construction cost for this improvement would require preliminary structural design outside this scope of work.

Additional details about these and other improvements recommended in Figures 5B-2.1 and 5B-2.2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Dallas Zoo Station that can be found in Appendix I and Appendix J.

3.2.19 Morrell Station (Half-Mile Area)

Figure 5C-2.1 on page 142 identifies the recommended improvements in the half-mile area around the Morrell Station. Figure 5C-2.2 on page 143 provides a zoomed-in view of a portion of the station area with a dense concentration of improvements. This station is surrounded by mostly single-family homes. Many of the residential streets have sidewalk in fair to good condition. However, on many other streets sidewalk is almost entirely absent or deteriorated.

Across Morrell Ave immediately south of the station, the City should coordinate with DART to install signed and marked crosswalks (see improvements 5C-MO-CW-66 through 5C-MO-CW-69). These should include new streetlighting, and consideration should be given to constructing a raised pedestrian refuge island in the median. See Section 3.1.19 and station improvements 5C-MO-ST-03 and 5C-MO-ST-04.

To the east along Morrell Ave at its intersection with Hutchins Rd (see improvements 5C-MO-CW-71 and 5C-MO-CW-72), the City should add school crossing signs at this existing marked and lit crosswalk, which is located within a signed school reduced speed zone for Franklin D. Roosevelt High School. The improvement should include adding advance yield lines and "Yield Here to Pedestrians" signing due to the high width of the two lane roadway (~40 feet). Consideration should also be given to constructing a median refuge island and/or curb extensions and adding pedestrian-actuated RRFB's.

A worn path in the grass east of Renner Rd indicates existing pedestrian demand leading to a pedestrian bridge over Little Cedar Creek and stairs up to S Corinth Street Rd, where a DART bus stop is present (see improvement 5C-MO-SW-107). Sidewalk to fill this gap should be constructed in conjunction with enhanced crosswalks across S Corinth Street Rd (at locations 5C-MO-CW-108 and 5C-MO-CW-135) to allow DART riders to safely and comfortably access the bus stops on either side of the six-lane divided arterial at its intersection with High Hill Blvd, where a road diet along South Corinth Street Rd should be considered along with a pedestrian hybrid beacon and crosswalk signing and striping enhancements.

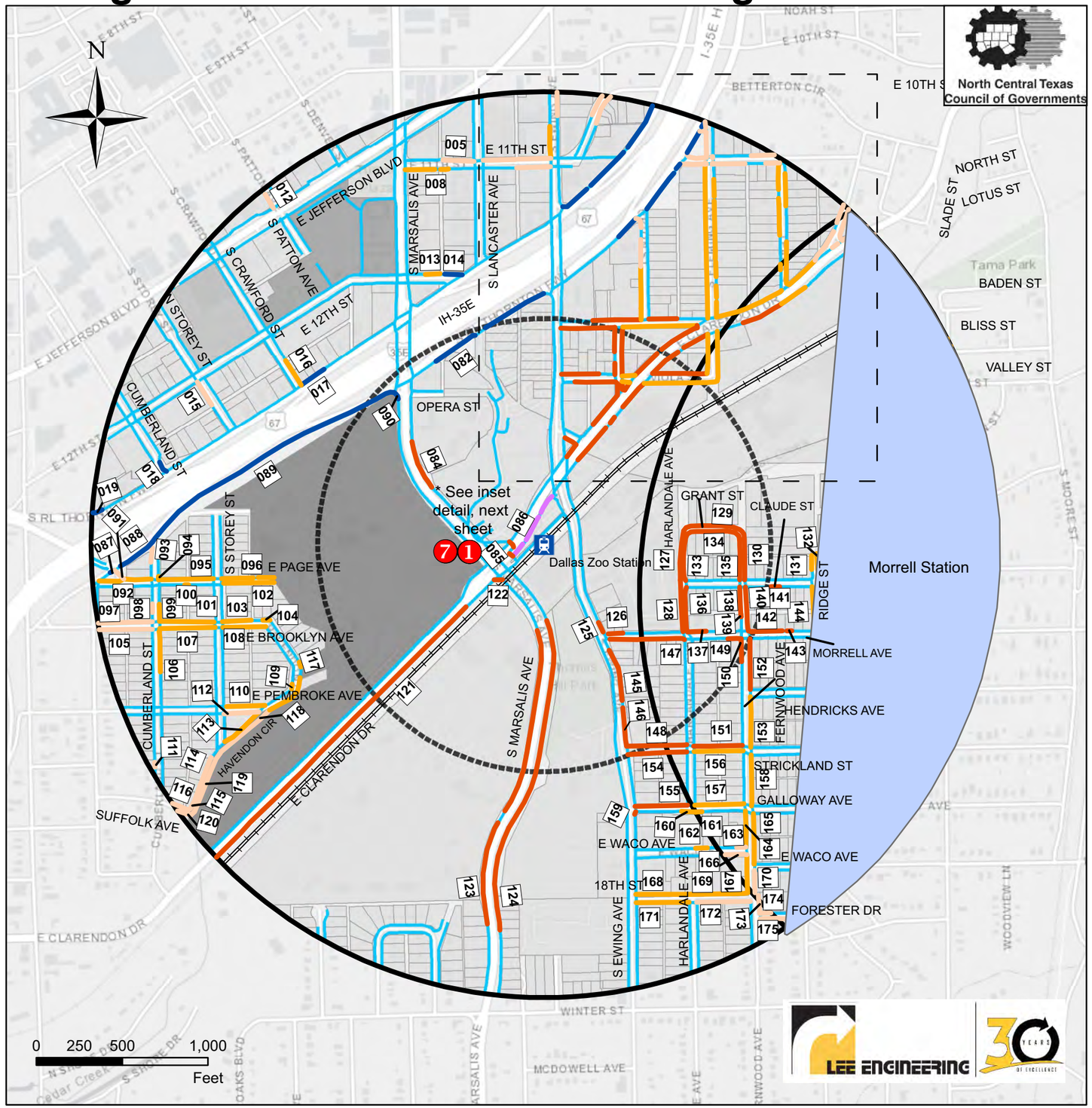
The City should coordinate with DART to ensure that the crosswalk design meets DART's needs for locating the bus stops, with bus stops downstream of the crosswalks for better sight lines if possible.

Additional details about these and other improvements recommended in Figures 5C-2.1 and 5C-2.2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Morrell Station that can be found in Appendix I and Appendix J.

FTA DART Stations Last Mile Connections
Dallas Zoo Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 5B-2.1 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$3,304,400
Medium	$1,874,000
Low	$965,100
	$6,143,500

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
5B-DZ-SW-01
5B ← Station Number
DZ ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING

FTA DART Stations Last Mile Connections
Dallas Zoo Station
November 2020

Figure 5B-2.2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- **Proposed Sidewalk/ Crosswalk by Priority** 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

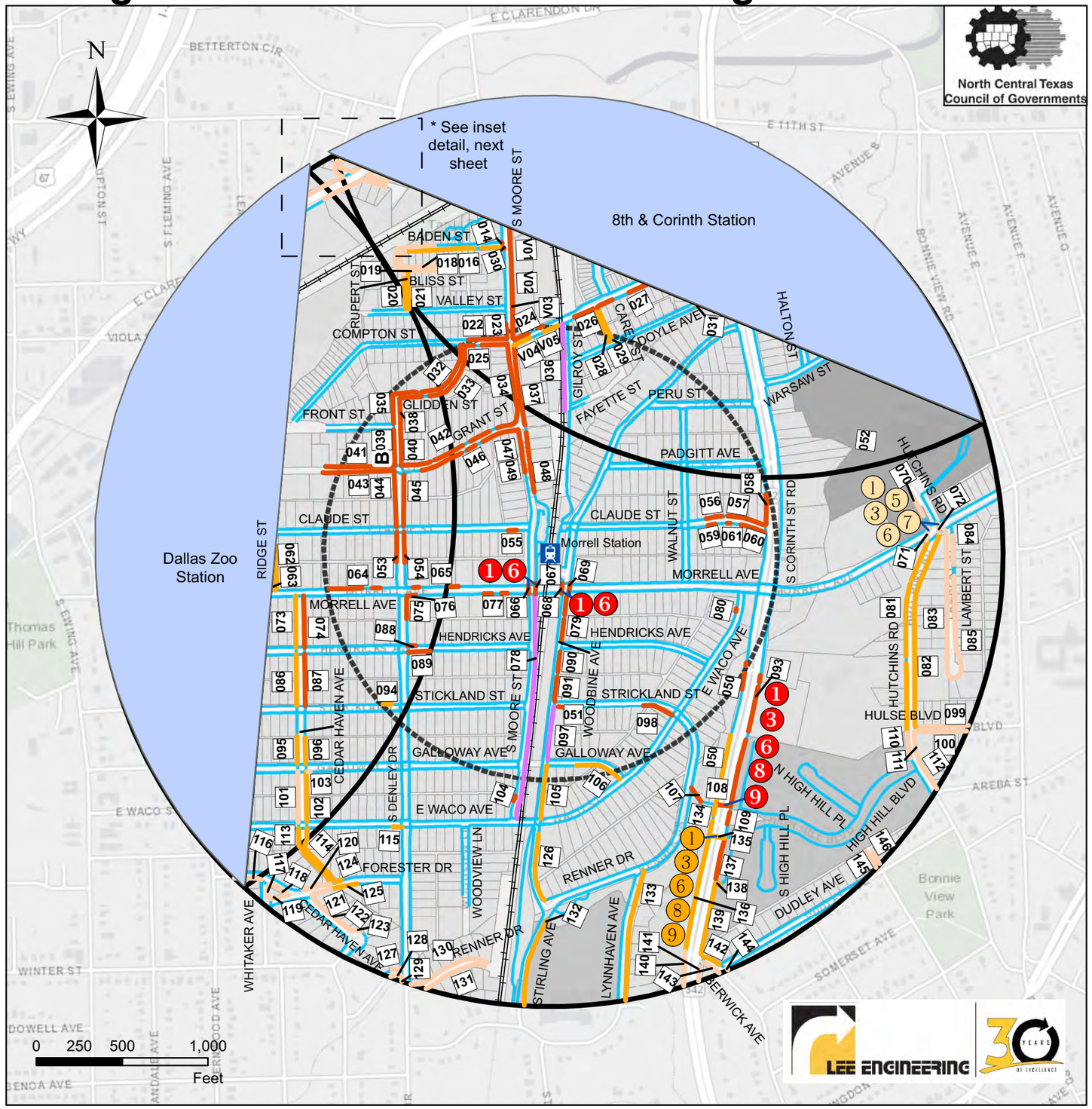
Improvement Code Legend (See Matrix)
5B-DZ-SW-01
5B ← Station Number
DZ ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches 1 on Map)

FTA DART Stations
Last Mile Connections
Morrell Station

November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 5C-2.1 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,426,200
Medium	$1,647,900
Low	$1,174,700
	$5,248,800

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

PpI

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
5C-MO-SW-01
5C ← Station Number
MO ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Morrell Station

November 2020

Figure 5C-2.2
Construction Packages Inset Detail

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority 1

- High
- Medium
- Low
- Built by Others
- Gap to Remain

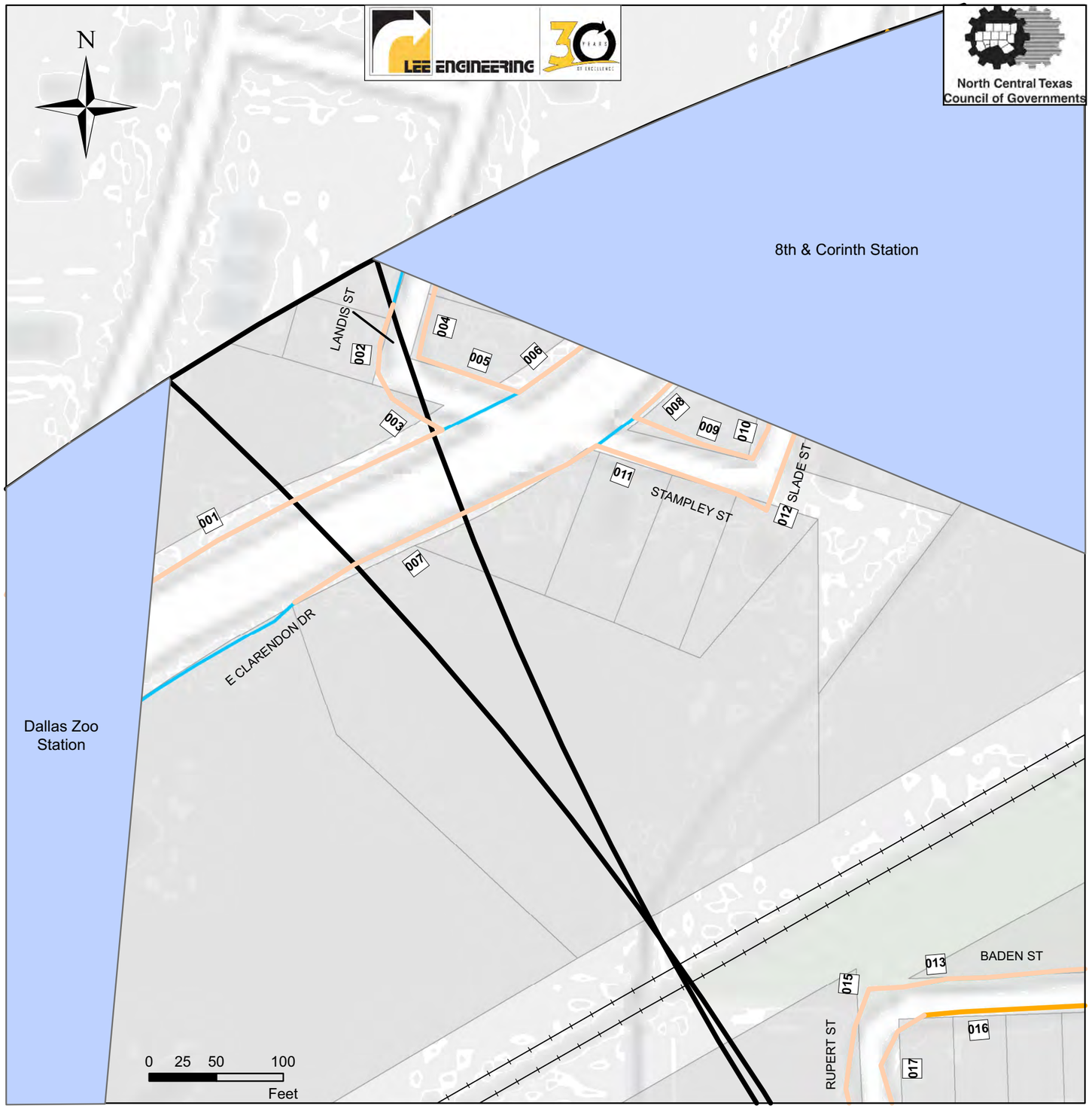
Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339



Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
5C-MO-SW-01
5C ← Station Number
MO ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches 1 on Map)

3.2.20 Tyler Vernon Station (Half-Mile Area)

Figure 6A-2.1 on page 145 identifies the recommended improvements in the half-mile area around the Tyler Vernon Station. Figures 6A-2.2 and 6A-2.3 on pages 146-147 provide a zoomed-in view of two portions of the station area with dense concentrations of improvements.

