Lockwood, Andrews & Newnam, Inc.
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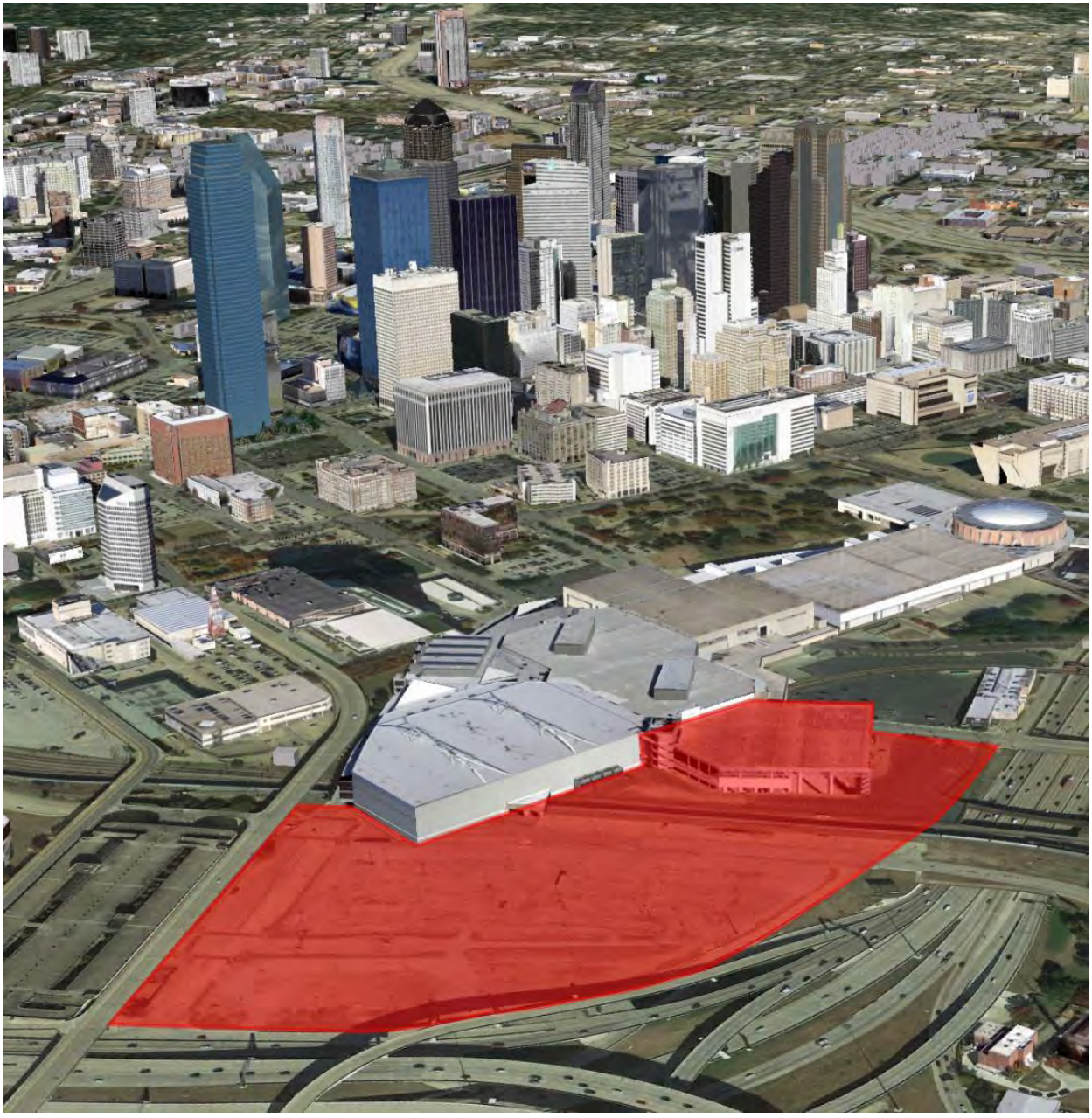
Dallas Multimodal Transportation Facility Fatal Flaw Analysis – Final Report

October 2019



Multimodal Transportation Facility Location – Dallas, TX

Contents

1 Background

The long-awaited arrival of a 90-minute high-speed rail connection to Houston from the heart of Dallas seems eminent as Texas Central Railway makes preparation for the environmental clearance, funding, design and construction of the high-speed rail corridor. If this vision becomes reality, robust last- mile connection services will be essential to accommodate the travel needs of high-speed rail patrons.

The location of the future high-speed rail station, east of the Trinity River and just south of I-30, is immediately adjacent to the Dallas Convention Center through a pedestrian walkway connection that is to be provided by Texas Central. The proximity to this regional center of commerce, adjacency to rail services and to developable city-owned property create the opportunity to develop a centralized transportation hub that brings all modes of transportation to one location. This Multimodal Transportation Facility (MTF) would be oriented around the existing rail corridor and would provide opportunity for dense, urban, multi-use development immediately accessible to the Convention Center, the high-speed rail station, regional transit patrons and the Dallas Central Business District.

This report evaluates potential fatal flaws and challenges associated with transportation connectivity and economic development at the MTF. The MTF would serve primarily as a modern "one-stop shop" where all transportation modes come together in one location with a single connection to the proposed HSR station. The Fatal Flaws Analysis provides an initial evaluation of the MTF concept, focused on identifying potential challenges that might impede the implementation of this facility and courses of action that could mitigate the impacts of identified challenges.

This report analyzes one possible scenario for the MTF and its location. Many others are possible. Additional coordination with all entities involved will be required in subsequent project development phases.

2 Executive Summary

This study found ***no fatal flaws*** *for the one potential site scenario identified* that would prevent the further development and implementation of the Multimodal Transportation Facility (MTF) concept. Such a facility that provides multimodal connectivity to high-speed rail service to Houston and to future Core Express Services to Fort Worth greatly increases the site development potential for the convention center and other MTF-adjacent properties.

2.1 Recommendations

Move forward with an MTF Feasibility Study to develop concepts for the MTF rail station and adjacent development and to further evaluate how this project would potentially move through project development and final implementation.

2.2 Highlights

Highlights of major findings from this study include the following:

- **Rail Feasibility:** There are no major constraints that would prevent the transfer of commuter rail and passenger rail service from Union Station to a new MTF rail station.

- **Site Concept:** The presence of the Core Express corridor, existing freight and passenger rail corridor and surrounding roadway and utility infrastructure creates an environment conducive to support a modern multi-use high-rise development adjacent to the MTF Station.

- **Connectivity:** The MTF Station and development are immediately accessible by all primary modes of transportation, including the future High-Speed Rail and Core Express services.

- **Federal & Environmental:** Federal processes have been identified and evaluated in support of the further advancement of the MTF project and adjacent development.

- **Preliminary Cost:** Track modifications and the MTF rail station platform are estimated to cost about $18M, inclusive of construction and professional services. The preliminary cost estimate does not include the cost of other improvements such as commercial development adjacent to the station, modifications to the convention center or heliport or modifications to the existing roadways or utilities.

- **Implementation:** Steps for inclusion in a project implementation plan and schedule are identified and establish a starting point for next steps in this project.

- **Entity Coordination:** Critical project stakeholders and jurisdictional authorities are identified along with relevant critical points of coordination.

Refer to the full report for details on each element of the fatal flaws evaluation.

3 Fatal Flaws Analysis Scope

The Fatal Flaws Analysis for the Multimodal Transportation Facility (MTF) include the following scope. Each element is addressed in this report in the same order as listed below.

- **Rail Feasibility:** An evaluation of the track configuration and operations for current TRE, Amtrak, freight rail, DART Light Rail and Dallas Streetcar service. Development of track configuration and operating scenario(s) that accommodate all modes of rail service (including the future Core Express Service), relocating passenger rail service to the proposed Multimodal Transportation Facility. An identification of challenges that might inhibit the implementation of this rail service reconfiguration along with courses of action to mitigate these challenges. Develop Rough Order of Magnitude (ROM) Estimate range for rail corridor modifications.

- **Site Concept Development:** Development of a conceptual site layout for the Multimodal Transportation Facility, including consideration for services such as rail (including Dallas Streetcar), multi-modal connections (including commercial bus service), parking, mixed-use, retail, and hospitality.

- **High-Speed Rail Connectivity:** Identification and evaluation of options for connectivity between the High-Speed Rail Station platform and the current and future transportation modes to be located at the Multimodal Transportation Facility. Identification of potential fatal flaws and mitigation options.

- **Traffic Circulation:** Identification and evaluation of potential ingress/egress routes needed to accommodate current and future modes of transportation. Anticipated future transportation modes include personal vehicles, public bus and shuttle transit, private bus and shuttle transit, automobile rideshare provided by Transportation Network Companies (TNCs), urban aerial rideshare provided by TNCs, autonomous vehicles, car share, bicycles, scooters and pedestrians. Consideration of circulation related to D2 and Dallas Streetcar. Identification of potential fatal flaws and mitigation options.

- **Multi-Modal Connectivity:** Development of options for how current and future modes of transportation could connect to the Multimodal Transportation Facility and the High-Speed Rail Station. Recognizing that TCP is already considering how multi-modal connections take place at the High-Speed Rail Station, discussion of whether connections to the Multimodal Transportation Facility introduce any redundancy. Consideration for connectivity for D2 and Dallas Streetcar. Evaluation of all aspects of multi-modal connectivity identifying the pros and cons of connectivity concepts.

- **Federal Application Requirements:** Identification of potential sources of federal funding that might be available for this project and potential federal applications that may be required for this project (i.e. NEPA, 404/408, etc.). Recognizing that federal applications require applicants to satisfy prerequisite criteria and/or follow prescribed steps, it is important that these potential federal application processes be identified early. Identification of the anticipated federal

applications and associated prerequisites and project steps. Identification of potential fatal flaws and mitigation options.

- **Preliminary Cost Estimate:** Development of a general scope and a Rough Order of Magnitude (ROM) Preliminary Cost Estimate for the Multimodal Transportation Facility project rail corridor modifications.

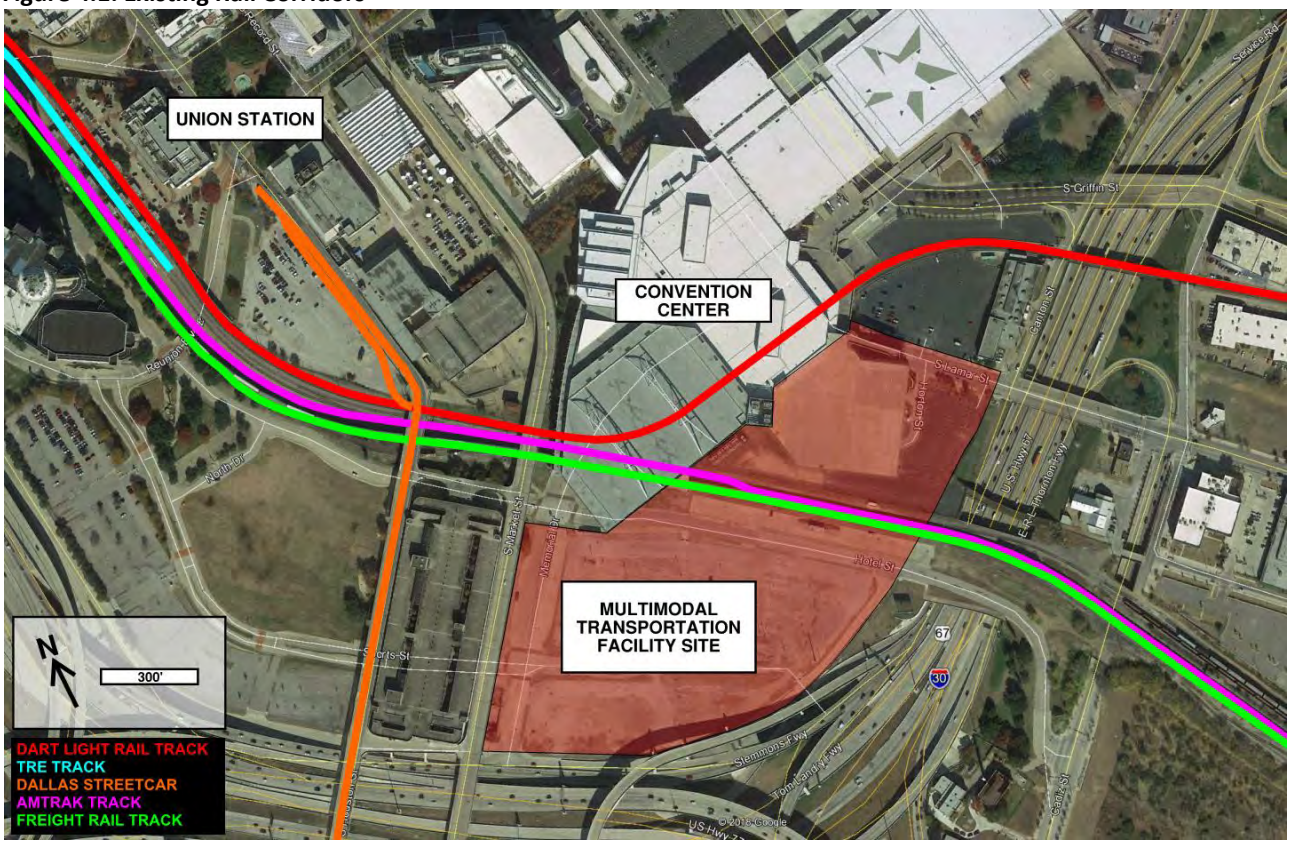
- **Implementation Plan and Schedule:** Development of a high-level plan for implementing the Multimodal Transportation Facility project, considering the information developed during this Fatal Flaw Analysis. Development of a high-level program schedule in support of the Implementation Plan.

- **Entity Coordination:** Identification of coordination roles for key stakeholder agencies including the City of Dallas, AMTRAK, Trinity Railway Express, DART, Trinity Metro, NCTCOG and TXDOT. Also, the Union Pacific Railroad (UPRR) regarding rail operations to obtain feedback on the potential acceptability of conceptual rail corridor modifications.

4 Rail Feasibility

The outcome of this rail feasibility evaluation indicates that for the site scenario identified for this investigation, there are **no fatal flaws** associated with track configuration and rail service operations that would prevent the implementation of a new rail station.

Figure 4.1: Existing Rail Corridors



4.1 Challenges and Mitigations

The following is a list of the most significant challenges that potentially inhibit implementation of the new Multimodal Transportation Facility (MTF) rail station. Proposed mitigations are identified to address each potential challenge.

4.2 Space for Station Platform

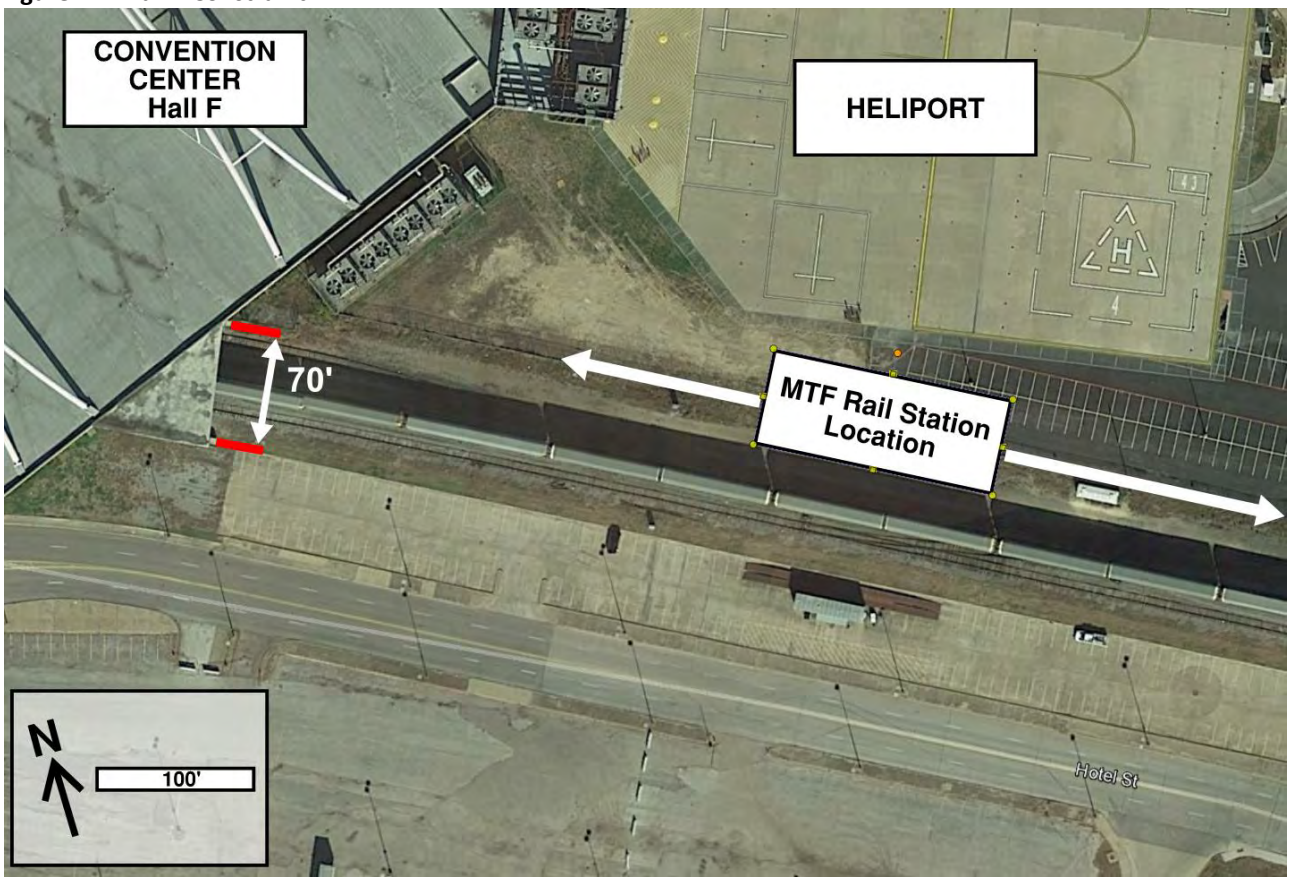
Challenge: Considering the size of the rail station platforms at Union Station that currently provide service to Amtrak and TRE, an MTF rail station platform should be approximately 450' long and 25' wide. One platform is required to provide one track of service to each of these two service providers. The existing configuration of freight tracks at the MTF location consumes too much of the available rail right- of-way width to allow a rail station platform to reside entirely within the existing corridor.

Mitigation: The proposed track modifications (see details later in this section) allow for a single rail platform to reside on the north side of the rail corridor, extending into the parking lot located adjacent to the heliport structure. This platform can service both TRE and Amtrak and be oriented in a manner that provides multiple options for patron access.

4.3 Corridor Width Restricted by Hall F Support Structure

Challenge: The foundation structure for Convention Center Hall F restricts the rail corridor to a width of approximately 70’ as tracks exit from beneath the building to the south of the Convention Center. This allowable corridor width must provide sufficient space for the TRE and Amtrak and at least three tracks for use by freight service.

Figure 4.2: Hall F Constraint



Mitigation: The proposed track modifications take advantage of existing Convention Center property and widen the rail corridor just south of Hall F, providing sufficient space for a new TRE track while maintaining service and capacity for Amtrak and UPRR. This can be accomplished without modifications to Hall F.

Although Hall F support column modifications are not required to accommodate the width of the proposed track corridor, a less-restrictive corridor width would create more flexibility for the project during final design.

4.4 Maintain Freight Operations

Challenge: Use of the rail corridor for a rail station platform, air rights over the rail corridor and modifications to existing track configurations must be approved by UPRR. Success for the railroad is measured by satisfaction of the following primary railroad concerns:

- **Operations:** Avoid adverse impacts to current and future rail operations.
- **Capacity:** Preserve the ability for the railroad to incorporate additional tracks within the

corridor if the capacity for expansion exists today. Maintain the ability to incorporate additional future tracks if possible.

- **Condition:** Maintain or improve the state of good repair for trackage within the rail corridor.

Mitigation: The proposed track modifications provide minimal temporary impact to railroad operations, maintain current rail infrastructure capacity and improve upon the track infrastructure state of good repair for approximately 600’ for existing freight track.

4.5 Maintain Amtrak Operations

Challenge: Amtrak route alignment along the existing UPRR mainline prohibits the efficient configuration of an MTF rail station platform just south of the Convention Center. The track alignment does not provide sufficient length to accommodate the recommended 450’ platform length.

Mitigation: The proposed track modifications create a new Amtrak track near the station platform that avoid spatial restricting imposed by existing switches.

4.6 Current Track Configuration & Operations

The track configuration for all modes of rail service considered in this study are described in the following section. Refer to **Attachment 1** to view the full-size diagrams of the existing configuration. A summary of this information is provided in the following figures.

Figure 4.3: Current Track Configuration (1 of 5)

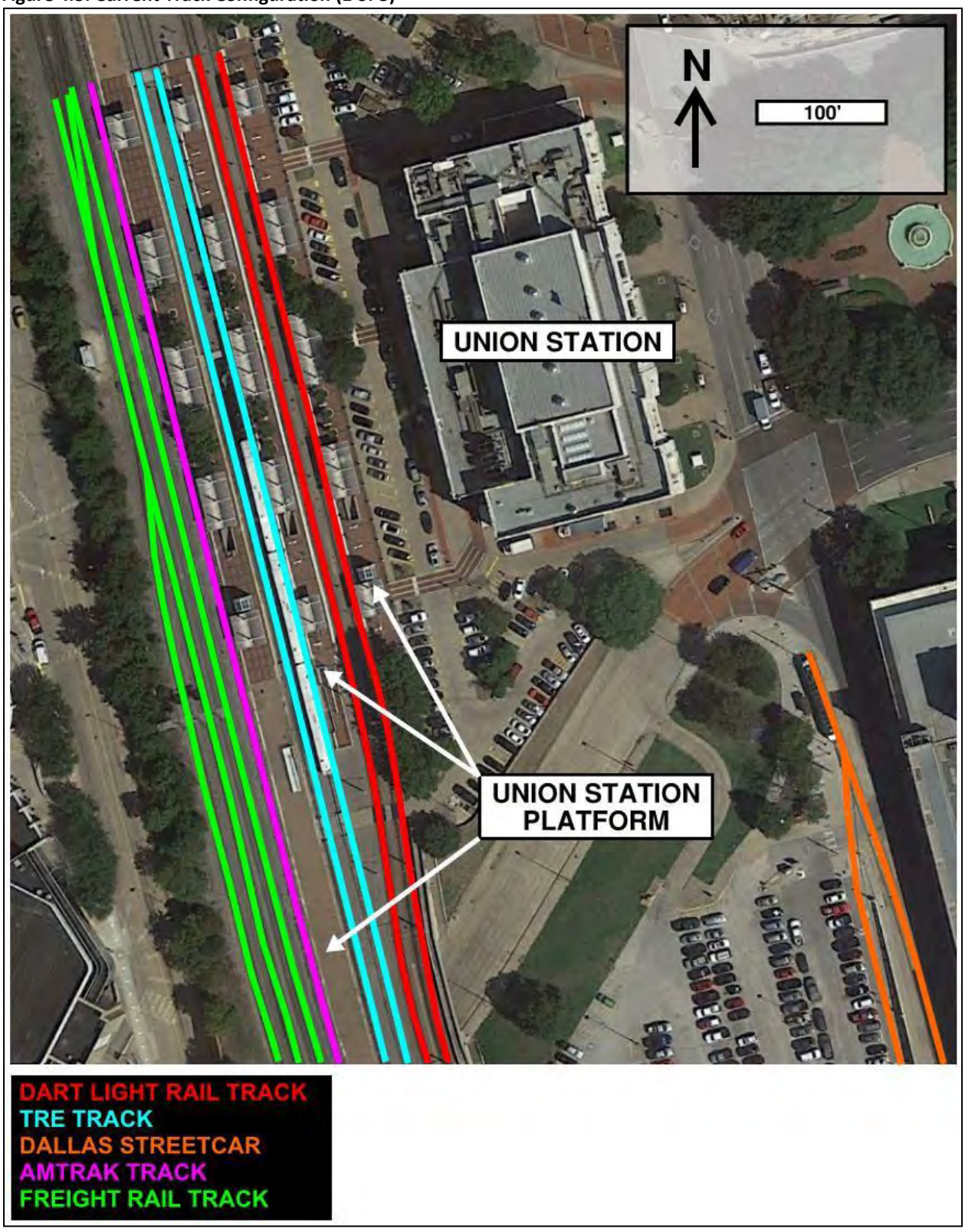


Figure 4.4: Current Track Configuration (2 of 5)

