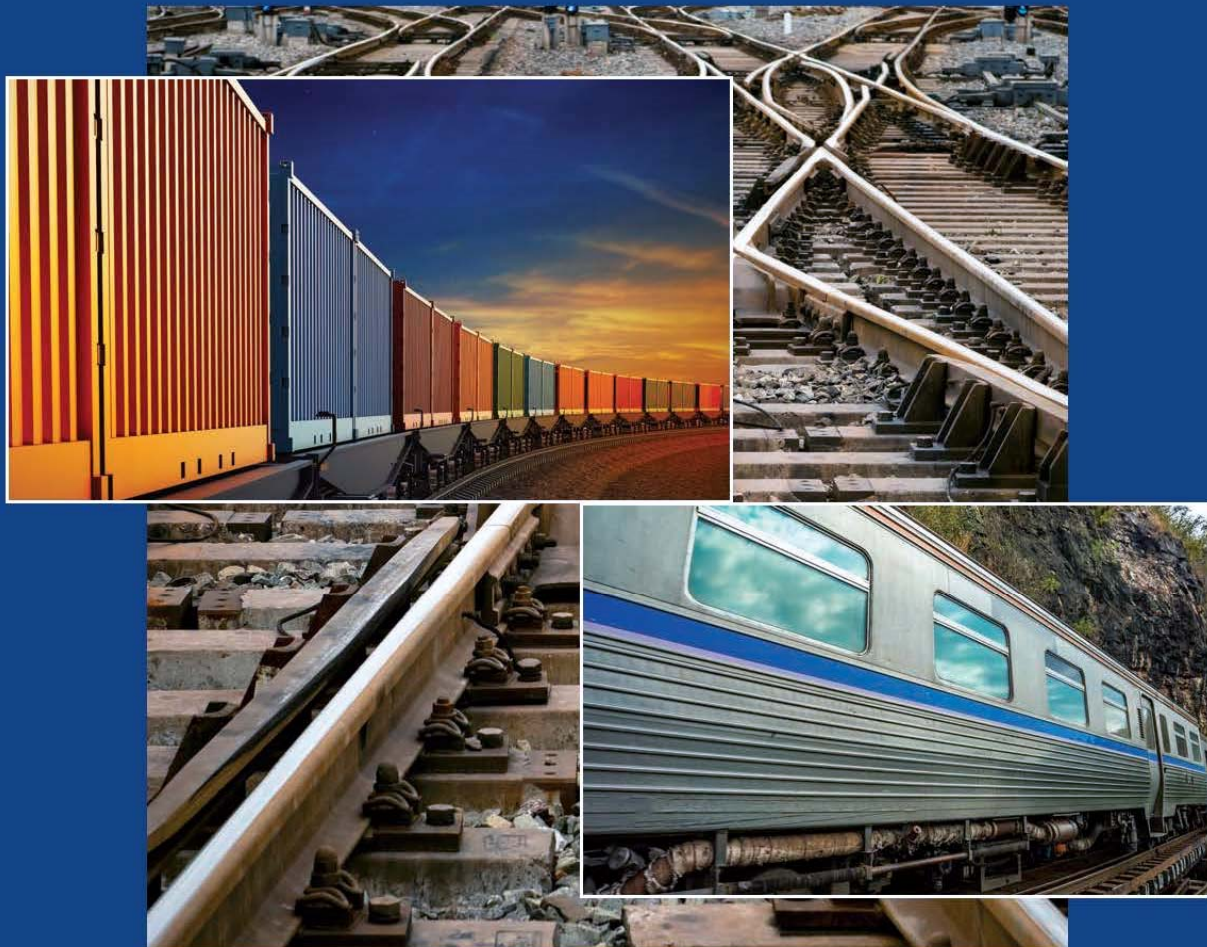


North Texas Multimodal Operations, Velocity, Efficiency, and Safety (MOVES) Program