This station serves a mostly residential area. A largely connected rectangular grid street system partially compensates for the lack of sidewalk on many streets north and southwest of the station, though Clarendon Dr and the creek to the north of it are a barrier to linear travel for the neighborhood to their north. To the southeast of the station, sidewalks are completely absent from the lower density residential neighborhood.

Significant segments of sidewalk are proposed along Leganon Ave, adjacent to the station, as well as along Nolte Dr, Polk St, Tyler St, and Vernon Ave as well as along many neighborhood streets.

Enhanced crosswalks are proposed at several locations. Among the most notable are:

- Across Tyler St adjacent to the east end of the station platform, where a pedestrian traffic signal and median refuge island are recommended.
- Across the Polk St Cutoff at Buckalew St, where new markings, lighting, yield lines and signing, a road diet, and pedestrian hybrid beacon should all be added or considered for this existing signed but unmarked school crosswalk across a three-lane, one-way street. A DART bus stop is located on the west side of the street near this crosswalk.
- Across Tyler St at Page Ave, where new markings, yield lines and signing, a road diet, and pedestrian hybrid beacon should all be added or considered for this existing signed but unmarked school crosswalk across a three-lane, one-way street in a 20 mph reduced speed school zone. A DART bus stop is located on the east side of the street near this crosswalk.
- Across Tyler St at Burlington Ave, where new markings, lighting, yield lines and signing, a road diet, and pedestrian hybrid beacon should all be added or considered for this existing signed but unmarked school crosswalk that crosses a six-lane divided arterial but which is not in a reduced speed school zone. DART bus stops are located on either side of Tyler St at this location.
- Across Vernon Ave at Ferndale Ave, where DART bus stops with modest ridership are present on both sides of the six-lane divided roadway here. The improvement should include advance yield lines and signing, and strong consideration should be given for a pedestrian hybrid beacon and/or a road diet from six to four lanes.

Additional details about these and other improvements recommended in Figures 6A-2.1, 6A-2.2, and 6A-2.3, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Tyler Vernon Station that can be found in Appendix I and Appendix J.

3.2.21 Hampton Station (Half-Mile Area)

Figure 6B-2 on page 148 identifies the recommended improvements in the half-mile area around the Hampton Station. Sidewalk connectivity is good for some streets but poor for others. The lack of sidewalk on the west side of Hampton Rd north of the station is a barrier to pedestrian travel since there are no other signalized crossings north of Wright St. Both sides of Wright St east of the station are also without sidewalk. In addition to filling sidewalk gaps on the streets mentioned above and others, enhanced crosswalks are recommended at the following locations:

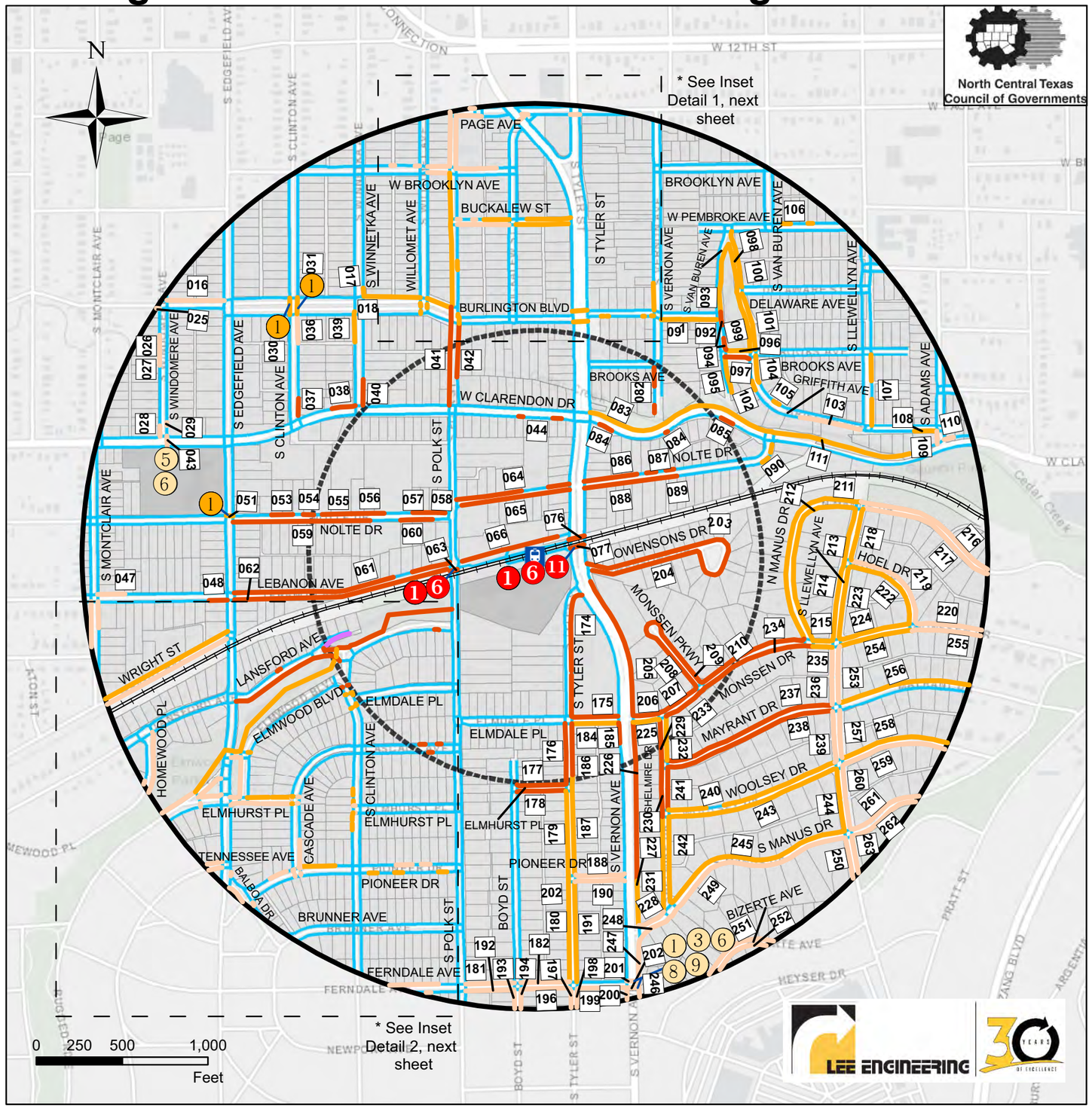
- For crossing Wright St at Hollywood Ave (improvements 6B-HA-CW-90 and 6B-HA-CW-91), the City of Dallas should coordinate with DART to add crosswalk markings and possibly a median refuge island. The improvements should be coordinated with DART, which will need to add sidewalk connections to the station platform where fences currently exist. See station improvements 6B-HA-ST-05 and 6B-HA-ST-06 and Section 3.1.21 for more details.
- For crossing Wright St at Montreal Ave next to the DART station (6B-HA-CW-92), the City should coordinate with DART to add a high-visibility crosswalk. Provide pedestrian ramps on the south side of Wright St and consider constructing a median refuge island.
- At the signalized intersection of Hampton Rd and Wright St (6B-HA-CW-87 through 89 and 6B-HA-CW-105), the City should add parallel white edge lines to the existing brick crosswalk. See Station area improvements 6B-HA-ST-01 and 6B-HA-ST-02 and and Section 3.1.21 regarding similar recommendations made to DART on station property.
- The intersection of Hampton Rd and Elmwood Blvd (6B-HA-CW-133), has a marked, signed, and lit school crosswalk near Moreno Elementary School. DART bus stops with modest ridership are present on either side of Hampton Rd here. The City should add advance yield lines and signing and consider a pedestrian hybrid beacon.
- Across Hampton Rd south of Illinois Ave (6B-HA-CW-134) and Illinois Ave at Hollywood Ave (improvements 6B-HA-CW-204 and 205), the City should add or upgrade crosswalks with additional warning signs, advance yield lines and signing, and/or pedestrian hybrid beacons. Alternatively, the City and DART may consider consolidating the bus stops these crosswalks serve closer to those at Illinois Ave or Hampton Rd approximately 350 feet to the north or west, where signalized crosswalks are already present.
- For crossing Waverly Dr at Melbourne Ave (6B-HA-CW-193 and 194), the City should add crosswalk markings and pedestrian ramps to the existing unmarked school crosswalk.

Additional details about these and other improvements recommended in Figure 6B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Hampton Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Tyler/Vernon Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 6A-2.1 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$3,790,900
Medium	$4,098,300
Low	$3,571,300
	$11,460,500

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

6A-TV-SW-01

- 6A ← Station Number
- TV ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Tyler/Vernon Station
November 2020

Figure 6A-2.2
Construction Packages Inset Detail 1

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- **Proposed Sidewalk/ Crosswalk by Priority** 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
6A-TV-SW-01
6A ← Station Number
TV ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches 1 on Map)

FTA DART Stations
Last Mile Connections
Tyler/Vernon Station
November 2020

Figure 6A-2.3
Construction Packages Inset Detail 2

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- **Proposed Sidewalk/ Crosswalk by Priority** 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

6A-TV-SW-01

- 6A ← Station Number
- TV ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches 1 on Map)

FTA DART Stations
Last Mile Connections
Hampton Station

November 2020

North Central Texas Council of Governments

DART Red & Blue Line Corridors Last Mile Connections

Figure 6B-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,286,200
Medium	$1,736,100
Low	$1,975,800
	$4,998,100

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
6B-HA-SW-01
6A ← Station Number
HA ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.22 Westmoreland Station (Half-Mile Area)

Figure 6C-2 on page 150 identifies the recommended improvements in the half-mile area around the Westmoreland Station. This station serves residential land uses to the north and west and industrial area to the southeast. Multimodal connectivity is relatively poor. Illinois Ave north of the station and Westmoreland Rd to the west are barriers to pedestrian travel since they each have six lanes of traffic and only one traffic signal where they intersect. Significant sidewalk gaps are present along several major streets. In addition to constructing sidewalk, recommended improvements include:

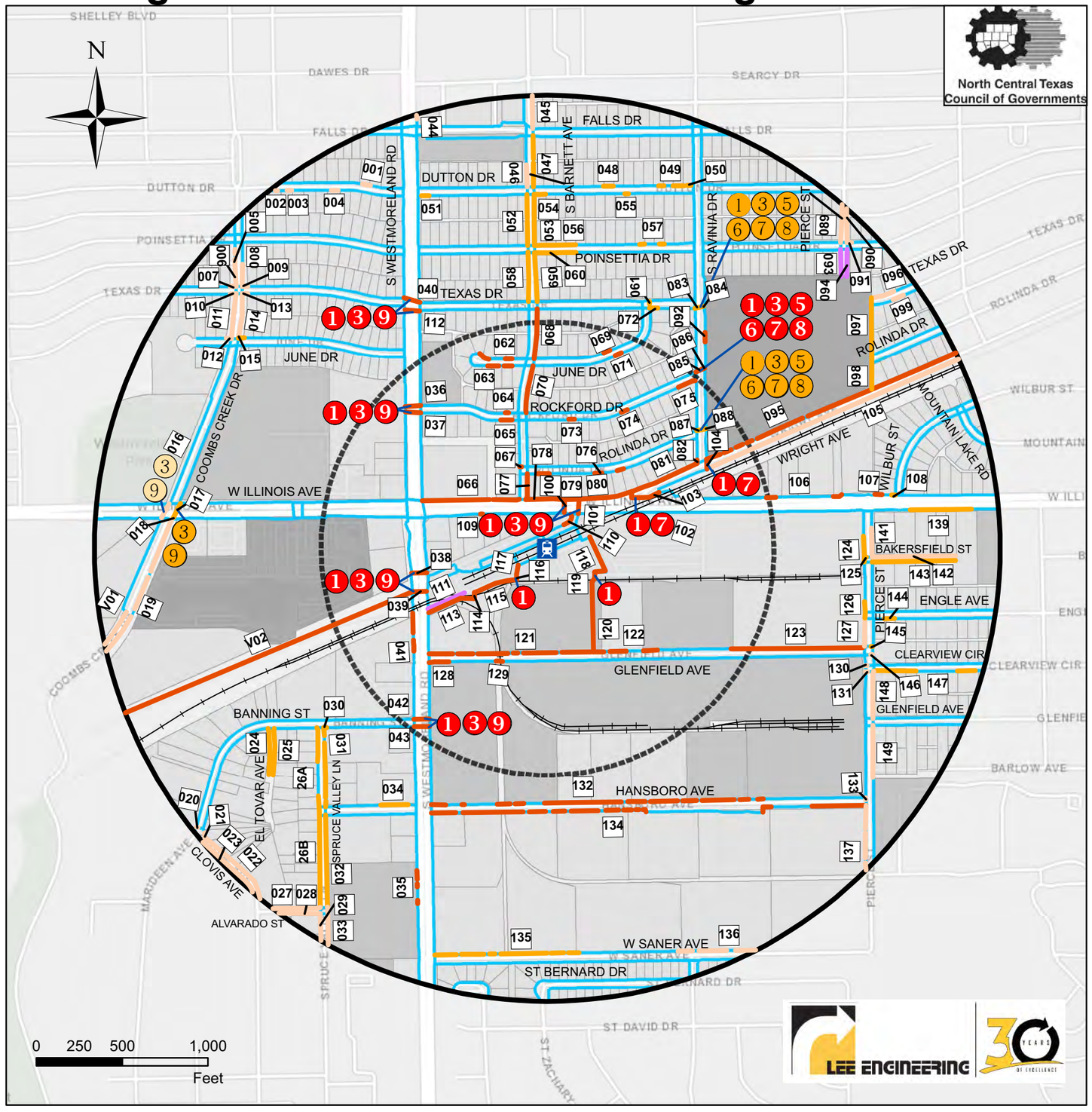
- For crossing Illinois Ave at the DART Station driveway (improvements 6C-WM-CW-100 and 101), the City of Dallas should work with DART to add a signed and marked crosswalk with pedestrian hybrid beacon with yield lines and "Yield Here to Pedestrians" signing.
- For crossing Westmoreland Ave west of the DART station (6C-WM-CW-038, 039), the City should add a signed and marked crosswalk with pedestrian hybrid beacon, connecting to a funded segment of the Regional Veloweb that will extend to the west (6C-WM-VW-V02). Include yield lines and "Yield Here to Pedestrians" signing.
- South of the DART station property, the City of Dallas should work together with DART and the adjacent property owner to add a sidewalk connection to the industrial businesses along Glenfield Ave, approximately following the worn path in the grass that indicates existing pedestrian demand (6C-WM-SW-118 to 120). This work should be coordinated with recommended changes on DART property to provide continuous sidewalk to the train platform. See DART Station improvement 6C-WM-ST-13 and Section 3.1.22 for more details.
- The City of Dallas should add a marked crosswalk across Wright Ave at Illinois Ave (6C-WM-CW-102) due to high skew of the intersection, the resulting long crossing distance, and potential for high speed turns. The work should include new sidewalk through the Wright Ave median. Among other details, also consider adding pedestrian actuated rectangular rapid flashing beacons (RRFB's) in the median and on the northeast side of the intersection to face northeast-bound traffic for increased yielding compliance.
- At the existing signed crosswalk across the south leg of Westmoreland Rd at Texas Dr, a six-lane crossing with high traffic volumes, refresh pavement markings and give strong consideration to a pedestrian hybrid beacon (6C-WM-CW-112). Consider adding new crosswalk markings for the north leg of the intersection (6C-WM-CW-040), which has pedestrian warning signs. Add advance yield lines and "Yield Here to Pedestrians" signing.
- For crossing Westmoreland Rd at two additional intersections at Rockford Dr (improvements 6C-WM-CW-036 and 037) and Banning St (6C-WM-CW-042 and 043), the City should consider adding signed and marked crosswalks with pedestrian hybrid beacons. Add advance yield lines and "Yield Here to Pedestrians" signing.
- For crossing Illinois Ave at Coombs Creek Dr (6C-WM-CW-016 and 017), the City should add advance yield lines and "Yield Here to Pedestrians" signing at this existing school crosswalk. Also, give strong consideration to adding a pedestrian hybrid beacon.
- For three crossings of Ravinia Dr at Texas Dr (6C-WM-CW-083), Rockford Dr (6C-WM-CW-085), and Rolinda Dr (6C-WM-CW-087), the City should install additional warning signs for the existing school crosswalks. Add advance yield lines, "Yield Here to Pedestrians" signing, and consider installing pedestrian-actuated RRFB's. Also consider a road diet to reduce Ravinia Dr to three lanes to build curb extensions or median refuge islands.

Additional details about these and other improvements recommended in Figure 6C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Westmoreland Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Westmoreland Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 6C-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,937,300
Medium	$1,385,700
Low	$1,431,100
	$5,754,100

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
6C-WM-SW-01
6C ← Station Number
WM ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING 30 YEARS OF EXCELLENCE

3.2.23 Illinois Station (Half-Mile Area)

Figure 7A-2.1 on page 152 identifies the recommended improvements in the half-mile area around the Illinois Station. Figures 7A-2.2 and 7A-2.3 on pages 153-154 provide zoomed-in views of two portions of the station area with dense concentrations of improvements. Sidewalk connectivity is very poor in this area. Most streets lack sidewalk on either side, though Illinois Ave and Denley Dr, two critical links, do have sidewalk along most of their length. S Corinth Street Rd is a significant barrier to east-west multi-modal travel due to its width, high speeds, and lack of sidewalk.

In addition to filling the many sidewalk gaps, the more notable recommended improvements include:

- At the intersection of S Corinth Street Rd and Louisiana Ave just northeast of the station, (improvements 7A-IL-CW-309 and 312), the City of Dallas should consider adding a a pedestrian hybrid beacon and other supporting improvements. Also consider a road diet from six lanes to four to implement a median refuge area. DART bus stops are located on either side of S Corinth St Rd at this location.
- At the signalized intersection of S Corinth Street Rd and the DART Station entrance (improvement 7A-IL-CW-319), the City of Dallas should add a marked crosswalk. Changes to a sloped retaining wall on the east side of the street and/or replacement of the two traffic signal poles on this side with a dual mast arm pole will be needed to make the intersection accessible.
- At the Illinois Ave crossing of the planned Regional Veloweb shared use path (improvement 7A-IL-CW-176), install a pedestrian hybrid beacon and marked crosswalk with advance pedestrian warning signs, advance yield lines and signing. All recommended work is contingent on construction of the Regional Veloweb shared use path crossing. Consider a road diet so pedestrians only cross two lanes of traffic in each direction.
- At the signalized intersection of S Corinth Street Rd and Illinois Ave, (improvements 7A-IL-CW-266 and 321), the City should add marked crosswalks.
- At the intersection of Lancaster Rd with S Corinth Street Rd, (improvements 7A-IL-SW/CW-258 through 265), the City should add marked crosswalks across the stop- and yield-controlled approaches, build sidewalk through the adjacent median islands, adjust signing, add streetlighting, and install pedestrian-actuated rectangular rapid flashing beacons (RRFB's). The guardrail protecting the DART rail bridge pier in the median would need to be modified, and structural stone surrounding the pier would need to be regraded to provide sidewalk across the median. Across the east leg, care should be taken to maximize sight distance between pedestrians and drivers around the horizontal curve while making the crosswalk as perpendicular to S Corinth Street Rd as possible to minimize the crossing distance. Consider geometric changes to the median island for improved sight distance and reduced speed northbound right turns.

Additional details about these and other improvements recommended in Figures 7A-2.1, 7A-2.2, and 7A-2.3, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Illinois Station that can be found in Appendix I and Appendix J.

3.2.24 Kiest Station (Half-Mile Area)

Figure 7B-2 on page 155 identifies the recommended improvements in the half-mile area around the Kiest Station. Sidewalk connectivity to the residential neighborhoods around this station is fair in some places and poor in others.

In addition to filling the many sidewalk gaps the exist, recommended improvements include:

- At the intersection of Kiest Blvd and Frio Dr/Ramona Ave (improvement 7B-KS-CW-057), the City of Dallas should add missing signs and advance yield lines and signing for this existing signed and marked school crosswalk that crosses a six-lane divided arterial but is not a reduced speed school zone.

  The Cedar Crest Trail Regional Veloweb link was recently constructed (completed after field visit) on either side of Kiest Blvd to cross at this crosswalk. It is unclear if additional pedestrian crossing improvements have been made in conjunction with the trail construction. Consider a road diet to implement a median refuge. Give strong consideration to a pedestrian hybrid beacon, especially if a road diet is not implemented. The horizontal curve in Kiest Blvd at this location heightens the need to make crossing pedestrians and cyclists more visible.

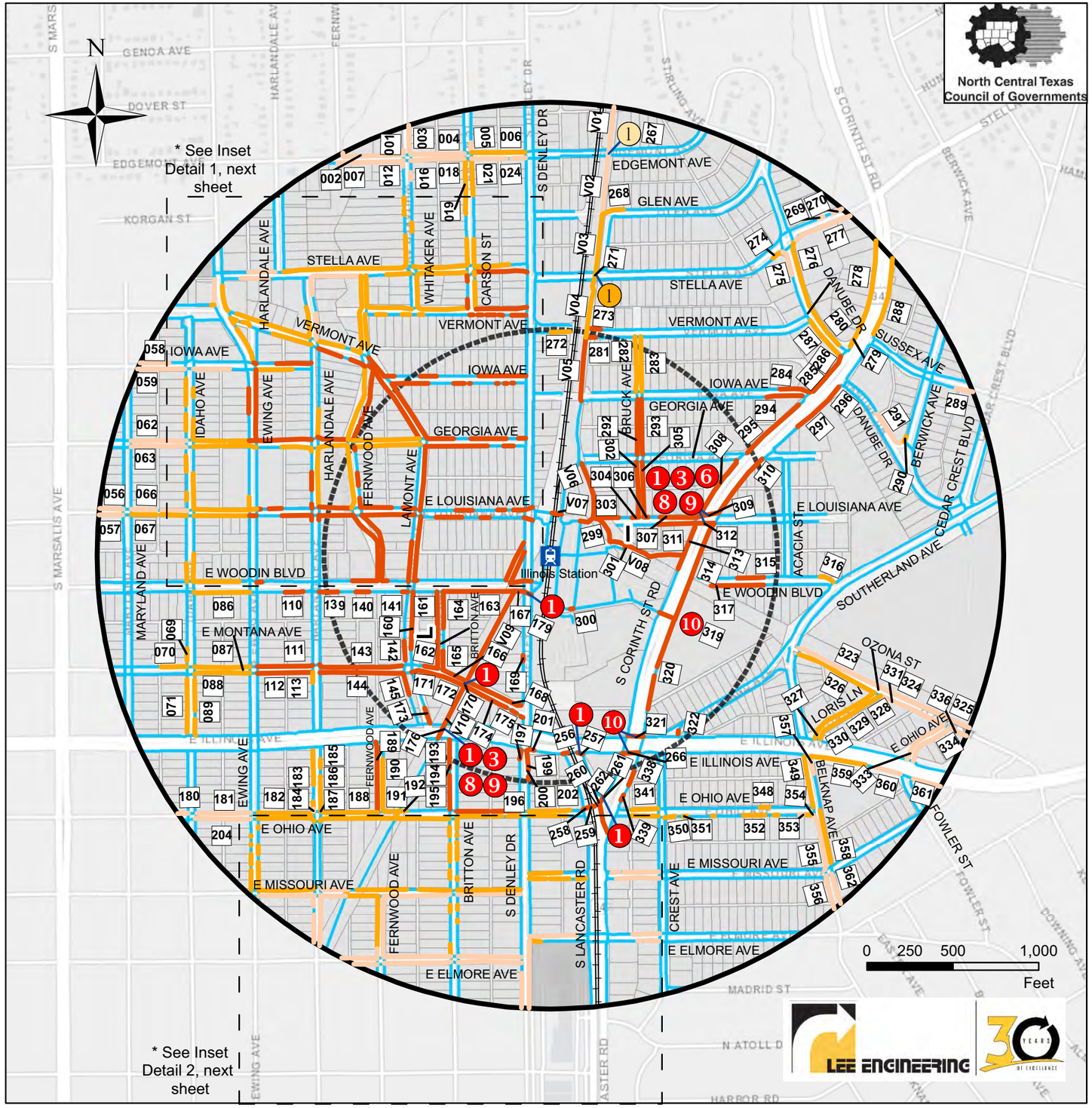
- At the intersection of Kiest Blvd and Easter Ave (improvement 7B-KS-CW-058), the City should add advance yield lines and signing for this existing signed and marked school crosswalk that crosses a six-lane divided arterial and is in a 20 mph reduced speed school zone. Consider a road diet to implement a median refuge. Give strong consideration to a pedestrian hybrid beacon, especially if a road diet is not implemented or if a study indicates significant pedestrian demand outside school arrival and dismissal hours.
- At the intersection of Overton Rd and Easter Ave (improvement 7B-KS-CW-124 and 125), the City should add pedestrian warning signs to this existing marked and lit crosswalk. Add yield lines and signing to mitigate risk of dual threat situation for pedestrians. Though Overton Rd has recently been widened from two to four lanes, no median or left turn lanes have been provided for pedestrian refuge at this crossing. Consider a road diet to allow for a median refuge island and/or bike lanes, consistent with the City's bicycle master plan for on-street bike lanes. Add pedestrian-actuated rectangular rapid-flashing beacons (RRFB's) mounted below the pedestrian warning signs.