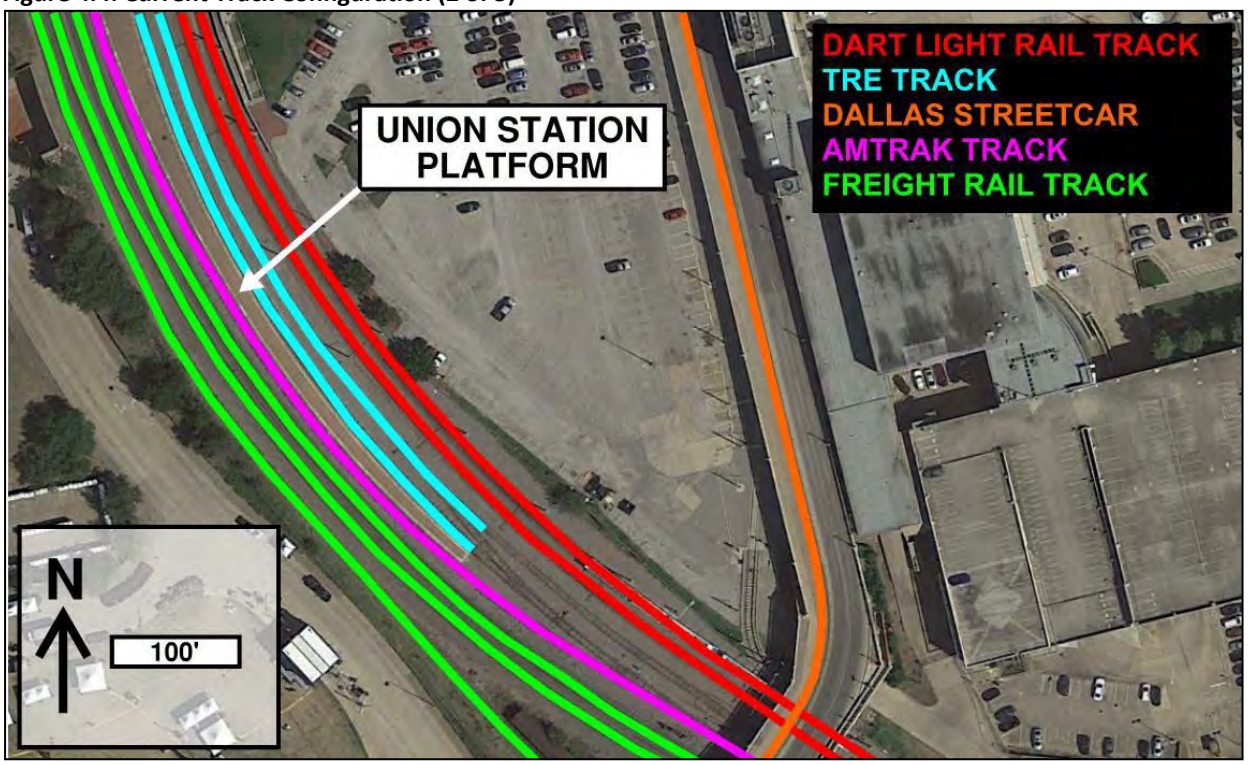


Figure 4.5: Current Track Configuration (3 of 5)

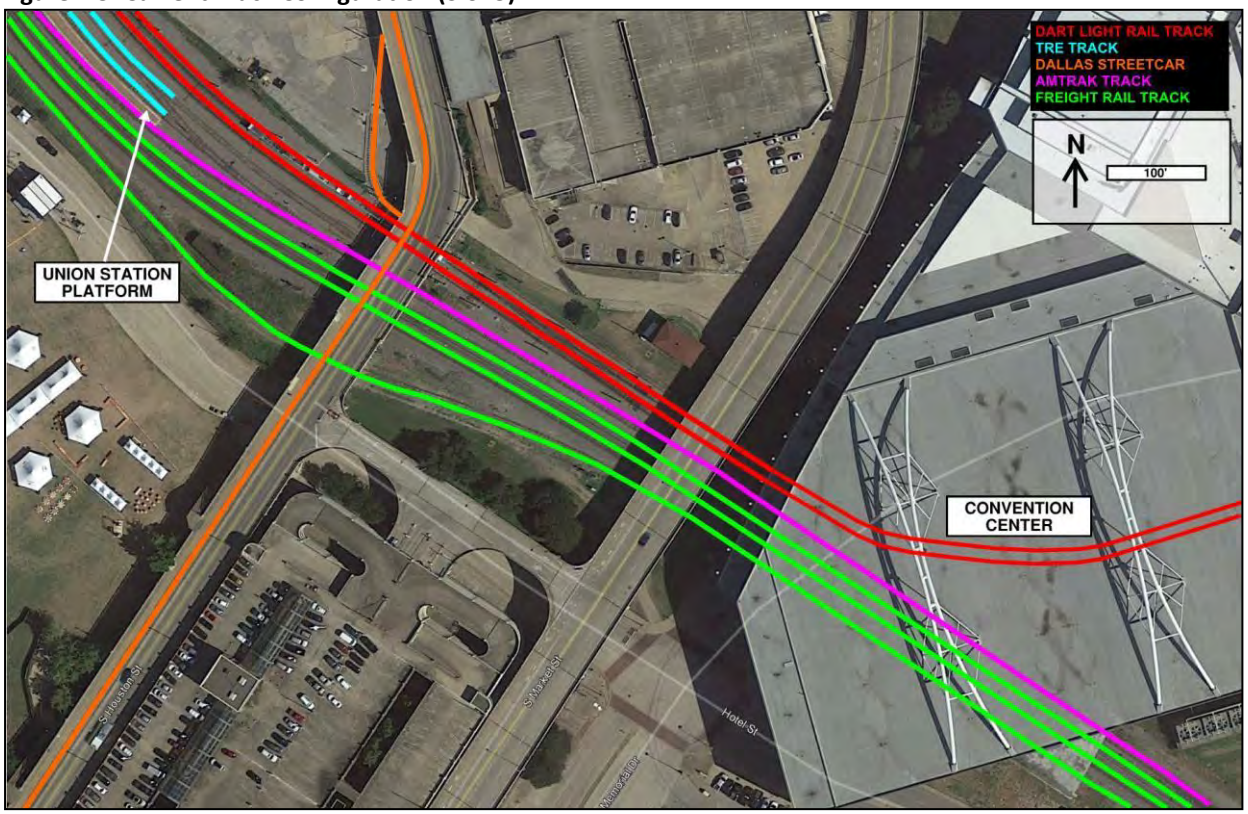


Figure 4.6: Current Track Configuration (4 of 5)

Figure 4.7: Current Track Configuration (5 of 5)

4.6.1 Core Express

The Core Express will align through the MTF development along an aerial viaduct with a top of rail elevation of just over 50'. This elevation and configuration allow the Core Express to pass over I-30, south of the MTF development, and berth at the High-Speed Rail Station platform located just south of the interstate.

The City of Dallas parking garage and any Convention Center Hall F expansion may pose physical constraints to the outer edges of the Core Express corridor as it routes through the MTF development. The bottom of the Core Express viaduct structure is expected to be over 40' above the ground, which allows sufficient space for roadway infrastructure and commercial development beneath this rail corridor. The alignment concept for the Core Express cannot be modified significantly due to the constraints of the high-speed rail platform and the other noted constraining features. Any future modifications to the Convention Center required for other purposes need to be closely coordinated with Core Express alignment requirements.

The aerial structure supporting the Core Express Service can be integrated into the future development located adjacent to the Multimodal Transportation Facility rail station, maintaining the overall feasibility of the Core Express corridor.

4.6.2 Trinity Railway Express

The TRE currently provides service at Union Station, which serves as the terminus for the TRE corridor today. The platform configuration at Union Station provides two platform edges for use by TRE. The tracks used by TRE currently converge at the south end of Union Station and extend southward to connect with the track currently used by Amtrak.

4.6.3 Amtrak

Amtrak currently provides service at Union Station using the outmost platform edge of the western platform. This track is also accessible to freight traffic. The Amtrak track extends southward beneath Convention Center Hall F before converging with the UPRR mainline just outside the Heliport area. Amtrak stays on the UPRR mainline throughout the remainder of the area involved in this study.

4.6.4 Light Rail

DART light rail service is provided at Union Station and the Convention Center Station by the Red and Blue Lines. The light rail double-track corridor enters the northern side of Union Station through the Dallas Central Business District and provides service along two platform edges. The corridor extends southward to Convention Center Station located beneath the Convention Center. The existing rail station at the Convention Center will be within a few hundred feet of the proposed MTF rail station platform.

4.6.5 Streetcar

Dallas Streetcar service begins at Young Street just across the street from Union Station. The corridor routes along the Houston Street Viaduct and Zang Blvd. and terminates in the Bishop Arts District. Streetcar vehicles are stored and serviced at DART's light rail operations and maintenance facility. The

Streetcar corridor accesses the DART light rail corridor via a service track between the Convention Center and Union Station to travel to the vehicle facility once light rail services has ended for the day.

Although streetcar service is not provided at the Convention Center Station, a physical connection between this station and the Dallas Streetcar corridor does exist. Streetcar vehicles use the LRT corridor through the Convention Center after regular operating hours to access DART's Rail maintenance facility. Operational challenges and safety concerns currently prevent this level of service from being provided today during regular service hours and must be thoroughly evaluated before it would be considered in support of the Multimodal Transportation Facility.

4.6.6 UPRR

The Union Pacific Railroad (UPRR) operates on two mainline and two siding tracks from Union Station through the Convention Center. Upon emerging from beneath Hall F, the siding track upon which Amtrak operates converges into one of the mainlines, leaving three total UPRR tracks throughout the vicinity of the proposed MTF rail station platform. Just north of the I-35/I-30 interchange, a new siding track diverges off the mainline, providing access to a rail yard that is located adjacent to the future High-Speed Rail Station.

4.7 Proposed Track Modifications

Modifications to the existing rail infrastructure are necessary to accommodate the MTF rail station platform and service by Amtrak and TRE. Track modifications for all modes of rail service considered in this study are described in the following section. Refer to **Attachment 2** to view diagrams of the proposed modifications.

Figure 4.8: Proposed Track Modifications (1 of 3)

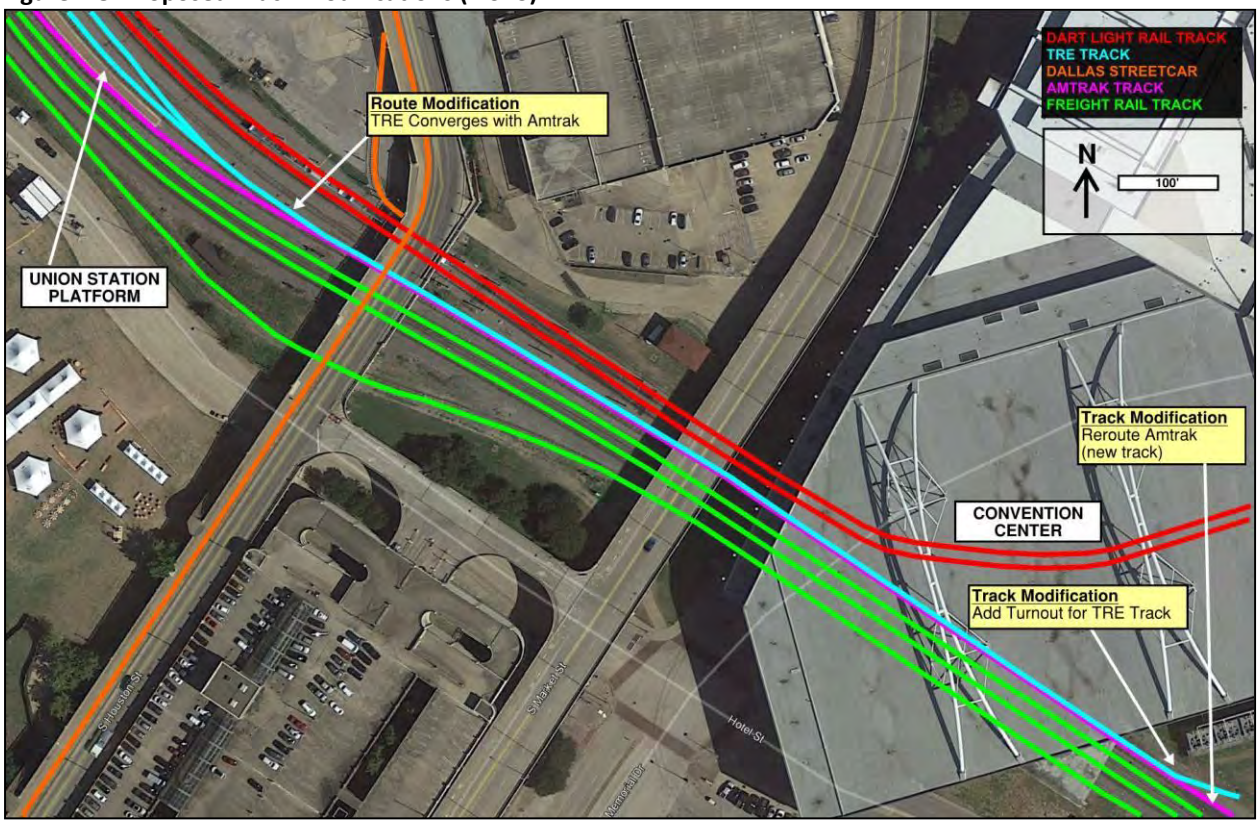


Figure 4.9: Proposed Track Modifications (2 of 3)

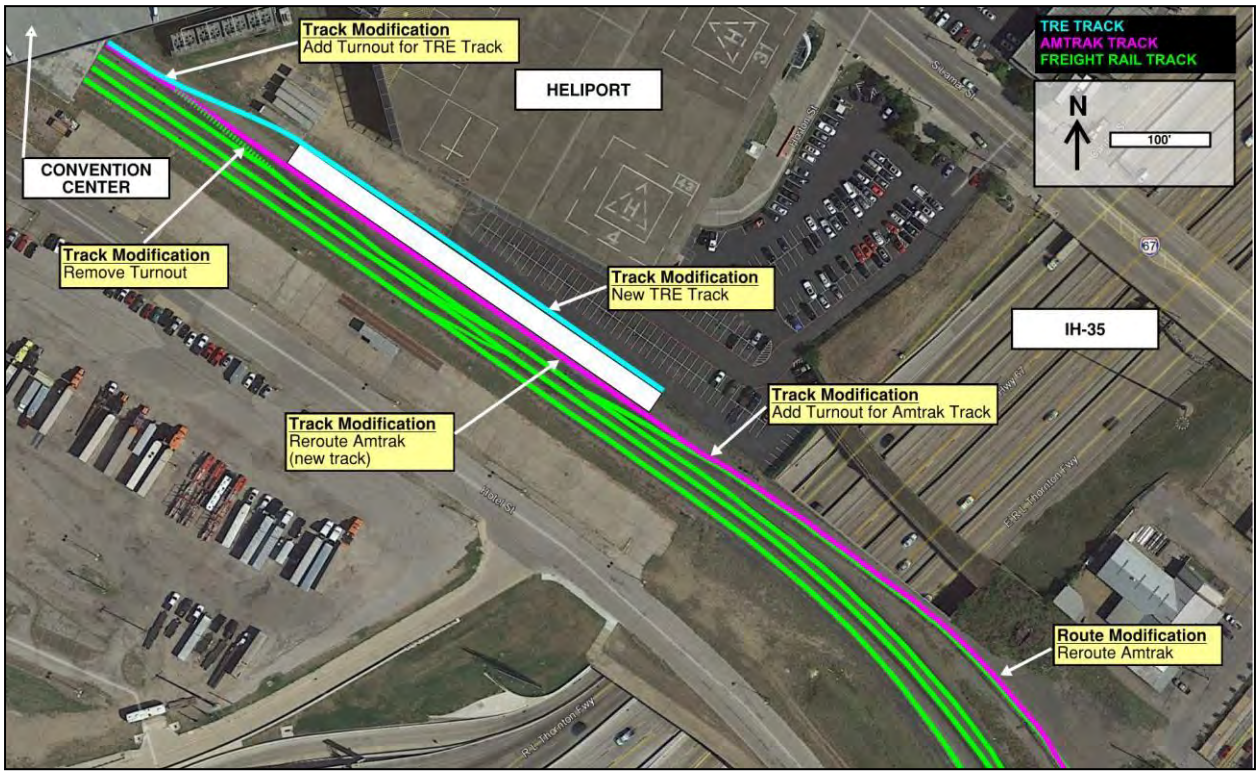
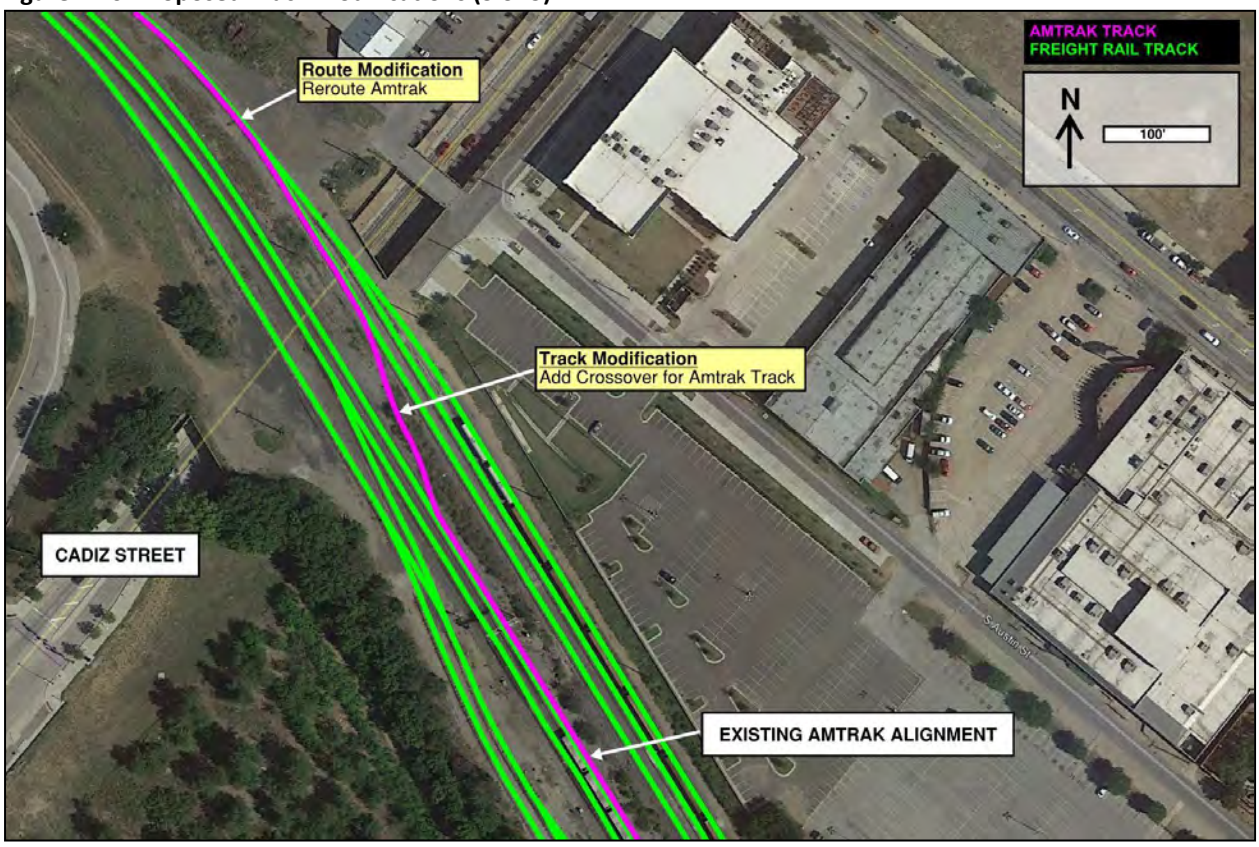


Figure 4.10: Proposed Track Modifications (3 of 3)



4.7.1 Core Express

The introduction of the MTF rail station does not necessitate modification to the existing Core Express concept.

4.7.2 Trinity Railway Express

The TRE tracks currently extend past the southern end of Union Station and converge with the Amtrak track. The turnout at this location is currently hand-thrown and must be upgraded to a powered switch. Amtrak and TRE will share the use of track between Union Station and the MTF rail station. A new TRE track will be added just south of Hall F to allow TRE access to the north side of the MTF rail station. This move will require a powered turnout at the point where the TRE diverges from Amtrak.

The current TRE service will terminate at the MTF rail station, with vehicles operating in the same manner as they do today at Union Station. If the TRE is extended south towards Waxahachie in the future, an agreement must be worked out with UPRR to facilitate that extension.

4.7.3 Amtrak

Amtrak service will continue along the existing track from Union Station to the point just south of Hall F. At this point, the existing track will be extended for approximately 700', providing tangent track for the MTF rail station platform. Amtrak service will be provided along the southern side of the station platform. Upon leaving the station and moving southward, Amtrak will now travel along the northernmost UPRR service track for approximately 600' before being routed back onto the UPRR mainline for continued service along the track upon which Amtrak travels today.

4.7.4 Light Rail

The introduction of the MTF rail station does not necessitate modification to the existing light rail track configuration.

4.7.5 Streetcar

The introduction of the MTF rail station does not necessitate modification to the existing streetcar track configuration used during regular service hours or its use of the LRT alignment to access the rail maintenance facility after hours.

4.7.6 UPRR

One objective of the Fatal Flaws Analysis was to identify a rail configuration scenario with minimal impact to UPRR. The proposed track modifications leave all of the existing freight tracks intact except for approximately 146' of track that will be removed south of Hall F to allow for Amtrak and TRE access to the MTF rail station. It is believed that this track removal will not impact UPRR operations. This is an item and area that will require coordination with UPRR to understand their needs in this corridor.

Track modifications include the replacement of over 600' for existing UPRR track and the replacement of one hand-thrown turnout with a powered switch. Approximately 235' for new track will be added to the UPRR corridor at the point where Amtrak shifts back onto the UPRR mainline. This new track will increase UPRR operational flexibility.

4.8 Future Modifications to Union Station Platforms

This fatal flaw analysis does not include an evaluation of the Union Station platform configuration nor does it address any future modifications to the platforms once Amtrak and TRE services are transferred to the MTF rail station.

4.9 UPRR Coordination

All proposed track modification concepts for the scenario analyzed for this study have been provided to UPRR for review and comment. Refer to **Attachment 3** for a copy of correspondence sent to UPRR. Two meetings were held with UPRR personnel to discuss the proposed modifications and obtain their comments. The summaries of those meetings are also provided in **Attachment 3**.

4.10 FRA Rail Corridor Information

The Federal Railroad Administration (FRA) provides a database of the nation's rail inventory available to the public in the form of an interactive map that is found at the following website: https://fragis.fra.dot.gov/GISFRASafety/

This FRA database identifies the freight corridor as the "DALLAS SUBDIVISION", owned by UPRR, with operational rights (known as trackage rights) provided to TRE, Amtrak, BNSF and DGNO. Information from this database will be useful when this project advances toward final design.

5 Site Concept Development

The MTF site is in the immediate vicinity of the Kay Bailey Hutcheson Convention center. The site is bi-furcated by the Union Pacific railroad corridor with a major site portion south of the tracks and a second smaller portion north. The site's western and southern boundaries are the downtown freeway system; the northern boundary is the Houston St. Viaduct and the eastern boundary is the DART LRT line heading south east to/from the existing Convention Center Station. The parking structure just south of the convention center with a helipad is considered part of the east site portion for purposes of this evaluation. **Figure 5.1** illustrates the MTF site area in red.

Figure 5.1: MTF Site Layout

As important points of reference, **Figure 5.1** also shows the location in concept for the TCR HSR platform (orange), elevated platform access (blue), the Core Express alignment concept (yellow) and the proposed MTF station platform (white). Straight line access distance between the HSR platform and the MTF platform is less than 800 feet, with an elevated connection spanning I-30, making the MTF location ideal for the intended rail to rail transfers. This is important, given the regional rail connections (Trinity Railway Express) and Amtrak intercity/interstate connections to/from HSR facilitated by the MTF and its station platform.

This section describes and illustrates important access attributes afforded by the strategic placement of the MTF adjacent to the convention center including MTF rail to HSR rail access, MTF rail access to other modes, MTF platform track configuration and MTF site drainage. This section also describes and illustrates

potential site land development possibilities mindful of the need to incorporate modal access efficiently and effectively and discusses the potential for some type of enclosed facility serving the MTF platforms.

5.1 Site Concept Development

The purpose of this study is not to develop a viable concept for transit-oriented development. That exercise will be conducted later once the MTF concept moves into the feasibility and preliminary engineering phases. This Fatal Flaws Analysis evaluates the size of the developable site and potential development configurations that emulate existing development styles found in transit-oriented development throughout the world. Refer to **Attachment 4** to view the full site concept development packet.

5.2 Size of Development Site

The MTF site has potential for dense urban development. The convention center draws scores of major conventions annually, possess excellent roadway/freeway and DART light rail access and is in the central business district. Add to the mix a future HSR station that will also connect the Core Express, the result becomes a potential nexus for new transportation and new development. Even though the site itself is relatively small, a dense development is still quite possible given allowable zoning. To illustrate, **Figures** 5.2 **– 5.4** superimposes the footprints of Dallas City Hall, Union Station, East Transfer Center and the Klyde Warren Park structures onto the site as points of reference.

