



Appendix B

Technical Memoranda and Reports

Disclaimer:

Technical memoranda and reports were prepared as independent documents to support the preparation of the Supplemental Draft Environmental Impact Statement (SDEIS) for the Dallas CBD Second Light Rail Alignment (D2 Subway). Information from these documents was incorporated into the SDEIS to provide information on existing conditions, and in some cases, assess potential impacts to the resources. Information contained in the SDEIS is the most current and supersedes information in the technical memoranda and reports.



B-14

Determination of Effects Report, Part 1



Determination of Effects Report

Dallas Central Business District Second Light Rail Alignment (D2 Subway)

Draft

Dallas County
April 2, 2020



This Report was prepared for DART
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- July 18, 2018 THC Concurrence on APE
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1 INTRODUCTION

Dallas Area Rapid Transit (DART) proposes to construct a second light rail transit (LRT) alignment through the Dallas Central Business District (CBD), referred to as the D2 Subway. The D2 Subway (or Project), shown in Figure 1-1, would consist of a 2.4-mile alignment extending from the existing Victory Station through the core of downtown Dallas, reconnecting to the Green Line along Good Latimer in the Deep Ellum Area. The Project would include four new stations and would relocate the existing Deep Ellum Station to the north as the Live Oak Station. The alignment would be a combination of at-grade and below-grade sections. The below-grade subway segment would run primarily under Griffin and Commerce Streets. The existing Green and Orange lines would shift operations from the existing Bryan-Pacific Transit Mall to the proposed D2 Subway alignment, thereby increasing capacity on the mall for additional service in the near and long-term, while also enhancing operational reliability and flexibility.

2 PROJECT BACKGROUND AND REGIONAL CONTEXT

2.1 Background

Light rail alignments in downtown Dallas were first included in the 1983 DART Service Plan to accommodate interlining of multiple future corridors in the DART Service Area. The 1983 plan envisioned three corridors with a policy position that the initial development focus on an east-west subway rather than an at-grade transit way if funding allowed. In 1988, a failed bond referendum led to development of the 1989 DART New Directions Transit System Plan, which recommended a modification to the DART Service Plan to include a surface transit way along Bryan-Pacific. This was followed by a 1990 DART Board resolution approving a Master Interlocal Agreement (ILA) with the City of Dallas, which included terms and conditions related to the planning, design and construction of a future subway in the Dallas CBD. These conditions related to headway and ridership thresholds.

The 1995 DART Transit System Plan laid out an extensive light rail expansion program and included initial funding for a future CBD subway project. As expansion of the DART light rail system continued, both the city of Dallas and DART began planning for the D2 Project. In June 2005, the City of Dallas published their Comprehensive Transportation Plan for the Dallas Central Business District to guide future planning relative to streets, transit, and other downtown circulation needs. This plan recommended an LRT corridor that encompasses the proposed D2 Project through the center of downtown. Specific recommendations on the length of the subway and portal locations were not included subject to further alternatives analysis and an environmental impact statement.

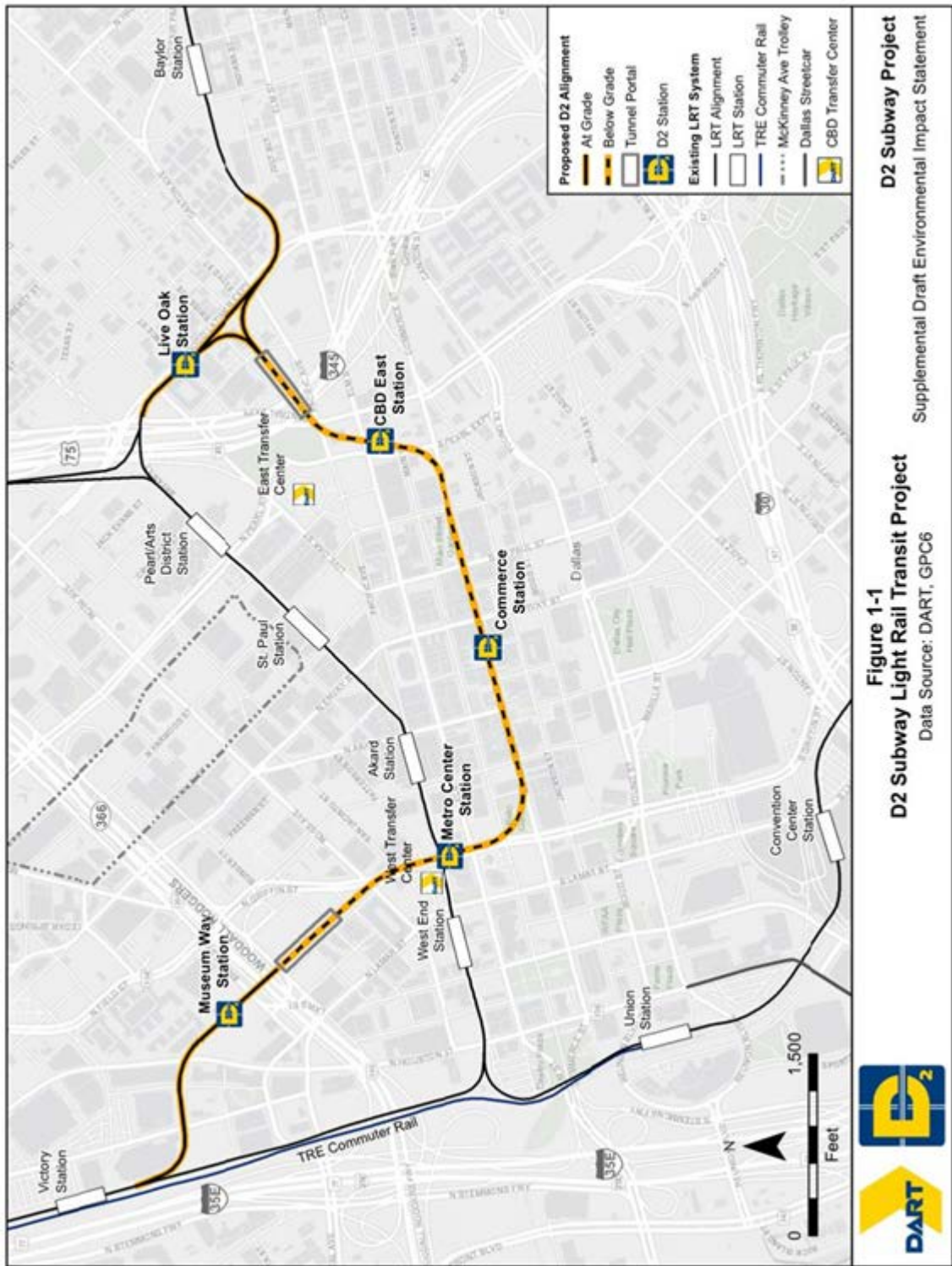


Figure 1-1
D2 Subway Light Rail Transit Project
 Data Source: DART, GPC6

D2 Subway Project
 Supplemental Draft Environmental Impact Statement



DART began planning for the D2 Subway in 2007. On April 12, 2007, the Federal Transit Administration (FTA) and DART published a notice of their intent to prepare an environmental impact statement (EIS), concurrent with a planning Alternatives Analysis (AA), for transportation improvements in the Dallas CBD. From 2007 through 2010, FTA and DART prepared a draft environmental impact statement (DEIS). In May 2010, DART released the AA/DEIS but postponed selection of a locally preferred alternative (LPA) due the recession and changed conditions in downtown Dallas. Over the last several years, DART has continued to advance the D2 Project including addressing these new conditions and is now preparing a Supplemental DEIS based on direction from the DART Board and City of Dallas.

2.2 Study Area

The Study Area for the D2 Subway (herein after referred to as "Study Area") is generally a 0.5-mile buffer on either side of the alignment. The Study Area is located within the metropolitan area of Dallas, in Dallas County, Texas. As defined in the City of Dallas 360 Plan, Downtown Dallas is the traditional CBD core bounded by a freeway loop system consisting of IH 35E (Stemmons Freeway) on the west, Interstate (I)-30 on the south, I-345 on the east, and Spur 366 (Woodall Rodgers Freeway) on the north. This downtown core contains six distinct districts and is surrounded by several additional districts and neighborhoods. The SDEIS illustrates the districts located within and surrounding the Study Area. The Study Area includes the entire downtown core and most directly interacts with portions of the Victory Park, Uptown, Deep Ellum, and Baylor districts. Several additional districts and neighborhoods are located near or beyond the Study Area boundary.