Phase 1 B

Fy 2019 Infra Grant Application
Attachment 1 – Cover Page And Project Narrative



North Central Texas Council of Governments



Cover Page	
Project Name:	North Texas MOVES Program-Phase 1 B
Project Sponsor	NCTCOG
Was an INFRA application for this project submitted previously? (If Yes, please include title).	No
INFRA Request Amount	\$56,000,000
Estimated federal funding (excl. INFRA)	\$5,000,000
Estimated non-federal funding	\$44,000,000
Future Eligible Project Cost (Sum of previous three rows)	\$105,000,000
Previously incurred project costs (if applicable)	\$0
Previously incurred project cost (if applicable)	\$0
Are matching funds restricted to a specific project component? If so, which one?	Yes – \$42,000,000 is restricted to projects on the DART/TRE rail line. Please see the budget summary for the allotted funds.
Project Eligibility:	
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway Freight Network (NHFN)?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway System (NHS)?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	\$105,000,000
Project Location:	
State(s) in which project is located	Texas
Small or large project	Large
Urbanized Area in which project is located, if applicable.	Dallas - Fort Worth - Arlington
Population of Urbanized Area.	7,399,662 (2017)
Is the project currently programmed in the:	
▪ TIP	No
▪ STIP	No
▪ MPO Long Range Transportation Plan	Yes – Mobility 2045: The Metropolitan Transportation Plan for North Central Texas www.nctcog.org/trans/plan/mtp/2045
▪ State Long Range Transportation Plan	No
▪ State Freight Plan	Yes – Texas Freight Mobility Plan www.dot.state.tx.us/move-texas-freight/studies/freight-plan.htm



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- Attachment 5: Project Supporting Documents



Executive Summary

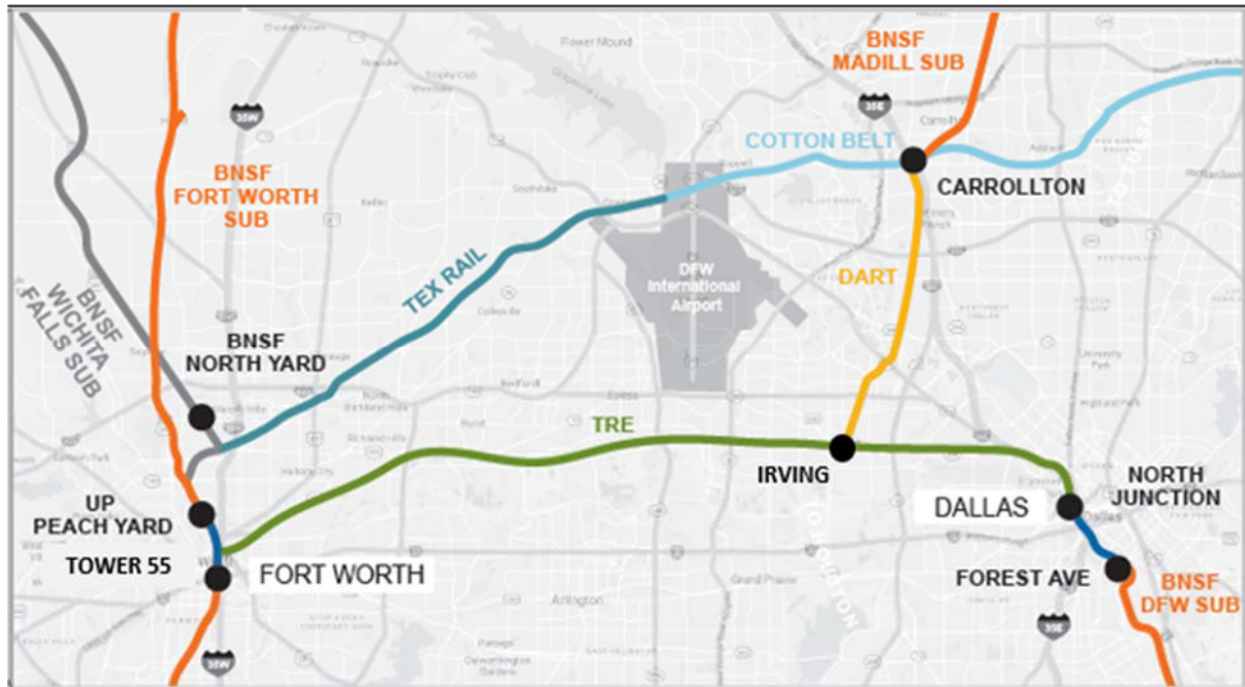
The North Central Texas Council of Governments (NCTCOG) and its partners, Dallas Area Rapid Transit (DART) and Trinity Railway Express (TRE) are pleased to submit this application for an Infrastructure for Rebuilding America (INFRA) discretionary grant for rail improvements on the commuter rail network owned by DART and operated by DART, Trinity Metro (TM), and the Trinity Railway Express commuter service. *The North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (NT MOVES – Phase 1 B) is a long-range plan for increasing freight and passenger mobility in Dallas–Fort Worth (DFW) through strategic investment in rail capacity to improve multimodal transportation.*