Figure 5.2: Development Site Size (1 of 3)

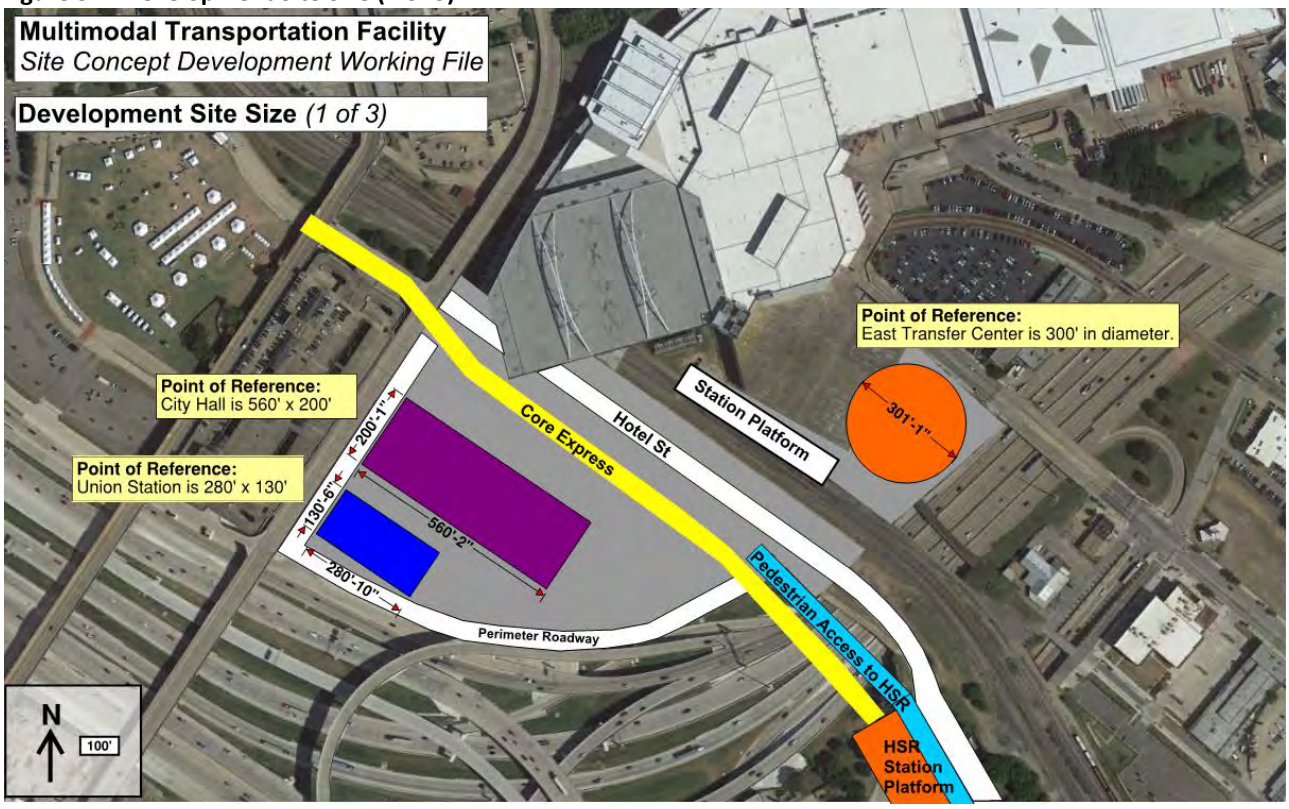


Figure 5.3: Development Site Size (2 of 3)

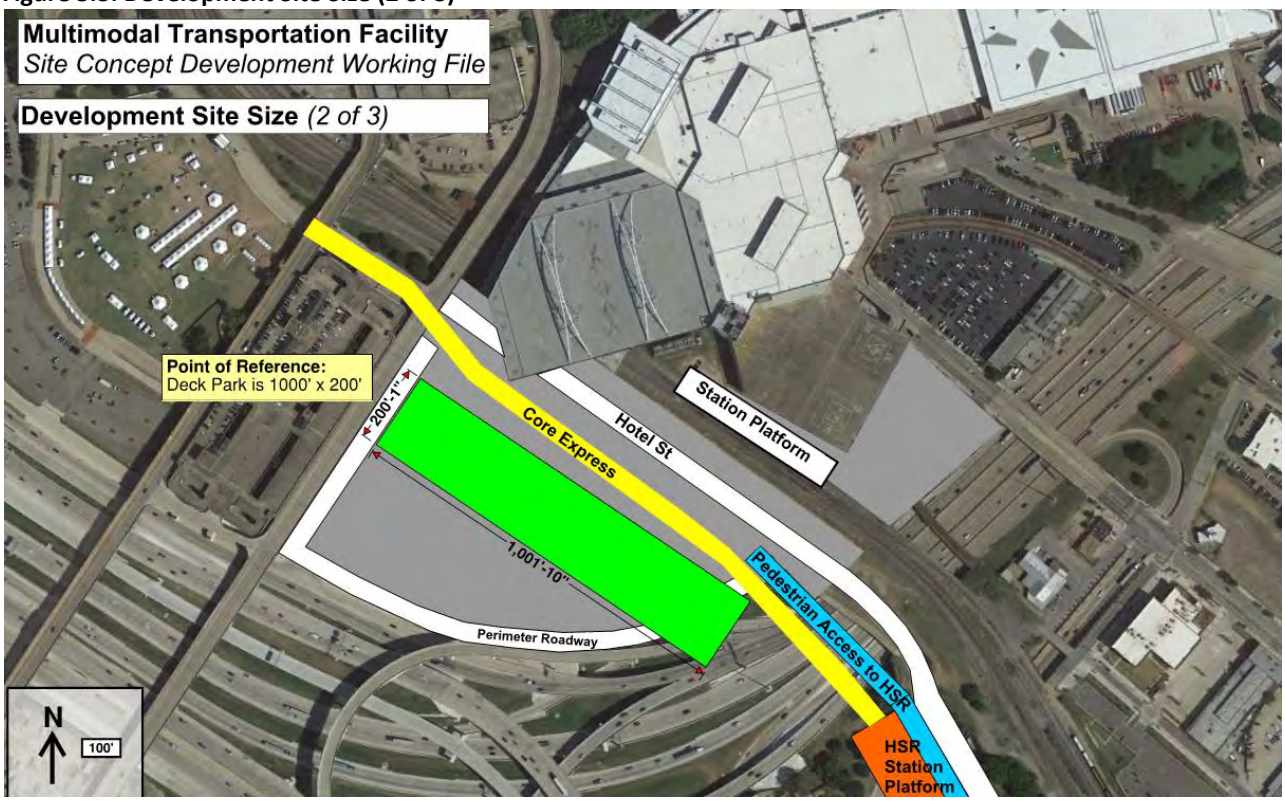
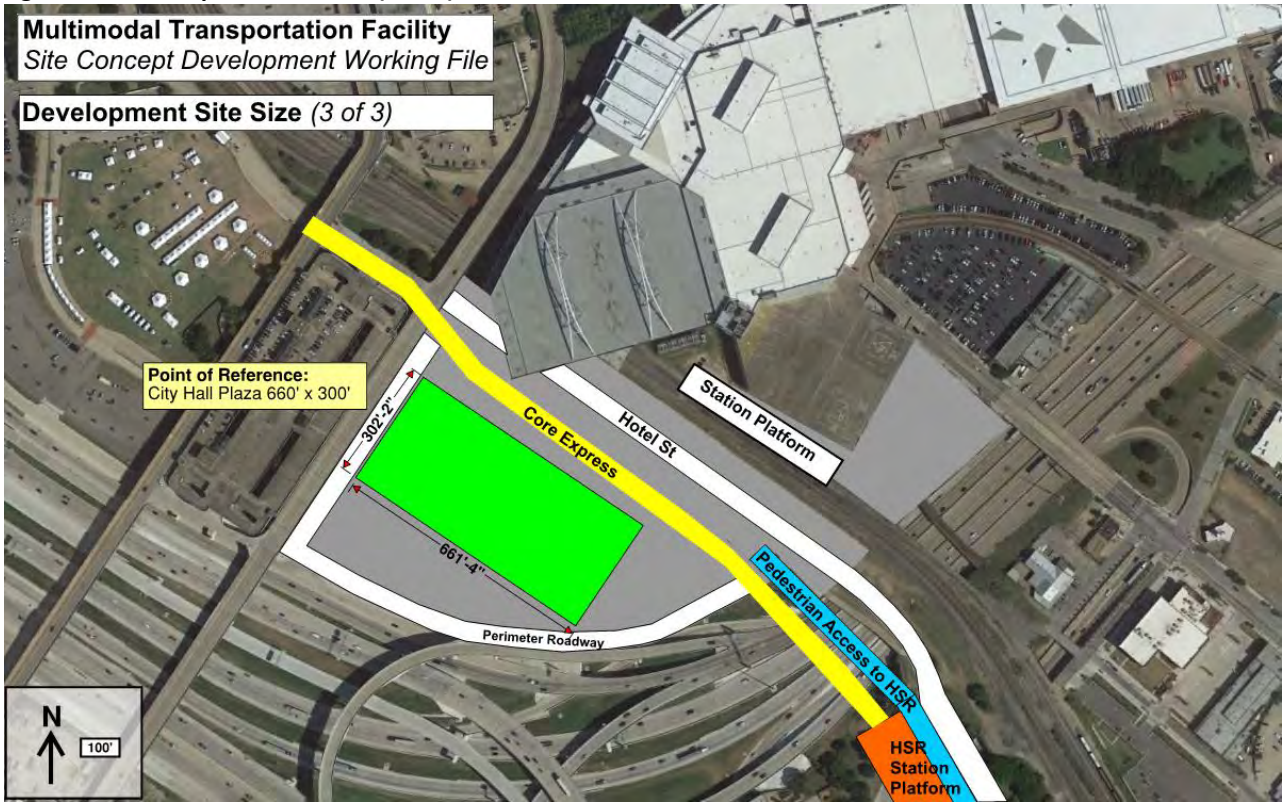


Figure 5.4: Development Site Size (3 of 3)



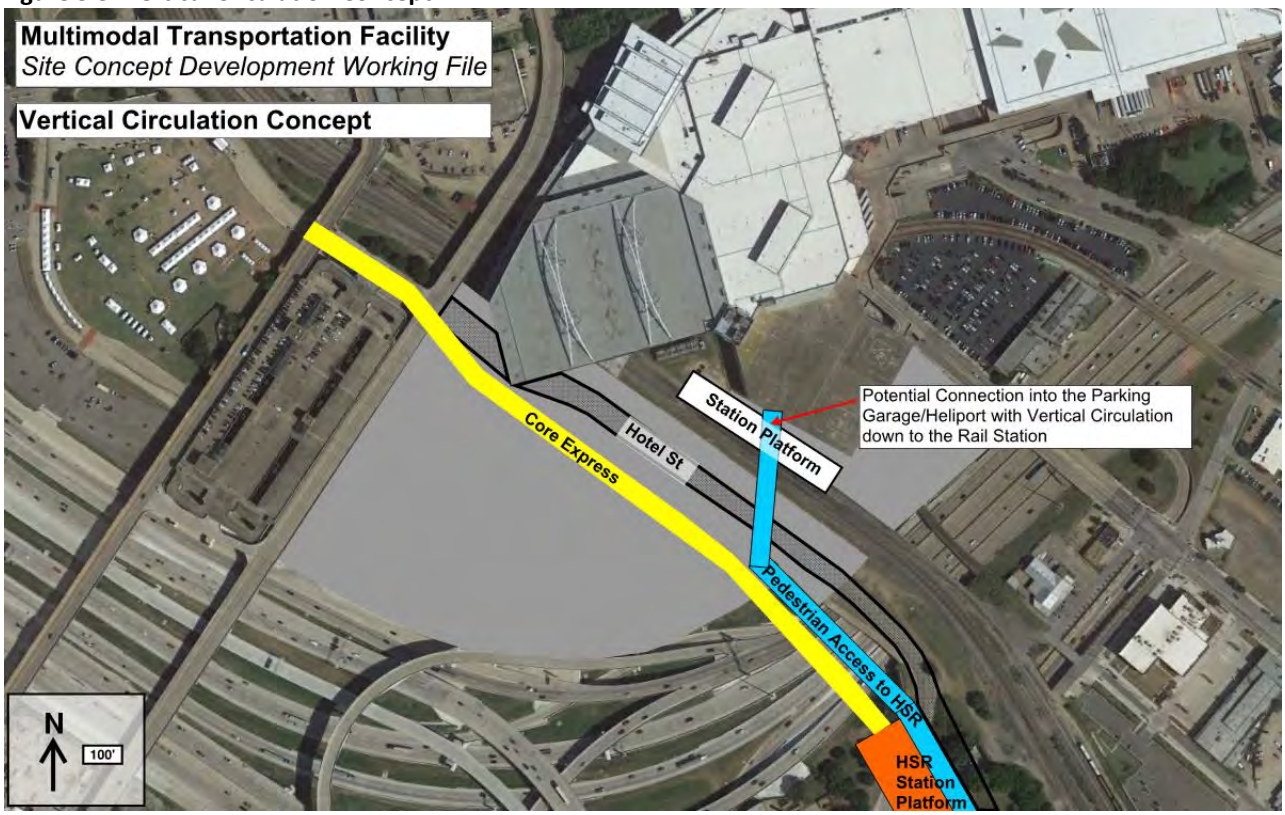
5.3 Visual Impact of MTF Development

Since the desired transit-oriented development adjacent to the MTF rail station involves high-rise buildings, stakeholders must remain aware of the impact such a development may have upon the view of iconic features in the Dallas skyline, such as Reunion Tower and the Omni Hotel.

5.4 MTF Rail to HSR Rail Access

Two concepts have been developed to demonstrate basic connection concepts that allow easy access for people transferring between HSR and regional/intercity/interstate TRE and Amtrak service at the MTF.

Figure 5.5: Vertical Circulation Concept



First, **Figure 5.5** illustrates elevated access to the MTF platform with vertical circulation to ground level. The concept extends the overhead pedestrian accessway to the HSR station across the existing rail corridor to connect with the MTF Station platform via the adjacent heliport/parking garage structure. One advantage of this concept is that it provides additional vertical circulation for persons wishing to access helicopter and Uber Elevate services due to the proximity of the MTF station to the convention center parking garage and heliport.

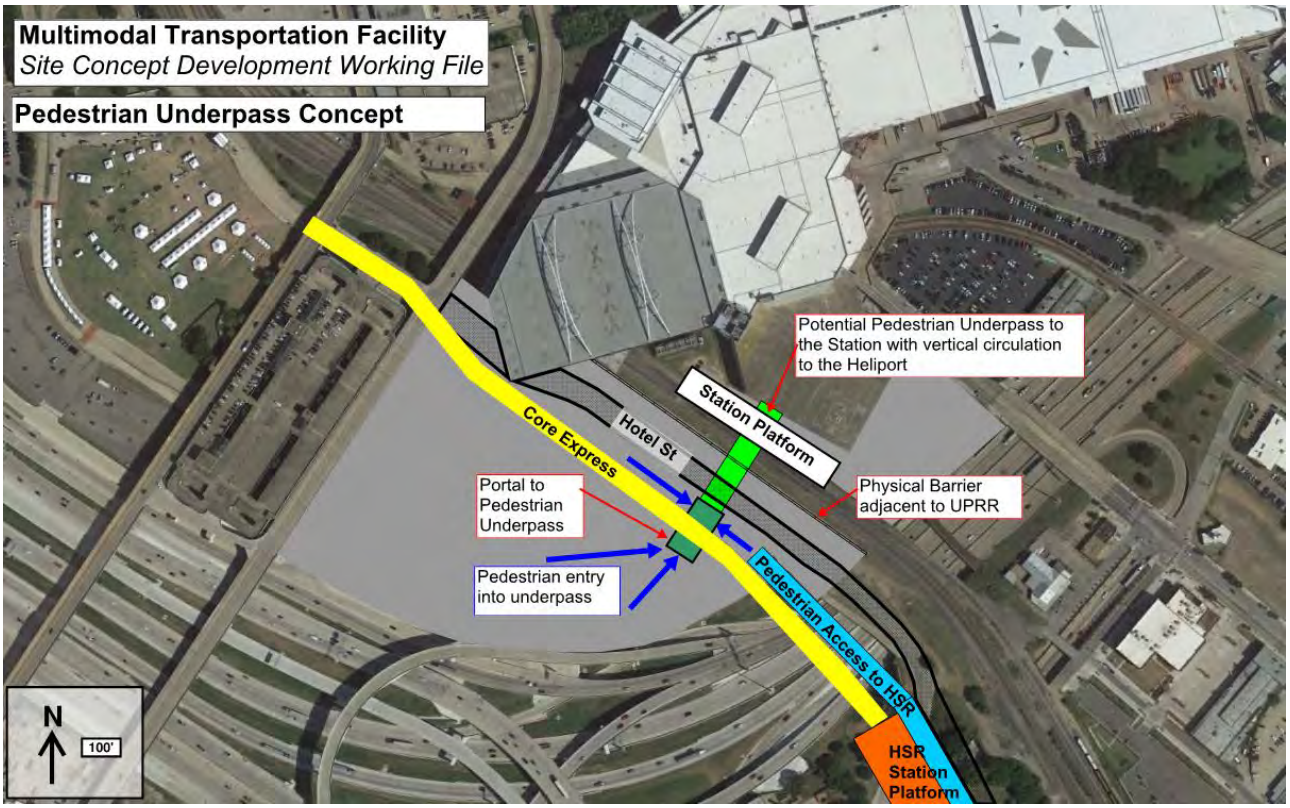


Figure 5.6: Pedestrian Underpass Concept

Second, **Figure 5.6** shows vertical circulation down from the HSR platform access area to a pedestrian underpass portal. The pedestrian underpass would then continue under an extended Hotel St. and then under the railroad tracks to connect to the MTF rail station platform. The underpass portal entries provide opportunity for a grand aesthetic entryway into the transit-oriented development area when traveling southward and into the convention center when traveling to the north. Additional vertical circulation on the north side of the station can connect patrons to the convention center parking garage and the heliport. Both concepts provide direct and easy access between platforms. One drawback with the pedestrian underpass concept will be gaining approval from UPRR and addressing underground utilities.

UPRR design criteria provides technical requirements that must be considered when developing plans for a proposed underpass beneath the rail corridor. Since underpass structures create the potential for differential settlement and restrict the future use of right-of-way within the rail corridor, UPRR prefers the use of an overpass that provides sufficient vertical and horizontal clearance. Design team coordination with UPRR is essential during final concept development to gain consensus on the structure type and configuration that will be acceptable to the railroad.

5.5 MTF Rail to DART Convention Center Station Access

Imagining the potential for an inviting and attractive space for the MTF against the dark and closed-in Convention Center Station can be quite difficult. While visiting the station, our team found an already-created pathway that could potentially lead to the future High-Speed Rail station. With minimal investment, this pathway can be used to connect transfers to the High-Speed Rail Station. With a more extensive investment, such as a structural analysis and a removal of some of the columns to open the space, this pathway can be transformed in an attractive and open space (as depicted in the sketch) where visitors can wait for the train, grab a meal, and rest from their travels. **Figures 5.7 – 5.9** depict the conceptual configuration of this potential rail service connection.

Refer to **Attachment 11** to view potential concepts for the connectivity between the MTF Station platform and the DART Convention Center Station platform.

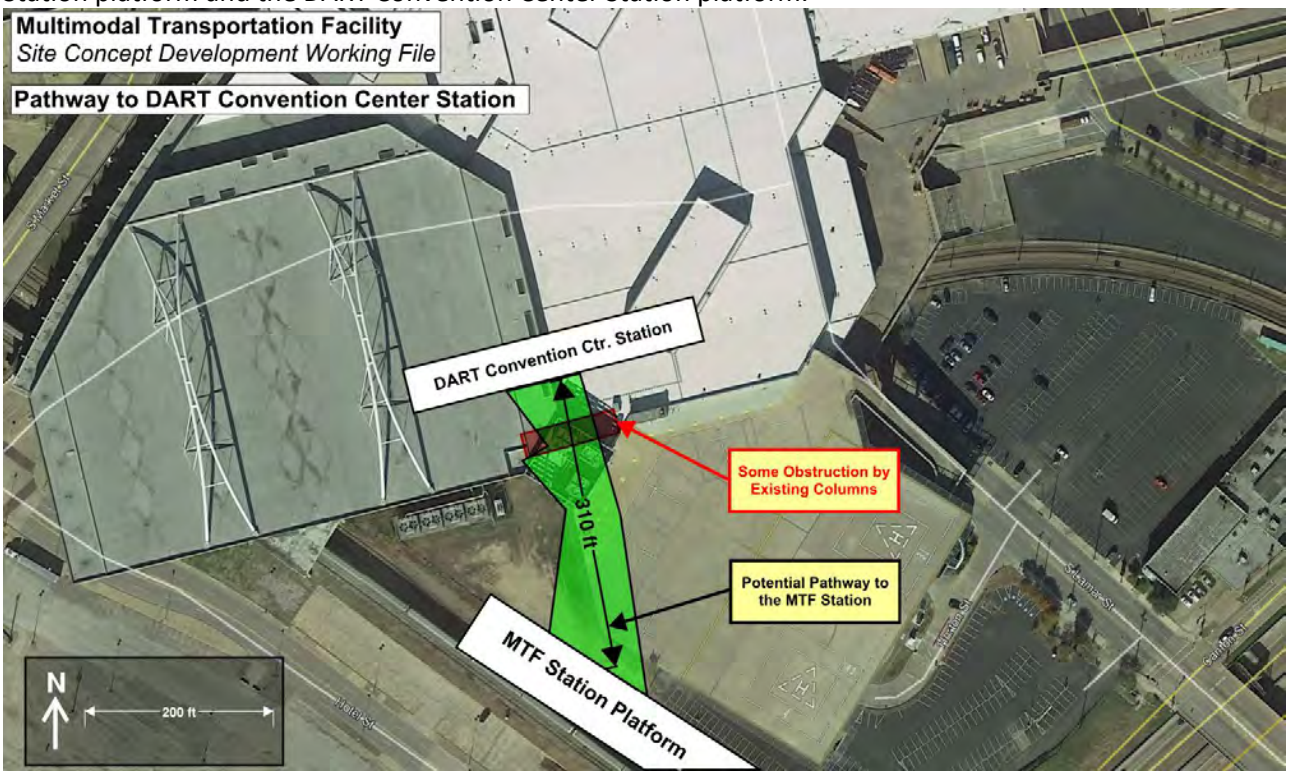


Figure 5.7: Pathway to DART Convention Center Station (Aerial View)

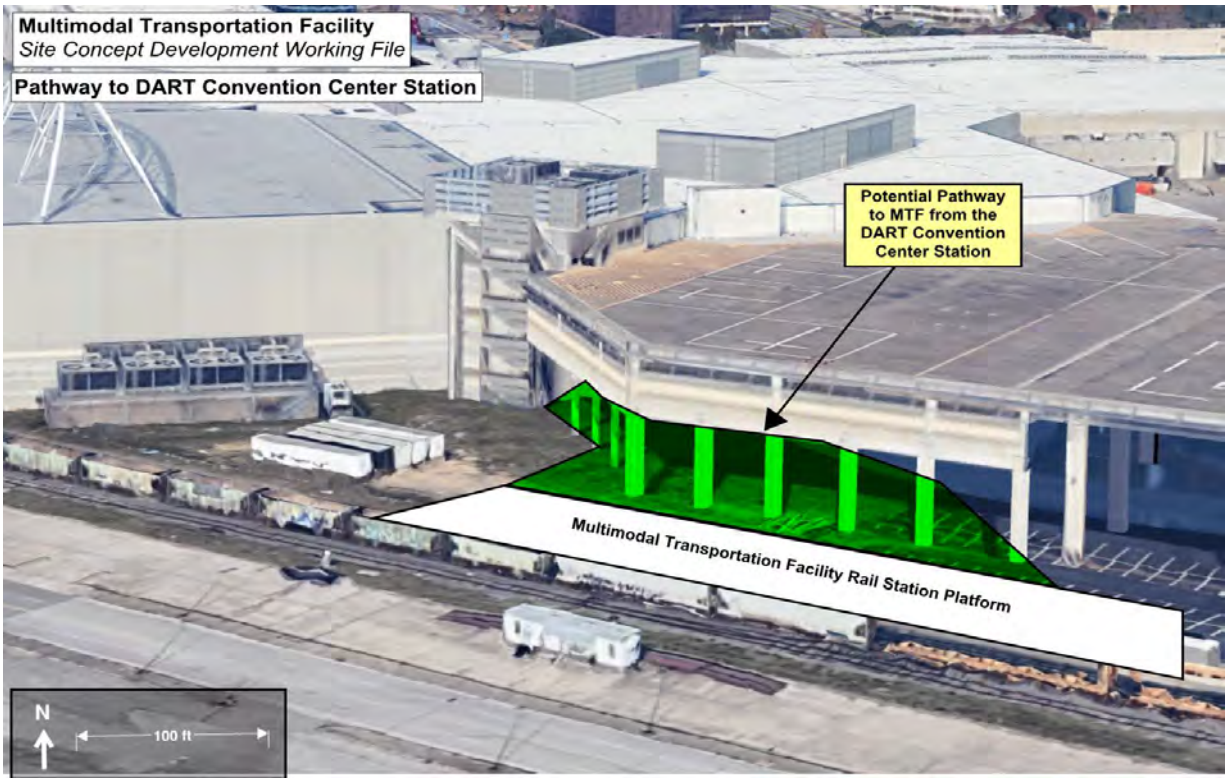


Figure 5.8: Pathway to DART Convention Center Station (Elevation View)

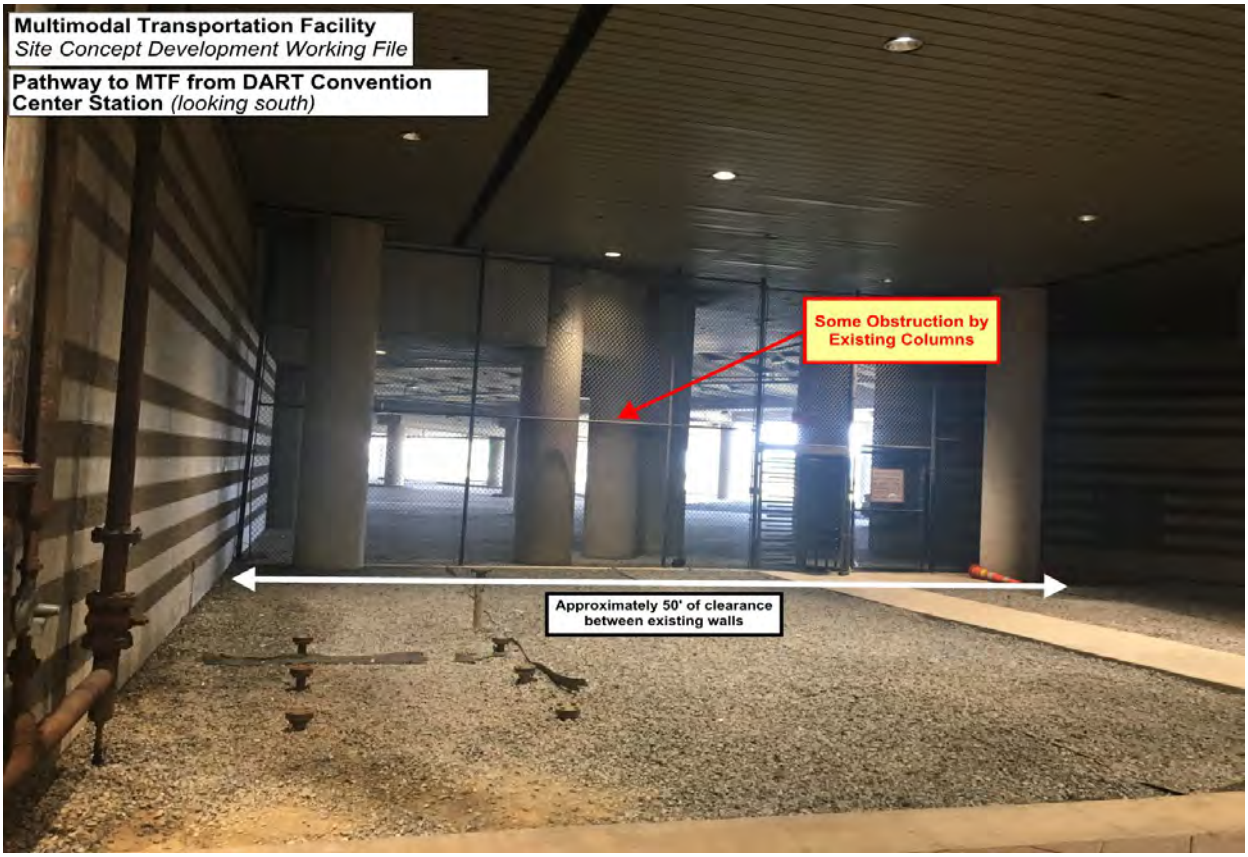


Figure 5.9: Pathway to DART Convention Center Station – Existing Conditions

5.6 MTF Platform Modal Access

Figure 5.10 shows two possible configurations for such modal access. One is a section along Hotel St. adjacent to the MTF platform and a second is a semi-circular drive from Lamar St. Both options will allow for bus, TNC and other vehicle pick-up/drop-off modes. Pedestrians from the convention center, the DART convention center station and additional surrounding developments will also focus their journey to/from the MTF platform area. Further analysis is necessary to determine the general number of people that will require ingress and egress into the MTF and onto the MTF rail station platform. Depending on future demand studies, one or both access concepts may be required. In any event, the final arrangement must be driven by anticipated demand.