2.3 Purpose and Need for the Proposed Action

2.3.1 Purpose of the Proposed Action

The purpose of the D2 Subway would be to ensure the sustainability of the DART system into the future by:

- Providing additional system and core capacity by adding another LRT line through downtown Dallas, which would allow for improved headways or new lines;
- Enhancing operational flexibility by incorporating connections that allow for potential new LRT patterns in the future and options for special events;
- Improving system reliability by reducing conflicts at major junctions that constrain operations and scheduling, while providing system redundancy during incidents; and
- Serving new markets while supporting land use and economic development initiatives.

Reliance upon the existing at-grade Bryan-Pacific Transit Mall for all LRT lines constrains the ability of both DART and the region to implement additional rail projects or improve headways on the existing light rail lines and affects quality of service. Dependence on one single downtown transit mall also increases the risk for system-wide service disruption due to incidents on the mall, such as traffic accidents or incidents in adjacent buildings.



Operational and capacity constraints are compounded by continued high regional growth, increasing highway congestion, planned regional transit expansion, and the introduction of a privately funded high-speed rail project. These items will further increase DART system demand and stress DART's limited core capacity.

The D2 Subway would be designed to address the core capacity issues and increase operational flexibility, reliability, and quality of passenger service through downtown and throughout the entire LRT system. The D2 Subway would also enhance access to both established and growing markets in downtown, including the Commerce Street corridor, the south Victory Park area, and the eastern part of the CBD where recent new development and redevelopment initiatives are underway.

2.3.2 Need for the Proposed Project

A second light rail alignment through downtown Dallas would address several needs of the DART rail system. These needs range from broad issues such as regional growth and transit expansion, to specific light rail operational constraints that affect service and capacity. Specific transportation needs are outlined below.

Relieve the CBD LRT Capacity Constraint

Train operations through the existing transit mall are at or near capacity. In 2009, the LRT system operated at 10-minute peak headways. Service testing before the Green Line opened in 2010 revealed that the system was not able to maintain 10-minute headways without affecting on-time performance and service quality of all lines. While the modeled theoretical capacity in each direction was 24 trains per hour (2.5-minute combined headway), the practical capacity based on restrictive junction movements and schedule variations was 16 trains. As a result, DART increased peak headways to 15 minutes and has maintained that headway since.

Because of this capacity constraint, DART is limited in its ability to add insert trains or improve peak headways to either accommodate increasing demand, add new LRT lines, or provide a higher level of service.

DART LRT lines are currently restricted to two-car train operations due to limited station platform length on the Red and Blue lines. While various segments on the system experience crowding, the highest peak hour/peak direction loads are generally seen in the PM peak in the northbound direction on the Red and Orange lines, which serve the growing areas of northeast Dallas County and Collin County. Based on observations and ridership data, these lines experience crowding on a regular basis, which affects schedule reliability and passenger comfort. DART is advancing a program of interrelated projects to enhance core and system capacity. This program includes the D2 Subway, the Red/Blue Platform Extension project, and the Dallas Streetcar Central link. The Red/Blue Platform Extension project will enable all lines to operate three-car trains and thus address passenger capacity issues on specific trips. However, that project does not address the ability to improve headways or add new lines.



Furthermore, existing junction timing would need to be modified to accommodate longer train movements, thus limiting the ability to operate three-car trains on all lines during the peak periods.

Accommodate Growing Regional Demand

Regional population and employment growth in the DFW region continue to outpace most of the country. Regional population and employment are expected to grow by more than 35% through year 2045. All counties will experience an increase in vehicle miles traveled (VMT), and more importantly, will see hours of congestion delay increase at twice the rate of VMT, or in some counties up to seven times the rate. This increasing congestion will make transit expansion in both the DART Service Area and the region a higher priority to help alleviate mobility issues and offer a higher capacity alternative to driving indicating that D2 Subway capacity solutions would be of regional significance. For example, Trinity Metro opened its TEXRail line in January 2019, increasing transfers to the Orange Line at DFW Airport. The DCTA A-Train already requires that three-car trains be used on peak Green Line trips.

In response to growth forecasts, DART is evaluating a range of potential high capacity expansion corridors as part of its 2045 Transit System Plan (TSP), some of which would require operations through the CBD. DART is also advancing a core frequent bus network which would match LRT service levels to drive ridership and improve transfers. The NCTCOG Mobility 2045 Metropolitan Transportation Plan (MTP) recommends eight additional rail corridors that would connect to or extend the LRT network, adding passengers and requiring longer trains or additional service to accommodate demand.

Beyond regional projects, Texas Central Partners is planning to bring high speed rail (HSR) to downtown Dallas from Houston by 2025. Initial plans call for 24 trips per day between Houston and Dallas, including a train every 30 minutes during peak times. Each train is expected to carry up to 400 passengers. With convenient transit connectivity to bus and light rail, it is anticipated that transfers would increase the capacity needs of the DART LRT system. NCTCOG also recommends a higher speed rail connection between Dallas and Fort Worth to complement the HSR project.

While regional forecasts demonstrate need, the phasing of regional development and adjustments to demographic forecasts to focus more on higher density transit-oriented developments could also influence the timing of core capacity improvements.

Maintain a Quality System and Service

Quality service for customers translates into frequent and reliable service. Dependence on one transit mall for the current LRT system forces DART to cap peak period schedules, diminishing operating flexibility, efficiency and service. Due to the cycle time of the two junctions located at either end of the mall, the current operations represent the practical operating capacity without compromising schedule reliability during the peak period. In addition, the current configuration does not allow for optimal scheduling throughout the Service Area. For example, the Orange Line and Red Line 15-minute peak headways are evenly



spaced in the North Central Corridor (downtown Dallas to Plano). This allows for equal distribution of train arrivals of 7 to 8 minutes, minimizing wait time for customers. However, given operational constraints at junctions, the Green Line must be scheduled in such a way that it operates a tighter headway with the Orange Line in the Northwest Corridor from downtown to the Bachman junction, a segment that serves a large employment area including the medical district. During peak periods, the Orange and Green Lines are only four minutes apart, resulting in an 11-minute wait for customers rather than a more evenly spaced headway.

Any disruption along the transit mall disrupts the entire system and reduced reliability. Ensuring a reliable, quality system is what attracts customers to DART and provides a competitive advantage over the automobile.

Serve New CBD Markets

Downtown Dallas continues to redevelop and add a greater mix of uses. While much of the commercial and office core is along the existing Bryan-Pacific Transit Mall, the southern part of downtown and the Commerce Street corridor is home to several offices including AT&T Headquarters, numerous hotels and restaurants, and is within a short walk to the Government District along Young Street. The eastern area of downtown is also seeing new and redevelopment and enhancements and expansion of Carpenter Park. The new East Quarter District includes renovation of several historic buildings into commercial, retail and restaurants. The Epic development is an 8-acre site at the intersection of the downtown, Deep Ellum, and the Farmers Market areas and includes office space, high-rise residential, a signature hotel in the historic Pittman building (Grand Lodge of the Colored Knights of Pythias), and retail.

In addition to this area, the northern West End and Victory Park areas have seen extensive new development in the past few years including the Perot Museum of Nature and Science, The Union, improvements to the West End Marketplace, and several additional high density residential or office buildings. The Union includes office, residential, and a Tom Thumb urban grocery store. More redevelopment is planned for the area. This area has limited accessibility from the existing Victory Station and the West End Station.

Enhance Land Use and Redevelopment Potential

The Dallas 360 Plan identifies several catalytic development areas, including the Northern West End, AT&T Discovery District, and the Carpenter Park area. All these areas are identified as having the opportunity to capitalize on transportation projects like the D2 Subway, have great development potential, and the ability to catalyze other areas of downtown.

2.4 Alternatives Considered

This section presents the definition of the No-Build Alternative and Build Alternative. These two alternatives are evaluated and compared in the SDEIS in accordance with the National



Environmental Policy Act (NEPA). Federal Transit Administration (FTA) regulations dictate that “The draft EIS (DEIS) must evaluate all reasonable alternatives to the action and document the reasons why other alternatives, which may have been considered, were eliminated from detailed study” (23 CFR 771.123). The Council on Environmental Quality (CEQ), the federal commission responsible for coordinating federal environmental efforts, further addresses reasonable alternatives as “those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant” (46 Fed. Reg. 18026, question 2a).