This program is unique because *BNSF Railway’s (BNSF) freight franchise utilizes track owned by DART and TM to traverse the metroplex north and south through Dallas and between Fort Worth and Dallas for west – east movement.* At the same time, BNSF customer freight demands in the region have increased significantly. In the spirit of cooperation and partnership, BNSF performed computer simulation modeling to understand the impact future passenger operations would have on BNSF freight operations, over the territory, due to the close operational alignment between the two networks. *The results of BNSF’s technical modeling effort, and subsequent dialogue with the public partners, has yielded a compelling vision for the cooperative growth of both freight and passenger rail operations in DFW.* This dialogue and the scope of opportunity continues to broaden as communities within and beyond the DFW urban core begin to consider how their surface transportation needs are related to the expansion of rail service and how those needs might be addressed in the future through a similar approach.

NT MOVES - Phase 1 B, will accommodate the anticipated freight rail growth on the BNSF network and continued on-time performance of the TRE commuter service. *The composite benefit-cost ratio for all project components is 11.84 or better, with a Net Present Value of 1.03 billion* (as discussed in Section 5.1.1). Tying it all together will be an innovative technology platform called Clear Path™, in use today in the Chicago terminal, to ensure that public and private users of the DFW rail network are communicating to the greatest extent possible to maximize utility of the shared use assets. Future phases of NT MOVES will include additional rail capacity projects, road/rail grade-separation projects on rail corridors throughout the region and accompanying private investment as the region continues to grow. The following is a brief review of the projects in Phase 1, primarily comprised of rail capacity projects, from west to east across the metroplex.



Exhibit 1: Rail Providers Phase 1 B



Centralized Traffic Control and Track Expansion on the Madill Subdivision from the Red River to Irving will enhance train fluidity and capacity on this key route that handles, among other business, tons of aggregate per year moving from origins in southeast Oklahoma to destinations in Irving, Texas, and points further south.

Doubletracking on the TRE is crucial to maintain fluidity of the TRE operation as well as the BNSF freight operation. One portion of this doubletracking, from Medical Market Center to Stemmons Freeway, is ready for construction. Two other projects – doubletracking the Stemmons Freeway IH 35 bridge and the North Junction terminal area – require significant design efforts that must be funded now so that these projects can be made ready for funding under future phases of the North Texas MOVES program.

Design and develop a concept of operations for this traffic management application and implement the hardware and software backbone structure of Clear Path technology, enormously successful in the nation’s busiest freight rail hub, Chicago. Clear Path technology will empower all agencies and users of the DFW metroplex rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex.

Public investments in the NT MOVES, Phase 1 B, program are designed to integrate seamlessly with significant private investment and rail capacity on the BNSF network based upon the outcome of sophisticated computer simulation modeling. The program performs well in all four INFRA program Merit Criteria priorities, explained in more detail later in the application.



- **Support of National or Regional Economic Vitality:** As discussed in Section 1.3.5, the infrastructure improvements afforded by this project will enhance national and regional freight flows to and from Southern California, the Pacific Northwest, Chicago, and Mexico, as well as regional traffic originating and terminating between Texas and the Midwest. The rail capacity projects will benefit passenger and commuter service across the DFW metroplex and interstate passenger service operated by Amtrak, which provides multimodal commuter solutions that take people and cars off the highway.
- **Leveraging of Federal Funding:** As discussed in Section 5.2, the total project budget for NT MOVES Phase 1 B is \$105 million. The project partners request \$56 million in federal funds, approximately 53% of the overall budget, representing significant leverage of matching funds and non-federal local funds. DART/TRE have pledged \$42 million, North Central Texas Council of Governments has pledged \$5 million, and BNSF has pledged \$2 million (that could grow to as much as \$78M) in private capital to fund elements of the program. In addition, BNSF is spending approximately \$30 million in rail capacity projects on its adjacent network (not pledged as matching funds), which generates public benefits protected by the public's complementary investment on its network. Furthermore, these projects enable additional freight traffic to utilize the DART-owned trackage, which results in increased revenues paid from BNSF to the transit agencies for a long-term, sustainable source of operating income for the public rail network.
- **Potential for Innovation:** NCTCOG and DART have studied the successful implementation of Clear Path technology in support of the Chicago rail network under the CREATE program and they have committed to implement the platform in the DFW region. This innovation enables sharing of dispatch and train movement information across the transit agencies and freight operators to fully utilize capacity offered by public, shared-use rail assets. Furthermore, BNSF, DART, NCTCOG, and the Texas Department of Transportation (TxDOT) are working to identify opportunities to collaborate on design development and track construction to reduce soft costs, construction timelines, and track outages during implementation.
- **Performance and Accountability:** The project partners have performed the work necessary to ensure these projects are ready to implement upon the award of grant funds and execution of grant agreements. In addition, the partners will commit to specific service level improvements for the freight and passenger utilization of the assets that receive federal funds. For BNSF, this provides the ability to operate additional freight trains daily, north to south over the lower Madill Subdivision and east end of the Trinity Railway Express line. For the commuter agencies, this means the ability to increase service and optimize efficiency. Finally, BNSF is also on schedule to install privately-funded network infrastructure before the publicly-funded network features are installed.