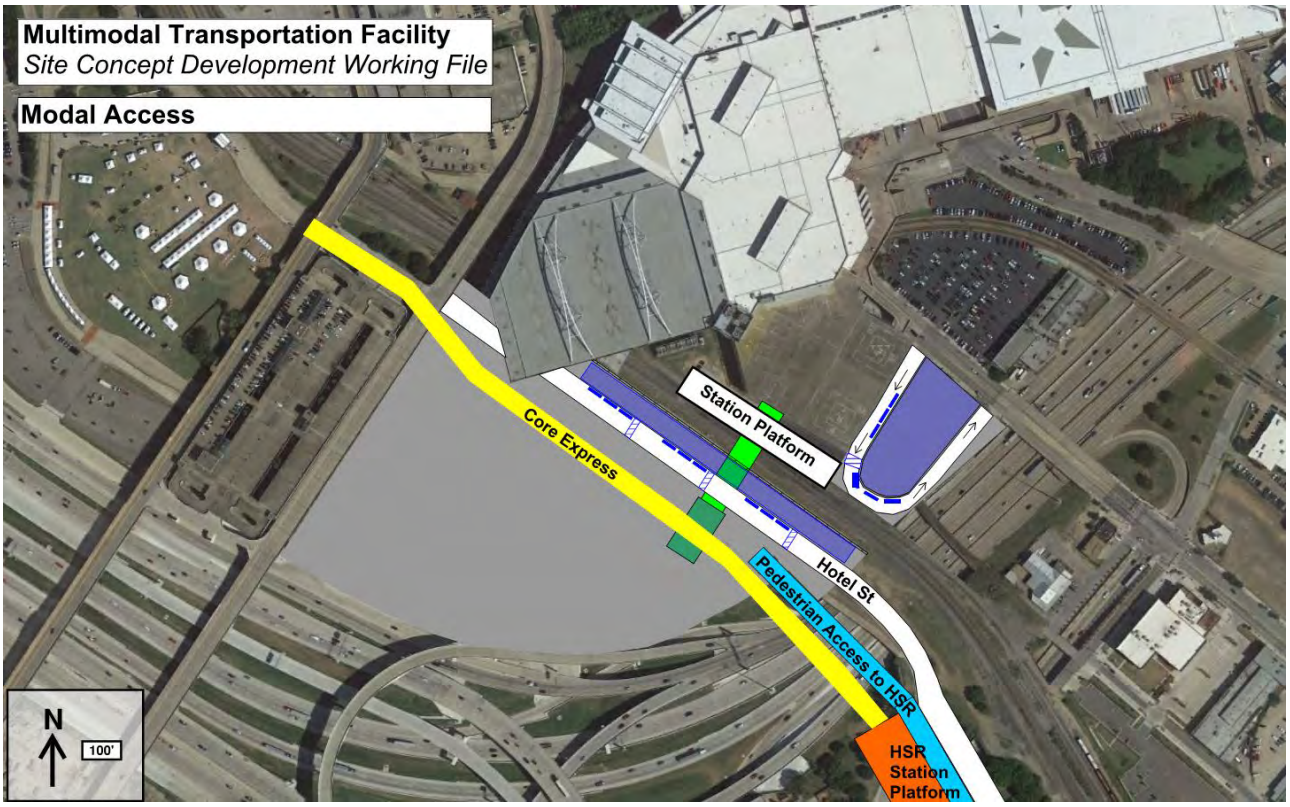


Figure 5.10: Pedestrian Underpass Concept (Modal Access)

Refer to Section 8 of this report for more information on Multi-Modal Connectivity.

5.7 MTF Site Development

There are countless possibilities for site development. In developing a concept for the City of Dallas site, the team explored ideas to minimize the transportation footprint and maximize space for development with the following considerations.

- Connectivity to the high-speed rail station
- Preserving space for proposed extension of the high-speed rail to the west
- Extension of the Trinity Railway Express with new terminal station
- New Amtrak platform at terminal station
- Connection to the DART Light Rail and Dallas Street Car

- Multi-modal connections including bus, taxi, Uber and Lyft, Uber Elevate, heliport, and autonomous vehicles
- Access and new entrance to the Convention Center
- Pedestrian flow
- Aesthetics
- Pedestrian crossing of freight tracks
- Minimizing impact to current freight network and service to freight customers

Three of the more significant constraints and decisions for the City of Dallas is the Convention Center, the loading dock, and Heliport. The existing configuration does not facilitate access to the Convention Center from the high-speed rail station, does not provide an opportunity to create a "grand" entrance into the Convention Center from the south, and does not accommodate pedestrian flow from the new multimodal facility or the high-speed rail station. Additionally, the aesthetics, lighting and structural constraints could impede private development and limit expansion of rail services to the new station. The City is undertaking the development of a Convention Center Master Plan that is expected to address the possibility of a vertical expansion and the incorporation of multi-use development.

The following sketches show some site development options and are intended to facilitate further discussion about the types of development preferred by project stakeholders as the MTF project advances.

5.7.1 Development Concept (1 of 4)

Figure 5.11: Development Concept (Sydney)

The City of Dallas has expressed interest in a dense mixed-use development with tall buildings oriented adjacent to the Core Express aerial structure. The concept depicted in the picture show in **Figure 5.11** reflect the concept from a mixed-use development from the *Eighty Eight* development in St. Leonards, a suburb of Sydney, Australia. This development includes a vast array of both building and open space features.

5.7.2 Development Concept (2 of 4)

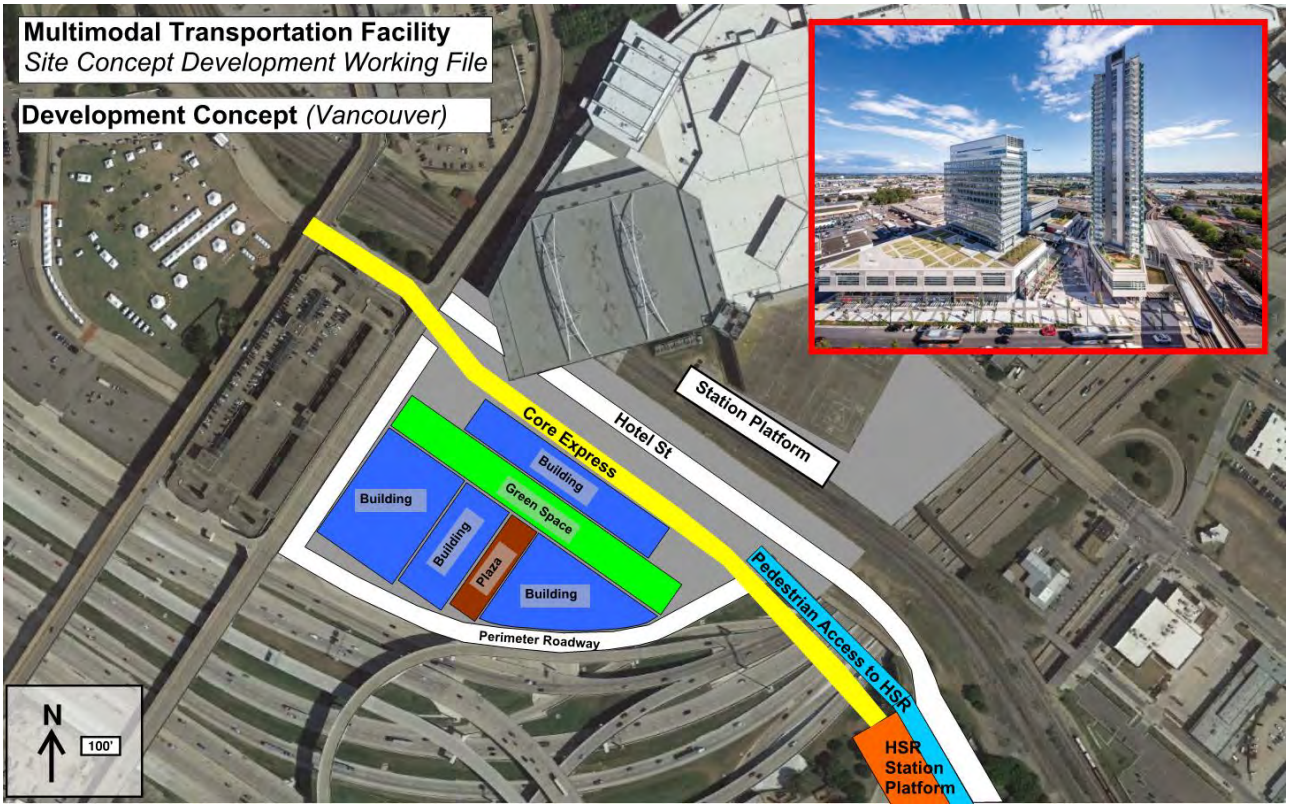


Figure 5.12: Development Concept (Vancouver)

The concept depicted in **Figure 5.12** provides another example configuration for the layout of a high-rise mixed-use development from a project in Vancouver. The City of Vancouver's largest transit-oriented development, Marine Gateway, is a mixed-use development that adjoins the Sky-train station of the same name. This example incorporates rail transit immediately adjacent to the tallest building and includes a series of plazas connecting office and residential spaces to commercial and retail units.

5.7.3 Development Concept (3 of 4)

Figure 5.13: Development Concept (Ontario)

The concept in **Figure 5.13** dedicates a significant portion of the development site to a transit hub where public, commercial and private vehicles can drop off and pick up patrons immediately adjacent to the high-rise development. The concept adopted from a development in Ontario allows room for green space and limits the surface area used by buildings. Transit City, in Ontario, is the largest commercial development site in the city, residing on a 100-acre campus. The entire development area for the Dallas Multimodal Transportation Facility is just under 25-acres, requiring a smaller-scale application of this concept. Commercial, office and residential spaces would need to reside in taller buildings to achieve the desired density for this area.

5.7.4 Development Concept (4 of 4)

Figures 5.14 and 5.15 depict a concept that shows major structures on both sides of the rail corridor with a possible deck park and pedestrian bridges spanning over portions of the platform area. For this development concept, the team has assumed that the Convention Center will be expanded and renovated with an entrance from the high-speed rail station and multimodal facility. Lighting, wayfinding signage and streetscape enhancements would be needed to improve the pedestrian experience between the stations (high speed rail and multimodal station) and the DART LRT station.

This concept depicts two towers connected with the multimodal facility and a deck park. The east tower would incorporate the expansion and reconfiguration of the convention center. The west tower would be adjacent to the high-speed rail line extension to the west. Both towers would be designed with heliport and/or Uber Elevate pads on the roof.

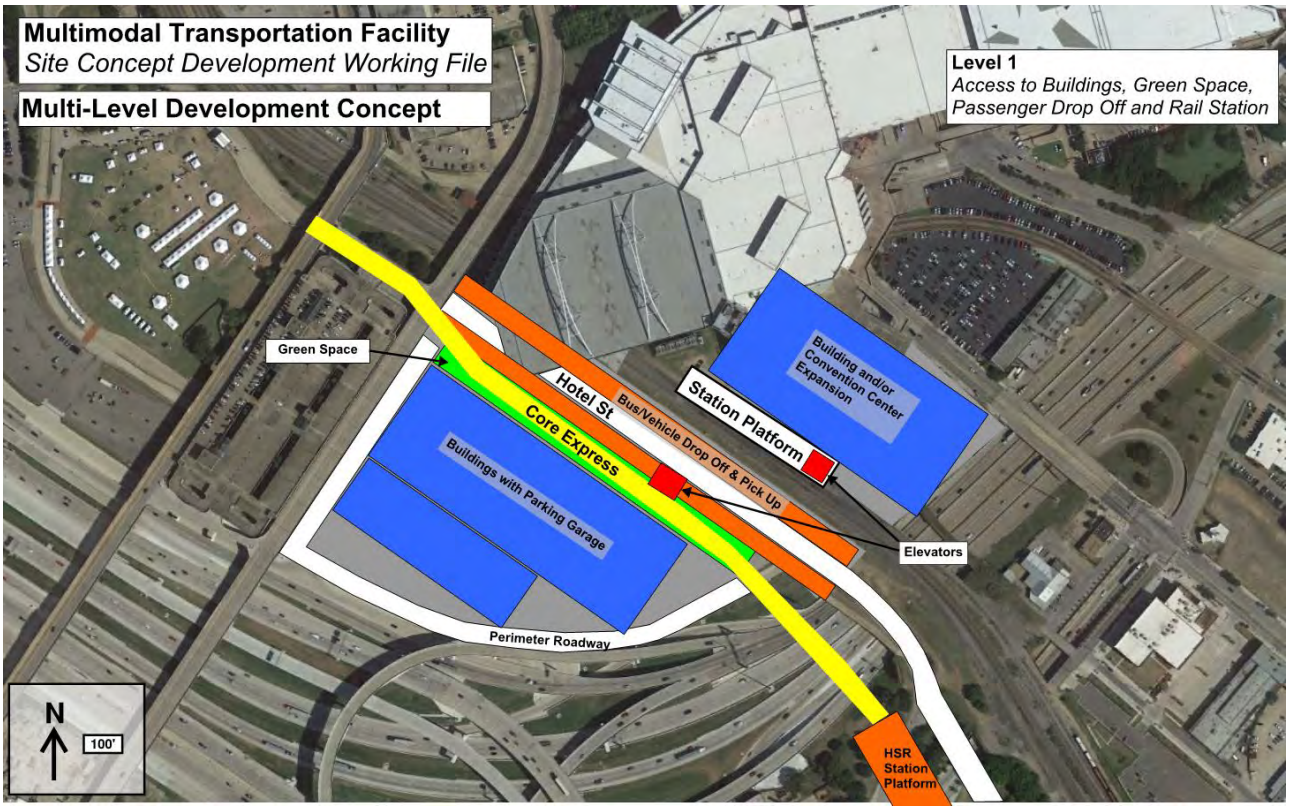


Figure 5.14: Multi-Level Development Concept (Level 1)

Access to the towers and multimodal connectivity is provided at three levels and include the features described below.

- **Level 1:** Access to both towers, TRE Station, Amtrak Platform, bus and auto pick up and drop off adjacent to Hotel Street, connection to DART Convention Center LRT Station. Elevator and stair access to Levels 2 and 3. Level 1 is divided by the freight line.

- **Level 2:** Deck park connection between towers with elevator access to Levels 1 and 2. Pedestrians will access opposing towers via elevator or stair connection to Level 2. Deck park could include green space, restaurants, and shops. The team assumed that the Union Pacific will only allow pedestrian bridges across the freight tracks which requires the deck park be divided by the tracks and connected with multiple pedestrian bridges. Even with the pedestrian bridges, the deck park will still cover Hotel Street, all bus and auto traffic from view, as well as, most of the train traffic.

- **Level 3:** Enclosed pedestrian bridges connecting high-speed rail station to both towers with elevator access to Levels 2 and 3. The enclosed pedestrian ways could include moving sidewalks.

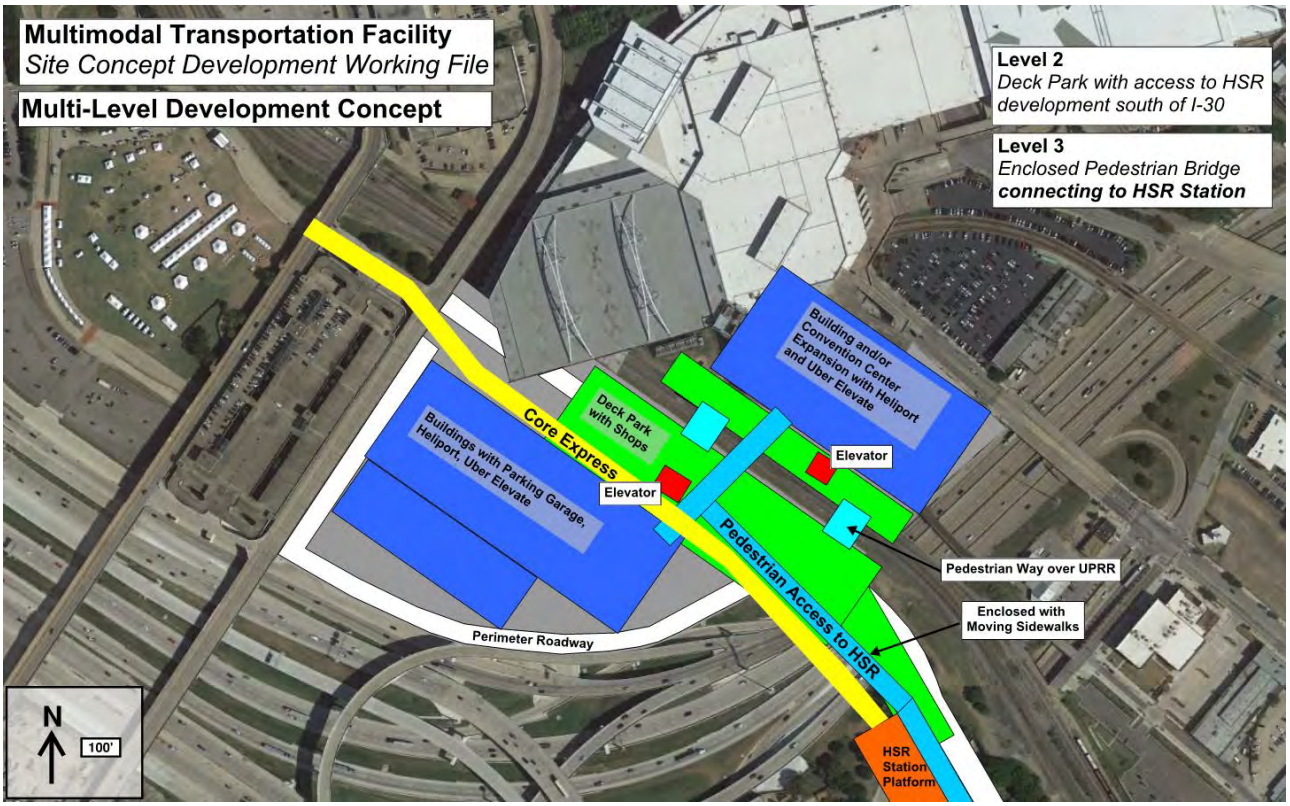


Figure 5.15: Multi-Level Development Concept (Levels 2 & 3)

5.8 MTF Rail Station Platform Configurations

A series of platform and track configurations have been developed to better understand the width requirements for the MTF platform and tracks. These configurations reflect passenger service needs for TRE and Amtrak as well as continued operation of freight rail and help define the effective width of the rail corridor. This is important because there is currently a width restriction as the rail corridor traverses under the convention center at Hall F. Presently with building columns, the effective width is only approximately 70 feet The available right of way within the rail corridor just south of Hall F adjacent to the proposed MTF is approximately 95 feet Track and service requirements will help dictate space needs, so the following configurations are designed to illustrate those needs and help decide how a given required width can ultimately be accommodated. In each example, two UP tracks are assumed along the western edge of the current rail corridor.

The following platform configuration options are shown in this section to document the options that were considered during the fatal flaws analysis and were developed conceptually, without applying track alignment and geometry to this brainstorming evaluation.

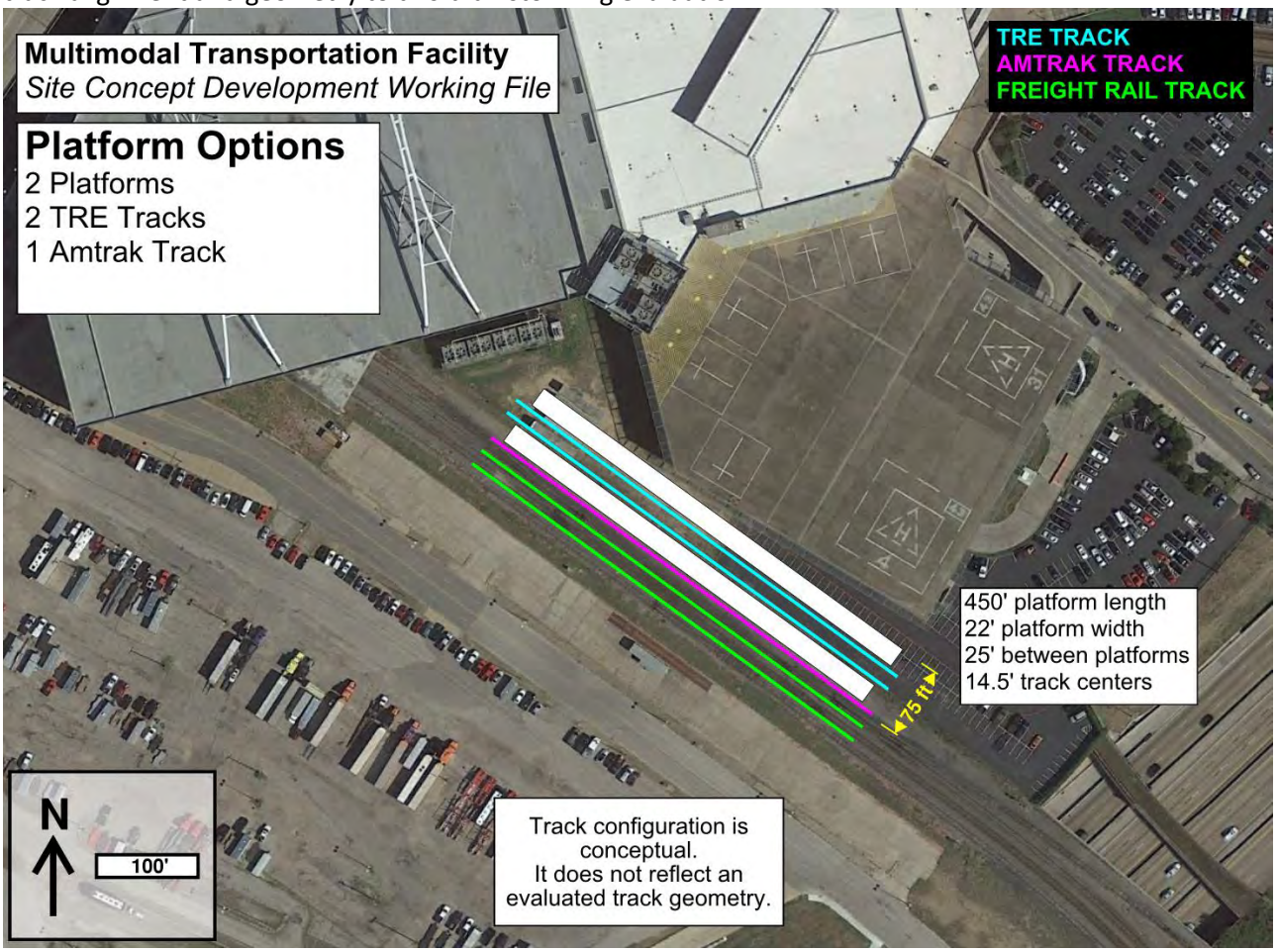


Figure 5.16: Platform Options 1

The first MTF platform/track configuration example consists of TRE side platforms with two tracks plus a shared platform and one track for Amtrak. This is shown as **Figure 5.16.** Although the illustration is approximate, the configuration basically keeps the present UPRR and Amtrak tracks in their current

location and adds the TRE tracks and the two platforms. These new tracks and platforms encroach on the parking area adjacent to the existing convention center parking structure with the helipad. The distance between the Amtrak track and the eastern platform is approximately 75 feet. As shown, the platforms are 450 feet long and 22 feet wide. The platforms are separated by 25 feet, allowing for the 14.5 feet track centers that exist today.

According to UPRR's Common Standard Plan Passenger Platform Guideline (**Attachment 5**), a spacing of 25' is required between the centerline of a station track and any adjacent freight track. This spacing must be considered by designers as the concept for the MTF advances.