2.5 Planning History

A second downtown light rail alignment has been included in various DART and NCTCOG planning documents since 1983 as noted in Section 2.1. Planning for the alignment was officially initiated in 2007 as part of the Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) effort. The project webpage (www.DART.org/D2) includes information on the alternatives development and screening process that led to the selection of the proposed Build Alternative presented in the SDEIS from among several other build alternatives. A brief summary of that process is provided below.

D2 Study Phase One: AA/DEIS (2007-2010)

In the spring of 2007, DART conducted scoping pursuant to FTA and NEPA requirements. A long list of over 20 alternatives was developed. Phase One of the D2 Study concluded with the AA/DEIS in May 2010. The AA/DEIS included the evaluation of four primary alternatives including: Lamar-Commerce (Build B7), Lamar-Young (Build B4), Lamar-Marilla (Build B4a), and Lamar-Convention Center (Build B4b). A locally preferred alternative (LPA) was not selected at that time due to changing downtown conditions that resulted in a desire by the City of Dallas to evaluate additional alternatives, and the 2009 recession, which deferred the implementation date.

D2 Study Phase Two: Additional Alternatives Analysis (2011-2015)

In early 2011, DART initiated Phase Two of the study, which built on the original effort in response to comments on the AA/DEIS. These comments led to new D2 Alternatives as well as refinements to those considered in the AA/DEIS. In February 2013, DART held public meetings to present the alternatives and refinements. In June 2015, DART held meetings to present the evaluation results which supported the selection of an LPA. On September 22, 2015, the DART Board of Directors passed Resolution No. 150101 Approval of the Locally Preferred Alternative for the Second CBD Light Rail Alignment (D2). The 2015 LPA was Alternative B4 Lamar-Young/Jackson, a mostly at-grade alignment with a below grade crossing of the existing transit mall.



Project Development for Original LPA B4 Lamar-Young/Jackson (2015-2016)

DART received authorization into Project Development under the FTA Capital Investment Grant (CIG) program in November 2015 to conduct preliminary engineering and a supplemental DEIS. By mid-2016, there were community concerns with the at-grade alignment along Young/Jackson and requests from the City of Dallas and key stakeholders to pursue a subway option. As a result, on October 25, 2016, the DART Board of Directors approved the FY17 Financial Plan, which doubled the project budget to \$1.3 billion for development of a D2 Subway. Based on this action, DART initiated an LPA Refinement Phase in December 2016.

LPA Refinement Phase to Select D2 Subway (2016-2017)

The LPA refinement phase entailed significant coordination with technical staff and downtown stakeholders that started with input on potential subway corridors. The screening and evaluation process led to broad stakeholder support for an alignment along Commerce via Victory/Swiss and culminated with the following actions supporting advancement of the D2 Subway as the new LPA:

- On September 6, 2017 DART provided its annual CIG program submittal to the FTA in support of a future Core Capacity grant, which received a subsequent medium-high rating.
- On September 13, 2017 the Dallas City Council approved the Victory/Commerce/Swiss alignment as the LPA (Resolution No. 171426).
- On September 26, 2017 the DART Board of Directors selected and approved the Commerce via Victory/Swiss Alternative as the LPA (Resolution No. 170101).

2.6 No-Build Alternative

The No-Build Alternative is defined as existing and committed transportation projects through year 2045. It includes DART services and facilities that are programmed and funded within the FY20 DART 20-Year Financial Plan, as well as the regional projects contained in the NCTCOG MTP, Mobility 2045. Mobility 2045 also includes an extensive regional rail network that is subject to additional funding and is not included in the No-Build Alternative. In addition, the DART 2045 TSP is in development so there are no additional major programmed DART rail expansion projects or service level improvements defined at this time. However, the plan may include system-wide headway improvements and possible LRT expansion corridors.

The No-Build Alternative is not a no impact alternative, as it includes actions by DART or other agencies that have been in or will be addressed in separate environmental reviews. The No-Build Alternative is included as a benchmark against which the potential significant environmental benefits and impacts of the proposed Build Alternative will be measured.

2.7 Stations

As shown in Figure 1-1, the Project would introduce four new stations: one surface station (Museum Way), three underground stations (Metro Center, Commerce, and CBD East) and



one relocated surface station (Deep Ellum Station relocated as Live Oak Station) [see Appendix A: Figures 2-1 through 2-11 for urban design and station architectural plans]. The underground stations would be accessed by stairs, elevators, and/or escalators, and would have fare barrier systems to control access. DART is considering use of platform edge doors in the subway stations. Platform edge doors are an automatically controlled barrier to the tracks, which only allows passengers access when a train arrives and stops at a station. Two or more station access points would be provided for underground stations. The access points would be provided in open spaces downtown, within the sidewalks, or incorporated into new or existing buildings. The underground station infrastructure would also include emergency egress and ventilation shafts.

The underground stations would be designed using National Fire Protection Association (NFPA) 130, Standard for Fixed Guideway Transit and Passenger Rail Systems (2018). This NFPA standard is used internationally for new and existing transit systems as a baseline for which calculations to use and how to apply them to common situations found in the design of fixed guideway transit stations. The NFPA requirements focus on fire and life safety requirements within both surface and underground stations. The Project would adopt the current year of the NFPA once final design and construction is underway.

Table 2-1: Summary of Station Characteristics

Station	Platform Type	Access Portals	Fare Barrier Location	Vertical Circulation Elements
Museum Way	At-Grade, Side Platform	N/A	Open	N/A
Metro Center	Subway, Center Platform	West Transfer Center Head House	Street level	Elevators, escalators, stairs
		Rosa Parks Plaza	Street level	Elevators, escalators, stairs, emergency egress stairs
		Lamar/Pacific	Street level	Elevators Only, emergency egress stairs
		Pacific/Griffin	Street level	Elevators, Stairs
		Griffin Street Median	N/A	Emergency egress stairs only
Commerce	Subway, Center Platform	Pegasus Plaza Head House	Upper mezzanine	Elevators, escalators, stairs
		Two Options: 1. Commerce/Erway sidewalk, or	Lower mezzanine	Elevators only, emergency egress stairs
		2. Inside the parking garage in first floor retail area	Street level	Elevators only, emergency egress stairs
		Adolphus Tower ground level	N/A	Emergency egress stairs
CBD East	Subway, Center Platform	Pearl/Elm	Street level	Elevators, escalators, stairs
		North side of Elm	Street Level	Emergency egress stairs
		Pearl/Main	Street level	Elevators, escalators, stairs, emergency egress stairs
Live Oak	At-Grade, Center Platform	N/A	Open	N/A

Source: DART, GPC6

2.7.1 Museum Way

The Museum Way Station would be an at-grade, side platform station located southwest of the Perot Museum and north of Woodall Rodgers Freeway. Figure 2-1, in Appendix A illustrates the overall urban design plan to show the relationship of the station to the surrounding area. The station would be located to allow for potential integration of the Perot Museum expansion over or adjacent to the station platforms, which could include new museum facilities and a multi-story parking garage.

The station canopy elements would be like that for other side platform stations in downtown Dallas until potential museum expansion occurs, which could replace the canopies with museum infrastructure elements. The Museum Way Station platforms would each be 17'-4" x 386'-0". Landings and access ramps wrap around the back of the platform to reduce the overall effective length of station to fit in between River Street and Broom Street. Even with the reduced platform length, Broom Street would need to be realigned to the south to accommodate the platform length and allow for a future River Street connection to the north of the station. Shifting Broom Street south would create a more pedestrian friendly edge along the museum property leading to the platform (Appendix A: Figure 2-2).

Accessibility to the station would be via sidewalks and potential new pathways along the Project corridor to areas south of Woodall Rodgers Freeway where new developments are planned.

2.7.2 Metro Center

The Metro Center Station urban design plan is shown in Figure 2-3 (Appendix A), while Figure 2-4 illustrates the station architectural plans. The Metro Center Station would be a subway station located under North Griffin Street between San Jacinto and Elm Streets, near the West Transfer Center and Rosa Parks Plaza and adjacent to Homewood Suites and Crowne Plaza. The station is accessible to both the West End Station (one block to the west) and the Akard Station (one block to the east). The station would have a mezzanine level, a public concourse level, and a center platform level accessible from elevators, escalators and/or stairs from up to four access points. Vertical circulation at each access point is dependent on availability of space. The access points are located to enhance connectivity and transfers to bus service, the Red and Blue lines, and area destinations including the West End Historic District, major employers, and El Centro College.