1.0 Project Summary

NT MOVES is an emerging program of road and railway improvements in the DFW region intended to enhance freight and passenger mobility across all modes. Projects in NT MOVES Phase 1 A were identified by BNSF as freight capacity needs to serve customers in the region and those projects are underway, 100% funded by BNSF, not pledged as matching funds, and scheduled to be complete before the publicly-funded network features are installed. Phase 1 B projects, the subject of this application, are located on the DART-owned corridor between Carrollton and Irving and the TRE rail line between Irving and Dallas. NT MOVES also contemplates future grade separations and capacity improvements on the roads and highways across the region with which those rail lines interact. The deliberate, technical approach via rail simulation computer modeling that yielded this portfolio of projects has been adopted by BNSF and the public partners and demonstrates the interdependency of these projects. Rail Traffic Controller (RTC) software was used with input from TxDOT and the regional rail partners. Rail operation simulations were completed to determine the projects most needed to relieve freight congestion. By modeling current and future freight and passenger demands along regional corridors, the highest priority projects were identified that would allow the best path forward.

1.1 Project Size and Elements

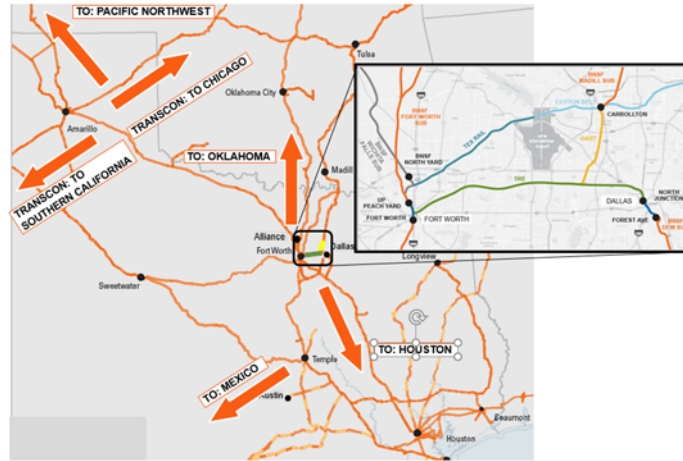
The Trinity Railway Express (TRE), jointly owned by DART and Trinity Metro, is a vital commuter artery for the DFW region, connecting downtown Dallas with downtown Fort Worth and three stops in the mid-cities. Initiated in 1996, its ridership has maintained an average annual ridership since 2013 and it currently serves more than 2 million passengers per year by means of 340 trains per week. At the same time, it hosts freight railroad operations by BNSF, Fort Worth and Western, and Dallas Garland and Northeastern who move more than 2.64 million carloads across various segments of the line each year, as well as daily Amtrak movements. *The Madill Sub between Carrollton and Irving and the east end of the TRE (Irving to Dallas) handles the majority of freight traffic on the line due to the north-south link, it connects BNSF's Madill and DFW rail line Subdivisions.* DART also owns the lower end of the Madill Subdivision between Irving and Carrollton. While no passenger service operates on this line today, it is a critical section of railroad for freight operations, including two high-volume bulk aggregate customers.