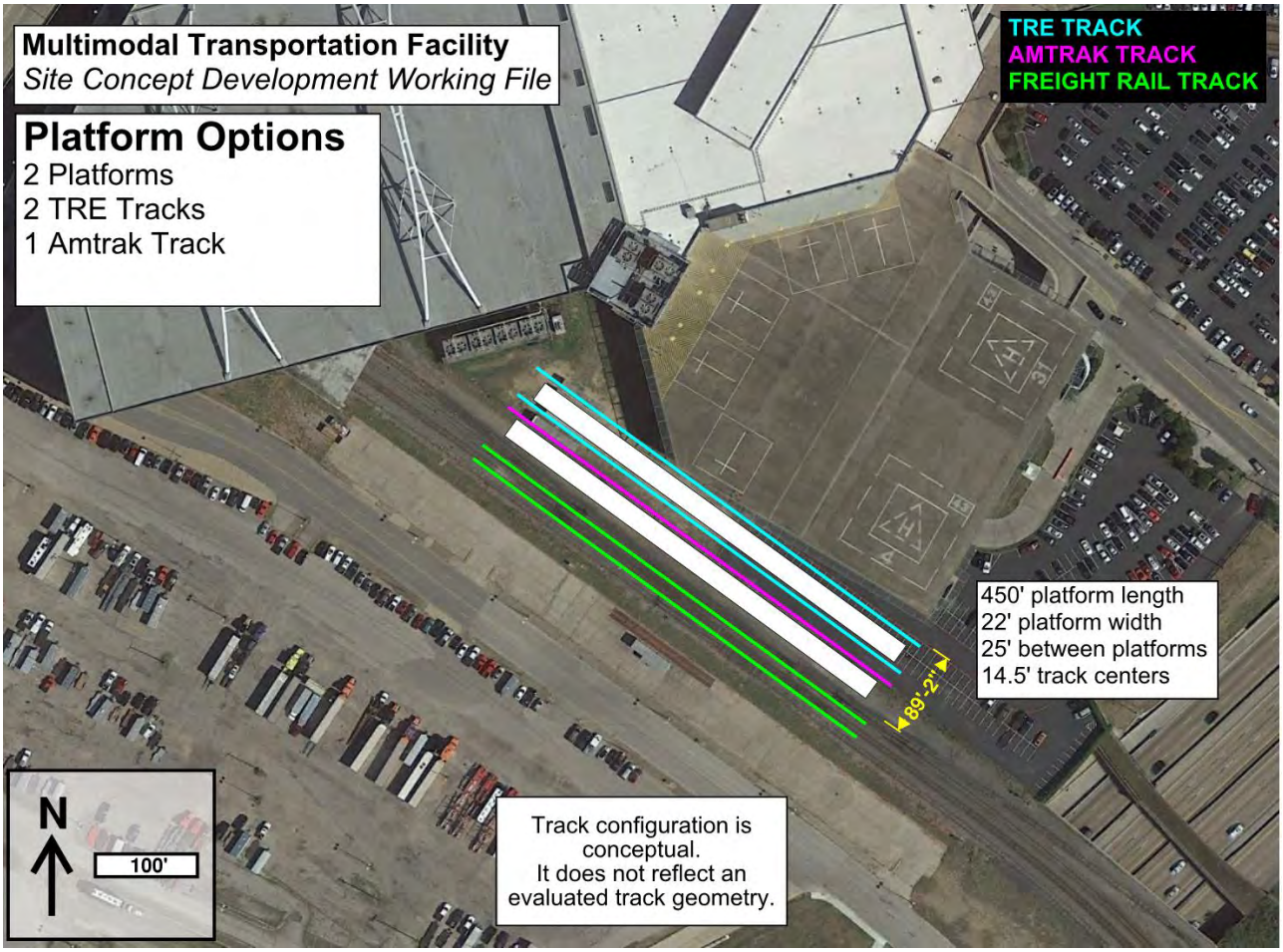


Figure 5.17: Platform Options 2

The second MTF platform/track configuration example consists of a TRE center platform with two tracks plus a separate Amtrak platform and track. This is shown in **Figure 5.17**. As before, the two UP tracks remain in their current location but, to accommodate the platforms, the Amtrak track is shifted east from its current location with the TRE tracks and platform encroaching on the existing convention center surface parking area. Dimensionally, the effective width spanning the distance from the outer edge of the TRE track and the Amtrak platform is around 90 feet This center platform configuration consolidates the passenger waiting area for TRE users to one platform.

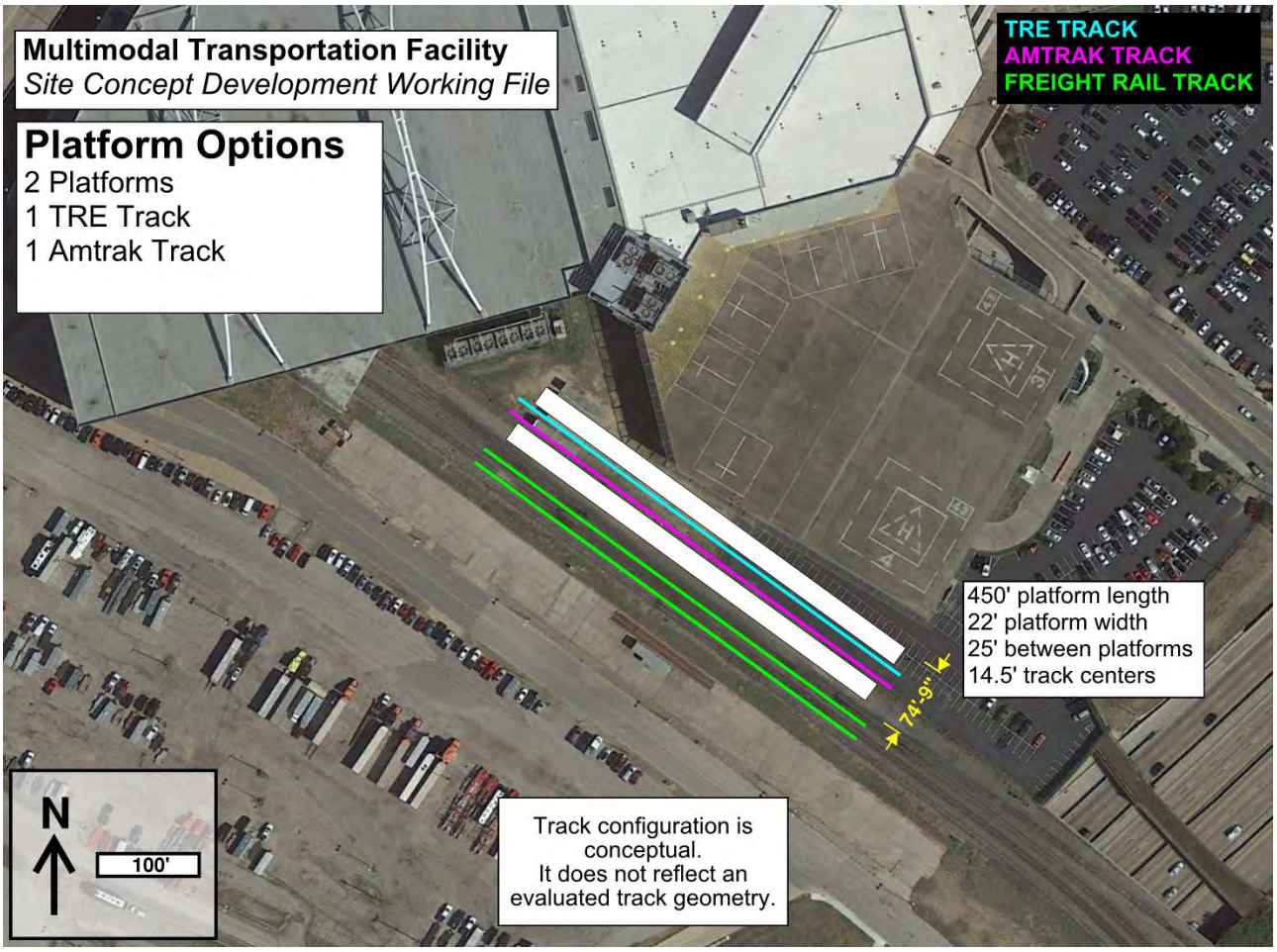


Figure 5.18: Platform Options 3

A third MTF platform/track configuration example includes a single TRE side platform with one track and a separate Amtrak platform and track. This is shown in **Figure 5.18**. The platforms and new tracks encroach upon the convention center parking area and consume a width of about 75 feet. A single platform may be all that is needed if the MTF is the termination point for TRE service in Dallas as the trains have locomotives on each end and can simply reverse direction on the same track at the station.

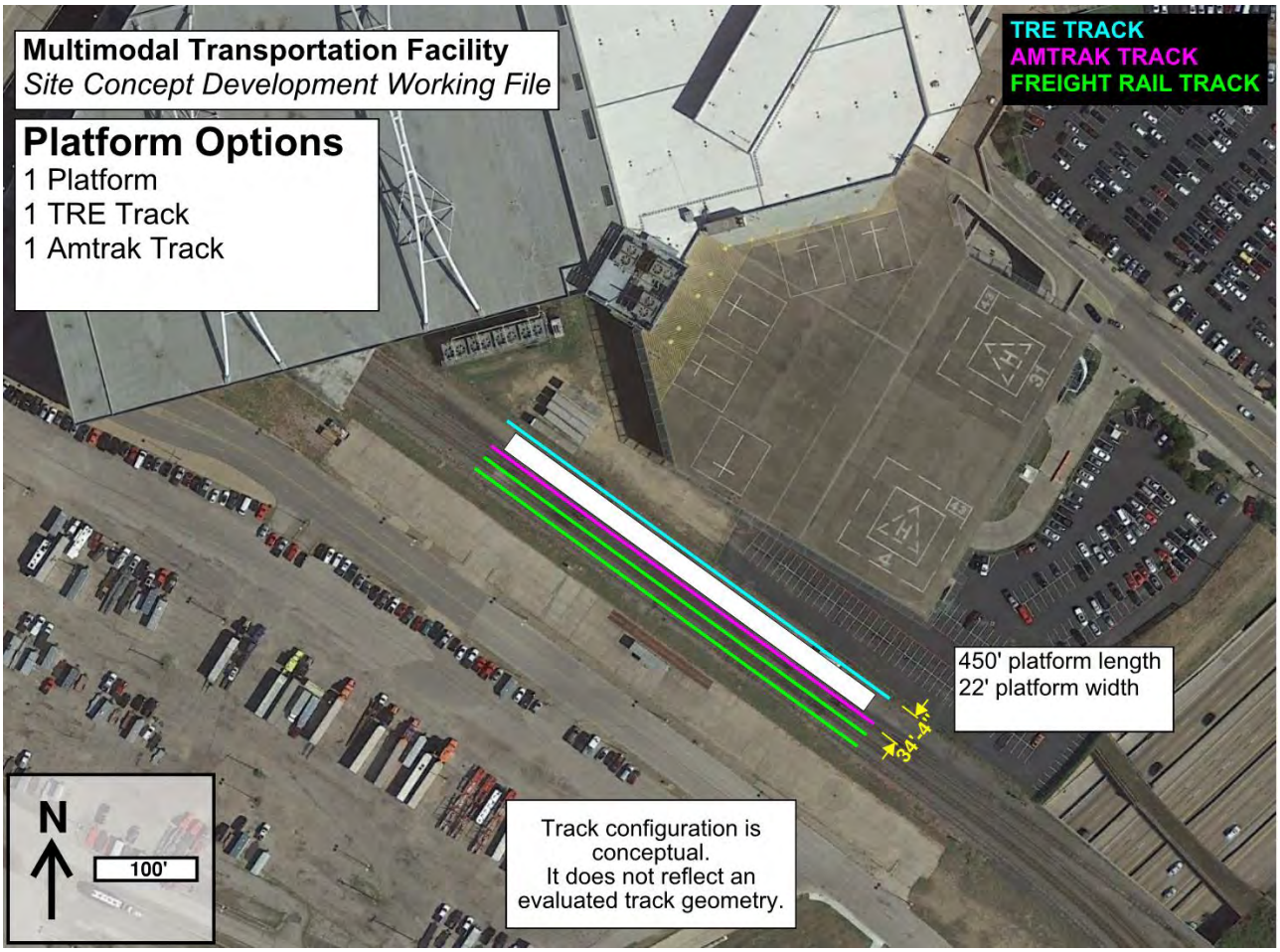


Figure 5.19: Platform Options 4

A fourth MTF platform/track configuration example is very basic and includes a single platform shared with one TRE track and one Amtrak track. This is shown in **Figure 5.19**. The nominal distance from the outer edge of the TRE track to the Amtrak track is approximately 35 feet and may fit in the rail corridor without encroaching on the convention center surface parking lot.

The fourth example is the most advantageous from a right-of-way perspective; however, the final configuration must also be based on ridership and passenger rail operational needs. The number of platforms is ridership sensitive. The volume of activity between Amtrak and TRE is known today at Union Station but how that ridership is affected by the presence of HSR is still to be determined.

5.9 DWU Utilities Considerations

The MTF site consists of two tracts of land on both sides of Hotel Street. The larger tract (Lot E) is bound by the Jefferson Avenue Viaduct on the NW, Hotel Street on the NE, and Tom Landry Frwy (IH30)/IH35/IH30 on the SW/SE. A smaller tract to the NE of the larger tract is bound by Hotel Street on the SE, IH30 on the SE, and S. Lamar on the NE. These two tracts are more or less vacant except for pavement for vehicular parking. There are existing DWU improvements: both wastewater and potable water that transverse both tracts and will need to be relocated prior to development of the tracts.

There are three existing large-diameter wastewater lines that transverse the tracts as follows:

- A 42”-51” diameter line built in approximately 1914 that flows from the NW to the SE, Lot E tract,
- A 90” diameter line built in approximately 1947 that also flows from the NW to the SE, Lot E tract
- A 48”-54” diameter line built in approximately 1991 that flows from the NE to the SW, Lot E and smaller tract.

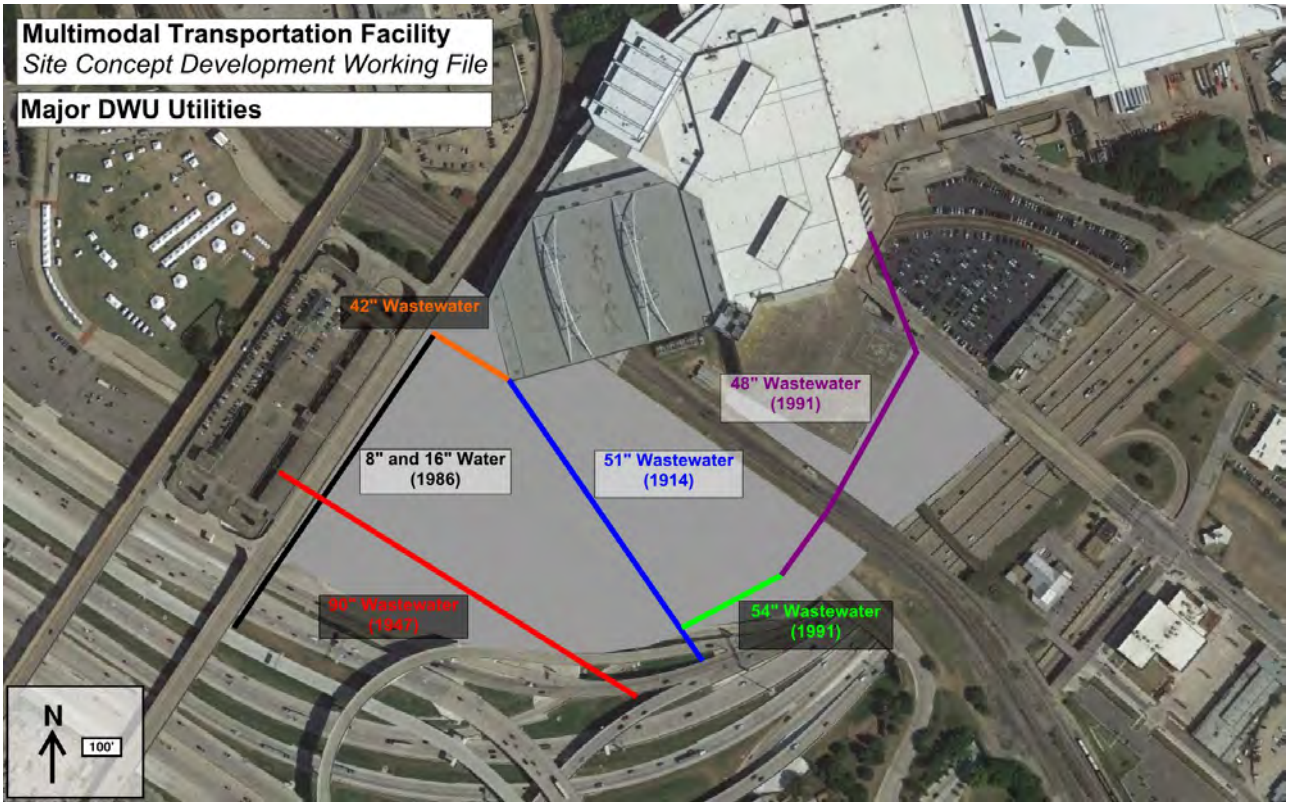


Figure 5.20: Major DWU Utilities

Refer to **Attachment 6** to view the Lot E and Riverfront/Forest City Fact Sheet provided by Dallas Water Utilities. This document describes several infrastructure projects planned to take place near Convention Center Lot E over the next few years. These projects affect the existing water utilities that align through the Multimodal Transportation Facility site.

The Attachment 6 fact sheet identifies the following potential impact that the water utilities may have upon Lot E development.

- City construction activity and construction access needed for at least 3 more years (2022)
- 90” wastewater to remain in SW portion of Lot E
- 48” wastewater to remain in southern portion of Lot E
- City to retain permanent easements for 90” and 48” wastewater lines
- 51” wastewater can be abandoned after City construction projects
- 15” wastewater to be rerouted along Hotel or to existing wastewater north of Lot E
- Future structural foundations for buildings and decking will need to span 90” and 48” wastewater lines and allow for future internal access via manholes and junction structures
- The 48” wastewater in the smaller tract remains and will impact construction of buildings.

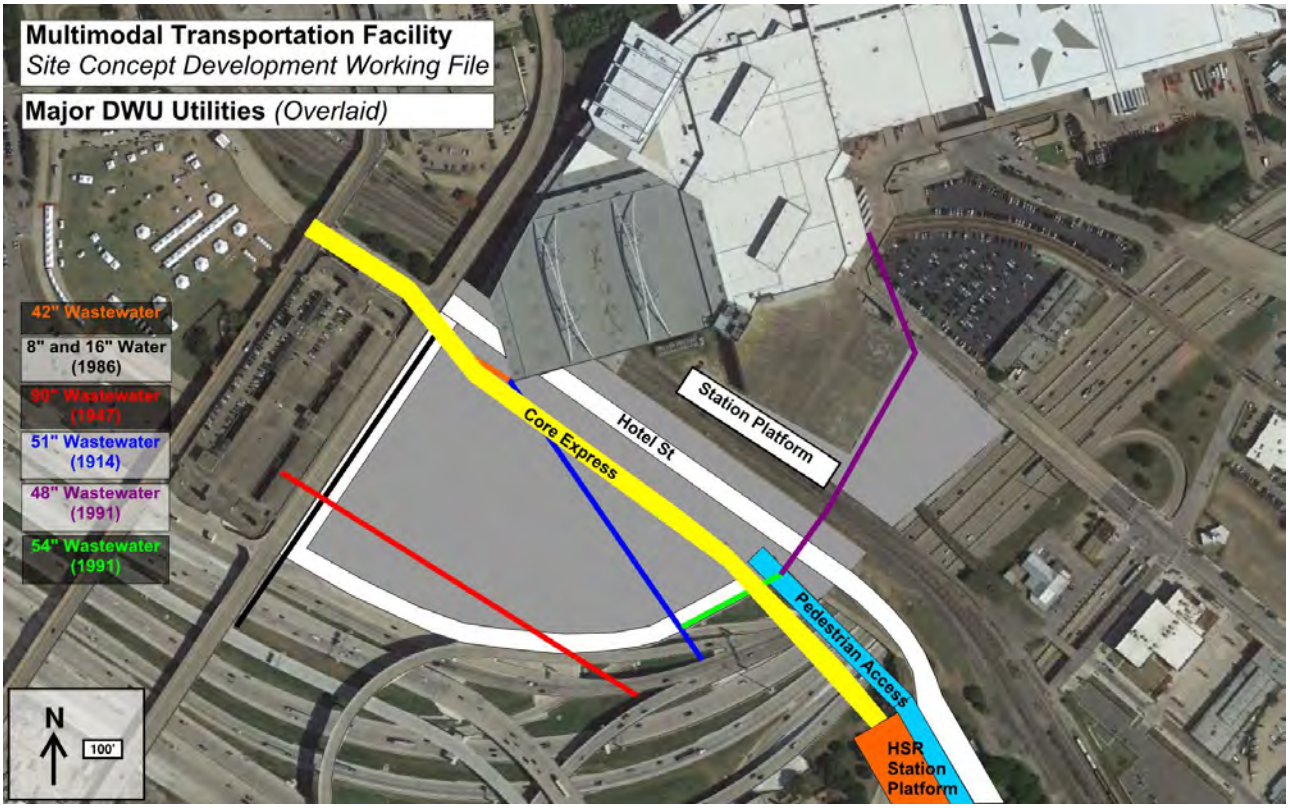


Figure 5.21: Major DWU Utilities (Overlaid)

The wastewater lines will affect the location and orientation of buildings on this site, however, the utilities should not significantly impact the foundations of the Core Express Service aerial structure.

The existing water mains are 8” and 16” in diameter and are located along the NW property lines. These two existing water lines along the perimeter should pose little, if any, impact on site development.

6 High-Speed Rail Connectivity

The Dallas MTF being so proximate to the proposed Dallas HSR station makes rail connectivity relatively easy, despite a major interstate highway and freight rail yard right of ways in between. The right of way issues should be overcome by the proposed HSR station being completely elevated and spanning the right of ways. The MTF will connect to the high- speed rail station by an enclosed pedestrian bridge over Interstate 30. Texas Central is showing pedestrian bridge connections in the concept drawings for the station; however, it is not certain that Texas Central will design and construct the bridges or if the future developer will be responsible for design and construction. Regardless, planning and design of the pedestrian bridges will have to be coordinated between the design team for the Multimodal Transportation Facility, the development around the facility, UPRR and the Texas Central station design team.

Figure 6.1: Dallas High-Speed Rail Station (from Texas Central Railway)

As illustrated in **Figure 6.1,** the HSR station concept is quite elaborate with large flowing canopies over the platforms and enclosed pedestrian connections, linking the station to parking and proposed bus and other vehicle access areas. A plan view of the HSR station concept is shown in **Figure 6.2** and a cross section view (elevation view) showing the pedestrian pathway over I-30 is shown in **Figure 6.3**. The plan view illustration shows that the western edge of the HSR platform is only 1200 feet from the eastern edge of the Convention Center main structure, which coincidently is the same as the length of the HSR platform.

Figure 6.3: Dallas High-Speed Rail Station Elevation View (from HSR DEIS)

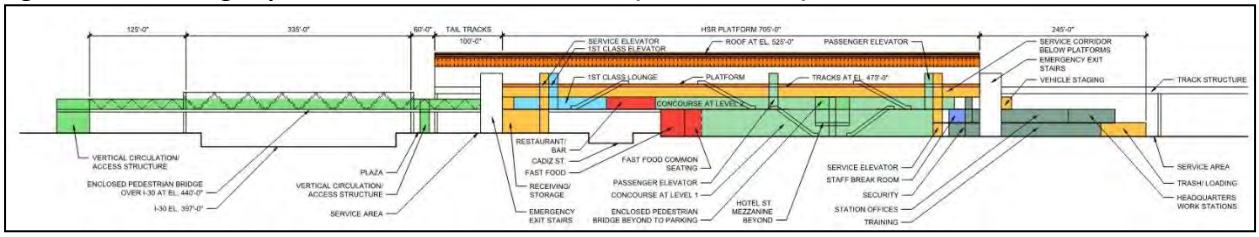
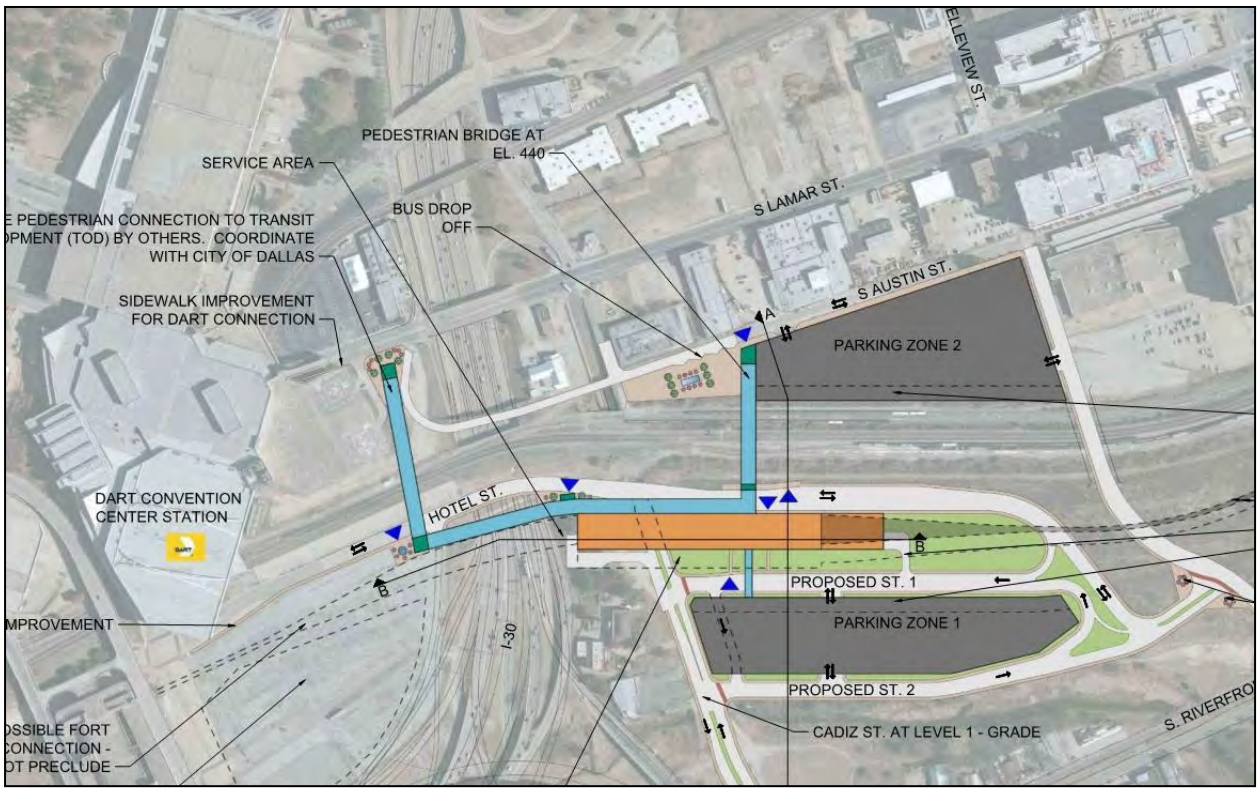


Figure 6.2: Dallas High-Speed Rail Station Plan View (from HSR DEIS)



Access between the MTF and the HSR station is best facilitated using elevated pedestrian connections like those shown in **Figures 6.2 & 6.3**. The HSR station site plan shows an extended pedestrian connection to Lamar St. to access a possible bus connection area. It is an easy task to connect to the MTF platform using the same connection. This notion is shown in Section 5 of this report as well. Other possible connections to/from the southernmost portion of the MTF site development area were also shown in Section 5.