Additional details about these and other improvements recommended in Figure 7B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Kiest Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Illinois Station
November 2020

Figure 7A-2.1 Construction Packages

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$5,082,900
Medium	$4,117,700
Low	$3,526,200
	$12,726,800

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

7A-IL-SW-01

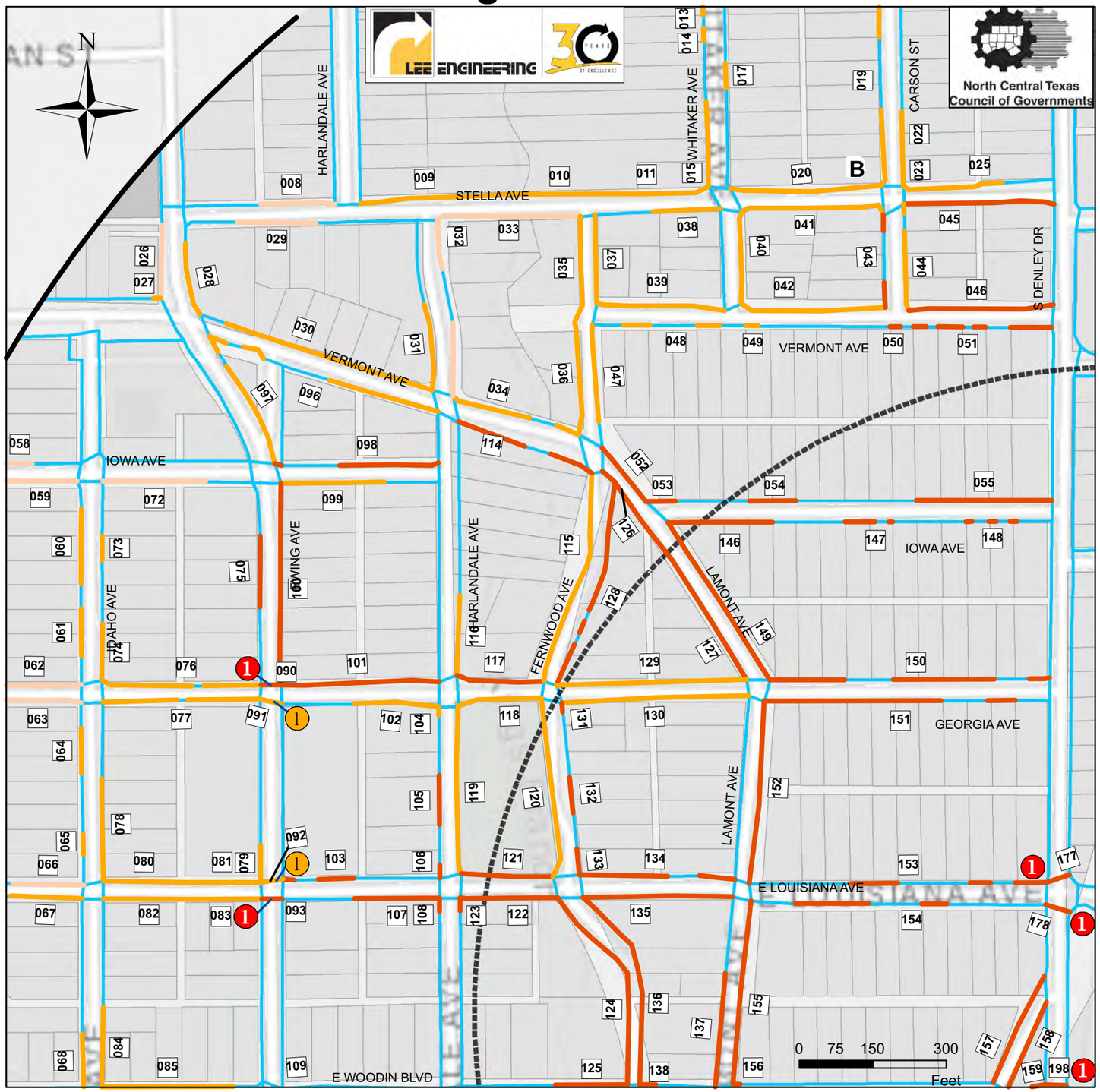
- 7A ← Station Number
- IL ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING 30 YEARS OF EXCELLENCE

FTA DART Stations
Last Mile Connections
Illinois Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 7A-2.2
Construction Packages Inset Detail 1



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- Proposed Sidewalk/ Crosswalk by Priority 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

7A-IL-SW-01

- 7A ← Station Number
- IL ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches 1 on Map)

FTA DART Stations
Last Mile Connections
Illinois Station
November 2020

Figure 7A-2.3
Construction Packages Inset Detail 2

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- Proposed Sidewalk/ Crosswalk by Priority 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
7A-IL-SW-01
7A ← Station Number
IL ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches 1 on Map)

FTA DART Stations
Last Mile Connections
Kiest Station

November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 7B-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,579,400
Medium	$3,246,700
Low	$2,269,300
	$7,095,400

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
7B-KS-SW-01
7B ← Station Number
KS ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING

3.2.25 VA Medical Center Station (Half-Mile Area)

Figure 7C-2 on page 157 identifies the recommended improvements in the half-mile area around the VA Medical Center Station. Multi-modal access to the main part of the Veterans Administration Hospital campus on the east side of Lancaster Rd is good, though several crosswalks lack consistently applied, MUTCD-compliant warning signs. Some sidewalk gaps exist along the hospital vehicular access roads. Sidewalk connectivity to the neighborhood west of Lancaster Rd is quite poor, with many sidewalks missing or severely damaged.

The City of Dallas and/or DART should work with the Veterans Administration Hospital to encourage and suggest the illustrated upgrades to crosswalk signing, as well as completion of a few segments of sidewalk. These changes will require the participation of the VA Hospital management.

On City of Dallas streets, notable recommendations in addition to filling sidewalk gaps are:

- At the intersection of Ann Arbor Ave and Fernwood Ave (improvements 7C-VA-CW-038 and 039), the City of Dallas should add crosswalk markings and pedestrian ramps to this existing signed but unmarked crosswalk between a church and its parking lot on the opposite side of a 4-lane undivided roadway.

- At the intersection of Ann Arbor Ave and Denley Dr (improvement 7C-VA-CW-040), the City should consider upgrades to this existing signed and marked school crosswalk near a church and day care center on opposite sides of the street.

At both locations above, consider a road diet to reduce the street width to one lane in each direction, with curb extensions adjacent to on-street parallel parking for the church or a median refuge island if bike lanes planned by the City will replace parking spaces. If four travel lanes are to remain, add advance yield lines and signing at the yield lines. Also consider providing pedestrian-actuated rectangular rapid-flashing beacons (RRFB's).

Additional details about these and other improvements recommended in Figure 7C-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for VA Medical Center Station that can be found in Appendix I and Appendix J.

3.2.26 CityPlace/Uptown Station (Half-Mile Area)

Figure 8A-2 on page 158 identifies the recommended improvements in the half-mile area around the CityPlace/Uptown Station. The area is dense, urban, and very well connected for pedestrians and cyclists, with only a limited number of gaps in the sidewalk network. In addition to filling the limited number of sidewalk gaps, the recommended improvements include:

- For crossing Haskell Ave at the mid-block locations northeast and east of the station (improvements 8A-CP-CW-031 through 034), the City of Dallas should add crosswalk signing and markings to these crossing locations which already include pedestrian ramps and brick paving in the median. Add advance yield lines and signing. Restrict parking where it blocks visibility and build a curb extension to reduce the crossing distance and improve sight distance. Consider RRFB's to further enhance visibility of crossing pedestrians.

- At the intersection of Haskell Ave at Lemmon Ave (improvements 8A-CP-CW-037 and 040-043), the City should provide crosswalks and countdown, accessible pedestrian signals where missing. Consider geometric changes to the intersection to signalize and/or slow the high-speed double right turn lanes from northeast-bound Lemmon Ave to southwest-bound Haskell Ave. Pedestrian-actuated RRFB's might also be considered for crossing the double right-turn movement if geometric changes are infeasible.

- For crossing Haskell Ave at Munger Ave (improvement 8A-CP-CW-044), the City should add advance yield lines and signing for the existing signed and marked school crosswalk. Consider pedestrian-actuated RRFB's or a pedestrian hybrid beacon to further enhance the visibility of crossing pedestrians.

- For crossing Lemmon Ave E at Howell St (improvement 8A-CP-CW-010), the City should add a marked crosswalk with additional signs and advance yield lines. Construct a pedestrian hybrid beacon to accommodate pedestrian crossings across four lanes of traffic.

- The west leg of Lemmon Ave at Washington Ave (improvement 8A-CP-CW-035 has a pedestrian crossing prohibition and lack of crosswalk. The City should reconsider if a single left turn would function adequately instead of double left turns for the northbound approach and/or explore other options to add the west leg crosswalk with countdown, accessible pedestrian signals.

- For crossing Lemmon Ave at Caddo St (improvement 8A-CP-CW-036), the City should add advance yield lines and signing for this existing signed and marked school crosswalk. Consider pedestrian-actuated RRFB's or a pedestrian hybrid beacon, particularly if no school crossing guard is present or study indicates pedestrian crossing demand outside school arrival/dismissal hours.

- For crossing Lemmon Ave at Oak Grove Ave (improvements 8A-CP-CW-008 and 009), the City should add advance yield lines, signing, and a pedestrian hybrid beacon for this existing signed and marked crosswalk.

- For crossing Blackburn St at Travis St (improvements 8A-CP-CW-003 and 004), the City should add pedestrian warning signs and white pavement marking lines outside of existing brickwork that may appear to casual observers to represent crosswalks. Add advance yield lines and signing and consider pedestrian-actuated RRFB's.

- At the crossing of Cole Ave at Haskell Ave (improvement 8A-CP-CW-001), a marked and signed crosswalk is already in place across three-lane, one-way street near North Dallas High School. The City should add advance yield lines and signing. Consider curb extensions and pedestrian-actuated RRFB's. Since this section of Cole Ave will be converting from one-way operation to two-way operation as part of a City project in the near future, it may be possible to incorporate such changes into that project.

Additional details about these and other improvements recommended in Figure 8A-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for CityPlace/Uptown Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
VA Medical Center Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 7C-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,021,000
Medium	$2,808,800
Low	$3,508,500
	$8,338,300

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)

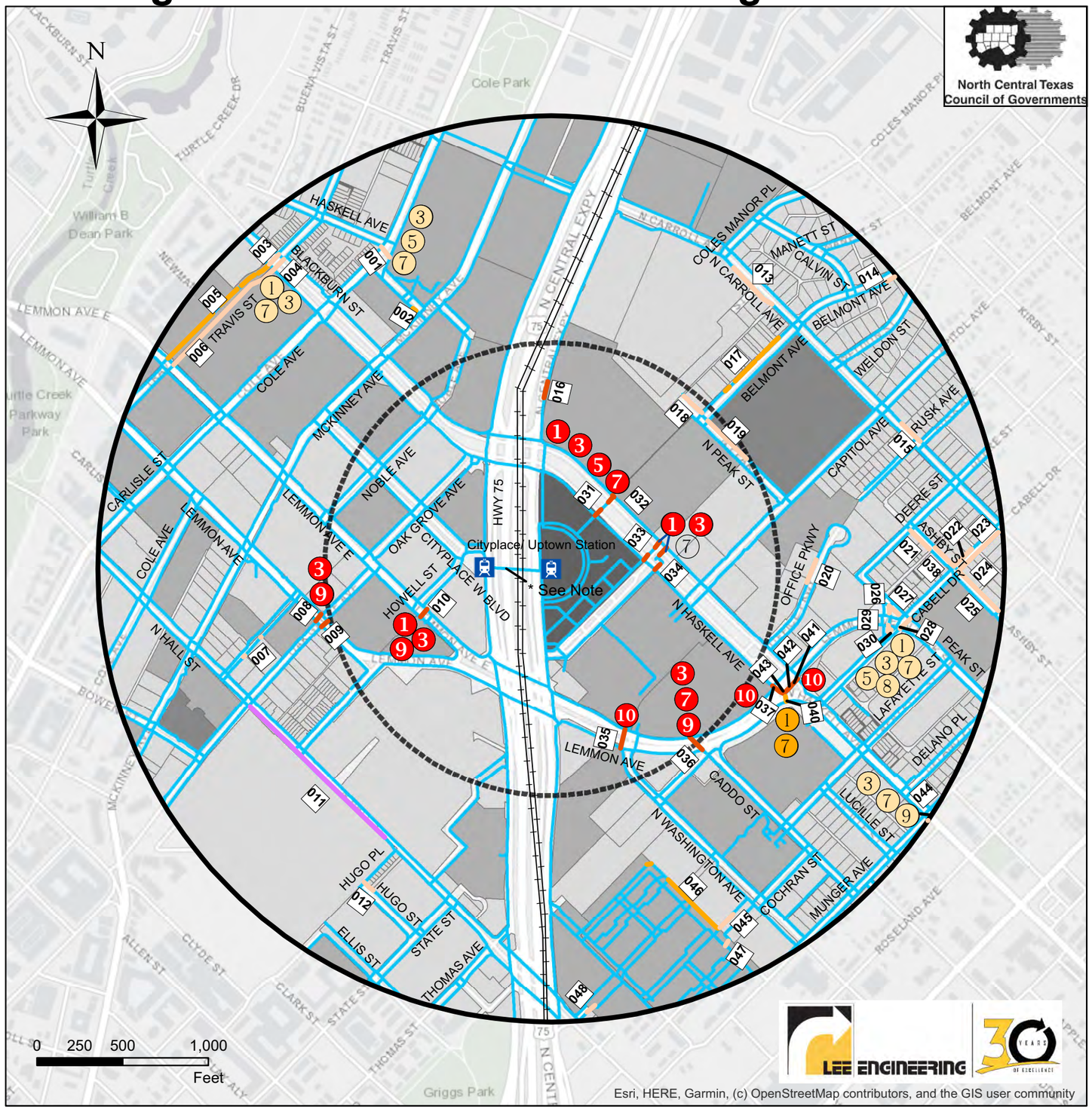
7C-VA-SW-01
- 7C ← Station Number
- VA ← Station Abbreviation
- SW ← Sidewalk (or CW for Crosswalk)
- 01 ← Improvement Number (Matches [1] on Map)

LEE ENGINEERING 30 YEARS OF EXCELLENCE

FTA DART Stations
Last Mile Connections
Cityplace/Uptown Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 8A-2 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$1,054,100
Medium	$394,800
Low	$514,800
	$1,963,700

- Built by Others
- Gap to Remain

Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

* Escalators/elevators to underground station.

Improvement Code Legend (See Matrix)
8A-CP-SW-01
8A ← Station Number
CP ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.27 Convention Center Station (Half-Mile Area)

Figure 8B-2 on page 160 identifies the recommended improvements in the half-mile area around the Convention Center Station. The station is well situated for walking trips to and from the Kay Bailey Hutchison Convention Center in which it is housed. Other downtown areas to the north are also well connected to the station. IH-30 and its interchange with IH-35 E form barriers to bicycle and pedestrian travel to and from the south, as do the freight rail lines paralleling Hotel St.

Several new sidewalk and shared use path improvements to fill existing gaps are programmed along Canton St and Cadiz St parallel to IH-30 as part of the IH-30 Canyon project that is under design by the City of Dallas and TxDOT.