The DFW region is a central node for the BNSF rail network in Texas. BNSF assets in and through DFW are critical to serving the freight demand driven by the booming population growth of the "Texas Triangle," the geography between the three metropolitan areas of DFW, Austin, and Houston. The three primary arteries for BNSF through DFW are the Fort Worth Subdivision on the west, through the City of Fort Worth; the Creek, Madill, and DFW rail line Subdivisions on the east through the City of Dallas and over the publicly-owned DART network; and over the TRE line between Fort Worth and Dallas. The Fort Worth Subdivision also serves traffic into and out of the BNSF Alliance Hub. This intermodal and manifest serving yard, at the confluence of IH 35W and the Fort Worth Alliance Airport, "billed as the world's first purely industrial airport" has grown rapidly since its construction in 1994 and facilitated more than 915,000 intermodal lifts in 2018. It is BNSF's third busiest intermodal terminal, by lift count. This region serves



cross-country rail traffic – to and from Southern California, the Pacific Northwest, Chicago, and Mexico – as well as regional traffic originating and terminating between Texas and the Midwest.

Exhibit 2: The BNSF Network



Today, these routes' ability to handle freight traffic are severely imbalanced due substantially to the public's inability to invest in rail capacity. Under BNSF's trackage rights agreement with DART and TRE, which extends from Carrollton to Irving and between Ft. Worth and Dallas, BNSF has the right to operate its freight trains over the public network and relies upon the availability of freight capacity on the lower Madill Sub, between Carrollton and Irving, to serve multiple customers in this region. For example, 30 – 40 BNSF freight trains traverse the Fort Worth Subdivision daily, 6 – 10 BNSF trains traverse the east side route via Creek, Madill, DART/TRE and DFW rail line subdivisions daily, and only 1 – 2 BNSF trains per day can traverse the TRE line between Fort Worth and Dallas. Computer simulation modeling performed by BNSF demonstrates that the public network investment requested in this grant application is part of the overall program of projects required to realize the calculated public benefits while protecting existing freight capacity on the publicly-owned portion of the network. *Without investment to accommodate freight movement over the public network, the freight rail capacity through Dallas and the surrounding communities south toward Houston will be negatively impacted. NT MOVES Phase 1 B is a portion of the system of projects, validated by computer simulation modeling and input from the public and private sectors, that adds capacity to facilitate freight movement on the Fort Worth and Dallas freight routes, and commuter operations between Fort Worth and Dallas.* Each construction project is described in more detail below and illustrated in Exhibit 3. When completed, this program will deliver a fully-Centralized Traffic Controlled (CTC) railroad between Denison and Dallas, with doubletracking of the TRE largely complete between Irving and Dallas.¹ In addition to these construction projects, there are two DESIGN projects for which funds are being sought in order

¹ The only remaining singletrack sections of TRE between Irving and Dallas will be the Stemmons Freeway Bridge and the Union Station area, which will require significant design development, engineering, and environmental review. Funds for these efforts are sought under this program of projects.



to progress what are likely to be multi-year design efforts. The design project would be realized as construction projects in later Phases of the NT MOVES program.

Exhibit 3: NT MOVES – Phase 1 B Projects



- 1. Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Construct and Install CTC Siding at Gribble** – Install automatic rail traffic signal system between South Hebron and Elm Fork Bridge. Install power switches that can be controlled remotely (by a Dispatcher) from main line into new 10,300 linear foot siding (~ 7,300 LF clear) at Gribble. Construct doubletrack from Gribble to siding at MP 707.6, replacing and doubletracking deteriorating Elm Fork Bridge. Project increases main line capacity for through train traffic by enabling expeditious movement of trains off and on the main track. This improvement also enables trains to more easily park clear of the main line during unloading activity at Gribble, allowing other trains to pass. Preliminary engineering of this project is complete, and it is eligible for a NEPA CATEX. *This project, which provides independent utility upon completion, is comprised of a track capacity and a signal component. It is the focus of a BCA alternative in this application that calculates public benefit if USDOT chooses to fund only this project. Further, if desired, USDOT could choose to fund only the track portion of this project and an incremental public benefit related to freight mobility could still be achieved.*
- 2. DT Stemmons Freeway Bridge** – (DESIGN) Replace existing and construct new second rail bridge, parallel to the existing, over Stemmons Freeway (IH 35E) to increase rail



capacity by enabling simultaneous train operations over the bridge (0.1 miles) and completing doubletracking of the TRE between Irving and Dallas. This project will also eliminate the roadway freight constraint caused by the existing rail bridge, which is identified as a low-clearance bridge by TxDOT over the critical IH 35E arterial. Its low clearance also subjects the existing rail bridge to frequent strikes, interrupting rail operations over the TRE. This bridge has experienced nine bridge strikes by trucks traveling under it from May 2006 to September 2018.