Relatively short distances between platforms will make for easy and convenient connections for transferring passengers, given that most connections are less than a ¼ mile walk. Not only are connections between HSR and TRE/Amtrak relatively short, it is only approximately another 300 feet between the existing DART LRT Convention Center station and the proposed MTF platform. Good wayfinding and climate-controlled enclosures for rail transferring passengers will re-enforce a positive ridership experience. At present, few, if any, fatal flaws appear to exist that would prevent excellent rail connectivity between TCP, Core Express, TRE, Amtrak and DART LRT.

The HSR Site Plan **(Figure 6.2)** and the MTF site concepts in Section 5 provide proximate locations for parking, bus access, other vehicle access (i.e. transportation network companies (TNCs), kiss & ride), bicycle access and even heliport access for rail users. These concepts identify possible locations that will be further evaluated during final design.

7 Traffic Circulation

Several transportation ingress and egress routes to and from the MTF site were assessed for primary transportation modes. These modes are summarized below in the following table and can be viewed in **Attachment 7**.

MULTIMODAL TRANSPORTATION FACILITY (MTF) SITE ANALYSIS
addressing Dallas High-Speed Rail Station Area Planning Study
TRAFFIC CIRCULATION

TRANSPORTATION MODE	INGRESS & EGRESS ROUTE EVALUATION		
	Route Description	Potential Fatal Flaw(s)	Potential Mitigation Option(s)
ROADWAY VIA: - Personal / Public / Private Vehicles - Private Bus / Shuttle - School Bus - Automobile Rideshare - Transportation Network Companies - Autonomous Vehicles - Car Share	City / Central Business District (CBD) streets, notably Lamar, Griffin, Cadiz and Hotel Streets and Riverfront Boulevard. TxDOT I-30 and I-35E highways via ramps and frontage roads.	Streets near the MTF Convention Center lack Kiss & Ride (loading / unloading) and bus bays.	Add bay storage adjacent to Lamar Street north of the I-30 / Lamar Street bridge or widen bridge in each direction (before it undegoes reconstruction by TxDOT) to accommodate a raised median-seperated bays. Supplement the bay necessity by allowing bus and drop-off access from Cadiz Street to / from the HSR's Parking Zone 1 located directly adjacent to Cadiz Street. Mitigate via link to proposed Streetcar route down Lamar Street to access the MTF/ Convention Center Station site.
ROADWAY VIA: - DART Bus - Shuttle Transit	DART Local Bus Routes serving Convention Center Station, notably Local Routes 11, 19, 21, 26, 29, 52, 59, 60, 155, 161, and 749; Express Routes 205, 208, 210, 278, and 283	See above bus bay deficits.	See above bus bay mitigation.
ROADWAY VIA: - Bicycle	City / CBD streets.	No notable bike lane other than Jefferson Street Viaduct bike lane and Young Street semi-shared lane(s) which may cause accidents or otherwise hamper this mode's usage / reliability.	Cater the Jefferson Street Viaduct bike lane via the PRT option noted below. Collaborate with TxDOT on is future resonstruction of the Lamar and Griffin Street bridges over I-30 to optimally install bike lanes, as space/ROW allows.
DART LIGHT RAIL: **- Existing**	Red & Blue Lines at Convention Center Station	No current circulation fatal flaws.	N/A
DART LIGHT RAIL: **- D2**	Along Griffin Street and Commerce Street to east of I-345; transitions to tunnel at Woodall Rodgers Freeway to Cesar Chavez Boulevard. Intoduces four new Stations: Museum Way at surface and Metro Center (at Pacific Avenue), Commerce Street (between Akard & Ervay) and CBD East (between Main Street & Pacific Avenue) all underground.	Confined downtown area with narrow street (D2) lanes along Jackson.	No mitigation in that DART Express Bus Routes 206, 278 and 283 involving Young Street appear to get passengers to Lamar Street.
DALLAS STREETCAR	Existing along Zang Boulevard and Houston Street Viaduct; from N. Beckley Avenue to Young Street. Proposed along Lamar Street.	No current circulation fatal flaws	N/A
URBAN AERIAL RIDESHARE (by Transportation Network Companies)	At Convention Center helipads (between Hotel Street & S. Lamar Street)	No designated dropoff location other than the HSR-proposed pedestrian bridge; street congestion may result, for exmaple Cadiz St vehicles will want to acces Lamar Street and the helipad for passenger loading/unloading. Back and for the pedestrian bridge, as opposed to the loop transit system may be cumbersome/inefficient.	Provided more than one means to access the helipad; see PRT mitigation option below.

MULTIMODAL TRANSPORTATION FACILITY (MTF) SITE ANALYSIS addressing Dallas High-Speed Rail Station Area Planning Study TRAFFIC CIRCULATION			
TRANSPORTATION MODE	INGRESS & EGRESS ROUTE EVALUATION		
	Route Description	Potential Fatal Flaw(s)	Potential Mitigation Option(s)
DEDICATED GUIDEWAY / GROUP RAPID TRANSIT (GRT) (People Movers)	Envisioned herein as an elevated GRT podcar loop located adjacent to Hotel Street; from Convention Center to east Cadiz Street at HSR Station.	Current concept (assuming a ground line and the concept portal at Jefferson St Viaduct) appears to conflict with the Conv. Ctr columns, Hotel St travel lane count, Jefferson St bridge columns and adjacent parking garage. Current concept (assuming an elevated line and the concept portal at Jefferson St Viaduct) appears to conflict with the Conv. Ctr building and the Jefferson St parking garage, as well as decending adequately to meet the Union Station at ground level.	Omit the Union Station leg as unneccessary. Make full use of the GRT and have the existing and future development buildings accommodate the PRT as a shared space solution which could be on either side of Hotel Street or directly above the street. The ground level option is not idea since it takes up space and does not directly link the helipad or HSR at the same elevation that passengers are loading / unloading.
BICYCLISTS, SCOOTERS & PEDESTRIANS	- Along sidewalks adjacent to CBD Streets. - Potential future I-30 Deck Park	Potential deck park issues via impacts to the existing I-30 overhead highway signs mounted on the S. Lamar Street and UPRR bridges. S. Lamar St sidewalks are obstructed by utility poles. Does the deck Park conflict with the potential future Concention Center expansion over I-30 as shown in the City of Dallas' Convention Center Master Plan (circa 2004)? This expansion over I-30 was located between Hotel Street and Griffin Stretand between Griffin Street and Akard Street (TxDOT's Project Pegasus Urban Design Summary.	If necessary, condense or configure the suggested deck park width to allow for continued mounting of the I-30 overhead signage, or mimic signage mounts utilized benath the Woodall Rodgers Freeway deck park.

Attachment 8 provides annotated maps for each mode of transportation, describing how each mode would theoretically interact with the MTF site. The summary of each mode's traffic circulation is summarized in the following section.

7.1 Public, Private and Autonomous Vehicles, Car Share, and Automobile Rideshare (by Transportation Network Companies)

(Refer to **Attachment 8** Pages 2 and 3)

This mode focused and assessed roadways that included city streets, as well as existing and future highway routes regarding TxDOT's ongoing phased reconstruction of the I-30 and I-35E highway corridors which directly and indirectly serve the Convention Center (MTF site) vicinity. The frontage roads and access ramps associated with each highway have been determined to be acceptable in serving the MTF site's traffic circulation.

The city street system also provides acceptable circulation primarily via Lamar, Griffin, Cadiz and Hotel Streets and Riverfront Boulevard. Hotel Street and the adjacent vicinity surrounding the street is currently very underutilized, and there is an opportunity to serve the various traffic circulation modes near the MTF, as noted in later mode descriptions. Another opportunity identified in the HSR DEIS is to more directly serve the proposed HSR Parking Zone 1 by providing passenger drop off / pick up access to Zone 1 directly from Cadiz Street. This can provide efficient ramp access links to the highway corridors and, in turn, alleviate traffic / mode congestion at the MTF and more directly serve the HSR passengers via Parking Zone 1.

7.2 DART Light Rail, Private Bus / Shuttle Transit, Preferred D2 Orange & Green Lines, and Existing Streetcar & Proposed BRT Streetcar

(Refer to **Attachment 8** Pages 4 thorough 6)

These mass transit travel options were assessed for access to the MTF and how to best load/unload passengers and/or park at or near the MTF. As it currently operates in serving Convention Center Station via its Red and Blue Routes, DART's light rail and bus systems would continue to do so in the future when the MTF is operational, likewise for DART's preferred Orange and Green Routes in combination with bus route 283 access to Convention Center Station. As the Oak Cliff Streetcar line presently terminates just south of Union Station, a bus route 283 connection from the streetcar to the MTF via the Convention Center rail station provides a good connection opportunity.

DART and private bus access for the HSR passengers could potentially be catered if the previously stated access from Cadiz Street to the HSR Parking Zone 1 was realized. Relatedly, this mode assessment needs to include efficient accommodations of both bus and private vehicles via the installation of pull-out lanes / kiss-and-ride bays along Cadiz (and adjacent Hotel) Streets.

As currently proposed by others, the Streetcar route proposed along Lamar Street would also provide ample ingress and egress circulation in serving the MTF site at Lamar Street.

7.3 Urban Aerial Rideshare (by Transportation Network Companies)

(Refer to **Attachment 8** Page 7)

This theorized mode option can be adequately served by the existing helipads atop the Convention Center parking garage located adjacent to Lamar Street. To increase the value and usage of this mode, the HSR site logistics include a potential pedestrian bridge linking the helipads. In place of the pedestrian bridge, the People Mover / PRT option described below may further enhance the Urban Aerial mode.

7.4 Dedicated Guideway / Group Rapid Transit (People Movers)

(Refer to **Attachment 8** Page 8)

As previously referenced, this elevated People Mover / PRT loop route option would supplement the back-and-forth pedestrian bridge option and create secondary benefits such as:

- No-wait continuously circulating, driverless Podcars directly linking the Urban Rideshare helipad (and kiss-and-ride bay access beneath the helipad on Lamar Street), the HSR Station and Houston / Jefferson Street Viaduct bike route / streetcar routes;
- Podcars accommodate bikes and luggage;
- All-weather transportation;
- Underneath space for other MTF modes and site development objectives; and
- Shared-space linkage to and within existing and future urban scape buildings (see Slide 8 example).

7.5 Bicyclists, Scooters & Pedestrians

(Refer to **Attachment 8** Page 9)

A reoccurring pedestrian and urban design challenge is pedestrian accommodation in the form of adequate sidewalk installments and widths, crosswalks and American with Disabilities Act (ADA)wheelchair ramp access. The MTF site is no exception, given the surrounding I-30 and I-35E highways. However, the TxDOT Dallas District anticipated this travel mode during the mid-2000s when it engaged the City of Dallas during TxDOT's design of the future downtown highway systems. This design collaboration and its accompanying Urban Design package was branded Project Pegasus and resulted in TxDOT's design accommodation of future deck parks spanning the "Canyon" portion of I-30, the first park generally located between DART / UPRR line eastward to Griffin Street. In addition, TxDOT's design included accommodation of future structural columns necessary to support a future Convention Center expansion southward across I-30. This expansion was noted in the City's Convention Center Master Plan circa 2004. Regardless of whether this expansion is still being pursued, the deck parks would individually be a positive and aesthetic means to link the HSR and MTF and enhance both this segment of the central business district and surrounding, underutilized locale south of I-30.

With or without the deck parks, TxDOT's future replacement (via Project Pegasus design) of the Lamar Street bridge over I-30 is an opportunity to install optimal sidewalk widths and features, as opposed to relying on the existing sidewalks, which are hampered by utility poles located directly within the sidewalks and discourage foot traffic/passage.

8 Multi-Modal Connectivity

Multimodal connectivity to the proposed Multimodal Transportation Facility is a key element in the optimum planning of the facility. To be successful, the location must blend many different transportation modes considering not only proximity, but also transfers, connectivity, and passenger accommodations. This not only maximizes the utility of the facility for mobility users and visitors, but also maximizes the economic benefit of the facility for purposes of development and private investment.

The site location is near existing infrastructure for the major transit modes including the Trinity Railway Express commuter rail, the light rail system, DART fixed route bus services, and the Dallas Street Car with minimal modification required to provide good connectivity in comparison to the magnitude of the overall development. Additionally, commercial transportation partners should also be considered during development to ensure a variety of transportation choices. For all concepts, lighting, wayfinding signage and streetscape enhancements would be needed to improve the pedestrian experience between the transportation modes.

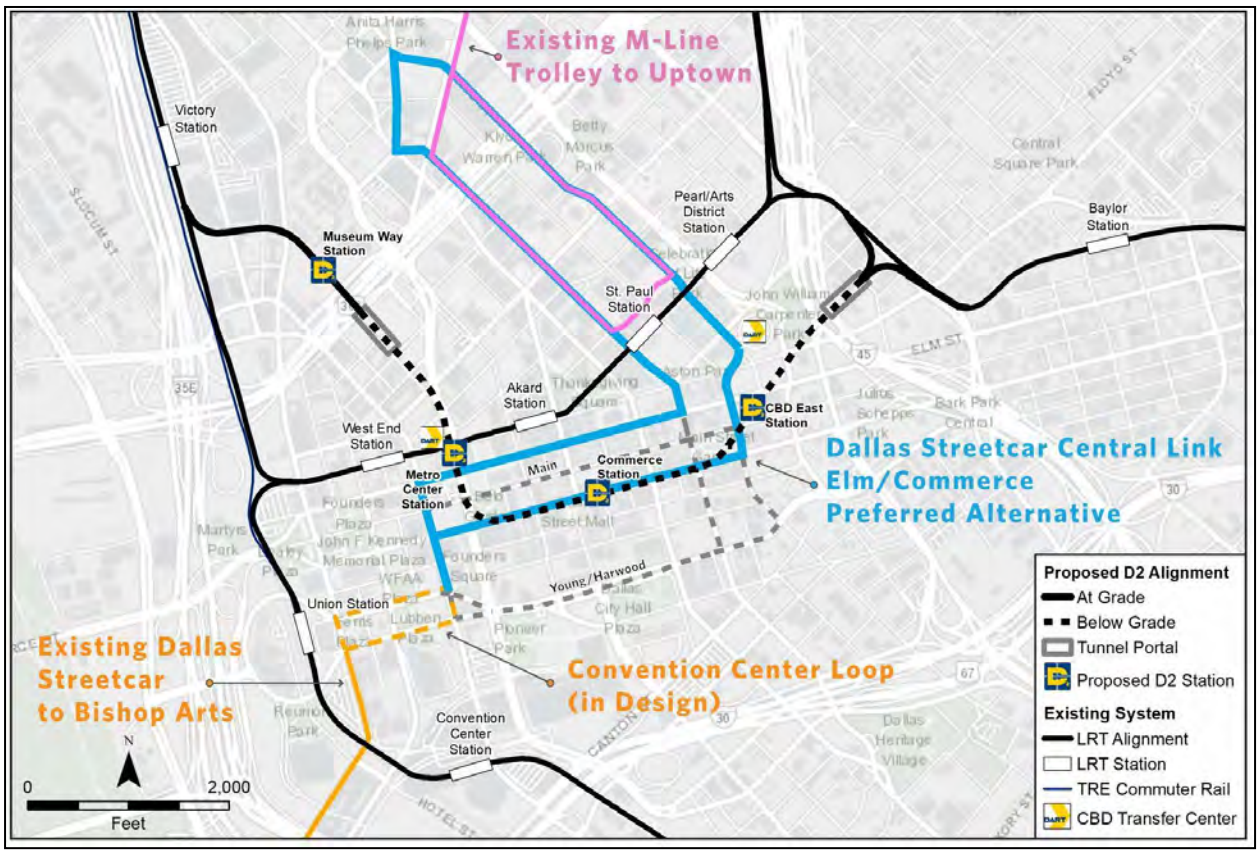
Bus: Bus connectivity can be provided via Hotel Street with bus bays on both sides and/or the space between Hotel Street and the potential high-speed rail line extension to the west. Bus bays can also be incorporated into a perimeter road around the west development site. Modifications to the bus routes will require planning and coordination with DART. Space in the bus bays for private bus companies and regional commuter services should also be considered to accommodate over the road coaches, private charters, or executive travel buses (i.e. Vonlane). Consideration for relocation of Greyhound to this site would require further study to understand the how many daily buses and passengers would need to be accommodated.

Automobile: Automobile access for drop off/pick up by personnel, taxi, executive car services, transportation network companies (TNC), or autonomous vehicles can be achieved via Hotel Street outside the bus bays and/or in the space between Hotel Street and the potential high-speed rail line extension to the west. Drop off/pick up loops and spaces can also be incorporated into a perimeter road around the west development site. The growing use of TNCs and the emergence of autonomous vehicles and similar technologies provides a planning challenge but will be an important consideration for this development and for future phases of study.

Streetcar: Connectivity with the Dallas Street Car can be provided with a pedestrian trail to the existing stop at Union Station or through the Convention Center with a short walk up Lamar Street to the proposed Convention Center loop extension to the Dallas Street Car system. A map of the existing street car system is shown here. The alignment for the next phase of Streetcar expansion is shown in **Figure 8.2** showing various alternative alignments.

Figure 8.1: Streetcar Alignment (from DART)

Figure 8.2: Streetcar Expansion (from DART)



Although the streetcar expansion does not directly connect to the convention center, current streetcar operations routes vehicles through Convention Center Station outside of revenue operation to transport streetcars to and from the vehicle maintenance facility. Although a future streetcar connection to this station would require infrastructure modification and operational adjustments, it should be considered to improve multimodal connectivity.

Commuter Rail: Commuter Rail connectivity is achieved through the new Trinity Railway Express terminal station at the proposed Multimodal Transportation Facility. This is the most significant extension of an existing transit system.

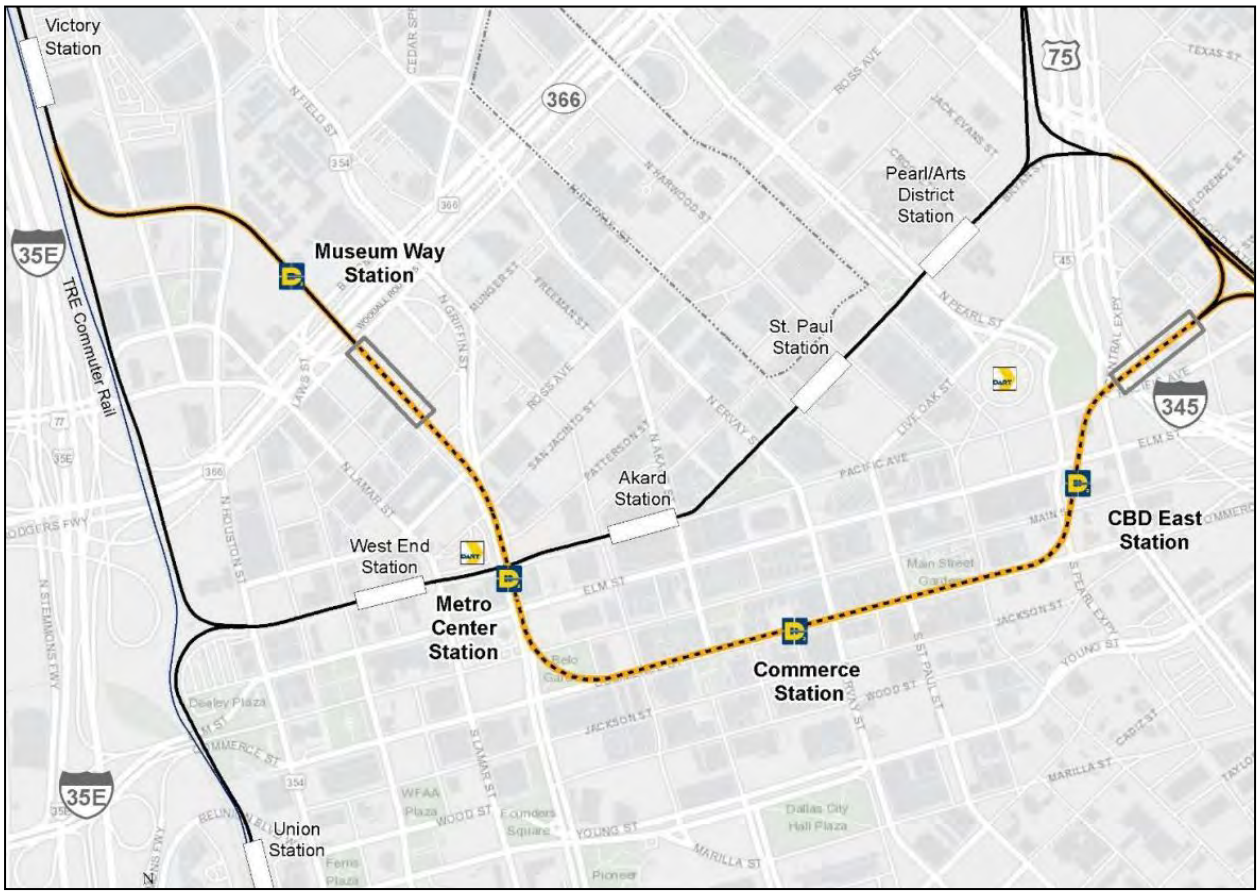
Intercity Passenger Rail: The Amtrak station could be moved from Union Station to the Multimodal Transportation Facility. Amtrak already passes through this location. If desirable, the new facility would need to accommodate Amtrak ticketing offices and an area for passenger waiting. Station location and passenger boardings would need to be coordinated with the extension of the TRE as track space is limited.

Uber Elevate & Helicopter: Access to helicopter or future Uber Elevate transportation can be available from the existing heliport or the building rooftops in the proposed development.

Bicycle: A map of the City of Dallas bike routes and trails can be found in the City's 2011 Dallas Bike Plan and 2011 Dallas Bike Plan Addendum. Shared bike access lanes from the Katy Trail, Trinity Strand Trail, and Santa Fe Trail and the protected bike lane across the Jefferson Viaduct all provide bicycle access to Union Station. Connectivity to the proposed Multimodal Transportation Facility from Union Station can

be achieved via a route from Houston Street and Hyatt Regency Hotel Drive to Hotel Street. Additional signage and striping may be needed to clarify this route.

Figure 8.3: DART D-2 Corridor Alignment (from DART)



Light Rail: Light Rail connectivity from the development site to the existing Convention Center light rail station on the Red and Blue lines will be either through the inside of the remodeled convention center or around the north side of the convention center. Access around the north outside is dependent on the modification plans for Hall F. The current D2 alignment is along Commerce Street with the Commerce Station approximately 10 blocks from the Convention Center Station. Connectivity to the Orange and Green Lines will be via the Red and Blue lines to West End Station and via pedestrian transfer at the new D2 Metro Center Station. A map of the proposed D2 alignment is provided here for reference.

9 Federal Application Requirements

The potential sources of federal funding for the Dallas High Speed Rail Multimodal Facility along with the most likely NEPA requirements necessary for project implementation are summarized in this section.

The possible funding sources and NEPA requirements are provided as an overview consistent with this early stage of project definition for the HSR Multimodal Facility.

9.1 Federal Funding Opportunities

Federal funding opportunities may be possible from many United States Department of Transportation (USDOT) agencies. Those agencies included here are the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA) and the Federal Railroad Administration (FRA). For each agency, specific grant programs considered most applicable for this project are described. Information is provided regarding why the grant program is applicable, key selection criteria for award, hints about the application process, local match requirements, the application schedule and the necessary 'readiness' status of a project required to qualify. It is important to mention that a grantee is not limited to applying for just one of the opportunities below. It is possible to apply for multiple grants for the same project in many cases. Coordination with the required federal agency will be key in any single or multiple grant application attempt.

In addition to grant opportunities, there are several low-interest federal programs through the Build American Bureau, part of USDOT, to streamline credit opportunities for infrastructure projects while also promoting innovation and public/private partnerships. These credit opportunities include Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Improvement Financing (RRIF), and Private Activity Bonds (PAB).

9.1.1 FTA - Capital Investment Grants – 5309

This is FTA's primary grant program for funding major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit. It is a discretionary grant program unlike most others in government. Instead of an annual call for applications and selection of awardees by the Federal Transit Administration (FTA), the law requires that projects seeking CIG funding complete a series of steps over several years to be eligible for funding. The law also requires projects to be rated

Relative Appropriateness to This Project

The Dallas project would compete with other similar transit projects; therefore, it would not compete with highway or railroad projects like it would for the BUILD program (see section 9.1.4). It also is not impacted by other transit submittals in Texas. The uniqueness of the Dallas project is its potential benefits to Core Capacity of the downtown transit system, a relatively new aspect of the CIG program. Each project competes on its own merits nationally based on the established rating criteria. At times the number of approved projects and required funding exceeds the FTA allotted budget in a given fiscal year which may delay funding. It is worth noting that DART has used this program successfully for many years and has an excellent reputation with FTA. Like the approach with the Dallas Street Car, the City & DART would need to decide who is the best 'applicant' in consultation with FTA.

by FTA at various points in the process according to statutory criteria evaluating project justification and local financial commitment.

Selection Criteria

The CIG program has two primary categories of selection criteria. First is Project Justification which includes measures describing mobility benefits, environmental benefits, congestion relief, economic development, land use benefits and cost effectiveness. Second is Local Financial Commitment which includes evidence of stable and dependable financial sources available from all local match participants and the implementing agency. Evidence must also be shown that the implementing agency can effectively operate and maintain the project over time.