The primary access point at Metro Center would consist of a new headhouse at the West Transfer Center site, which will require reconfiguration of the bus bays at this location. The redesign is pending outcomes of the DART Bus Network Redesign effort which may modify the number of required bus bays. The main head house would be located at the northwest corner of North Griffin Street and Pacific Avenue. This space would contain necessary functions to serve as the main entrance into the subway station and would be utilized as a transfer point to surface transportation. These functions include a pre-fare public space that includes seating for bus transfers, restrooms, vending, DART staff and a police podium. Post-

fare collection would be a large open concourse, spaces for concessions, large open platform, and non-public service spaces for DART staff, Dallas Fire-Rescue Department (DFD) and DART police. The building would also include ancillary spaces for ventilation, mechanical and electrical purposes. Other pedestrian portals would be located at the northeast corner of Griffin Street and Pacific Avenue, at Rosa Parks Plaza, and the northwest corner of North Lamar Street and Pacific Avenue. An emergency egress would be in the median of North Griffin Street and Elm Street. An emergency egress stairway and ventilation would also be in the median of North Griffin Street north of Elm Street, along with a light-well to allow natural light into the station below.

2.7.3 Commerce

The Commerce Station urban design plan is shown in Figure 2-5 (Appendix A) to show its relationship to the surrounding area. Figure 2-6 shows the architectural site plan. Commerce Station would be located under Commerce Street near AT&T's headquarters, and the Magnolia and Adolphus hotels. The station would be 730 feet in length with a center platform. The station platform is longer than typical, given right-of-way constraints such as subsurface utilities, building foundations, vertical circulation elements required at each end of the platform, and is designed to maintain visual wayfinding through the platform area.

The primary access point for Commerce Station would consist of a new headhouse at Pegasus Plaza located at the southeast corner of Main Street and Akard Street. The space would contain functions to serve as the main entrance into upper and lower mezzanine levels to access the platform. Fare control would be below-grade at the upper mezzanine level to minimize the surface footprint of the headhouse. Post-fare collection areas would include a large open concourse generally under Akard Street, spaces for concessions, and non-public service spaces for DART staff, DFD and DART police. The station would also include ancillary spaces for ventilation, mechanical and electrical purposes. Most of the station mechanical systems/electrical systems, and tunnel ventilation shafts and egress corridors would be located under Akard Street. An emergency egress exist would be located across Akard Street in the Adolphus Tower ground level. Discussions are underway to determine the potential for this to be an access point as well to complement the Pegasus Plaza headhouse. An additional pedestrian portal would be located near Commerce Street and Ervay Street. Two options are being considered at this location. One could be within public right-of-way in an expanded sidewalk with two elevators and emergency egress stairs. A public lobby portal with fare control and a DART police office would be located at the lower mezzanine at this pedestrian portal. A second option could be incorporated into ground floor retail space within DalPark garage. This second option would offer the same vertical circulation elements but would include fare control at ground level. The ventilation shafts for the station would be located at the east side of the headhouse, or within the Magnolia Hotel pass-through, and along the rear of private property located at Commerce and Browder.

Since Pegasus Plaza would be used as a temporary construction access point to mine the station without cut-and-cover construction along Commerce Street, this station represents

an opportunity to re-establish and reimagine Pegasus Plaza in cooperation with the city of Dallas.

2.7.4 CBD East

The CBD East Station is shown in Figure 2-7 (Appendix A) and would be an underground, center platform station located between Main and Elm streets just east of South Pearl Street. The station would be 532 feet in length with a center platform. Figure 2-8 (Appendix A) shows the architectural site plan.

The primary access point for the CBD East Station would be a new headhouse at Elm Street and South Pearl Street. The space would include a pre-fare public space that includes seating, vending, DART staff and a police podium. Post-fare collection would be a large open concourse, spaces for concessions, platform, and service spaces for DART staff, DFRD and DART police. The building would also include ancillary spaces for ventilation, mechanical and electrical purposes. A secondary entrance would be located at Main Street and South Pearl Street. The building would include pre-fare public space and concourse to the platform. The building would also include ancillary spaces for ventilation, mechanical and electrical purposes.

An emergency egress pedestrian portal would be located mid-block on the north side of Elm Street between Pearl Street and Cesar Chavez Boulevard.

2.7.5 Live Oak (Deep Ellum Relocated Station)

The Live Oak Station would replace the Deep Ellum Station which would be removed by the wye junction. The Live Oak Station would be an at-grade, gull-wing, center platform station located in the median of Good Latimer Expressway, south of Live Oak Street (see Appendix A: Figure 2-9). The station canopy elements would be the same as that for the existing Deep Ellum Station. It would be a standard 23'-8" x 385' platform (Appendix A: Figure 2-10).

Good Latimer would be rebuilt to remove ballast and replaced with embedded track. Accessibility to the station would be via sidewalks and potential new pathways along the Project corridor to surrounding neighborhoods and destinations.

3 HISTORIC SURVEY

The original project coordination with the Texas Historical Commission (THC) started in 2009 by DART to request concurrence on the Area of Potential Effect (APE). As the project progressed, an updated coordination letter was sent to THC by DART in 2016. The THC concurred with the APE boundaries in March of 2016, but also included that discussions pertaining to effects (direct and cumulative), vibration issues, and potential 4(f) evaluations should be included in the survey report. In 2018, the FTA sent a letter to the THC requesting an additional APE concurrence, which was concurred on July 18, 2018. A survey of

architectural resources within the APE was conducted by the AmaTerra Environmental, Incorporated, Dallas office for DART. (Appendix B: Agency Coordination).

To assist SHPO in determining the existence of undocumented historic resources and potential historic districts as well as previously documented National Register of Historic Places (NRHP) eligible and listed resources that may include those properties in the APE, the SHPO concurred that the historical resources investigation would include:

- Project description.
- Project area background and historic context.
- Previously documented historic-age resources within and immediately adjacent to the APE.
- Documentation of each historic-age resource within the APE; including
 - Address or location,
 - Historic and current name, if any,
 - Date of construction,
 - Style,
 - Historic and current use,
 - Property type and subtype,
 - Preliminary NRHP eligibility recommendations,
 - Condition, and
 - Digital photographs (minimum of two views) of each historic-age resource, and
- Summary and Recommendations.

At the time of the survey, the exact locations of the station locations had been determined, however, the station designs had not been developed. As such, the survey areas around the proposed station locations not only focused on the adjacent historic-age resources, but also on the streetscape (Dobson-Brown, et al. 2019). Most station locations elements will be constructed within areas of newly acquired right-of-way (ROW). Some elements of the stations will fall within DART-owned or public city ROW such as Metro Center Station headhouse (DART property) and Metro Center and Commerce platforms under City street ROW.

The Historic-age Resource Reconnaissance Survey for the DART D2 Subway – Commerce via Victory/Swiss Alignment report was sent to the THC on April 12, 2019. Based on comments a revised report was sent on August 29, 2019, for concurrence on the determination of eligibility of structures. The THC review concurred with the following recommendations on September 23, 2019 (Appendix B: Agency Coordination).

The 2019 effort documented 90 historic-age resources along the proposed DART D2 Subway Project. These resources included transportation, municipality, commercial, and religious facilities. Of the 90 resources, twenty-one remain eligible for individual listing on the NRHP; thirteen remain eligible as Dallas Landmarks; and four remain eligible as NRHP-listed District and Dallas Historic Districts (Appendix C: Figures 3-1 and 3-2; Appendix D: Table 3-1).

Seven newly documented historic-age resources were recommended eligible for listing in the NRHP as individual resources (Appendix C: Figures 3-1 and 3-2; Appendix D: Table 3-1). The THC concurred with this finding in 2019.

Thirteen resources were recommended as a historic district in the National Register as being a cohesive group of buildings related to the Automobile Era in Downtown Dallas for a historic district under Criterion A for significance in social and cultural trends at the local level (Appendix C: Figure 3-2; Appendix D: Table 3-1). The THC concurred with this finding in 2019.

3.1.1 Historic Districts within Project APE

The listed National Register District – Downtown Dallas Historic District with the Downtown Dallas Historic District Expansion, still retains its’ integrity under Criterion A for commerce and community planning and development, and Criterion C for its architecture, and it is recommended no changes be made to the nomination form. All contributing resources identified during the survey retain their integrity for the district (Dobson-Brown, et al 2019). In addition, several historic resources located within the existing Downtown Historic District, were not individually documented during the 2018 survey, but were noted in the 2019 survey report. While not called out individually, these resources, which are contributing resources to the District, will be discussed below with regards to any impacts (Appendix C: Figure 3-2; Appendix D: Table 3-2).