3. **DT Medical Market Center to Stemmons Freeway** – Replace existing culvert and Obsession Bridge, Inwood Bridge, and Knight’s Branch Bridge with new doubletrack structures and construct doubletrack from Medical Market Center Blvd. to Stemmons Freeway Bridge. *This project has been pursued previously as part of a BUILD grant submitted by NCTCOG in 2018 and is being submitted for simultaneous consideration under the 2019 State of Good Repair grant program for its benefits to intercity passenger rail.* Preliminary engineering of this project is complete, and it is eligible for a NEPA CATEX.
4. **DT North Junction to Union Station** – (DESIGN) Construct new track connecting North Junction to Union Station, for use by TRE and BNSF (0.5 miles), and complete doubletracking of the TRE between Irving and Dallas. This project will likely require improvements to the west leg of the wye, which features doubletrack owned by Union Pacific across IH 35E. This project will also likely require modification of Riverfront Boulevard (six lanes with median) and Union Blvd., adjacent to the Dealey Plaza historical preservation area.
5. **Implement Clear Path Technology** (not shown on map) – Design, develop concept of operations, and implement hardware and software backbone structure that will enable all agencies and users of the DFW metroplex rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex. This system will increase capacity of the DFW rail network in the territory between Alliance, Burleson, Dorchester, and Lancaster by facilitating inter-carrier operations and enhancing the flow of passenger and freight trains through the complex.

BNSF NETWORK PROJECTS (NT MOVES Phase I A)

In addition to construction and design projects in Phase 1 B, for which funds are being sought, BNSF has funded projects on their portion of the Madill Subdivision. These projects make up Phase 1 A of the MOVES program and are 100% funded, **not pledged as private capital match under this application**, and will go to construction in 2019. The BNSF completion of these projects is critical to the success of the NT MOVES Program and an example of the reliability the rail partners have with each other in the DFW region. **See Attachment 4: NT MOVES Phase 1 A Summary** for more details. The BNSF Network Projects for 2019 construction include:



- 1. Convert Hebron Siding to Centralized Traffic Control (CTC) and Extend – Upgrade track** on existing 4,250 LF siding and extend approximately 8,000 LF and add CTC signaling. This will increase track capacity by expediting dispatch clearance for train movement into and out of the siding and enabling the siding to hold longer trains. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.
- 2. Construct CTC on Madill Subdivision (Denison – S. Hebron)** – Install automatic rail traffic signal system between Denison and South Hebron to increase track capacity by expediting dispatch clearance for train movement. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.
- 3. New Siding, MP 648-650 (Sherman)** – Construct 11,500 LF siding on the Madill Subdivision in the vicinity of MP 648 – 650. This will increase track capacity by enabling meet/pass train movements on the rail corridor. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.

1.2 Project History and Context

The North Texas MOVES program is a unique multimodal public-private funding partnership to improve rail and roadway transportation in the region. The program was born from the Texas Freight Mobility Plan and a TxDOT initiative to improve freight and passenger rail mobility in the DFW region. The computer simulation modeling performed during the TxDOT study indicates the necessity of the rail capacity improvements identified in this Phase 1 B application, to ensure near-term fluidity of freight movement across the publicly-owned rail network. TxDOT’s modeling indicates the public network investment must accompany BNSF’s planned capacity improvements in order to protect the public benefits generated by the BNSF investment. It is also appropriate to consider the DFW complex as a central node in BNSF’s Texas freight network, with fluidity of freight operations over the publicly-owned network as vital to its overall health and successful growth.