Application Process

As noted above, the law requires that projects seeking CIG funding complete a series of steps over several years to be eligible for funding. For New Starts and Core Capacity projects, the law requires completion of two phases in advance of receipt of a construction grant agreement – Project Development and Engineering. For Small Starts projects, the law requires completion of one phase in advance of receipt of a construction grant agreement – Project Development.

Local Match

The maximum Federal award is 80% of capital costs (all Federal sources), however additional 'points' are given to projects that offer a local match greater than 20%. This approach is strongly encouraged of all applicants.

Application Schedule

An applicant can start the process at any time. As this is a multi-year process, enough project definition must be documented so FTA can consider the project is strong enough technically to enter the process. To continue successfully and allow project development, preliminary engineering, environmental analysis and design to evolve, FTA will rate the project using established criteria submitted by the applicant to establish continued eligibility for funding.

Required Project Readiness

Project 'readiness' in this case is a function of obtaining a successful FTA project rating during each major step in the process

9.1.2 FTA - Pilot Program for Transit-Oriented Development Planning – Section 20005(b)

The Pilot Program for TOD Planning helps support FTA's mission of improving public transportation for America's communities by providing funding to local communities to integrate land use and transportation planning with a new fixed guideway or core capacity transit capital investment. Comprehensive planning funded through the program must examine ways to improve economic development and ridership, foster multimodal connectivity and accessibility, improve transit access for pedestrian and bicycle traffic, engage the private sector, identify infrastructure needs, and enable mixed-use development near transit stations.

Relative Appropriateness to This Project

This grant won't completely fund the project in question. If successful, however, this grant will greatly help implementation of the project's TOD objectives. A strong TOD and/or joint development aspect will support future applicable grants, such as the CIG program.

Selection Criteria

Successful TOD depends on access and density around the transit station. Convenient access to transit fosters development, while density encourages people to use the transit system. Focusing growth around transit stations capitalizes on public investments in transit and provides many benefits grant applicants must emphasize, including:

- increased ridership and associated revenue gains for transit systems
- incorporation of public and private sector engagement and investment
- revitalization of neighborhoods
- a larger supply of affordable housing
- economic returns to surrounding landowners and businesses
- congestion relief and associated environmental benefits
- improved safety for pedestrians and cyclists through non-motorized infrastructure

Application Process

All applicable forms on-line must be filed out for FTA review along with any supplemental information the applicant deems appropriate.

Local Match

As Grant awards are typically between $250,000 to $1,200,000, any local match is either small or non-existent.

Application Schedule

Applicants apply on an annual basis early in the federal fiscal year. Awards are announced in the fall.

Required Project Readiness

Given this program supports front-end planning, the 'project' does not need to be that far advanced although a demonstrated commitment must be shown as part of the application process.

9.1.3 FTA - Pilot Program for Expedited Project Delivery - 3005(b)

The Pilot Program for Expedited Project Delivery allows FTA to select up to eight capital transit projects annually (as funds are authorized) for expedited grant awards. Projects must be supported through a public-private partnership, be operated and maintained by employees of an existing public transportation provider, and have a federal share not exceeding 25 percent of the project capital cost.

Relative Appropriateness to This Project

This is a relatively new program and the grant process is still being worked out. FTA and US DOT has been encouraging public-private partnerships for some time, so if the implementation plan for the Dallas project involves a strong partnership of this type, success is possible.

Selection Criteria & Application Process

FTA intends to work with selected project sponsors to further define the steps that must be completed before a construction grant can be awarded under the Pilot Program. FTA is particularly interested in working with project sponsors who are considering value capture techniques as part of their project financing. The applications for FY 2018 were limited to a 10-page letter of interest.

Local Match

The local commitment is high as the federal share should not exceed 25 percent of the project capital cost.

Application Schedule

If the program continues annually, applications are due in November of each year

Required Project Readiness

Because this is a new program, it is yet unclear how advanced a project needs to be to qualify. That said a project must be advanced enough to be attractive to private sector partners willing to participate. An agreement between all parties regarding responsibilities of the public agency(ies) and private entities should be established in advance.

9.1.4 US DOT - Better Utilizing Investments to Leverage Development (BUILD) Transportation Grants Program (formerly TIGER)

U.S. DOT's Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants program funds investments in transportation infrastructure, including transit. BUILD Transportation grants replace the Transportation Investment Generating Economic Recovery (TIGER) grant program. Project applications are evaluated and selected based on established criteria on a nationwide basis, however geographic considerations are highly considered to distribute awards throughout the US.

Relative Appropriateness to This Project

This grant program has the benefit of both certainty and frequency. Annual awards make the process efficient. Although a national program, Texas has fared well in previous years. For the Dallas project, the timing of a successful application depends on local support through significant matching funds and environmental clearance. One drawback is that the Dallas transit project will compete with major highway and railroad infrastructure projects and it will be important to understand what other transportation projects are being submitted for BUILD funds across the state, given the relative importance of geographic considerations in project selection. Another drawback is the tendency for these grants to favor rural projects and limitations placed upon the amount awarded.

Selection Criteria
The criteria included safety, economic competitiveness, quality of life, environmental protection, project cost and state of good repair. Further criteria included innovation, such as projects supporting Autonomous Vehicles infrastructure, broadband service to underserved communities, as well as projects that demonstrate partnerships between the public and private sectors, and non-Federal revenue for transportation infrastructure investments.

Application Process
Applicable forms are available once the program for a given year is officially announced. All application materials must be submitted on the available forms. Local agency support including official letters should be included

Local Match
Maximum awards are set at 80% of capital costs. Applicants are best positioned for awards if they provide a local match greater than the minimum 20%.

Application Schedule
Applications are requested once a year, usually by mid-year so reviewers can announce awards by the end of a fiscal year.

Required Project Readiness
Shovel ready was a common term for TIGER Grants, meaning that environmental clearance was already achieved or that the environmental process was well underway.

9.1.5 FHWA - Flexible Funding - Congestion Mitigation and Air Quality Program - 23 USC 149

CMAQ provides funding to areas in nonattainment or maintenance for ozone, carbon monoxide, and/or particulate matter. States that have no nonattainment or maintenance areas still receive a minimum apportionment of CMAQ funding for either air quality projects or other elements of flexible spending. Funds may be used for any transit capital expenditures otherwise eligible for FTA funding if they have an air quality benefit.

Relative Appropriateness to This Project
The Dallas-Ft Worth area is a designated non-attainment area for Ozone so grant funds are apportioned each year to the NCTCOG region. Most surface transportation projects will compete for this program, so funding will be somewhat limited, yet CMAQ funds could be one of numerous funding components for this project.

Selection Criteria
Among the selection criteria are the projected emissions reductions estimated from the proposed project including volatile organic compounds, Carbon Monoxide and/or particulates. Transit projects must also demonstrate a ridership benefit.

Application Process
This is an annual program through a “call for projects” announcement, typically from NCTCOG.

Local Match
The Federal Share for CMAQ is 80%

Application Schedule
Although the program is annual in nature, funds are provided after project completion.

Required Project Readiness
Given that funds are provided after project completion, it is best to contact either FHWA or NCTCOG

regarding how far in advance of completion applications will be accepted.

9.1.6 FHWA - Flexible Funding - Surface Transportation Block Grant Program - 23 USC 133

Provides funding that may be used by states and localities for a wide range of projects to preserve and improve the conditions and performance of surface transportation, including highway, transit, intercity bus, bicycle and pedestrian projects.

Relative Appropriateness to This Project

The Dallas-Ft Worth area is a designated recipient of STB funds, so monies are apportioned each year to the NCTCOG region. Practically all surface transportation projects will compete for this program, so funding will be quite limited. That said, STB funds could be one of numerous funding components for this project.

Selection Criteria

Most projects become eligible if they fall into the extensive list of categories allowed by law which includes transit capital investments. In addition, to be eligible, projects must be in the NCTCOG TIP and be consistent with the COG metropolitan transportation plan.

Application Process

This is an annual program through a “call for projects” announcement, typically from NCTCOG.

Local Match

The Federal Share for CMAQ is 80%

Application Schedule

Although the program is annual in nature, funds awarded must be obligated within three years of award.

Required Project Readiness

It is best to contact either FHWA or NCTCOG regarding how far in advance of completion applications will be accepted.

9.1.7 FRA – Consolidated Rail Infrastructure and Safety Improvements Program (CRISI)

This program provides a comprehensive solution to leverage private, state and local investments to support safety enhancements and general improvements to infrastructure for both intercity passenger and freight railroads. Both services primarily operate over privately-owned and maintained infrastructure, allowing for strong private, capital market investment that generates public benefit, including public-private partnerships among other models.

Relative Appropriateness to This Project

Congress authorized this grant program for the Secretary to invest in a wide range of projects within the United States to improve railroad safety, efficiency, and reliability; mitigate congestion at both intercity passenger and freight rail chokepoints; *enhance multi-modal connections*; and *lead to new or substantially improved Intercity Passenger Rail Transportation corridors*. Additionally, the program includes rail safety projects, such as grade crossing enhancements, and *rail line relocations and improvements*. Applicable work also includes rail regional and corridor planning, *environmental analyses*, research, workforce development, and training. Although there are many aspects of the MTF project applicable, this grant is competitive nationwide.

Selection Criteria

Project selection is broadly based on a series of factors that include strength of the project narrative and statement of work for the grant funding track or tracks covered in the application (see Application process), project benefits and overall technical merit. Technical merit includes the relative results of benefit-cost analysis and the regional/national contribution of the project to the area's economic vitality.

Application Process

This is an annual program through a "notice of funding availability" announcement from the FRA. Applicants are not limited in the number of projects for which they seek funding. FRA will not limit eligible projects from consideration for funding for planning, environmental, engineering, design, and construction elements of the same project in the same application. Applicants can include multiple phases of a project in the same application. However, depending on the project, applications for multiple phases of project development may not contain sufficient detail with regards to scope, schedule, or budget for all phases of the application to compete well in the application review process.

An applicant must identify one or more of the following four tracks for an eligible project: Track 1—Planning; Track 2—PE/NEPA; Track 3—FD/Construction; or Track 4—Research, Safety Programs and Institutes.

Local Match

The maximum Federal share is 80%, however preference is given to applicants who request 50% or less from the FRA. Preference is also given to applicants who have commitments for the local match from multiple sources. Local match is also allowed from public and private sources.

Application Schedule

Once the Notice of Funding Availability is issued, typically 2-3 months are given to complete the application process.

Required Project Readiness

This depends on the project stage and the funding track being applied for. As examples, if final design is being applied for then the NEPA process must be at or near completion. If construction is being applied for then final design must be at or near completion. The FRA application forms and process description provides a detailed discussion of what is required for each project stage.

9.1.8 USDOT – Infrastructure for Rebuilding America (INFRA)

Only in its second year, INFRA evaluates highways and freight projects that align with national and regional economic vitality goals and seeks to leverage additional non-federal funding. This program is intended to increase the impact of projects by leveraging federal grant funding and incentivizing innovation and private sector participation. INFRA is open to both large and small projects. For a small project, the grant must be at least $5 million. For large projects, the grant must be at least $25 million.

Relative Appropriateness to This Project

Congress authorized this grant program for the Secretary to invest in a wide range of projects within the United States to leverage private investment and improve critical highway and freight infrastructure. Considering the potential for freight rail chokepoints through this area and the potential for private development, portions of the needed project improvements that provide public benefits could be eligible. Applicable work could include an extension or widening of the rail corridor in that area to support increased capacity or mitigate the potential loss of capacity through the extension of the Trinity Railway Express.

Selection Criteria

Project selection is broadly based on a series of factors that include strength of the project narrative, impact and benefit to the national freight or highway network, potential for innovation and non-federal participation. Technical merit includes the relative results of benefit-cost analysis and the regional/national contribution of the project to the region's and nation's economic vitality.

Application Process

This is an annual program through a "notice of funding availability" announcement from the USDOT. Applicants are not limited in the number of projects for which they seek funding and can submit multiple project components for funding. The USDOT does set aside 25% of the funds for rural projects.

Local Match

The maximum Federal share is 80%, however preference is given to applicants who request 50% or less from the USDOT. Preference is also given to applicants who have commitments for the local match from multiple sources. Local match is also allowed from public and private sources.

Application Schedule

Once the Notice of Funding Availability is issued, typically 2-3 months are given to complete the application process.

Required Project Readiness

The USDOT application forms and process description provides a detailed discussion of what is required for each project stage. By statute, the USDOT cannot award a large project unless that project is reasonable expected to begin construction within 18 months.

9.1.9 USDOT – Build America Bureau

The Build America Bureau serves as a single point of contact and coordination for projects sponsors seeking to apply for federal transportation credit projects and explore ways to access private capital in public private partnerships. The primary credit programs are TIFIA, RRIF, and PAB.

Relative Appropriateness to This Project

The Build America Bureau has example responses and a dedicated project development team that can assist project sponsors with identifying the best combination of DOT credit, funding programs, and innovative project delivery approached. This project is in an early enough stage that conversations with this bureau can help shape future strategy. Additionally, this project has the potential to have the innovation and private participation that the bureau is seeking. The FAST Act expanded project eligibility to include transit-oriented development projects.

Application Process

The Build American Bureau has a Credit Programs Guide that comprehensively describes the credit program and application processes. The initial steps include an Emerging Projects Agreements to outline the technical assistance to be provided by the Bureau and a Letter of Interest/Draft Application for assistance. Following these steps, the project sponsor will give an oral presentation intended to clarify the projects components including financing. After concluding its in-depth review of the creditworthiness of a project and related information submitted by potential applicants, along with the independent financial analysis report from the USDOT's independent financial advisor, and after the project sponsor's oral presentation, project sponsors of eligible projects will be invited to submit complete applications. The RRIF and TIFIA application forms for the current fiscal year required to request credit assistance is available on the Bureau website, which can be found at: https://www.transportation.gov/buildamerica.

Application Schedule

The length of the process is dependent upon the detail of the information provided during the initial phases of the projects. USDOT will notify the project sponsor within 30 days of receipt of application if the application is complete or additional information is sought. USDOT will notify of project approval no more than 60 days after notifying the project sponsor of receipt of a completed application.

9.2 Environmental Requirements (NEPA)

The federally-required National Environmental Policy Act (NEPA) process (42 U.S.C. § 4332 et seq.) and implementing regulations (40 C.F.R. Parts 1500-1508, 64 FR 25845, 23 C.F.R. § 771, 49 U.S.C. § 303 (formerly Department of Transportation Act of 1966, Section 4(f); National Historic Preservation Act (16 U.S.C. § 470); Clean Air Act as amended (42 U.S.C. § 7401 et seq. and 40 C.F.R. Parts 51 and 93); Endangered Species Act of 1973 (16 U.S.C. § 1531-1544); the Clean Water Act (33 U.S.C. § 1251-1387; and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. § 3601)) will apply to the Dallas Project, should federal funds be used.

NEPA requires federal departments and agencies to complete environmental reviews before decisions are made to entirely or partly finance, assist, conduct, regulate, or approve new or revised agency rules, regulations, plans, policies, programs, or specific projects. The type of review may be a simple Categorical Exclusion (CE), to a somewhat more complicated Environmental Assessment (EA), or up to a complex Environmental Impact Statement (EIS). The required level of review is determined early in project development via Project Scoping, in cooperation with the lead Federal Agency project sponsor. The regulatory topics summarized below may not always apply as they are project-specific. Depending on the lead Federal Agency, there may be special nuances associated with that agency's preferences for NEPA document preparation. In any event, potential project impacts are typically identified in the advanced project planning stage, with compliance occurring either during project design or during the construction phase.

The major impact categories are described below and include the applicable regulation or law and the agency or agencies involved. For each of the impact categories discussed, early and ongoing coordination is essential with the listed federal agency. In many cases, in addition to agency coordination, a permit must be obtained from a given agency for the project to proceed.

9.2.1 Acquisitions & Displacements

Following federal policies and procedures related to acquisition and relocation assistance, real property must be acquired, managed, and used in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. §§ 4601- 4655 and 49 C.F.R. part 24, the implementing regulation. Real property is defined in 49 C.F.R. §

18.3 as "land, including land improvements, structures and appurtenances thereto, excluding movable machinery and equipment." The acquisition of easements and rights of way are also considered real estate acquisitions.

9.2.2 Air Quality

The Clean Air Act of 1970 as amended stipulates air quality rules and regulations for the US. The DFW area is non-attainment for ozone. Any necessary mitigation plan shall be coordinated with Environmental Protection Agency (EPA) and Texas Commission on Environmental Quality

(TCEQ), if air quality impacts exist. Often, it can be shown that a transit project reduces VMT and, therefore, improves Air Quality. However, particulate emission impacts during construction may require special mitigation.

9.2.3 Biological & Natural Resources

If impacts exist, ongoing coordination with the Texas Parks and Wildlife Department (TPWD) and US Fish and Wildlife Service during construction is required: replacement vegetation will utilize native species; Section 7 of the Endangered Species Act requires the above agency coordination if a designated critical habitat is endangered by the Project. The City of Dallas also has local Tree Ordinances which would be applicable and require mitigation.

9.2.4 Cultural Resources (Historic & Archeological

Coordination with Texas Historical Commission (THC) through Memorandum of Agreement (MOA) may be required to obtain their concurrence and outline any potential mitigation, if warranted. If a property on the National Register of Historic Places is potentially impacted, Section 106 of the National Historic Preservation Act the Dallas Project will require a review by the Advisory Council on Historic Preservation (ACHP) and require a letter of concurrence from the ACHP, THC, and State Historic Preservation Office (SHPO).

9.2.5 Hazardous & Regulated Materials

Comply with all applicable federal and state regulations based on results of any phase I (as well as any needed subsequent) Environmental Site Assessments (ESA) for all property acquired for the Dallas Project. Additional regulations to follow are often specific to the type of hazardous material found, if any. Per the EPA Resource Conservation & Recovery Act (RCRA), a permit for hazardous material clean-up may be needed. Additionally, any existing structures that may be renovated (Dallas Convention Center or others) will require Asbestos Surveys, and proper coordination and notifications to the Texas Department of State Health Services (DSHS) at least ten working days in advance of any renovation or demolition. Proper documentation for the handling (profiling and disposal) of any regulated waste will be required for waste building material, soils, or affected groundwater identified on the Dallas Project.

9.2.6 Hydrology & Floodplains

If impacts are determined within the Trinity River Floodplain, the Dallas Project may need to obtain Trinity River Corridor Development Certificate (CDC) & coordinate with US Army Corps of Engineers (USACE) per Section 404 of the Clean Water Act. The Federal Emergency Management Agency (FEMA) as well as the City of Dallas Local flood plain ordinances will also require coordination and demonstrate compliance with the Local Floodplain Administrator.

9.2.7 Wetlands/Water Resources

While the Dallas Project's proposed location does not appear to affect or cross a Navigable Water, does not appear to have impacts associated by dredged or fill material to a Water of the US, wetland, and does not appear to affect the Trinity River levee, specific site information including exact fill types and amounts will be need to be determined once design is progressed and, if necessary, would most likely be permitted with a Nationwide Permit 14 (Linear Transportation Crossings) from the USACE in coordination with NCTCOG through a MOA as allowed through Section 214 Program of the Water Resources Development Act (WRDA). Section 408 of the Clean Water Act requires that projects which would take possession of, use, or cause injury to harbor or river improvements be reviewed and approved by the USACE. Section 404 permit would only be needed if Waters of the US are impacted by dredged or fill material and would require coordination with the USACE.

The EPA's National Pollutant Discharge Elimination System (NPDES) permit program, also authorized by the Clean Water Act Section 402, controls water pollution by regulating point sources that discharge pollutants into Waters of the US in Texas. The NPDES program is administered by the TCEQ, as part of the Texas Pollutant Discharge Elimination System (TPDES). Storm water runoff resulting from the Project would be addressed through compliance with the TPDES Construction General Permit 150000, most likely as a Large Site (over 5 acres disturbed). A Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SW3P) would be required for the Dallas Project. Copies of the NOI must be submitted to the receiving Multi Sector Storm Sewer System (MS4) Operator, and the City of Dallas also inspects permittees discharging to their MS4.

9.2.8 Section 4(f) Evaluation

The USDOT Act of 1966 (23 CFR 138 and 49 U.S.C. 303), often referred to as "Section 4(f)", and its implementing regulations found at 23 CFR Part 774, declares that it is national policy to make a special effort to preserve the natural beauty of the countryside, publicly-owned parks, recreation areas, wildlife or waterfowl refuges, or any historic sites of national, state or local significance. These property types whether privately or publicly owned are covered by Section 4(f). As the Dallas Project appears to affect publicly-owned parks, coupled with its proximity to historic sites of national, state, and local significance, documentation of compliance with Section 4(f) will likely be required as part of the NEPA process.

Lists of Most Likely Required Permits and Approvals Associated with the Dallas Project

Regulatory Program	Responsible Agency or Entity
Section 106 (Historic and Archeological	ACHP THC (SHPO)
Asbestos	DSHS
Permit to perform construction within a floodplain	FEMA, City of Dallas Local Floodplain Administrator
Section 402 CWA, Stormwater, TPDES General Permit for Stormwater Discharges associated with Construction Activities (TXR 150000)	EPA, TCEQ, City of Dallas
Section 404 Nationwide Permit	USACE
Section 408 (impact to USACE-owned facility)	USACE
Corridor Development Certificate	NCTCOG, Local Floodplain Administrator
Sewer/Utility modification activities	City of Dallas
Tree Removal	City of Dallas

10 Preliminary Cost Estimate

Most features associated with the MTF, the supporting infrastructure and its adjacent development are too preliminary in nature to support the development of a preliminary cost estimate at this time. The trackwork and basic platform configuration, however, are measurable and provided a sound basis for a track-related rough order of magnitude preliminary cost estimate. Additional improvements may be required of the UPRR as this MTF concept is developed further.

10.1 MTF Track-Related Rough Order of Magnitude (ROM) Estimate

This work is estimated to be $17.7M in Year of Expenditure (YOE), inclusive of construction and professional services.

10.2 Scope of Estimate

The track-related features addressed in this estimate are as follows.

10.2.1 Station Platform

The MTF rail station platform provide one platform edge for the Trinity Railway Express (TRE) and one platform edge for Amtrak. The platform is assumed to be basic in nature and does not include enhanced station amenities. Light Rail Transit (LRT) service is provided by the DART Convention Center Station and is not included in this estimate.

10.2.2 Trackwork

This estimate is intended to include all trackwork necessary to bring TRE service from Union Station to terminate at the MTF and Amtrak service from Union Station, through the MTF and onward to the existing Amtrak alignment beyond the MTF. It does not include any modifications to the LRT or Streetcar since modifications to those systems are not expected to be necessary.

The trackwork modifications allow for freight service to generally maintain the same capacity and configuration. Refinements during final design should be able to accommodate requirements from UPRR to fully address capacity, freight expansion and configuration. Additional coordination with freight railroads will occur in subsequent project phases.

10.3 Cost Estimating Format

This estimate is developed using the Standard Cost Categories (SCC) Format as prescribed in the Federal Railroad Administration's Capital Cost Estimating Guidance for Project Sponsors. This guiding document provides the cost estimate template from the RFA and refers to the Capital Cost Database held by the Federal Transit Administration (FTA). The database draws cost data from 28 projects throughout the country. One representative project example of the type of freight rail and station work to be performed on the MTF was the Salt Lake City – Weber County Commuter Rail line, which was used as a basis for most unit rates in the MTF estimate.

10.4 Contingency

In accordance with FTA guidelines, a 30% contingency was allocated to each line item to account for project scope that becomes more refined throughout design advancement. A 15% unallocated contingency is applied to the total cost to account for unanticipated project costs during final design and construction.