The National Register West End Historic District, listed in 1978 under Criterion A for community planning and development, industry, politics/government, social history, and transportation, and under Criterion C for its architecture and landscape architecture, contains two properties within the Project APE as contributing resources – Emerson-Brantingham Building, and the Sanger Brothers Building. It is recommended no changes be made to the nomination form. The contributing resources within the Project APE retain their integrity for the district (Dobson-Brown, et al 2019) (Appendix D: Figure 3-2)

The two listed City of Dallas Historic District Landmarks – the City of Dallas Historic District and the Harwood Street Historic District still retain their integrity and it is recommended no changes be made to the nomination form. All contributing resources identified during the survey retain their integrity for the two landmarks (Dobson-Brown, et al. 2019) (Appendix C; Figure 3-2; Appendix D: Table 3-1). In addition, several historic resources located within the two City of Dallas Landmarks were not individually documented during the 2018 survey but were noted in the 2019 survey report. While not called out individually, these resources, which are contributing resources to the Landmarks, will be discussed below with regards to any impacts (Appendix C: Figure 3-2; Appendix D: Table 3-2).

The Deep Ellum Historic District, while recommended for eligibility in 2001, was never formally listed in the NRHP nor were boundaries for the district established. However, the THC concurred with the findings of the 2001 recommendations and recommended that several resources were contributing resources to the District. The APE for the DART D2 Commerce via Victory/Swiss Alignment had nine resources which were considered



contributing resources to the District (Appendix C: Figure 3-2; Appendix D: Table 3-1). The full boundary of the Deep Ellum Historic District may extend further to the east and south of the Project APE, however a complete evaluation of the District and its boundaries are beyond the scope of this project (Dobson-Brown, et al. 2019).

Within the CBD East Station APE, thirteen resources were determined to be a cohesive group of buildings which are linked to the automobile era and development of Downtown Dallas and are determined to be eligible as a historic district under Criterion A for commerce and Criterion C for its architecture at the local level. The district was named the Automobile Row Historic District (Dobson-Brown, et al. 2019)(Appendix C: Figure 3-2; Appendix D: Table 3-1).

For purposes of determining effects to listed, eligible and contributing resources to historic district resources located within the DART D2 Subway Project, the following chapter is broken into resources that will be directly impacted (either visual or physically) or immediately adjacent to the subway corridor, as opposed to analyzing all resources identified within the project area of potential effect.

4 CRITERIA OF ADVERSE EFFECT

Section 106 of the National Historic Preservation Act (per 36 CFR 800.5(a)) requires that the Criteria of Effect and Adverse Effect [36 CFR 800.9(b)] be applied in determining effects on historic properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP).

An effect is one that, as a result of the proposed undertaking may change the attributes of a historic property that qualify the property for NRHP status. An adverse effect is one which may diminish one or more aspects of the property's integrity of location, design, setting, material, workmanship, feeling, or association, i.e. those qualities of integrity essential to the property's listing or eligibility for the NRHP. Adverse effects include, but are not limited to:

1. Physical destruction, damage, or alteration of all or part of the property; adverse alterations may include all forms of modification inconsistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68).
2. Removal or isolation of the property from or alteration of the character of the historic location if setting is integral to the property's historic integrity and its eligibility for the NRHP.
3. Change of the property's use or physical features within its historical setting that contribute to its historical significance.
4. Introduction of visual, audible, or atmospheric elements that alter the setting or the property's relationship to the setting to the extent it is no longer eligible for the NRHP.
5. Neglect of the property leading to its deterioration or destruction inconsistent with its eligibility for the NRHP (except in cases of religious or traditional significance to native cultures).



6. Transfer, lease, or sale of the property without adequate preservation or conservation restrictions on use or disposition to ensure long-term preservation of the property's significance and eligibility for the NRHP.

5 DETERMINATION OF EFFECTS FOR LISTED AND ELIGIBLE HISTORIC RESOURCES

The NRHP listed and eligible resources in the proposed DART D2 Subway APE were evaluated to determine the effects from the proposed project under the Criteria of Adverse Effect. No impacts to cultural resources (historical and archeological) are expected under the No Build Alternative. Potential effects of the Build Alternative are discussed in the following sections.

5.1 Physical Destruction, Damage or Alterations, and Removal or Isolation of Property – Build Alternative

The proposed DART D2 Subway Project area alignment runs through the Dallas Central Business District (CBD). The D2 Subway would consist of a 2.4-mile alignment extending from the existing Victory Station through the core of downtown Dallas, reconnecting to the Green Line along Good Latimer in the Deep Ellum Area. The Project would include four new stations and would relocate the existing Deep Ellum Station to the north of its current location as the Live Oak Station. The alignment would be a combination of at-grade and below-grade sections. The below-grade subway segment would run primarily under Griffin and Commerce Streets.

Acquisition and physical destruction and/or removal of historic properties would occur with the Build Alternative. The Magnolia Gas Station located at 902 Ross Avenue is located within a parcel proposed for acquisition and use as a construction staging area in order to assist with construction of the Project. The resource, which was determined eligible for listing in the NRHP by the THC in September 2019, would be demolished. Physical destruction of the resource is an adverse effect under the Section 106 of the National Historic Preservation Act (per 36 CFR 800.5(a)) Criteria of Effect and Adverse Effect [36 CFR 800.9(b)] guidelines (Appendix C; Figure 5-1).

The acquisition of non-historic properties located within the West End Historic District, Dallas Downtown Historic District, the Harwood Historic District, and the NRHP eligible Automobile Road Historic District would not create an adverse effect on their historic integrity since they do not have unique contributive elements to the districts. The four districts have enough remaining properties and open park space within their boundaries to retain the historic feel, setting, and context of the districts (Appendix C: Figure 5-1).

The acquisition of non-historic properties located adjacent to any NRHP listed or eligible properties would not create an adverse effect on their historic integrity (Appendix C: Figure 5-1).

5.2 Change of Property's Use or Physical Features – Build Alternative

There would be no change of any historic property's use or physical features located within the NRHP listed West End Historic District and the Dallas Downtown Historic District, the City of Dallas Landmark Dallas Downtown District and the Harwood Historic District, and the NRHP eligible Automobile Row Historic District which would create an adverse effect on their historic integrity. The five districts have enough remaining properties and open park space within the districts to retain their historic feel, setting, and integrity (Appendix C: Figure 5-1).

There would be no change of the property's use for the St. James AME Temple, located at 624 North Good Latimer Expressway as a result of the relocation of the Live Oak Station. The NRHP eligible resource and City of Dallas Landmark will still have access both to the building and to the parking area adjacent to the building (See Appendix A: Figure 2-11).

There would be a change of the St. James AME Temple property's physical landscape features as a result of the relocation of the Live Oak Station. St. James AME Temple is a NRHP eligible resource and a City of Dallas Landmark with defined boundaries which contribute to the integrity, location, feeling, and setting of the property. Due to the limited right-of-way within Good Latimer Expressway, a 1.5-foot to 5.4-foot-wide portion of property on the west/front side of the church would be acquired to accommodate necessary right-of-way for the Live Oak Station, needed ADA access, street and sidewalk reconstruction. This strip of property is currently a grassy area with trees along the existing sidewalk and the building is set back (Appendix A: Figure 2-11). The proposed design would require shifting the street and sidewalk closer to the building and reconstructing the concrete steps and driveway along the existing gate/fence to meet the new proposed sidewalk location. The existing fence and gate would remain in place. In addition, the historical marker on the northwest corner of the church property would need to be removed and relocated (Appendix A: Figure 2-11). The removal of land within the "No Build Zone" at the front of the resource, adjusts the physical boundary between the Temple and the public street. This would result in an adverse visual effect to the NRHP eligible property and the City of Dallas Landmark. City of Dallas Preservation Ordinance #24396 defines "No Build Zone" as that part of a lot in which no new construction may take place (See Appendix E). See section 7.0 for mitigation measures.