It is recommended that the certain pedestrian elements be incorporated into the IH-30 Canyon project at the following locations:

- The segment of Regional Veloweb shared use path planned on the north side of IH-30 between Lamar St and Hotel St (improvement 8B-CC-VW-V01) would most likely require a retaining wall and right-of-way or easement acquisition.
- For crossing Hotel St at the Regional Veloweb shared use path (improvement 8B-CC-CW-021), the project should add a marked crosswalk with lighting, pedestrian warning signs, and advance yield lines and signing.
- Along the north side of IH-30 (and south side of Canton St) between Akard St and Griffin St (improvement 8B-CC-VW-V02), strong consideration should be given to realigning the Regional Veloweb shared use path planned here to the northwest side of Canton St to avoid the conflict across the two-lane on-ramp to IH 30 westbound. A road diet from three one-way lanes to two one-way lanes on Cantron St would likely be feasible to make way for a shared use path on the north side.
- If the road diet and shared use path realignment described for improvement 8B-CC-VW-V02 above are not feasible, consider a pedestrian hybrid beacon for the south-side crosswalk of the shared use path where it will cross the on-ramp to the IH-30 westbound mainlanes (improvement 8B-CC-CW-024). The beacon should be coordinated with the adjacent traffic signal at Canton St and Akard St.

Elsewhere in the half-mile area for this station, recommended improvements include:

- At the mid-block crossing of Marilla St near the Convention Center entrance (improvement 8B-CC-CW-001), the City should add advance yield lines and signing for the existing crosswalk. Add pushbutton-actuated rectangular rapid flashing beacons (RRFB's). Consider a road diet from four lanes to two lanes to enable a shorter crossing distance and create space for a median refuge island.
- For crossing the south leg of Akard St at its intersection with Marilla St (improvement 8B-CC-CW-016), the City should add advance yield lines and signing for the existing crosswalk. Consider adding pushbutton-actuated rectangular rapid flashing beacons (RRFB's) or a pedestrian hybrid beacon, coordinated with adjacent traffic signals.
- For crossing the northeast leg of Canton St at its intersection with Browder St (improvement 8B-CC-CW-035), the City should add advance yield lines and signing for the existing crosswalk across a three-lane, one-way street. Add a curb extension to prevent parking in the left-hand lane too close to the crosswalk. Add pushbutton-actuated rectangular rapid flashing beacons (RRFB's) and consider a road diet from three to two lanes.
- For the west leg of the Riverfront Ave/Cadiz St intersection (improvement 8B-CC-CW-032), add a marked crosswalk with pedestrian ramps and countdown, accessible pedestrian signals. Remove the pedestrian prohibition against crossing this leg of the intersection. Add protected-only phasing for the left turn from the northbound IH-35E off-ramp to westbound Riverfront Blvd in conjunction with this change.

Additional details about these and other improvements recommended in Figure 8B-2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Convention Center Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Convention Center Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 8B-2 Construction Packages

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$501,300
Medium	$706,300
Low	$218,000
	$1,425,600

- Built by Others
- Gap to Remain

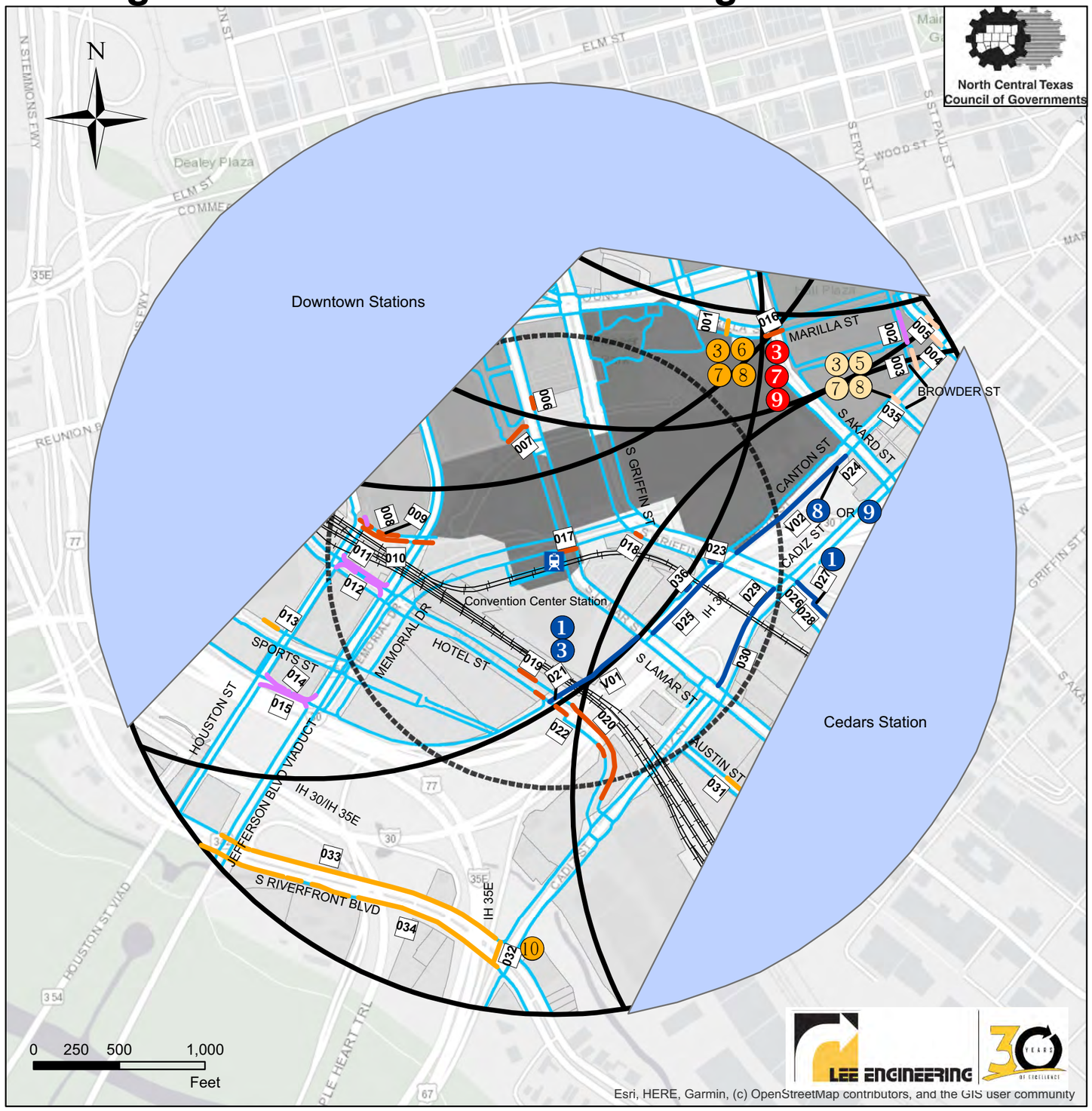
Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339



Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
8B-CC-SW-01
8B ← Station Number
CC ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

3.2.28 Cedars Station (Half-Mile Area)

Figure 8C-2.1 on page 162 identifies the recommended improvements in the half-mile area around the Cedars Station. Figure 8C-2.2 on page 163 provides a zoomed-in view of a portion of the station area with dense concentrations of improvements. This station serves a mix of urban residential, commercial and institutional land uses that are relatively well connected via the sidewalk network, though several streets have significant sidewalk gaps.

Several new sidewalk and shared use path improvements to fill existing gaps are programmed along Corsicana St and Griffin St parallel to IH-30 as part of the IH-30 Canyon project that is under design by the City of Dallas and TxDOT. The City of Dallas is planning a shared use path as part of the Regional Veloweb along the north side of IH-30, south of Corsicana St along an alignment that overlaps with the IH-30 Canyon project area.

It is recommended that the certain pedestrian elements be incorporated into the IH-30 Canyon project at the following locations:

- If the future Regional Veloweb shared use path currently planned along Corsicana St crosses Ervay St on the southeast leg of their intersection (improvement 8C-CS-CW-01B), the project should add a new signed and marked crosswalk with advance yield lines and signing. Also add pushbutton-actuated rectangular rapid flashing beacons (RRFB's) or a pedestrian hybrid beacon, coordinated with adjacent traffic signals. If adjacent constraints make it difficult to construct sidewalk or shared use path on the south side of Corsicana St, this leg of the intersection may remain without a crosswalk and the crossing built across the northwest leg of the intersection instead (improvement 8C-CS-CW-01A).
- In conjunction with the future Regional Veloweb shared use path currently planned to cross St. Paul St at this location (improvement 8C-CS-CW-002), add a new crosswalk with advance yield lines and signing. Also add pushbutton-actuated rectangular rapid flashing beacons (RRFB's) or a pedestrian hybrid beacon, coordinated with adjacent traffic signals.

Elsewhere in the half-mile area for Cedars Station, recommended improvements include:

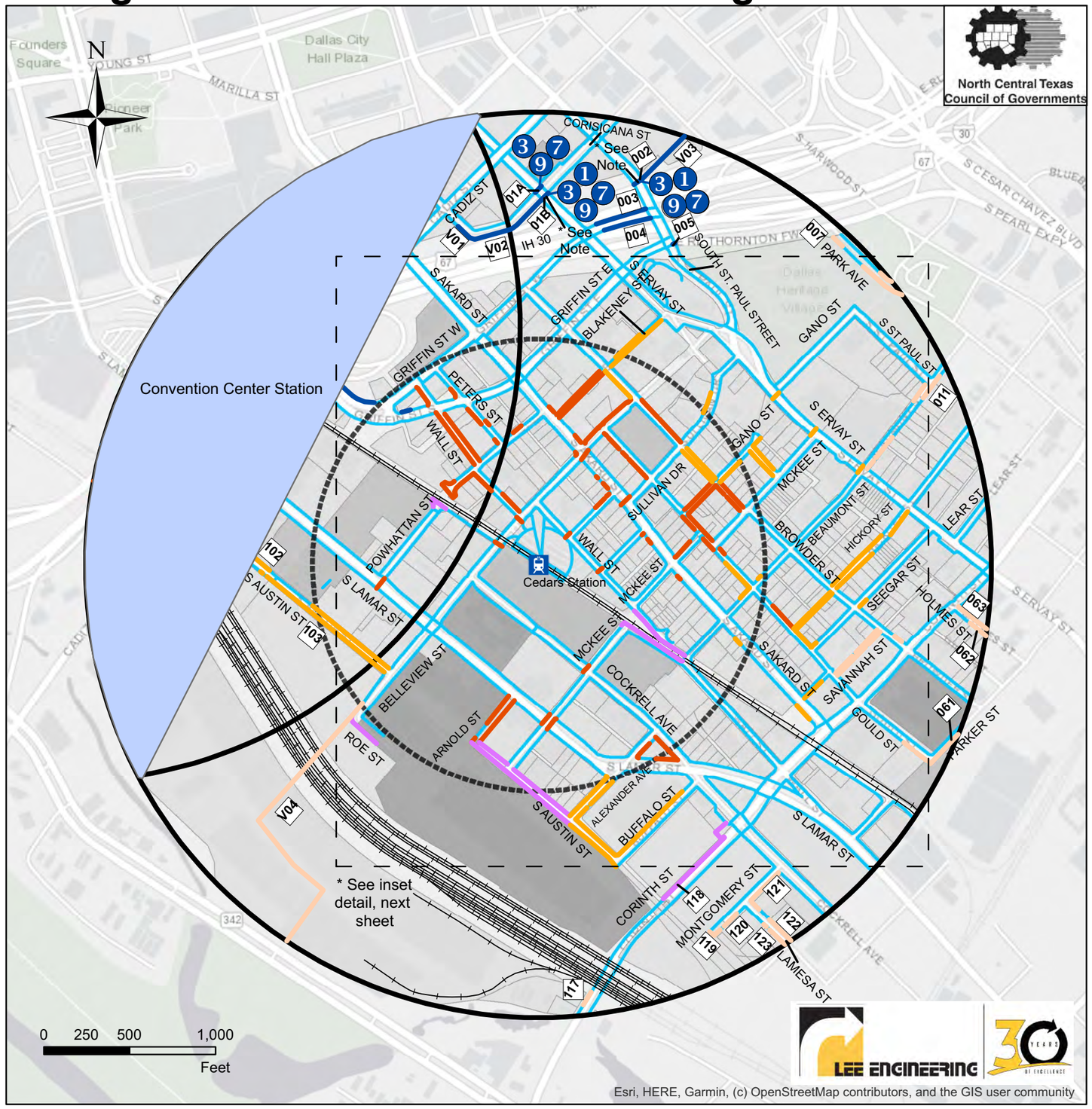
- Crossing Wall St and Belleview St at four locations immediately adjacent to the station (improvements 8C-CS-CW-081, 082, 085, and 094), the City of Dallas should coordinate with DART to add crosswalks with pedestrian ramps, signing, and lighting.
- At the Akard St crossings at Belleview St and Sullivan Dr (improvements 8C-CS-CW-023 and 028), the City of Dallas should add new signed and marked crosswalks. Consider a road diet from four lanes to three lanes and median refuge islands at each location.
- For crossing Lamar St at Powhattan St and McKee St (improvements 8C-CS-CW-092, 095 and 096), the City should add advance yield lines and signing for the existing crosswalks. Consider upgrading with overhead-mounted rectangular rapid flashing beacons (RRFB's) or a pedestrian hybrid beacon.
- At the Ervay St crossings at Gano St, McKee St, and Beaumont St (improvements 8C-CS-CW-008, 009, 014), the City should add signed and marked crosswalks where not currently present. The City should also consider a road diet from four lanes to three lanes to build median refuge islands.
- At the southwest end of Belleview St at its intersection with Roe St, a Regional Veloweb shared use path is planned to connect towards the southwest, bridging over the existing Union Pacific Railroad tracks to Riverfront Blvd and the Trinity River trails south of the study area (improvement 8C-CS-VW-V04). This pathway would also provide access to Texas Central Partners' passenger station for high-speed rail between Dallas and Houston, which is proposed for a vacant parcel near the tracks. The shared use path would require right-of-way acquisition and coordination with the multiple parties involved.

Additional details about these and other improvements recommended in Figures 8C-2.1 and 8C-2.2, as well as challenges associated with the recommended gaps to remain, are included in the expanded narrative and matrix notes for Cedars Station that can be found in Appendix I and Appendix J.