1.3 Transportation Challenges Addressed

The NT MOVES Phase 1 B creates a unique opportunity for the Dallas-Fort Worth region to implement an innovative and efficient means for addressing urban transportation needs while balancing costs and impacts to the community and to the environment. *The projects are anticipated to significantly help relieve congestion; enhance mobility, connectivity, and reliability; improve regional air quality; and improve safety along the TRE/BNSF corridors.*

1.3.1 Relieving Congestion

Rail congestion is ongoing and a critical issue to the movement of goods and passengers in the DFW region. NT MOVES Phase 1 B focuses on the congestion entangling three rail subdivisions, the TRE, DFW and the BNSF/DART Madill. These subdivisions are already experiencing high



levels of congestion due to the unique capital investment and operating environment of a Class I railroad on a publicly-owned commuter route. Rail improvements on the public network are needed now to curb future congestion issues. The proposed projects for NT MOVES Phase 1 begin the process of reducing congestion by adding capacity, signaling and technology that benefits all users of these corridors.

1.3.2 Enhancing Mobility, Connectivity, and Reliability

The TRE, DFW and the BNSF/DART Madill subdivisions are a vital component of the regional long-range transportation plan (*Mobility 2045*, www.nctcog.org/trans/plan/mtp/2045). These corridors provide opportunities for a more efficient use of existing rail network and is a more appropriate response to growing environmental and fiscal constraints in addressing transportation needs. Improving freight rail mobility and reliability are important freight planning initiatives for the North Central Texas region. It is what lead to the creation of the NT MOVES program and is an important part of *Mobility 2045*. As congestion grows and reliability of the roadways worsens, the role rail plays in moving goods will grow and become a greater economic driver now and into the future. Improvements to these corridors would 1) make higher speed movements available to all corridor users; 2) create opportunities to add new freight and passenger services; and 3) create revenue generation (from additional freight movement over the public network as well as passenger rail) to pay for ongoing corridor operation and maintenance needs.

1.3.3 Improving Air Quality

Ten counties in the Dallas-Fort Worth area are classified as nonattainment for ozone. While regional air quality has improved, the region still does not meet the federal standard. Failure to meet federal standards for air quality could result in additional emission control requirements that negatively affect local businesses. Transportation and diesel-powered locomotives are a significant source of air pollutants.

The NT MOVES Phase 1 B program will improve the operations of both freight and passenger rail movements that will reduce emissions from traditional vehicle trips due to the mode shift. As congestion along the corridors is reduced, locomotive idling time can decline by several hours every day.

1.3.4 Enhancing Safety

Safety is an significant driver of all projects, both highway and rail. NT MOVES Phase 1 B is focused on rail operational improvements that will reduce accidents and increase safety by upgrading older rail infrastructure and inducing a mode shift through additional passenger service. The improvements will also lessen the interaction between passenger and freight rail trains on a single shared-use track.

There are no planned grade separations in NT MOVES Phase 1, however, there are Centralized Traffic Control (CTC) improvements for the entire Madill subdivision, resulting in more efficient movements throughout the corridor. A major benefit is the reduction in dwell time occupying



at-grade crossings. The proposed improvements mean fewer encounters between cars, pedestrians and trains and faster response times for emergency vehicles that must cross the tracks to reach their destination. This is critical in smaller cities because of the limited number of rail crossings.

The planned improvements of NT MOVES Phase 1 B will result in mode shifts for both passenger and freight rail, resulting in fewer crashes on the surrounding highways. Streamlined freight operations, through rail expansion, are anticipated throughout the region, not just in the project corridors. This means more freight rail movements and fewer trucks on the highways, lessening the number of truck-involved incidents in the areas served by freight rail, near project improvement locations. Improved passenger rail operations will shift rail travel appeal consequently reducing the number of cars on the roadways and therefore fewer crashes in these areas.

1.3.5 Enhancing Economic Competitiveness (National and Regional Significance)

As the fourth largest metropolitan area in the US, the Dallas-Fort Worth region is responsible for one-third of the Gross Domestic Product of the State of Texas. The North Central Texas region is centrally located within the lower 48 states making it a logistical sweet spot for a primary distribution center, or inland port, for the southwestern US and the nation. Trucks leaving the region can reach the majority of the nation within 72 hours. This area is situated at the crossroads of east/west rail lines from the ports of Los Angeles/Long Beach to the eastern US and the north/south rail lines from Mexico and the Port of Houston to the Upper Midwest.