5.3 Introduction of Visual, Audible, Vibration or Atmospheric Elements – Build Alternative

The proposed DART D2 Subway Project area alignment runs through the Dallas Central Business District (CBD). The D2 Subway would consist of a 2.4-mile alignment extending from the existing Victory Station through the core of downtown Dallas, reconnecting to the Green

Line along Good Latimer in the Deep Ellum Area. The Project would include four new stations and would relocate the existing Deep Ellum Station to the north as the Live Oak Station (Appendix A: Figure 3-1). The alignment would be a combination of at-grade and below-grade sections. The below-grade subway segment would run primarily under Griffin and Commerce Streets. (Appendix C: Figure 5-1).

5.3.1 Visual Elements

The proposed DART D2 Subway Project area alignment proposes one new at-grade station (Museum Way); one re-located at-grade station (Live Oak); and three new subway stations (Metro Center, Commerce and CBD East). Each subway station has a main headhouse, 1 to 3 additional pedestrian portals, emergency egress points, and ventilation shafts. Two of the proposed pedestrian portals (Headhouses at Commerce Station and CBD East Station) and one pedestrian portal for Metro Center Station are each located within a NRHP listed historic district, a City of Dallas Historic Landmark and/or adjacent to a NRHP eligible historic district (Appendix A: Figures 2-1 – 2-10; Appendix C: Figure 3-2). The potential visual effect on the historic resources listed or eligible on NRHP are unclear given the lack of detailed design at the current 20% design level of the project. See section 7.0 below regarding mitigation.

The proposed pedestrian portals associated with the Metro Center Station, the Commerce Station, and CBD East Station are to be placed within the NRHP listed, City of Dallas Downtown District would result in a potential adverse visual effect to the resources situated within the Districts. (Appendix C: Figure 5-1). The introduction of new above-ground elements within the NRHP listed district and the City of Dallas Landmark would result in a change of visual quality of the historic property's setting. The full adverse visual effects of the portals on these resources will not be completely determined until the 90% design level. The visual elements within the City of Dallas Landmark District (Downtown Dallas) would also need to be coordinated with the City of Dallas through their preservation ordinance (Appendix E). Mitigation measures are described in section 7.0 below.

One station location, the Live Oak Station, is being proposed to be relocated to the north in front of the St. James AME Temple, located at 624 North Good Latimer Expressway. The moving of the Live Oak Station presents a new visual element in front of the NRHP eligible and City of Dallas Landmark. The new station location poses a visual adverse effect because the rail alignment will be positioned closer to the property resulting in the existing sidewalk to be removed and a new a 1.5-foot to 5.4-foot-wide portion of property on the west/front side of the church be acquired to accommodate necessary right-of-way for the Live Oak Station, which needs ADA access, street and sidewalk reconstruction. The proposed design would require shifting the street and sidewalk closer to the building and reconstructing the concrete steps and driveway along the existing gate/fence to meet the new proposed sidewalk location. The existing fence and gate would remain in place and mature trees would be preserved to greatest extent possible. In addition, the historical marker on the northwest corner of the church property would need to be removed and relocated at a location to be determined by the City of Dallas. The placement of the sidewalk closer to the NRHP eligible



property and City of Dallas Landmark encroaches within the “No Build Zone” boundaries established by the City of Dallas through their preservation ordinance #24396 and would result in an adverse visual effect (Appendix E). In addition, the removal of land, concrete steps and mature vegetation alters the historic physical setting of the NRHP eligible resource and City of Dallas Landmark. Mitigation measures are described in Section 7.0 below regarding the proposal of rebuilding the steps and preserving vegetation in alternate locations.

5.3.2 Audible Elements

The proposed DART D2 Subway Project area alignment proposes the introduction of a rail line and pedestrian portals within two NRHP listed Historic Districts (West End Historic District, Downtown Dallas Historic District), two City of Dallas Landmark Districts (Downtown Dallas and Harwood Street Historic District), one NRHP eligible historic district (Automobile Row) and near one NRHP eligible resource and City of Dallas Landmark (St. James AME Temple). All these resources are located within highly congested automobile and pedestrian traffic areas. As such it was recommended that these resources would not be adversely affected by audible elements as the DART D2 Subway project will be within existing traffic and transit corridors, so no new audible elements will be added.

5.3.3 Vibration Elements

The proposed DART D2 Subway Project area alignment proposes the introduction of a rail line and pedestrian portals within two NRHP listed Historic Districts (West End Historic District, Downtown Dallas Historic District), two City of Dallas Landmark Districts (Downtown Dallas and Harwood Street Historic District), one NRHP eligible historic district (Automobile Row) and near one NRHP eligible resource and City of Dallas Landmark (St. James AME Temple).

The proposed subway line, to be placed within the NRHP listed, City of Dallas Downtown District and the City of Dallas Downtown Dallas and Harwood Street Historic District Landmark would result in the introduction of vibration elements to the historic resources situated within the Districts.

A noise and vibration technical report was conducted by Cross-Spectrum Acoustics, Inc. in January of 2019 and a supplemental report conducted in February of 2020 (Appendix F). The noise and vibration impact assessments were carried out in accordance with the guidelines specified by the U.S. Federal Transit Administration (FTA) in support for the SDEIS for the D2 Subway. The noise study area for the project was limited to within 150 feet of the alignment, with the exception for highly vibration-sensitive land uses where facilities within about 450 feet of the alignment were considered.

The noise impact assessment identified a total of 176 moderate noise impacts (all under 3 dB) from light rail operations, including residential units at the W Dallas Residences, the Vista Apartments, and the Northend Apartments. Because the noise increases are projected to be less than 3 dB at these locations, noise mitigation is not required based on DART policy. However, there is the potential for additional noise impact from wheel squeal at sensitive

receptors near curves in the D2 alignment and therefore, wheel/rail lubrication measures should be considered at such locations. There is also the potential for additional noise impact at locations above the subway portions of the alignment due to fan noise and train noise transmitted to the surface through ventilation shifts and gratings. Noise from these sources will be evaluated during project design when detailed information becomes available, and mitigation measures will then be developed as appropriate (Cross-Spectrum 2018:2; 2019).

Cross-Spectrum's report further states that any vibration during construction of the D2 Project is a specific concern of the THC, particularly with regards to potential damage to historic buildings along Commerce Street. Therefore, it was recommended that blasting be avoided during project construction if possible (Cross-Spectrum 2018; 2019).

Other than blasting, any tunnel boring machine (TBM) operations and the potential use of much trains for spoils removal would be expected to generate the highest vibration levels. An assessment of tunneling vibration indicated that there is the potential for ground-borne vibration impact at the KDFW FOX4 TV Studio from both TBM and much train operations, including spaces in nearly all the sensitive buildings adjacent to the proposed tunnel. However, the projected vibration levels from TBM and muck train operations are well below the most stringent FTA damage criteria for historic buildings that are extremely susceptible to vibration damage (Cross-Spectrum 2018; 2019).

Since the design for the project is currently at 20%, it is unknown what the full extent of the effects to historic resources would be as a result of construction vibration. Therefore, it is assumed that there would be an adverse effect regarding vibration to the buildings and foundations. Refer to section 7.0 of this report for mitigation measures pertaining to blasting and further vibration studies pertaining to historic resources, foundations and basements.

The St. James AME Temple is currently located adjacent to the DART Green Line. The St. James AME Temple would not be adversely affected by vibration elements as the DART D2 Subway Project will be using the existing DART Green line, so no new audible elements will be added.

5.3.4 Atmospheric Elements

The proposed DART D2 Subway Project introduces construction activities which can lead to traffic disruption and rerouting. Traffic disruption, such as decreased roadway capacity or detouring, can lead to increased traffic congestion and motor vehicle exhaust emissions on the roadways, and can result in elevated CO concentrations. The NRHP listed and eligible resources, including contributing resources to the NRHP listed Historic Districts would have atmospheric effects due the construction period. Proper traffic management during the construction period would mitigate any potential adverse effects. This would include finding less congested routes for construction-related truck traffic, creating temporary detours for regular roadways where capacities have been diminished, and restricting construction activities during hours of high traffic volumes on existing roadways. The dust is temporary, and can be reduced by construction practices, and would not adversely affect the NRHP listed



and eligible resources, including the contributing resources to the NRHP Historic Districts and the City of Dallas Landmarks within the D2 Subway Rail Corridor.