FTA DART Stations
Last Mile Connections
Cedars Station
November 2020

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Figure 8C-2.1 Construction Packages



Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk

Proposed Sidewalk/ Crosswalk by Priority [1]	Construction Cost Estimate
High	$2,031,400
Medium	$1,333,900
Low	$1,436,000
	$4,801,300

- Built by Others
- Gap to Remain

Buffers
- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl
- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339

* Need contingent on construction of Regional Veloweb Shared Use Path.

Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
8C-CS-SW-01
8C ← Station Number
CS ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches [1] on Map)

FTA DART Stations
Last Mile Connections
Cedars Station

November 2020

Figure 8C-2.2
Construction Packages Inset Detail

North Central Texas Council of Governments
DART Red & Blue Line Corridors Last Mile Connections

Legend

- DART Rail Station
- Railroad Track

Sidewalk

- Existing Sidewalk/Crosswalk
- **Proposed Sidewalk/ Crosswalk by Priority** 1
  - High
  - Medium
  - Low
  - Built by Others
  - Gap to Remain

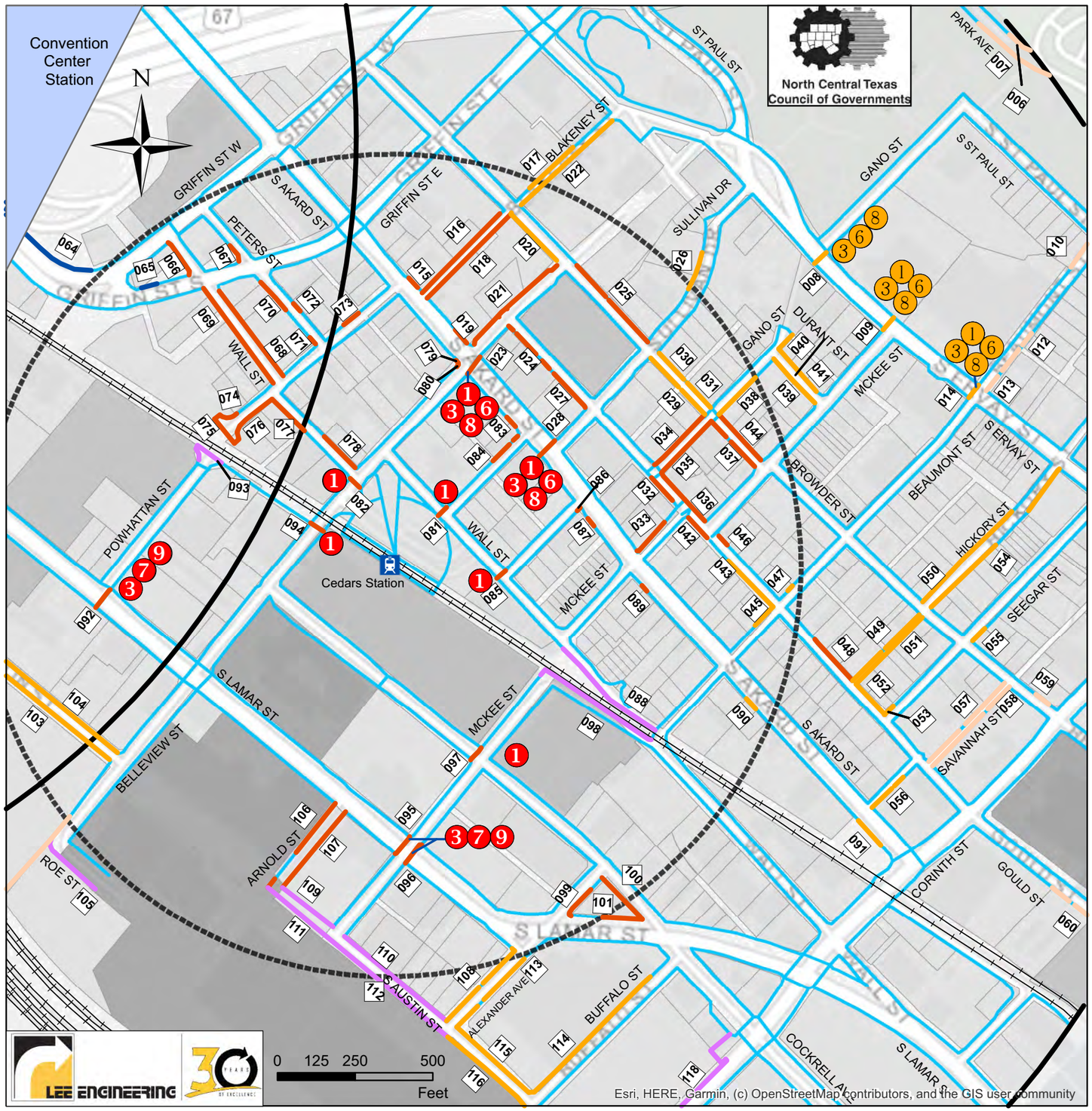
Buffers

- 0.5 Mile Buffer
- 0.25 Mile Buffer

Existing Residential and Employment Population (Number of People)

Ppl

- 0 - 234
- 235 - 1049
- 1050 - 2586
- 2587 - 5364
- 5365 - 10339



Possible Pedestrian Safety Countermeasures

Unsignalized Crosswalk Improvements

Hi	Md	Lo	Oth	
1	1	1	1	Crosswalk Signs, Markings & Lighting
2	2	2	2	Raised Crosswalk
3	3	3	3	Advance "Yield Here" Sign
4	4	4	4	In-Street Pedestrian Crossing
5	5	5	5	Curb Extension
6	6	6	6	Pedestrian Refuge Island
7	7	7	7	Rectangular Rapid Flashing Beacon
8	8	8	8	Road Diet
9	9	9	9	Pedestrian Hybrid Beacon

Signalized Crosswalk Improvements

10	10	10	10	Add Marked Crosswalks & Provide Countdown, Accessible Pedestrian Signals
11	11	11	11	Traffic Signal

Improvement Code Legend (See Matrix)
8C-CS-SW-01
8C ← Station Number
CS ← Station Abbreviation
SW ← Sidewalk (or CW for Crosswalk)
01 ← Improvement Number (Matches 1 on Map)

3.3 Half-Mile Area Opinions of Probable Construction Cost

In addition to the Opinions of Probable Construction Cost (OPCC's) developed for the on-site improvements at DART Stations in Section 3.1, OPCC's were developed for nearly 1,100 separate high-priority improvements totalling nearly 58 linear miles in the half-mile areas surrounding each of the 28 DART stations within the study area.

OPCC's were developed in the half-mile areas for each high-priority improvement that was ***not*** assumed by City staff to be built by others (as part of another project by a developer, the City, TxDOT, etc.) in the near future. Aggregate OPCC's were developed for low- and medium-priority improvements by extrapolating average costs from the high-priority improvements.

Appendix G details the assumptions that were made in order to provide high-quality, yet preliminary OPCC's. Detailed unit price and quantity estimates for the individual high-priority Phase 1 half-mile area improvements are listed in Appendix K which supplement the OPCC's for the proposed DART property improvements in Dallas provided in Appendix H. A summary of how overall cost estimates for low- and medium-priority Phase 2 and Phase 3 improvements were derived is also included in Appendix K.

The estimated cost of all projects for each city is summarized in Table 3. The cost of improvements located within Richardson around the CityLine Bush Station is excluded from the totals listed in Plano. For convenience, grand total costs are provided in both 2020 dollars and 2025 dollars, assuming for 2025 a 4% annual escalation rate for all three phases. Costs presented in all other figures, tables, and appendices of this report reflect 2020 dollars only.

As shown in Table 3, the 2020 total estimate for all improvements is about $153 million. High-priority Phase 1 multi-modal access improvements within the half-mile station areas are estimated to cost about $60.2 million. Of this total, about $3 million would be the responsibility of DART on its station properties.

Medium- and low- priority costs for Phases 2 and 3 were estimated by developing more generalized unit costs for five types of improvements, based on all high-priority improvements City-wide. Tables 4-32 on pages 165-174 illustrate this procedure.

The first row in each table lists the total linear feet of high-priority sidewalk, sidewalk repair, and Veloweb/shared use path construction City-wide, along with the respective cost totals. It also lists the overall count and cost of crosswalks, classified as simple crosswalks (implemented with signs and markings ony) or other crosswalks (which include beacons, islands, or signals). The bottom two rows of each table show how the same unit rates per linear foot or per each crosswalk were used to extrapolate overall cost estimates for the medium- and low-priority improvements without estimating costs for individual locations in those categories.

For reference, the unit price of 5 ft-wide sidewalk alone was assumed at $35 per linear foot. The all-inclusive price per linear foot of sidewalk improvements (including items such as pedestrian ramps, utility relocation, retaining walls, driveway reconstruction, contingencies, etc.) was calculated for each of the high-priority improvements, ranging between a low of about $44/LF to a high of about $6,140/LF. Lower unit costs were associated with simple sidewalk improvements without obstacles, while higher unit costs were associated with wider shared use paths and with higher densities of challenging conditions, especially along short segments.

Table 3: Summary Opinion of Probable Construction Cost for All Improvements Project-Wide

Station No.	Station Area	DART Station Property	Half-Mile Area				
			High Priority (Phase 1)	Medium Priority (Phase 2)	Low Priority (Phase 3)	*Grand Totals (2020)*	*Grand Totals (2025)*
1A	Parker Road	$361,650	$2,305,200	$730,000	$258,000	*$3,654,850*	*$4,446,700*
1B	Downtown Plano	$12,350	$1,927,100	$2,595,500	$2,011,300	*$6,546,250*	*$7,964,600*
1C	CityLine Bush	$69,600	$1,421,700	$1,219,400	$683,500	*$3,394,200*	*$4,129,600*
City of Plano Subtotals		*$443,600*	*$5,654,000*	*$4,544,900*	*$2,952,800*	*$13,595,300*	*$16,540,900*
1C	CityLine Bush	$83,000	$338,650	$1,153,800	$306,900	*$1,882,350*	*$2,290,200*
2A	Galatyn Park	$0	$3,550,700	$532,400	$2,529,500	*$6,612,600*	*$8,045,300*
2B	Arapaho Center	$169,800	$481,600	$513,800	$1,501,100	*$2,666,300*	*$3,244,000*
2C	Spring Valley	$239,900	$225,500	$215,500	$1,265,600	*$1,946,500*	*$2,368,300*
City of Richardson Subtotals		*$492,700*	*$4,596,450*	*$2,415,500*	*$5,603,100*	*$13,107,750*	*$15,947,800*
3A	Downtown Garland	$174,500	$7,134,400	$4,732,400	$4,017,400	*$16,058,700*	*$19,537,900*
3B	Forest Jupiter	$188,400	$3,020,900	$1,986,400	$2,489,600	*$7,685,300*	*$9,350,400*
City of Garland Subtotals		*$362,900*	*$10,155,300*	*$6,718,800*	*$6,507,000*	*$23,744,000*	*$28,888,300*
3C	LBJ Central	$36,200	$1,432,100	$414,700	$317,000	*$2,200,000*	*$2,676,700*
3D	Forest Lane	$15,400	$1,081,800	$94,300	$320,600	*$1,512,100*	*$1,839,800*
4A	Walnut Hill	$214,800	$607,900	$1,434,900	$576,900	*$2,834,500*	*$3,448,700*
4B	Park Lane	$290,300	$2,440,100	$1,109,600	$743,000	*$4,583,000*	*$5,576,000*
4C	Lovers Lane	$95,400	$369,600	$241,500	$62,900	*$769,400*	*$936,100*
4D	Mockingbird	$109,500	$513,400	$214,000	$1,593,800	*$2,430,700*	*$2,957,400*
4E	LBJ Skillman	$40,000	$2,578,300	$860,600	$1,241,800	*$4,720,700*	*$5,743,500*
4F	White Rock	$59,400	$1,232,700	$2,201,600	$2,545,400	*$6,039,100*	*$7,347,500*
5A	Eighth & Corinth	$59,200	$3,536,200	$1,979,800	$1,100,700	*$6,675,900*	*$8,122,300*
5B	Dallas Zoo	$72,700	$3,304,400	$1,874,000	$965,100	*$6,216,200*	*$7,563,000*
5C	Morrell	$2,000	$2,426,200	$1,647,900	$1,174,700	*$5,250,800*	*$6,388,500*
6A	Tyler Vernon	$258,300	$3,790,900	$4,098,300	$3,571,300	*$11,718,800*	*$14,257,800*
6B	Hampton	$62,400	$1,286,200	$1,736,100	$1,975,800	*$5,060,500*	*$6,156,900*
6C	Westmoreland	$145,400	$2,937,300	$1,385,700	$1,431,100	*$5,899,500*	*$7,177,700*
7A	Illinois	$34,400	$5,082,900	$4,117,700	$3,526,200	*$12,761,200*	*$15,526,000*
7B	Kiest	$58,800	$1,579,400	$3,246,700	$2,269,300	*$7,154,200*	*$8,704,200*
7C	VA Medical Ctr	$70,800	$2,021,000	$2,808,800	$3,508,500	*$8,409,100*	*$10,231,000*
8A	CityPlace/Uptown	$0	$1,054,100	$394,800	$514,800	*$1,963,700*	*$2,389,200*
8B	Convention Ctr	$0	$501,300	$706,300	$218,000	*$1,425,600*	*$1,734,500*
8C	Cedars	$33,300	$2,031,400	$1,333,900	$1,436,000	*$4,834,600*	*$5,882,100*
City of Dallas Subtotals		*$1,658,300*	*$39,807,200*	*$31,901,200*	*$29,092,900*	*$102,459,600*	*$124,658,900*
Grand Totals		*$2,957,500*	*$60,212,950*	*$45,580,400*	*$44,155,800*	*$152,906,650*	*$186,035,900*