Preliminary Cost Estimate – Track Related Elements

FRA MAIN WORKSHEET — Issue Date 5/4/16

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Current Phase : **Fatal Flaw Evaluation** — Yr of Revenue Ops: 2023

Standard Cost Category		Unit	Quantity	Base Year Dollars						YOE Dollars Total (X000) (from Inflation Worksheet)
				Without Contingency (X000)	Allocated Contingency (X000)	TOTAL (X000)	Unit Cost (X000)	Percent of Construction Cost	Percent of Total Project Cost	
10	**Guideway & Track Elements**	**Lineal Feet of Guideway**	1,600	2,523	757	**3,279**	2	31%	22%	**3,516**
10.01	Guideway: At-grade exclusive right-of-way	Lineal Feet of Guideway	1,600	446	134	580	0			
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Feet of Guideway		0		0				
10.030	Guideway: At-grade in mixed traffic	Lineal Feet of Guideway		0		0				
10.040	Guideway: Aerial structure	Lineal Feet of Guideway		0		0				
10.041	Bridges	Lineal Feet of Guideway		0		0				
10.042	Viaduct	Lineal Feet of Guideway		0		0				
10.043	Other Structure	Lineal Feet of Guideway		0		0				
10.044	Unspecified	Lineal Feet of Guideway		0		0				
10.050	Guideway: Built-up fill	Lineal Feet of Guideway		0		0				
10.060	Guideway: Underground cut & cover	Lineal Feet of Guideway		0		0				
10.061	Cut & Cover Guideway Soft Soils	Lineal Feet of Guideway		0		0				
10.062	Cut & Cover Guideway Hard Soils	Lineal Feet of Guideway		0		0				
10.063	Cut & Cover Guideway Vent Soft Soils	Lineal Feet of Guideway		0		0				
10.064	Cut & Cover Guideway Vent Hard Soils	Lineal Feet of Guideway		0		0				
10.065	Unspecified	Lineal Feet of Guideway		0		0				
10.070	Guideway: Underground tunnel	Lineal Feet of Guideway		0		0				
10.071	Bored Earth Open	Lineal Feet of Guideway		0		0				
10.072	Bored Earth Close	Lineal Feet of Guideway		0		0				
10.073	Bored Earth Mixed Shield	Lineal Feet of Guideway		0		0				
10.074	Bored Earth Mixes Shield SEM	Lineal Feet of Guideway		0		0				
10.075	Rock Drill & Blast	Lineal Feet of Guideway		0		0				
10.076	Rock Boring Machine	Lineal Feet of Guideway		0		0				
10.077	Sunken Tunnel	Lineal Feet of Guideway		0		0				
10.078	Unspecified	Lineal Feet of Guideway		0		0				
10.080	Guideway: Retained cut or fill	Lineal Feet of Guideway		0		0				
10.090	Track: Direct fixation	Track Feet		0		0				
10.100	Track: Embedded	Track Feet		0		0				
10.11	Track: Ballasted	Track Feet	2,241	876	263	1,139	1			
10.120	Track: Special (switches, turnouts)	Each Turnout	6	1,200	360	1,560	260			
10.130	Track: Vibration & Noise Dampening	Track Feet		0		0				
10.140	Special Structures	Lineal Feet of Guideway		0		0				
20	**Stations, Stops, Terminals, Intermodels**	**Stations**	1	4,986	1,496	**6,481**	6,481	61%	43%	**7,194**
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1	4,986	1,496	6,481	6,481			
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations		0		0				
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations		0		0				
20.031	Cut and Cover	Stations		0		0				
20.032	Bored Earth Soft Soils	Stations		0		0				
20.033	Bored Rock Hard Soils	Stations		0		0				
20.034	Unspecified	Stations		0		0				
20.040	Major stations, landings, terminals: Intermodal, ferry, trolley, etc	Stations		0		0				
20.050	Joint development	Stations		0		0				
20.060	Automobile parking multi-story structure	Spaces		0		0				
20.070	Elevators, escalators	Number		0		0				
20.071	Elevators	Number		0		0				
20.072	Escalators	Number		0		0				
20.073	Unspecified	Number		0		0				
20.080	Passenger Overpass	Number		0		0				
20.090	Underground Interconnecting Tunnel	Number		0		0				
20.091	Cut and Cover	Number		0		0				
20.092	Bored Earth Soft Soils	Number		0		0				
20.093	Bored Rock Hard Soils	Number		0		0				
20.094	Unspecified	Number		0		0				
20.100	Signage and Graphics	Number		0		0				
30	**Support Facilities: Yards, Shops, Admin. Bldgs**	**Number**	0	0	0	**0**		0%	0%	**0**
30.010	Administration Building: Office, sales, storage, revenue countin	Number		0		0				
30.011	Administrative Building	Number		0		0				
30.012	Central Control Facility	Number		0		0				
30.013	Central Revenue Counting Facility	Number		0		0				
30.014	Unspecified	Number		0		0				
30.020	Light Maintenance Facility	Number		0		0				
30.030	Heavy Maintenance Facility	Number		0		0				
30.040	Storage or Maintenance of Way Building	Number		0		0				
30.050	Yard and Yard Track	Number		0		0				
40	**Sitework & Special Conditions**	**Lineal Feet of Guideway**	1,600	48	14	**62**	0	1%	0%	**74**
40.010	Demolition, Clearing, Earthwork	Lineal Feet of Guideway	1,600	48	14	62	0			
40.020	Site Utilities, Utility Relocation	Lineal Feet of Guideway		0		0				
40.021	Urban Replacement In-Kind Public Utilities	Lineal Feet of Guideway		0		0				
40.022	Urban Replacement In-Kind Private Utilities	Lineal Feet of Guideway		0		0				
40.023	Urban Replacement Betterment Public Utilities	Lineal Feet of Guideway		0		0				
40.024	Urban Replacement Betterment Private Utilities	Lineal Feet of Guideway		0		0				
40.025	Suburban Replacement In-Kind Public Utilities	Lineal Feet of Guideway		0		0				
40.026	Suburban Replacement In-Kind Private Utilities	Lineal Feet of Guideway		0		0				
40.027	Suburban Replacement Betterment Public Utilities	Lineal Feet of Guideway		0		0				
40.028	Suburban Replacement Betterment Private Utilities	Lineal Feet of Guideway		0		0				
40.029	Unspecified	Lineal Feet of Guideway		0		0				
40.030	Haz. mat'l, contam'd soil removal/mitigation, ground water treatr	Lineal Feet of Guideway		0		0				
40.031	HazMat Abatement	Lineal Feet of Guideway		0		0				
40.032	Contaminated Soil Removal	Lineal Feet of Guideway		0		0				
40.033	Ground Water Treatment	Lineal Feet of Guideway		0		0				
40.034	Unspecified	Lineal Feet of Guideway		0		0				
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, pa	Lineal Feet of Guideway		0		0				

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				Without Contingency (X000)	Allocated Contingency (X000)	TOTAL (X000)	Unit Cost (X000)	Percent of Construction Cost	Percent of Total Project Cost	
40.050	Site structures including retaining walls, sound walls	Lineal Feet of Guideway		0		0				
40.051	Mechanically Stabilized Earth Walls	Lineal Feet of Guideway		0		0				
40.052	Concrete Walls	Lineal Feet of Guideway		0		0				
40.053	Other Walls	Lineal Feet of Guideway		0		0				
40.054	Unspecified	Lineal Feet of Guideway		0		0				
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Feet of Guideway		0		0				
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces		0		0				
40.071	Surface Parking Lot	Spaces		0		0				
40.072	Auto Access	Stations		0		0				
40.073	Bus Access	Spaces		0		0				
40.074	Bus Parking and Berthing	Spaces		0		0				
40.075	Unspecified	Spaces		0		0				
40.080	Temporary Facilities and other indirect costs during construction	Lineal Feet of Guideway		0		0				
40.081	Roadway Changes	Lineal Feet of Guideway		0		0				
40.082	Third-Party Work	Lineal Feet of Guideway		0		0				
40.083	Mobilization	Lineal Feet of Guideway		0		0				
40.084	Maintenance of Traffic (Railroad reroute, shutdown, reschedule, stage, phase, worker-protect, work-around)	Lineal Feet of Guideway				0				
40.085	Unallocated Indirect Costs	Lineal Feet of Guideway		0		0				
40.086	Unspecified	Lineal Feet of Guideway		0		0				
50	**Systems**	**Track Feet**	1,600	642	193	**835**	1	8%	6%	**1,027**
50.010	Train control and signals	Track Feet	2,241	383	115	498	0			
50.011	Train Control - Wayside	Track Feet		0		0				
50.012	Train Control - On Board Systems	Track Feet		0		0				
50.013	Train Control - Centralized Systems	Track Feet		0		0				
50.014	Unspecified	Track Feet		0		0				
50.020	Traffic signals and crossing protection	Track Feet		0		0				
50.030	Traction power supply: substations	Track Feet		0		0				
50.040	Traction power distribution: catenary and third rail	Track Feet		0		0				
50.041	Catenary	Track Feet		0		0				
50.042	Third Rail	Track Feet		0		0				
50.043	Power Distribution and Connections	Track Feet		0		0				
50.044	Unspecified	Track Feet		0		0				
50.050	Communications	Lineal Miles of Guideway		0		0				
50.051	Wired	Lineal Miles of Guideway		0		0				
50.052	Radio Based	Lineal Miles of Guideway		0		0				
50.053	Unspecified	Lineal Miles of Guideway		0		0				
50.060	Fare collection system and equipment	Stations	1	259	78	336	336			
50.061	Central Revenue Counting Systems	Stations		0		0				
50.062	Revenue Collection - In Station	Stations		0		0				
50.063	Revenue Collection - On Vehicle	Vehicles		0		0				
50.064	Unspecified	Stations		0		0				
50.070	Central Control System	Lineal Miles of Guideway				0				
	Construction Subtotal (10-50)	**Lineal Miles of Guideway**	1,600	8,198	2,459	**10,658**	6,484	100%	71%	**11,811**
60	**Row, Land, Existing Improvements**	**Lineal Miles of Guideway**		0	0	**0**			0%	**0**
60.010	Purchase or lease of real estate	Lineal Miles of Guideway		0		0				
60.011	Full Takes	Lineal Miles of Guideway		0		0				
60.012	Part Takes	Lineal Miles of Guideway		0		0				
60.013	Easement Acquisitions	Lineal Miles of Guideway		0		0				
60.014	Other Rights	Lineal Miles of Guideway		0		0				
60.015	Donated Value	Lineal Miles of Guideway		0		0				
60.016	Unspecified	Lineal Miles of Guideway		0		0				
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway		0		0				
60.021	Residential (Owners)	Lineal Miles of Guideway		0		0				
60.022	Residential (Tenants)	Lineal Miles of Guideway		0		0				
60.023	Business (Owners and Tenants)	Lineal Miles of Guideway		0		0				
60.024	Others (Personal Property Moves)	Lineal Miles of Guideway		0		0				
60.025	Unspecified	Lineal Miles of Guideway		0		0				
60.030	Services	Lineal Miles of Guideway		0		0				
60.031	Property Management	Lineal Miles of Guideway		0		0				
60.032	Agency	Lineal Miles of Guideway		0		0				
60.033	Contractor R/W Services (Title/Appraisal, etc)	Lineal Miles of Guideway		0		0				
60.034	Legal Services	Lineal Miles of Guideway		0		0				
60.035	Unspecified	Lineal Miles of Guideway		0		0				
60.040	Other Real Estate Costs	Lineal Miles of Guideway		0		0				
70	**Vehicles**	**Vehicles**	0	0	0	**0**			0%	**0**
70.060	Non-revenue vehicles	Vehicles		0		0				
70.061	Maintenance of Way Vehicles	Vehicles		0		0				
70.062	Automobiles	Vehicles		0		0				
70.063	Trucks	Vehicles		0		0				
70.064	Unspecified	Vehicles		0		0				
70.070	Spare parts/ Rotable Components	Vehicles		0		0				
70.080	Intercity Passenger Rail	Vehicles		0		0				
70.081	Diesel Locomotive	Vehicles		0		0				
70.082	Cab Car	Vehicles		0		0				
70.083	Bi-Level Coach	Vehicles		0		0				
70.084	Single Level Coach	Vehicles		0		0				
70.085	DMU	Vehicles		0		0				
70.086	EMU	Vehicles		0		0				
70.087	Unspecified			0		0				
80	**Professional Services**			2,214	664	**2,878**			19%	**3,696**
80.000	Planning and Concept Design		2%	164	49	213				

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				Without Contingency (X000)	Allocated Contingency (X000)	TOTAL (X000)	Unit Cost (X000)	Percent of Construction Cost	Percent of Total Project Cost	
80.010	Preliminary Engineering		2%	164	49	213				
80.020	Final Design		6%	492	148	639				
80.030	Project Management for Design and Construction		6%	492	148	639				
80.031	Agency Project Management			0		0				
80.032	Project Management Oversight Support			0		0				
80.033	Agency Force Account			0		0				
80.034	Unspecified			0		0				
80.040	Construction Administration & Management		5%	410	123	533				
80.050	Professional Liability and other Non-Construction Insurance		2%	164	49	213				
80.060	Legal; Permits; Review Fees by other agencies, cities, etc.		2%	164	49	213				
80.070	Surveys, Testing, Investigation, Inspection		1%	82	25	107				
80.080	Start up		1%	82	25	107				
80.081	Training/Start-up			0		0				
80.082	Safety Certification			0		0				
80.083	Off-Site Vehicle Testing, Test Runs			0		0				
80.084	Commissioning			0		0				
80.085	Unspecified			0		0				
80.090	Other			0		0				
81	**Subtotal (10-80)**	Lineal Feet of Guideway	1,600	10,412	3,124	**13,535**	8		90%	**15,507**
90	**Unallocated Contingency**	Total Amount		1,562		**1,562**			10%	**2,199**
91	**Subtotal (10-90)**	Lineal Feet of Guideway	1,600	11,974	3,124	**15,097**	9		100%	**17,706**
100	**Finance Charges**	Total Amount		0	0	**0**			0%	**0**
101	**Total Project Costs (10-100)**	Lineal Feet of Guideway	1,600	11,974	3,124	**15,097**	9		100%	**17,706**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	30.00%
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	15.00%
Total Contingency as % of Base Yr Dollars w/o Contingency	45.00%

10.5 UPRR Project Oversight Cost

This cost estimate does not include the cost for design review and construction oversight by UPRR. The MTF project stakeholders must enter into a separate agreement with UPRR to provide an allowance to reimburse UPRR.

10.6 Supporting Documentation

Refer to **Attachment 9** to find supporting documentation for this cost estimate.

11 Implementation Plan and Schedule

The following Implementation Plan outline and Implementation Schedule are intended to provide a foundation for the development of a formal approach once this project transitions into the feasibility stage.

11.1 Implementation Plan

The outlined implementation plan for the Dallas Multimodal Facility consists of an event sequence that includes detailed planning, as-needed environmental review and analysis, successful grant applications, careful design, active freight railroad coordination, coordination with Texas Central Railway (TCR), construction and construction management. Coordination with railroads, TCR and other agencies is vital to creating the Multimodal Facility in a timely manner. This implementation plan consists of a typical project development process whereby important decisions are reached at each major step to minimize total project investment. For example, key decisions about purpose, size, location, access, type of architecture and site development should be well understood by the conclusion of the feasibility step, so any design changes are kept to a minimum. In addition, the combination of a solid feasibility effort and a positive environmental finding will help establish opportunities for potential Federal grants. Once funding is more certain, and the implementation for TCR is better understood, design must be advanced appropriately so project risk is reduced prior to construction. The project implementation plan has many solicitation opportunities supporting each major step and assumes a traditional design-bid-build approach as this is considered the most appropriate method for this type of project.

11.1.1 Develop Purpose and Need Statement

The Fatal Flaws Analysis provides a more detailed vision for the MTF and the adjacent development which, in turn, provides information that can be used to develop a statement that clearly articulates the purpose and need for this project. Upon conclusion of this current analysis, project stakeholders will have sufficient supporting documentation, allowing them to develop a “vision” statement that can be used throughout the subsequent steps in the project as well.

11.1.2 Conduct Fatal Flaws Analysis

This report provides the product of the Fatal Flaws Analysis, documenting various assumptions, brainstorming, evaluations and preliminary conclusions regarding obstacles that may hinder the further development of this project. This step establishes a foundation that will be built upon as the project advances further through the project development process.

11.1.3 Feasibility Study

The next significant step in the development process is to conduct a formal feasibility study of the MTF. The format and content of this study will be established by project stakeholders with an intent to further investigate and evaluate various aspects of the project to gain a better understanding of how the project may affect the community and the physical environment. The project stakeholders will further define the community and the limits of the physical environment for this project and will identify specific facets of the project that should be included in the study in preparation for subsequent steps in the project development process.

11.1.4 Coordinate Project Schedule with TCP

Texas Central Railway (TCR) Dallas High-Speed Rail Station is an important component of multimodal connectivity to the proposed Multimodal Transportation Facility. The timing of TCR’s project and the

scope delineation for the pedestrian connection are critical factors that must be coordinated between projects. Upon entering into the MTF Feasibility Study, project stakeholders will soon develop sufficient information to initiate an ongoing coordination effort with TCP to address the essential aspects of project scope and schedule.

11.1.5 Identify Proper NEPA Documents & Preliminary Engineering

Environmental clearance requirements are specified by each prospective funding source; therefore, identification of the applicable environmental clearance approach for the MTF will be decided as the project nears funding certainty. Various funding sources are likewise associated with project development processes with oversight provided by the appropriate federal agency. That project development process provides guidelines for preliminary engineering.

11.1.6 Obtain Environmental Approval

Once the appropriate NEPA requirements are established, environmental clearance documents can be developed and submitted for approval through coordination with the lead federal agency responsible for oversight of the MTF project grant.

11.1.7 Develop Financial Plan and Pursue Grant Award

The financial plan for this project must support the requirements for the selected funding opportunity. Potential grant funding opportunities are identified and described in Section 9 of this report, listing the section criteria and describing the application process relevant to each source. The process for developing and submitting the grant application can happen concurrent with the project development process.

11.1.8 Final Design

Project stakeholders must identify the delivery method that brings the greatest benefit to this project and develop the program schedule based upon the corresponding procurement process for that method of project delivery. Prior to entering final design, a detailed scope delineation between the MTF Station project (tracks and station) and the project to be implemented by a developer (commercial development, roadway and utility infrastructure, station enhancements, etc.) must be clearly developed.

11.1.9 Railroad Review and Approval

The freight corridor is owned by Union Pacific Railroad (UPRR). As the owner, the railroad must approve the project design and provide oversight of the construction process. UPRR may also require certain elements of the trackwork be performed by UPRR forces.

11.1.10 Final Design and Construction Schedule Coordination

Implementation of the MTF Station project involving the tracks and the station must be coordinated with the design and construction of the adjacent development and of Texas Central Railway's Dallas High- Speed Rail Station and UPRR.

11.1.11 Construction

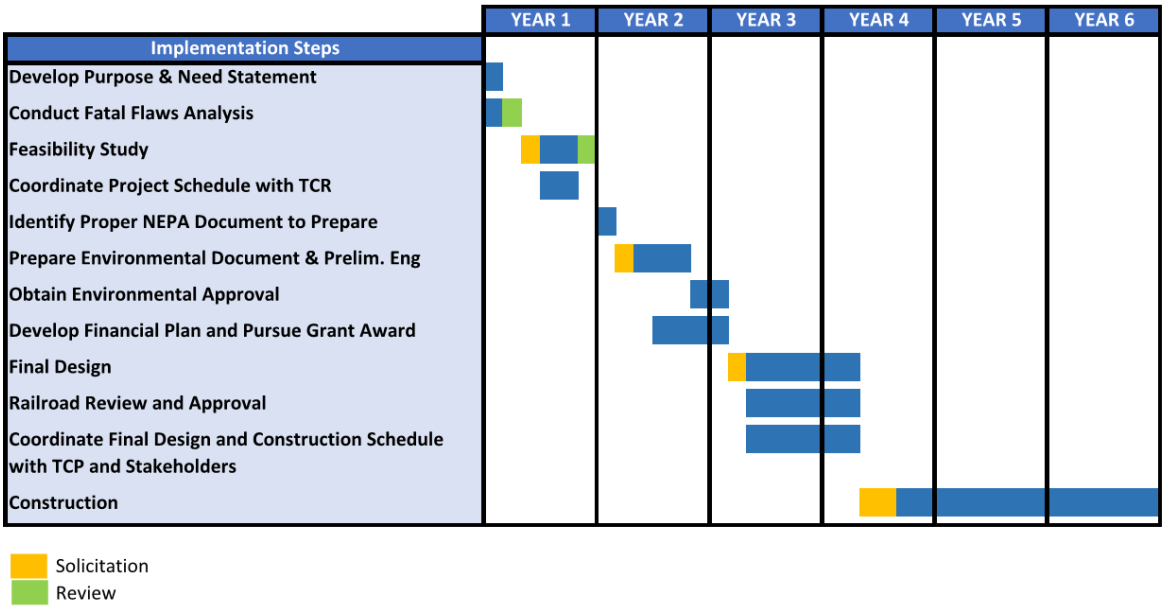
The construction procurement and delivery will be carried out in accordance with the selected delivery method.

11.2 Implementation Schedule

The implementation schedule for this project is tentative and has a duration of just over 6 years. This schedule contains the sequence of events as discussed in section 11.1 and is below.

Dallas Multimodal Transportation Facility (MTF) Implementation Schedule

Fatal Flaws Analysis



The first year includes this fatal flaw analysis, solicitation for, and completion of a more detailed feasibility study plus active coordination with TCR. Year two should complete any environmental analysis with an official finding close at hand, plus the development of a financial plan including grants in the application stage. During year three and into year four, a final design team should be on-board and completing the design phase. This will include active coordination with the freight railroads, TCR and all other major stakeholders. Once finalized, the construction team will be brought on and build the facility. Depending on the status of TCR, it may be possible to complete some early construction activities, such as utility relocation in advance of design completion. Any operational testing of new passenger rail service should also be conducted before construction completion.

Refer to **Attachment 10** to view the Implementation Schedule.

12 Entity Coordination

The Multimodal Transportation Facility project (MTF) is intended to centralize both transportation and new development in the heart of downtown Dallas. This focus will require many agencies and institutions to work together to achieve everyone's objectives.

The first high-speed rail legislation in the United States was passed in 1965. Fifty-four years later, there is still no high-speed rail in this country. It is not too dramatic to say that the entire nation will be watching High-Speed Rail and the Multimodal Transportation Facility to see how high-speed rail and integrated transit will work in the United States, and specifically in North Texas. This puts the State of Texas, the North Texas region, NCTCOG, the City of Dallas, Dallas Area Rapid Transit, and other regional transit and community partners in the spotlight.

12.1 North Central Texas Council of Governments and the City of Dallas

As the regional metropolitan planning organization, the North Central Texas Council of Governments (NCTCOG) will work with stakeholders to facilitate the development of a unified project approach that results in a transportation hub that successfully satisfies current needs while making provisions for the anticipated future transportation needs of the region. A key component of forward planning involves the preservation of a rail corridor for the Core Express Services, which is intended to provide high-speed rail between the Dallas High-Speed Rail Station and Fort Worth. The concept for the MTF will accommodate the future construction of the elevated guideway structure that will bring the Core Express directly to the Dallas High-Speed Rail Station platform.

The City of Dallas should take the lead role to develop a common understanding of the MTF, its potential impacts, and the information necessary to support timely review and decision making. The City should encourage regular meetings with all the key stakeholders and establish a solid working relationship with each one. It will be important for each agency to have decision makers participate and bring current updates on all active related projects plus planned projects that may have an impact on or be impacted by the proposed MTF. The City should also take the lead in establishing a conflict resolution process that will amicably resolve issues that may arise, whether it be during MTF planning, design or construction.

Many City of Dallas departments are crucial to the success of this project including the City Manager's Office for overall guidance, vision, and support; Economic Development and Planning and Urban Development for important leadership for surrounding MTF development and financing; the Transportation Department for relevant information on impacting municipal transportation & mobility projects; Dallas Water Utilities for existing and future project area water utility and stormwater projects; Development Services in providing clarity on construction standards and permitting requirements; and the Convention Center to keep all apprised regarding Convention Center needs and future expansion. Of special note is the possibility noted earlier of major modifications to Hall F of the Dallas Convention Center to facilitate better railroad expansion to the MTF and Hall F's importance to future Convention Center Expansion.

12.2 Texas Central Railway

The Dallas to Houston High Speed Rail (HSR) Project continues to advance through the leadership of Texas Central Railway (TCR). A Dallas HSR Station has been established in concept just southeast of the MTF as illustrated previously. As demonstrated in section 11 – Implementation Plan, the HSR project is most pivotal to the MTF regarding implementation timing. Since an easy direct connection between the MTF and

the Dallas HSR station is critical, it is, therefore, imperative that TCR provide regular updates on the timing of HSR implementation and design advancements for their Dallas HSR station to all other MTF stakeholders.

12.3 TxDOT

Downtown Dallas has experienced extensive expansion to its downtown freeway loop system and more improvements are underway along IH-35 from just south of downtown. A key portion of I-30 through downtown just north and east of the MTF is presently in schematic design. This makes TxDOT another key player for the MTF. Direct and easy to understand access to/from the MTF for autos, cyclists and pedestrians is vital to MTF success. TXDOT representatives of all active downtown-related projects must be regular participants sharing status on design impacting the MTF.

12.4 Union Pacific Railroad

There will be significant freight railroad activity passing immediately adjacent to the MTF. In addition, existing tracks will need to be improved and slightly relocated to allow Trinity Railway Express access to the MTF. These freight railroad track changes require ongoing coordination with the primary railroad owner, the Union Pacific Railroad. In addition to coordination, agreements will need to be defined between all parties establishing agency authority, responsibility, and funding for all design, reconstruction and continued railroad operation during construction.

12.5 Amtrak

Another important feature of the MTF is to bring Amtrak service further south from Union Station. Amtrak already uses track near the MTF as it provides service between Ft Worth and Dallas with connections to the Sunset Limited to San Antonio, New Orleans, Tucson, Phoenix and Los Angeles; and the Texas Eagle to St. Louis and Chicago north and Tucson and Los Angeles west. Provisions for MTF cross platform connections with TRE and grade separated connections to HSR need to be developed to Amtrak specifications; therefore, ongoing discussion with Amtrak is key.

12.6 Federal Regulatory Agencies

Some type of environmental document will likely need to be prepared to advance the MTF in the early project stages. Section 9 summarized federal and state regulatory agencies that may require coordination depending on the extent of potential environmental impacts and the type of NEPA document required. The City must maintain an appropriate level of coordination and consultation during environmental document preparation and any subsequent environmental mitigation monitoring required during construction. Public involvement will also be part of the environmental process and must be documented for inclusion in the MTF NEPA document for review by the designated NEPA federal agency project sponsor if a formal environmental impact statement is required.

12.7 Other Agencies

The above agency list is not all-inclusive but does include the major players. During certain project phases, two other agencies will play important roles. They include DART and Trinity Metro. In addition to playing a key role in framing the MTF concept to date with the City of Dallas, NCTCOG is currently leading the effort to establish the Core Express high-speed transit link between Dallas and Ft Worth. This Core Express project is intended to provide a cross platform connection at the Dallas HSR station as illustrated in section 8 – Site Concept Development. Active coordination is underway with Dallas, Ft Worth and Arlington as well as US DOT to advance the Core Express project.

DART and Trinity Metro will need to be consulted regarding the plans to extend the Trinity Railway Express (TRE) terminus from Union Station to the new MTF rail station. DART and Trinity Metro jointly fund and operate TRE, so they will need to share TRE operations requirements, track requirements and funding needs to successfully complete the extension. DART may play another important role, depending on the grant(s) applied for to fund the MTF. FTA Capital investment grants (see section 9), for example, require the grantee be a transit agency that has the capability to build and operate a transit project. As the MTF proceeds and the City weighs possible funding options, DART may play an important design, construction and operational role for the track improvements portion of the project, at a minimum.

13 Attachments

Attachment 1, Current Track Configuration
Attachment 2, Proposed Track Modifications
Attachment 3, UPRR Coordination
Attachment 4, Site Development Concept
Attachment 5, UPRR Passenger Platform Guide
Attachment 6, DWU Lot E and Riverfront/Forest City Fact Sheet
Attachment 7, Traffic Circulation Table
Attachment 8, Traffic Circulation Support Materials
Attachment 9, Preliminary Cost Estimate
Attachment 10, Implementation Schedule
Attachment 11, Concepts for Connectivity to DART Rail Station