5.4 Neglect of the Property Leading to its Deterioration or Destruction Inconsistent with its Eligibility for the NRHP – Build Alternative

The proposed DART D2 Subway Project area alignment runs through the Dallas Central Business District (CBD). The D2 Subway would consist of a 2.4-mile alignment extending from the existing Victory Station through the core of downtown Dallas, reconnecting to the Green Line along Good Latimer in the Deep Ellum Area. The Project would include four new stations and would relocate the existing Deep Ellum Station to the north as the Live Oak Station. The alignment would be a combination of at-grade and below-grade sections. The below-grade subway segment would run primarily under Griffin and Commerce Streets. While construction may cause some temporary inconvenience, the NRHP listed or eligible districts and City of Dallas Landmarks and properties within the DART D2 Subway Project would not be subject to neglect due to the Project.

5.5 Transfer, Lease, or Sale of the Property without Adequate Preservation or Conservation Restrictions on Use or Disposition to Ensure Long-Term Preservation of the Property's Significance and Eligibility for the NRHP – Build Alternative

The proposed DART D2 Subway Project area alignment runs through the Dallas Central Business District (CBD). The D2 Subway would consist of a 2.4-mile alignment extending from the existing Victory Station through the core of downtown Dallas, reconnecting to the Green Line along Good Latimer in the Deep Ellum Area. The Project would include four new stations and would relocate the existing Deep Ellum Station to the north as the Live Oak Station. The alignment would be a combination of at-grade and below-grade sections. The below-grade subway segment would run primarily under Griffin and Commerce Streets. The proposed Project would not require the transfer, lease, or sale of any NRHP listed or eligible properties and districts, nor any City of Dallas Landmarks. Adequate preservation or conservation restrictions on use or disposition to ensure long-term preservation of the property's significance and eligibility for any of the NRHP listed or eligible historic districts or individual properties would occur.



5.6 Summary of Anticipated No Adverse Effect – No Build Alternative

The NRHP listed, eligible, and contributing resources in the proposed DART D2 Subway APE were evaluated to determine the effects from the proposed Project under the Criteria of Adverse Effect. No impacts to historic resources are expected under the No Build Alternative.

5.7 Summary of Anticipated Adverse Effects – Build Alternative

The Build Alternative is anticipated to have an acquisition and physical destruction adverse effect as a result of the demolition of the Magnolia Gas Station located at 902 Ross Avenue. The resource is located within a parcel proposed for acquisition in order to assist with construction of the Project. The resource was determined eligible for listing in the NRHP by the THC in September 2019. Physical destruction of the resource is an adverse effect under the Section 106 of the National Historic Preservation Act (per 36 CFR 800.5(a)) Criteria of Effect and Adverse Effect [36 CFR 800.9(b)] guidelines. Since the demolition of the building is a constructive use and has been determined eligible for listing on the NRHP, a 4(f) Evaluation is required.

The Build Alternative is anticipated to have an adverse visual effect to the St. James AME Temple located at 624 North Good Latimer Expressway, as a result of acquiring additional right-of-way from the NRHP eligible and City of Dallas Landmark property boundary. Since acquiring new right-of-way in front of the resource for the construction of sidewalks is considered a constructive use, a 4(f) evaluation is required.

Since the D2 Subway Project is currently at a 20% design, it is assumed for this report that there would be adverse visual effects to NRHP listed, eligible and contributing resources and City of Dallas Landmarks as a result of the placements of proposed pedestrian portals, to be placed within the NRHP listed, West End Historic District and City of Dallas Downtown District. The portals being proposed are located within two historic districts and the Pegasus Plaza (a non-contributing resource to the NRHP City of Dallas Downtown Historic District), which is adjacent to four individually NRHP listed properties; the Adolphus Hotel and Tower, the Magnolia Petroleum Building, the Dallas Power and Light Building, and Dallas National Bank Annex. The introduction of new above-ground elements within the NRHP listed district and individual NRHP listed properties would result in a change of visual quality of the historic property's setting. The full adverse visual effects of the portals on these resources will not be completely determined until the 90% design level. The visual elements on the City of Dallas Landmarks (Downtown Dallas, Adolphus Hotel and Tower) would also need to be coordinated with the City of Dallas through their preservation ordinance (Appendix E). Mitigation measures are described in section 7.0 below.

Since the D2 Subway Project is currently at a 20% design, it is assumed for this report that there would be adverse construction vibration effects on the listed NRHP Historic District



(Downtown Dallas); and the City of Dallas Downtown Dallas and Harwood Street Historic Districts, Construction vibration elements would be introduced to the foundations and basements of the NRHP listed and eligible districts and contributing buildings within the districts as well as the individually NRHP listed and eligible properties located along Commerce Street while tunneling construction is occurring. While limited vibration studies relating to construction activities have been conducted at the writing of this report, a preliminary recommendation of vibration effects is anticipated due to the proposed tunneling construction.

No adverse effects are anticipated to the NRHP listed West End District, the NRHP eligible Automobile Row Historic District or the Deep Ellum Historic District.

6 ASSESSMENT OF EFFECTS TO ARCHEOLOGICAL RESOURCES

An archeological resource survey has not been completed at the present time. A coordination letter with the THC provided background data upon review of the Texas Archeological Sites Atlas (TASA) which indicates that eleven previously conducted archaeological surveys and eight archaeological sites were recorded within the Project study area of 1,000 feet of the proposed route. Three surveys documented archaeological sites within one kilometer of the proposed route. The coordination letter requested guidance related to future survey and monitoring measures due to the inherent difficulties in organizing archeological investigations for this type of proposed undertaking. DART proposed creating a work plan to guide the efforts during the construction phase of the Project where improvements will go below the depth of modern street construction and utilities. A recommended work plan for the Project was proposed to the THC on August 29, 2019; and concurred by the archeologist reviewer on September 23, 2019 (Appendix B; THC Letter, August 29, 2019).

Based on the lack of previously identified archeological resources in the area, as well as disturbances associated with the construction of roads, railroads, city parks, residential structures, commercial and industrial buildings and lots, the project area is considered to exhibit a low archeological potential except for the penetration points. An approach for the development of a work plan prior to construction of the DART D2 Subway Project is recommended between the THC and a permitted archeologist. If during construction, unforeseen discoveries of cultural remains are made, work should cease immediately, and the THC will be consulted for instructions on how to proceed.

7 PROPOSED MITIGATION MEASURES

Additional Section 106 Coordination

Advanced engineering design would determine the precise locations and designs for the pedestrian portals which will assist in determining which properties could be visually affected. Additional construction vibration studies would also determine the levels of vibration during construction and would also help to establish which properties could be physically affected. In order to address these issues, mitigation measures are recommended in the following sections.

7.1 Development of a Programmatic Agreement

Prior to the design and build phase of the DART D2 Subway Project, it is recommended that a Programmatic Agreement (PA) be implemented to establish measures to avoid, minimize, or mitigate any effects to the NRHP listed and eligible resources and NRHP listed Historic Districts and Dallas Landmarks with concurrence and consultation among DART, FTA, SHPO, and Advisory Council on Historic Preservation. The PA is recommended to address both archeology survey requirements, address the complete pedestrian portal designs, which currently are at 20%, and construction vibration studies along Commerce Street. The PA will be established between DART, FTA, SHPO, Advisory Council on Historic Preservation, and the City of Dallas to ensure that all NRHP listed and eligible resources and City of Dallas Landmarks are addressed to avoid and/or minimize any effects to the properties.

Stipulations recommended to be included within the Programmatic Agreement may include:

1. Coordination with the SHPO throughout the remaining design/build phase of the project. Since the DART D2 Project is currently at 20% design, on-going consultation with the SHPO is required to assure no future adverse effects occur to the identified historic resources due to on-going design changes.
2. DART will work with the SHPO in the design process of the pedestrian portals which are immediately adjacent to any NRHP listed or eligible resource, contributing resources within any of the NRHP listed historic districts, and within any of the City of Dallas Historic Landmarks. Coordination will occur throughout the design phase up to 90% in order to develop designs which are complementary to the historic resources and districts, and to determine if any future adverse visual effects were to occur to the resources. Continuous coordination with DART by the THC will ensure that a 4(f) Evaluation will not be needed, if the designs are complementary to the historic districts.
3. Additional construction vibration studies should be conducted within all the NRHP listed or eligible districts, and adjacent to all NRHP listed or eligible individual resources and City of Dallas Landmarks in order to determine if any effects would



occur to the foundations and basements during all construction activities. DART will consult with the SHPO throughout the design process up to the 90% design.