Table 4: Opinion of Probable Construction Cost for Parker Road Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Plano)	21,190	$ 3,215,000	$ 152	47	$ 11,600	$ 247	3,895	$ 946,400	$ 243	6	$ 51,800	$ 8,634	16	$ 1,573,600	$ 98,350	***
Phase 1/ High*	4,405	$ 531,000	-	12	$ 900	-	3,895	$ 946,400	-	2	$ 15,800	-	6	$ 811,100	-	$ 2,305,200
Phase 2/ Medium**	2,320	$ 352,700	$ 152	15	$ 3,800	$ 247	1,430	$ 347,500	$ 243	3	$ 26,000	$ 8,634	-	-	$ 98,350	$ 730,000
Phase 3/ Low**	1,640	$ 249,300	$ 152	-	-	$ 247	-	-	$ 243	1	$8,700	$ 8,634	-	-	$ 98,350	$ 258,000
	8,365	$ 1,133,000		27	$ 4,700		5,325	$ 1,293,900		6	$50,500		6	$ 811,100		$ 3,293,200

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Plano include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 5: Opinion of Probable Construction Cost for Downtown Plano Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Plano)	21,190	$ 3,215,000	$ 152	47	$ 11,600	$ 247	3,895	$ 946,400	$ 243	6	$ 51,800	$ 8,634	16	$ 1,573,600	$ 98,350	***
Phase 1/ High*	6,200	$ 1,377,800	-	35	$ 10,700	-	-	-	-	3	$ 30,800	-	5	$ 507,800	-	$ 1,927,100
Phase 2/ Medium**	16,265	$ 2,472,300	$ 152	65	$ 16,100	$ 247	-	-	$ 243	1	$ 8,700	$ 8,634	1	$ 98,400	$ 98,350	$ 2,595,500
Phase 3/ Low**	10,720	$ 1,629,500	$ 152	45	$ 11,200	$ 247	1,120	$ 272,200	$ 243	-	-	$ 8,634	1	$ 98,400	$ 98,350	$ 2,011,300
	33,185	$ 5,479,600		145	$ 38,000		1,120	$ 272,200		4	$ 39,500		7	$ 704,600		$ 6,533,900

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Plano include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 6: Opinion of Probable Construction Cost for CityLine Bush Station Half-Mile Area (Plano Only/Excludes Richardson)

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Plano)	21,190	$ 3,215,000	$ 152	47	$ 11,600	$ 247	3,895	$ 946,400	$ 243	6	$ 51,800	$ 8,634	16	$ 1,573,600	$ 98,350	***
Phase 1/ High*	10,585	$ 1,306,200	-	-	-	-	-	-	-	1	$ 5,200	-	5	$ 254,700	-	***
Phase 2/ Medium**	5,225	$ 794,200	$ 152	-	-	$ 247	535	$ 130,100	$ 243	-	-	$ 8,634	3	$ 295,100	$ 98,350	$ 1,219,400
Phase 3/ Low**	2,640	$ 401,300	$ 152	55	$ 13,600	$ 247	1,105	$ 268,600	$ 243	-	-	$ 8,634	-	-	$ 98,350	$ 683,500
	18,450	$ 2,501,700		55	$ 13,600		1,640	$ 398,700		1	$5,200		8	$ 549,800		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Plano and CityLine Bush Station include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 7: Opinion of Probable Construction Cost for CityLine Bush Station Half-Mile Area (Richardson Only/Excludes Plano)

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Richardson)	5,175	$ 905,600	$ 175	1,125	$ 89,100	$ 80	120	$ 39,500	$ 330	4	$ 55,100	$ 13,775	10	$ 633,400	$ 63,340	***
Phase 1/ High*	1,080	$ 354,000	-	-	-	-	-	-	-	-	-	-	2	$ 180,500	-	***
Phase 2/ Medium**	2,265	$ 396,400	$ 175	-	-	$ 80	2,295	$ 757,400	$ 330	-	-	$ 13,775	-	-	$ 63,340	$ 1,153,800
Phase 3/ Low**	-	-	$ 175	-	-	$ 80	930	$ 306,900	$ 330	-	-	$ 13,775	-	-	$ 63,340	$ 306,900
	3,345	$ 750,400		-	-		3,225	$ 1,064,300		-	-		2	$ 180,500		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for All Richardson include costs attributed to DART and others in calculating average costs per unit length or crosswalk, while excluding costs for improvements on the Galatyn Pkwy bridge over U.S. 75, and therefore do not match other totals shown in Table 3.*

Table 8: Opinion of Probable Construction Cost for Galatyn Park Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Richardson)	5,175	$ 905,600	$ 175	1,125	$ 89,100	$ 80	120	$ 39,500	$ 330	4	$ 55,100	$ 13,775	10	$ 633,400	$ 63,340	***
Phase 1/ High*	1,480	$ 37,400	-	10	$ 700	-	-	-	-	3	$ 15,100	-	3	$ 124,800	-	***
Phase 2/ Medium**	1,665	$ 291,400	$ 175	740	$ 59,200	$ 80	-	-	$ 330	4	$ 55,100	$ 13,775	2	$ 126,700	$ 63,340	$ 532,400
Phase 3/ Low**	5,540	$ 969,500	$ 175	210	$ 16,800	$ 80	2,890	$ 953,700	$ 330	6	$ 82,700	$ 13,775	8	$ 506,800	$ 63,340	$ 2,529,500
	8,685	$ 1,298,300		960	$ 76,700		2,890	$ 953,700		13	$ 152,900		13	$ 758,300		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for All Richardson include costs attributed to DART and others in calculating average costs per unit length or crosswalk, while excluding costs for improvements on the Galatyn Pkwy bridge over U.S. 75, and therefore do not match other totals shown in Table 3.*

Table 9: Opinion of Probable Construction Cost for Arapaho Center Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Richardson)	5,175	$ 905,600	$ 175	1,125	$ 89,100	$ 80	120	$ 39,500	$ 330	4	$ 55,100	$ 13,775	10	$ 633,400	$ 63,340	***
Phase 1/ High*	1,085	$ 157,000	-	965	$ 64,800	-	120	$ 39,500	-	-	-	-	3	$ 220,300	-	$ 481,600
Phase 2/ Medium**	2,015	$ 352,700	$ 175	430	$ 34,400	$ 80	-	-	$ 330	-	-	$ 13,775	2	$ 126,700	$ 63,340	$ 513,800
Phase 3/ Low**	6,315	$ 1,105,200	$ 175	535	$ 42,800	$ 80	1,070	$ 353,100	$ 330	-	--	$ 13,775	-	-	$ 63,340	$ 1,501,100
	9,415	$ 1,614,900		1,930	$ 142,000		1,190	$ 392,600		-	-		5	$ 347,000		$ 2,496,500

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for All Richardson include costs attributed to DART and others in calculating average costs per unit length or crosswalk, while excluding costs for improvements on the Galatyn Pkwy bridge over U.S. 75, and therefore do not match other totals shown in Table 3.*

Table 10: Opinion of Probable Construction Cost for Spring Valley Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Richardson)	5,175	$ 905,600	$ 175	1,125	$ 89,100	$ 80	120	$ 39,500	$ 330	4	$ 55,100	$ 13,775	10	$ 633,400	$ 63,340	***
Phase 1/ High*	1,530	$ 357,200	-	150	$ 23,600	-	-	-	-	1	$ 40,000	-	2	$ 107,800	-	***
Phase 2/ Medium**	325	$ 56,900	$ 175	1,190	$ 95,200	$80	-	-	$ 330	-	-	$ 13,775	1	$ 63,400	$ 63,340	$ 215,500
Phase 3/ Low**	6,824	$ 1,194,200	$ 175	100	$ 8,000	$80	-	-	$ 330	-	-	$ 13,775	1	$ 63,400	$ 63,340	$ 1,265,600
	8,679	$ 1,608,300		1,440	$126,800		-	-		1	$ 40,000		4	$ 234,600		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for All Richardson include costs attributed to DART and others in calculating average costs per unit length or crosswalk, while excluding costs for improvements on the Galatyn Pkwy bridge over U.S. 75, and therefore do not match other totals shown in Table 3.*

Table 11: Opinion of Probable Construction Cost for Downtown Garland Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Garland)	34,850	$ 9,632,600	$ 277	490	$ 97,100	$ 199	855	$ 69,700	$ 82	5	$ 170,900	$ 34,180	2	$ 338,400	$ 169,200	***
Phase 1/ High*	19,975	$ 7,009,900	-	115	$ 36,400	-	-	-	-	3	$ 88,100	-	-	-	-	$ 7,134,400
Phase 2/ Medium**	14,795	$ 4,098,300	$ 277	970	$ 193,100	$ 199	-	-	$ 82	3	$ 102,600	$ 34,180	2	$ 338,400	$ 169,200	$ 4,732,400
Phase 3/ Low**	10,135	$ 2,807,400	$ 277	635	$ 126,400	$ 199	-	-	$ 82	2	$ 68,400	$ 34,180	6	$ 1,015,200	$ 169,200	$ 4,017,400
	44,905	$ 13,915,600		1,720	$ 355,900		-	-		8	$ 259,100		8	$ 1,353,600		$ 15,884,200

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Garland include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 12: Opinion of Probable Construction Cost for Forest Jupiter Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Garland)	34,850	$ 9,632,600	$ 277	490	$ 97,100	$ 199	855	$ 69,700	$ 82	5	$ 170,900	$ 34,180	2	$ 338,400	$ 169,200	***
Phase 1/ High*	14,875	$ 2,622,700	-	375	$ 60,700	-	855	$ 69,700	-	2	$ 82,800	-	2	$ 338,400	-	***
Phase 2/ Medium**	6,740	$ 1,867,000	$ 277	600	$ 119,400	$ 199	-	-	$ 82	-	-	$ 34,180	-	-	$ 169,200	$ 1,986,400
Phase 3/ Low**	7,210	$ 1,997,200	$ 277	145	$ 28,900	$ 199	1,525	$ 125,100	$ 82	-	-	$ 34,180	2	$ 338,400	$ 169,200	$ 2,489,600
	28,825	$ 6,486,900		1,120	$ 209,000		2,380	$ 194,800		2	$ 82,800		4	$ 676,800		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Garland and Forest Jupiter Station high-priority improvements include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 13: Opinion of Probable Construction Cost for LBJ Central Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	8,850	$ 786,900	-	2,515	$ 254,400	-	615	$ 104,500	-	-	-	-	3	$ 286,300	-	$ 1,432,100
Phase 2/ Medium**	-	-	$ 146	415	$ 60,600	$ 146	1,260	$ 354,100	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 414,700
Phase 3/ Low**	985	$ 143,900	$ 146	20	$ 3,000	$ 146	605	$ 170,100	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 317,000
	9,835	$ 930,800		2,950	$ 318,000		2,480	$ 628,700		-	-		3	$ 286,300		$ 2,163,800

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 14: Opinion of Probable Construction Cost for Forest Lane Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	1,005	$ 142,300	-	1,350	$ 206,900	-	2,035	$ 447,800	-	-	-	-	5	$ 284,800	-	$ 1,081,800
Phase 2/ Medium**	355	$ 51,900	$ 146	290	$ 42,400	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 94,300
Phase 3/ Low**	2,035	$ 297,200	$ 146	160	$ 23,400	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 320,600
	3,395	$ 491,400		1,800	$ 272,700		2,035	$ 447,800		-	-		5	$ 284,800		$ 1,496,700

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 15: Opinion of Probable Construction Cost for Walnut Hill Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	3,495	$ 513,300	-	-	-	-	-	-	-	1	$ 12,400	-	2	$ 82,200	-	$ 607,900
Phase 2/ Medium**	8,755	$ 1,278,300	$ 146	110	$ 16,100	$ 146	500	$ 140,500	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,434,900
Phase 3/ Low**	205	$ 30,000	$ 146	-	-	$ 146	1,635	$ 459,500	$ 281	-	-	$ 11,692	1	$87,400	$ 87,387	$ 576,900
	12,455	$ 1,821,600		110	$ 16,100		2,135	$ 600,000		1	$ 12,400		3	$ 169,600		$ 2,619,700

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 16: Opinion of Probable Construction Cost for Park Lane Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	15,530	$ 2,416,000	-	300	$ 25,400	-	-	-	-	-	-	-	1	$ 17,800	-	***
Phase 2/ Medium**	7,350	$ 1,073,100	$ 146	250	$ 36,500	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,109,600
Phase 3/ Low**	4,450	$ 649,700	$ 146	40	$ 5,900	$ 146	-	-	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 743,000
	27,330	$ 4,138,800		590	$ 67,800		-	-		-	-		2	$ 105,200		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas and Park Lane Station include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 17: Opinion of Probable Construction Cost for Lovers Lane Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	1,635	$ 290,400	-	545	$ 79,200	-	-	-	-	-	-	-	-	-	-	$ 369,600
Phase 2/ Medium**	1,055	$ 154,100	$ 146	-	-	$ 146	-	-	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 241,500
Phase 3/ Low**	420	$ 61,400	$ 146	10	$ 1,500	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 62,900
	3,110	$ 505,900		555	$ 80,700		-	-		-	-		1	$ 87,400		$ 674,000

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 18: Opinion of Probable Construction Cost for Mockingbird Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	1,020	$ 490,100	-	5	$ 17,400	-	-	-	-	1	$ 5,900	-	-	-	-	$ 513,400
Phase 2/ Medium**	1,130	$ 165,000	$ 146	175	$ 25,600	$ 146	-	-	$ 281	2	$ 23,400	$ 11,692	-	-	$ 87,387	$ 214,000
Phase 3/ Low**	7,025	$ 1,025,700	$ 146	920	$ 134,400	$ 146	610	$ 171,500	$ 281	-	-	$ 11,692	3	$ 262,200	$ 87,387	$ 1,593,800
	9,175	$ 1,680,800		1,100	$ 177,400		610	$ 171,500		3	$ 29,300		3	$ 262,200		$ 2,321,200

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 19: Opinion of Probable Construction Cost for LBJ Skillman Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	16,895	$ 1,685,400	-	825	$ 76,000	-	2,800	$ 563,700	-	-	-	-	1	$ 253,200	-	$ 2,578,300
Phase 2/ Medium**	5,070	$ 740,300	$ 146	225	$ 32,900	$ 146	-	-	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 860,600
Phase 3/ Low**	8,505	$ 1,241,800	$ 146	-	$-	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,241,800
	30,470	$ 3,667,500		1,050	$ 108,900		2,800	$ 563,700		-	-		2	$ 340,600		$ 4,680,700

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 20: Opinion of Probable Construction Cost for White Rock Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	11,010	$ 1,214,800	-	135	$ 10,900	-	-	-	-	-	-	-	2	$ 7,000	-	$ 1,232,700
Phase 2/ Medium**	12,625	$ 1,843,300	$ 146	1,775	$ 259,200	$ 146	-	-	$ 281	1	$ 11,700	$ 11,692	1	$ 87,400	$ 87,387	$ 2,201,600
Phase 3/ Low**	11,765	$ 1,717,700	$ 146	5,070	$ 740,300	$ 146	-	-	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 2,545,400
	35,400	$ 4,775,800		6,980	$ 1,010,400		-	-		1	$ 11,700		4	$ 181,800		$ 5,979,700

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 21: Opinion of Probable Construction Cost for Eighth & Corinth Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	9,695	$ 1,252,200	-	205	$ 24,200	-	1,475	$ 1,516,800	-	-	-	-	5	$ 795,500	-	***
Phase 2/ Medium**	12,645	$ 1,846,200	$ 146	915	$ 133,600	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,979,800
Phase 3/ Low**	6,500	$ 949,000	$ 146	115	$ 16,800	$ 146	480	$ 134,900	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,110,700
	28,840	$ 4,047,400		1,235	$ 174,600		1,955	$ 1,651,700		-	-		5	$ 795,500		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas and Eighth & Corinth Station include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 22: Opinion of Probable Construction Cost for Dallas Zoo Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	15,440	$ 3,047,000	-	835	$ 257,400	-	-	-	-	-	-	-	-	-	-	$ 3,304,400
Phase 2/ Medium**	10,325	$ 1,507,500	$ 146	2,510	$ 366,500	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,874,000
Phase 3/ Low**	5,430	$ 792,800	$ 146	1,180	$ 172,300	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 965,100
	31,195	$ 5,347,300		4,525	$ 796,200		-	-		-	-		-	-		$ 6,143,500

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 23: Opinion of Probable Construction Cost for Morrell Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	9,390	$ 1,606,500	-	2,065	$ 283,500	-	670	$ 100,600	-	-	-	-	6	$ 435,600	-	$ 2,426,200
Phase 2/ Medium**	10,335	$ 1,509,000	$ 146	150	$ 21,900	$ 146	105	$ 29,600	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 1,647,900
Phase 3/ Low**	7,790	$ 1,137,400	$ 146	255	$ 37,300	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 1,174,700
	27,515	$ 4,252,900		2,470	$ 342,700		775	$ 130,200		-	-		7	$ 523,000		$ 5,248,800

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 24: Opinion of Probable Construction Cost for Tyler Vernon Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	19,815	$ 3,238,200	-	1,205	$ 200,200	-	770	$ 160,500	-	1	$ 51,400	-	3	$ 267,000	-	***
Phase 2/ Medium**	22,760	$ 3,323,000	$ 146	1,210	$ 176,700	$ 146	1,175	$ 330,200	$ 281	8	$ 93,600	$ 11,692	2	$ 174,800	$ 87,387	$ 4,098,300
Phase 3/ Low**	17,935	$ 2,618,600	$ 146	685	$ 100,100	$ 146	235	$ 66,100	$ 281	-	-	$ 11,692	9	$ 786,500	$ 87,387	$ 3,571,300
	60,510	$ 9,179,800		3,100	$ 477,000		2,180	$ 556,800		9	$ 145,000		14	$ 286,300		***

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas and Tyler Vernon Station include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 25: Opinion of Probable Construction Cost for Hampton Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	9,190	$ 866,200	-	880	$ 110,900	-	270	$ 23,800	-	-	-	-	8	$ 285,300	-	$ 1,286,200
Phase 2/ Medium**	10,170	$ 1,484,900	$ 146	1,560	$ 227,800	$ 146	-	-	$ 281	2	$ 23,400	$ 11,692	-	-	$ 87,387	$ 1,736,100
Phase 3/ Low**	11,520	$ 1,682,000	$ 146	815	$ 119,000	$ 146	-	-	$ 281	-	-	$ 11,692	2	$ 174,800	$ 87,387	$ 1,975,800
	30,880	$ 4,033,100		3,255	$ 457,700		270	$ 23,800		2	$ 23,400		10	$ 460,100		$ 4,998,100

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 26: Opinion of Probable Construction Cost for Westmoreland Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	9,140	$ 1,236,200	-	890	$ 152,500	-	1,820	$ 177,100	-	-	-	-	13	$ 1,371,500	-	$ 2,937,300
Phase 2/ Medium**	6,845	$ 999,400	$ 146	850	$ 124,100	$ 146	-	-	$ 281	-	-	$ 11,692	3	$ 262,200	$ 87,387	$ 1,385,700
Phase 3/ Low**	7,810	$1,140,300	$ 146	380	$ 55,500	$ 146	215	$ 60,500	$ 281	-	-	$ 11,692	2	$ 174,800	$ 87,387	$ 1,431,100
	23,795	$ 3,375,900		2,120	$ 332,100		2,035	$ 237,600		-	-		18	$ 1,808,500		$ 5,754,100

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 27: Opinion of Probable Construction Cost for Illinois Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	17,570	$ 2,883,700	-	5,085	$ 716,600	-	2,260	$ 469,600	-	9	$ 92,500	-	10	$ 920,500	-	$ 5,082,900
Phase 2/ Medium**	22,590	$ 2,111,900	$ 146	4,185	$ 611,100	$ 146	575	$ 161,600	$ 281	4	$ 46,800	$ 11,692	-	-	$ 87,387	$ 4,117,700
Phase 3/ Low**	14,465	$ 143,900	$ 146	660	$ 96,400	$ 146	605	$ 170,100	$ 281	1	$ 11,700	$ 11,692	13	$ 1,136,100	$ 87,387	$ 3,256,200
	54,625	$ 8,293,800		9,930	$ 1,424,100		3,440	$ 801,300		14	$ 151,000		23	$ 2,056,600		$ 12,726,800

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 28: Opinion of Probable Construction Cost for Kiest Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	10.070	$ 1,383,200	-	1,525	$ 196,200	-	-	-	-	-	-	-	-	-	-	$ 1,579,400
Phase 2/ Medium**	16,680	$ 2,435,300	$ 146	4,200	$ 613,200	$ 146	-	-	$ 281	2	$ 23,400	$ 11,692	2	$ 174,800	$ 87,387	$ 3,246,700
Phase 3/ Low**	13,635	$ 1,990,800	$ 146	630	$ 92,000	$ 146	-	-	$ 281	1	$ 11,700	$ 11,692	2	$174,800	$ 87,387	$ 2,269,300
	40,385	$ 5,809,300		6,355	$ 901,400		-	-		3	$ 35,100		4	$ 349,600		$ 7,095,400

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 29: Opinion of Probable Construction Cost for VA Medical Center Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	12,450	$ 1,527,400	-	1,520	$ 310,100	-	-	-	-	7	$ 33,100	-	2	$ 150,400	-	$ 2,021,000
Phase 2/ Medium**	16,380	$ 2,391,500	$ 146	1,100	$ 160,600	$ 146	-	-	$ 281	7	$ 81,900	$ 11,692	2	$ 174,800	$ 87,387	$ 2,808,800
Phase 3/ Low**	14,740	$ 2,152,100	$ 146	750	$ 109,500	$ 146	-	-	$ 281	2	$ 23,400	$ 11,692	14	$ 1,223,500	$ 87,387	$ 3,508,500
	43,570	$ 6,071,000		3,370	$ 580,200		-	-		16	$ 138,400		18	$ 1,548,700		$ 8,338,300

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 30: Opinion of Probable Construction Cost for CityPlace/Uptown Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	160	$ 30,500	-	-	-	-	-	-	-	-	-	-	11	$ 1,023,600	-	$ 1,054,100
Phase 2/ Medium**	2,105	$ 307,400	$ 146	-	-	$ 146	-	-	$ 281	-	-	$ 11,692	1	$ 87,400	$ 87,387	$ 394,800
Phase 3/ Low**	3,120	$ 455,600	$ 146	405	$ 59,200	$ 146	-	-	$ 281	-	-	$ 11,692	-	-	$ 87,387	$ 514,800
	5,385	$ 793,500		405	$ 59,200		-	-		-	-		12	$ 1,111,000		$ 1,963,700

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 31: Opinion of Probable Construction Cost for Convention Center Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	1,715	$ 262,300	-	105	$ 11,600	-	-	-	-	-	-	-	2	$ 227,400	-	$ 501,300
Phase 2/ Medium**	3,640	$ 531,500	$ 146	-	-	$ 146	-	-	$ 281	-	-	$ 11,692	2	$ 174,800	$ 87,387	$ 706,300
Phase 3/ Low**	120	$ 17,600	$ 146	175	$ 25,600	$ 146	-	-	$ 281	-	-	$ 11,692	2	$ 174,800	$ 87,387	$ 218,000
	5,475	$ 811,400		280	$ 37,200		-	-		-	-		6	$ 577,000		$ 1,425,600

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

Table 32: Opinion of Probable Construction Cost for Cedars Station Half-Mile Area

Phase/ Priority	Sidewalks			Sidewalk Repairs			Veloweb/ Shared Use Paths			Simple Crosswalks			Other Crosswalks (with Beacon, Island or Signal)			
	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	Lin. Ft	Cost	~$/LF	#	Cost	~$/EA	#	Cost	~$/EA	Total Cost
High Priority (All Dallas)	180,005	$ 26,244,200	$ 146	20,665	$ 3,012,500	$ 146	12,715	$ 3,564,400	$ 281	24	$ 280,600	$ 11,692	79	$ 6,903,500	$ 87,387	***
Phase 1/ High*	5,930	$ 1,371,600	-	675	$ 79,100	-	-	-	-	5	$ 85,300	-	5	$ 495,400	-	$ 2,031,400
Phase 2/ Medium**	6,430	$ 938,800	$ 146	910	$ 132,900	$ 146	-	-	$ 281	-	-	$ 11,692	3	$ 262,200	$ 87,387	$ 1,333,900
Phase 3/ Low**	3,195	$ 466,500	$ 146	105	$ 15,400	$ 146	1,840	$ 517,100	$ 281	-	-	$ 11,692	5	$ 437,000	$ 87,387	$ 1,436,000
	15,555	$ 2,776,900		1,690	$ 227,400		1,840	$ 517,100		5	$ 85,300		13	$ 1,194,600		$ 4,801,300

** High priority cost opinions are based on field visits and bid item breakdowns, but without the benefit of survey, subsurface utility investigation, or other engineering information typically available for semi-final design.*

*** Medium- and low-priority cost opinions are not based on individual improvements, but instead extrapolated from cost/linear foot calculations for high-priority improvements; actual costs may vary significantly, especially for crosswalk improvements.*

**** Costs for all Dallas include costs attributed to DART and others in calculating average costs per unit length or crosswalk, and therefore do not match the total value shown in Table 3.*

APPENDICES

APPENDIX A: Field Work Dates

APPENDIX B: Data Collection Maps & Forms

- Parker Road Station
- Downtown Plano Station
- CityLine Bush Station
- Galatyn Park Station
- Arapaho Center Station
- Spring Valley Station
- Downtown Garland Station
- Forest Jupiter Station
- LBJ Central Station
- Forest Lane Station
- Walnut Hill Station
- Park Lane Station
- Lovers Lane Station
- Mockingbird Station
- LBJ Skillman Station
- White Rock Station
- Eighth & Corinth Station
- Dallas Zoo Station
- Morrell Station
- Tyler Vernon Station
- Hampton Station
- Westmoreland Station
- Illinois Station
- Kiest Station
- VA Medical Center Station
- CityPlace/Uptown Station
- Convention Center Station
- Cedars Station

APPENDIX C: Crosswalk Improvement Evaluation Details

APPENDIX D: Crosswalk Improvement Selection Tables

- Parker Road Station
- Downtown Plano Station
- CityLine Bush Station
- Galatyn Park Station
- Arapaho Center Station
- Spring Valley Station
- Downtown Garland Station
- Forest Jupiter Station
- LBJ Central Station
- Forest Lane Station
- Walnut Hill Station
- Park Lane Station
- Lovers Lane Station
- Mockingbird Station
- LBJ Skillman Station
- White Rock Station
- Eighth & Corinth Station
- Dallas Zoo Station
- Morrell Station
- Tyler Vernon Station
- Hampton Station
- Westmoreland Station
- Illinois Station
- Kiest Station
- VA Medical Center Station
- CityPlace/Uptown Station
- Convention Center Station
- Cedars Station

APPENDIX E: Half-Mile Area Improvement Prioritization – Initial Trial Methodology Details

APPENDIX F: Half-Mile Area Improvement Prioritization – Final Methodology Details

APPENDIX G: Cost Estimating Details

APPENDIX H: Estimated Quantities & Opinions of Probable Construction Cost – Station Property Improvements

- Parker Road Station
- Downtown Plano Station
- CityLine Bush Station
- Galatyn Park Station
- Arapaho Center Station
- Spring Valley Station
- Downtown Garland Station
- Forest Jupiter Station
- LBJ Central Station
- Forest Lane Station
- Walnut Hill Station
- Park Lane Station
- Lovers Lane Station
- Mockingbird Station
- LBJ Skillman Station
- White Rock Station
- Eighth & Corinth Station
- Dallas Zoo Station
- Morrell Station
- Tyler Vernon Station
- Hampton Station
- Westmoreland Station
- Illinois Station
- Kiest Station
- VA Medical Center Station
- CityPlace/Uptown Station
- Convention Center Station
- Cedars Station

APPENDIX I: Half-Mile Area Recommendation Details & Detailed Improvement Mapping

- Parker Road Station
- Downtown Plano Station
- CityLine Bush Station
- Galatyn Park Station
- Arapaho Center Station
- Spring Valley Station
- Downtown Garland Station
- Forest Jupiter Station
- LBJ Central Station
- Forest Lane Station
- Walnut Hill Station
- Park Lane Station
- Lovers Lane Station
- Mockingbird Station
- LBJ Skillman Station
- White Rock Station
- Eighth & Corinth Station
- Dallas Zoo Station
- Morrell Station
- Tyler Vernon Station
- Hampton Station
- Westmoreland Station
- Illinois Station
- Kiest Station
- VA Medical Center Station
- CityPlace/Uptown Station
- Convention Center Station
- Cedars Station