4. DART will work with the SHPO to assure that no blasting will occur during the project construction stages.
5. Further study pertaining to the locations of any basements attached to any of the historic resources identified within the project corridor, especially along Commerce Street, in order to prevent any unknown adverse vibration effects due to construction activities.
6. Prior to the demolition of the Magnolia Gas Station located at 902 Ross Avenue, a complete historic documentation of the historic resource should be completed. Such documentation measures would consist of a Historic American Building Survey – Phase II level. DART will also seek to avoid demolition of this resource pending confirmation of construction staging area needs.
7. Prior to acquiring any new right-of-way from the NRHP eligible, and City of Dallas Landmark St. James AME Temple, a complete historic documentation of the historic resource should be completed. Such documentation measures would consist of a Historic American Building Survey – Phase II level.
8. Coordination with the City of Dallas Historic Landmark Commission on all identified City of Dallas Landmarks following their preservation ordinances (see Section 7.2 below)
9. Prior to any construction activities, and once 90% design is complete, coordination must be held with the SHPO with regards to archeological resources. The SHPO will work with DART and their consultation to prepare a work plan and develop an archaeology permit for conducting a survey/monitoring during the construction phase of the project under Section 106 guidelines.

The above recommendations are non-inclusive. The SHPO may provide additional mitigation measures for the resources upon review of this report and additional requested design documentation.

7.2 Coordination with City of Dallas Landmark Commission

Coordination with the City of Dallas Historic Landmark Commission will be conducted under the Dallas Development Code. This mitigation is a requirement as the DART D2 Subway Project proposes to run along Commerce Street within two City of Dallas Landmarks Districts (Dallas Downtown District and Harwood Street), and one stand-alone Landmark (St. James AME Temple).

During the Final Design and Construction phase of the D2 Subway Project and associated reconstruction of Good Latimer Expressway, all efforts must be expended to minimize impacts

to the St. James AME Temple located at 624 North Good Latimer Expressway. The St. James AME Church building, recognized as a Dallas Landmark in 2000, and determined eligible for listing to the NRHP by the THC in 2019, was constructed in 1919-1921 in Neoclassical style, designed by African American architect William Sydney Pittman and constructed entirely by African American contractors, workers, and electricians. It housed the St. James congregation for sixty-four years and is now owned by the Meadows Foundation and Mental Health America-Dallas for office space. Due to the limited right-of-way within Good Latimer Expressway, a 1.4-foot to 5.4-foot-wide portion of property on the west/front side of the church would be acquired to accommodate necessary right-of-way for the Live Oak Station, needed ADA access, street and sidewalk reconstruction. The proposed design would require shifting the street and sidewalk closer to the building and reconstructing the concrete steps and driveway along the existing gate/fence to meet the new proposed sidewalk location. The existing fence and gate would remain in place and existing trees would be preserved to greatest extent possible. In addition, the historical marker on the northwest corner of the church property would need to be removed and relocated at location to be determined by City of Dallas. Care must be afforded during construction to minimize any further impact and disruption to this resource during construction. Meetings have been held with the Meadows Foundation (owners of the Temple) to discuss the need for the additional right-of-way to support the relocation of the rail station. The Meadows Foundation supports the project however concerns have been presented with regards to the viability of the tree near the corner, the steepness of the driveway approach, and the materials for the sidewalk. The Meadows Foundation will assist DART with the design, application and the presentation to the City of Dallas Historic Landmark Commission to address the design options and to adjust the site boundaries. Physical work within the St. James AME Temple boundary cannot be conducted without the approval of the City of Dallas Historic Landmark Commission under the city's establish preservation ordinance. At the completion of the station relocation efforts, the building will maintain an access to rail station rather than none without the relocation.

7.3 Section 4(f) Evaluation

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. 303) regulation requires that the proposed transportation use of any land from a significant publicly owned public park, recreation area, wildlife and waterfowl refuge, or public or private historic site that is on or eligible for the National Register of Historic Places (NRHP), be avoided, if avoidance is feasible and prudent, before any U.S. DOT funding or approvals can be granted. Additionally, a full evaluation of measures to minimize harm to that property must be made and documented.

Regardless of whether the Section 4(f) evaluation is processed independently or as a subsection of a NEPA document, the project sponsor must submit a draft that (1) identifies and evaluates avoidance alternatives and (2) identifies and evaluates measures to minimize harm to the Section 4(f) property. An avoidance alternative must avoid using any Section 4(f) property - an alternative that avoids one Section 4(f) property by virtue of using a different



Section 4(f) property is not an avoidance alternative. If the Section 4(f) evaluation concludes that there is no avoidance alternative that is feasible and prudent, and more than one reasonable alternative uses Section 4(f) property, then the project sponsor must also evaluate which alternative that uses Section 4(f) property would cause the least overall harm.

A 4(f) *de minimis* impact involves the use of a Section 4(f) property that is generally minor in nature. A *de minimis* impact is one that, after considering avoidance, minimization, mitigation and enhancement measures, results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of “no adverse effect” or “no historic properties affected.” A *de minimis* impact determination requires agency coordination with the officials having jurisdiction over the Section 4(f) property and opportunities for public involvement. A *de minimis* impact determination may not be made when there is a constructive use.

A determination of *de minimis* impact on a historic site may be made when all three of the following criteria are satisfied:

1. The process required by Section 106 of the National Historic Preservation Act (NHPA) results in the determination of “no adverse effect” or “no historic properties affected” with the concurrence of the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), and Advisory Council on Historic Preservation (ACHP), if the ACHP is participating in the Section 106 consultation;
2. The SHPO and/or THPO, and ACHP, if the ACHP is participating in the Section 106 consultation, is informed of U.S. DOT’s intent to make a *de minimis* impact determination based on their written concurrence in the Section 106 determination; and
3. U.S. DOT has considered the view of any consulting parties participating in the Section 106 consultation.

The proposed Project intersects or is adjacent to two Section 4(f) resources meeting the 4(f) requirements. The resources consist of the NRHP eligible Magnolia Gas Station at 902 Ross Avenue, and the NRHP eligible and listed City of Dallas Landmark, St. James AME Temple at 624 N. Good Latimer Expressway.

The Magnolia Gas Station is located within a parcel which is a proposed acquisition by DART to assist in the D2 Subway Project development. The proposed take or use of the building is to demolish the NRHP eligible resource which is an adverse physical effect to a historic resource under Section 106 and U.S. DOT Act of 1966 (49 U.S.C. 303). Since this resource is eligible for listing in the NRHP per the SHPO in September of 2019, the property qualifies for protection under Section 4(f).

The St. James AME Temple is adjacent to the proposed alignment of the Live Oak Station at 624 N. Good Latimer Expressway. The proposed take (or use) is estimated to be 800 sq. ft within the Temple’s property boundaries. Due to the limited right-of-way within Good Latimer



Expressway, a 1.4-foot to 5.4-foot-wide portion of property on the west/front side of the church would be acquired to accommodate necessary right-of-way for the Live Oak Station, needed ADA access, street and sidewalk reconstruction. The proposed design would require shifting the street and sidewalk closer to the building and reconstructing the concrete steps and driveway along the existing gate/fence to meet the new proposed sidewalk location. The existing fence and gate would remain in place. In addition, the historical marker on the northwest corner of the church property would need to be removed and relocated.

Because the proximity of the impacts of the proposed project is adjacent to, or nearby, this Section 4(f) property would result in substantial impairment to the property's features and attributes that qualify the property for protection under Section 4(f).

Mitigation efforts for the St. James AME Temple would include the following:

1. Protection of the resource during construction activities to prevent any physical damage to the brick and mortar;
2. Replacement of landscape features surrounding the building, if removed during construction activities;
3. Provide continuous access to the resource and the parking lot during construction activities;
4. Conduct photographic document of the property both before and after construction in order to fulfill Section 4(f) requirements; and
5. Replacement of historic marker to area determined by the SHPO and the City of Dallas Landmark Commission.

8 REFERENCES

Cross-Spectrum Acoustics, Inc.

2019 Noise and Vibration Technical Report, DART Dallas CBD Second Light Rail Alignment D2 Subway), Dallas, Texas Prepared for Dallas Area Rapid Transit, January 2019.

2020 CSA Reference J2016-1020 – Noise and Vibration Assessment – Modified Track Alignment on East End and Addition of Live Oak Station, February 10, 2020.

Dobson-Brown, Deborah L.

2019 *Historic-Age Resource Reconnaissance Survey, DART D2 Subway, Commerce via Victory/Swiss Alignment, City of Dallas, Dallas County, Texas.* Prepared for Dallas Area Rapid Transit, on file at THC and DART, August 6, 2019.