Transporting freight is a key component of the regional economy. Over 380,000² tons of freight move to and from the region in a single year. Moving this much freight through the region requires a well-developed rail system. Three Class 1 railroads (BNSF, UPRR and KCS) and two short lines as well as the Trinity Railway Express and Amtrak operate in the region. A key component to this system is freight and passenger movement on the corridors identified in the NT MOVES Phase 1 B program. In addition to the importance these Phase 1 corridors have to the success of rail movements in the North Central Texas area, there are state and national impacts as well, on the movement of goods across the country as depicted in Exhibit 3, above.

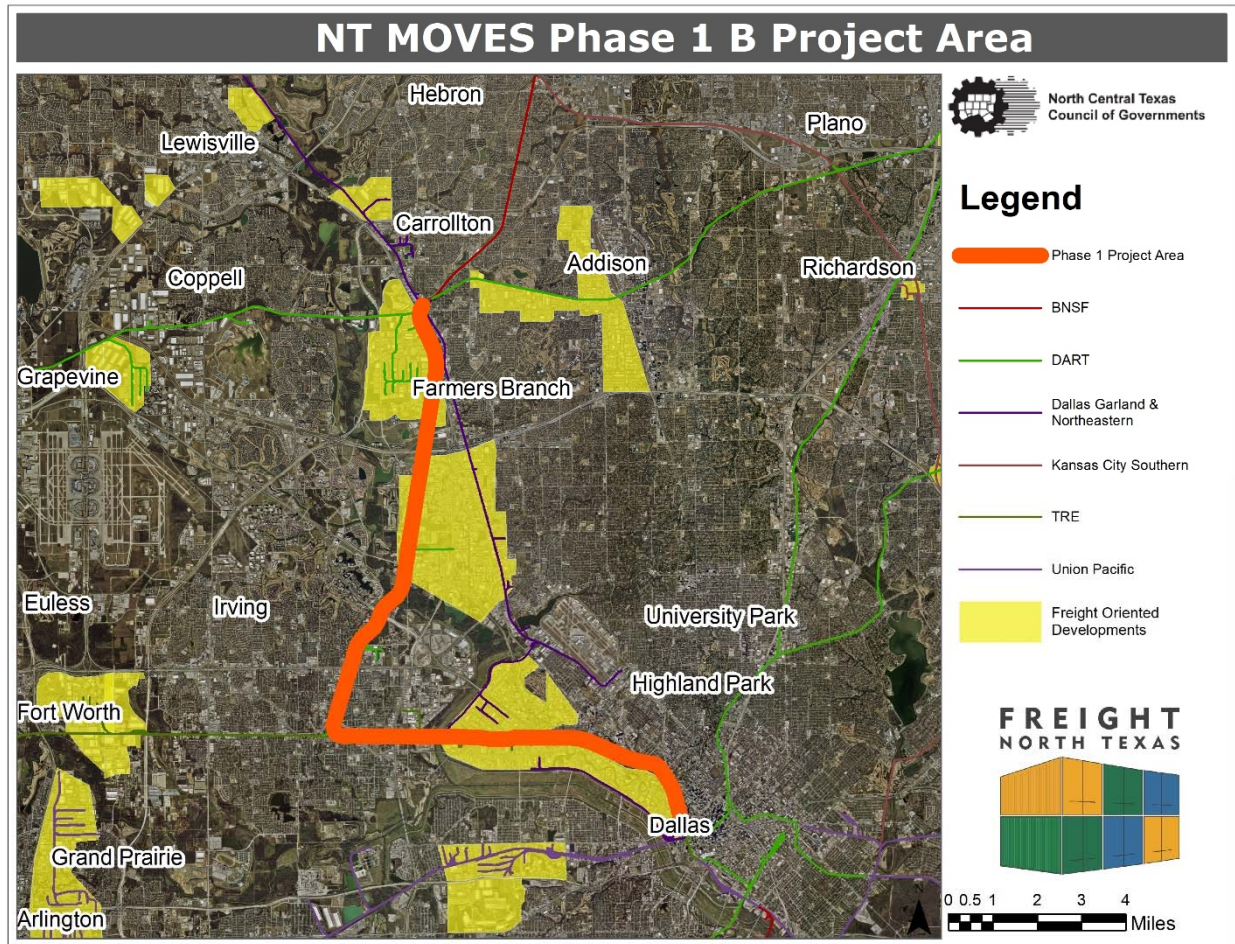
2.0 Project Location

The NT MOVES Phase 1 B projects are located in the western portions of Dallas County and Collin County. The public projects are within the Cities of Irving, Farmer's Branch, Carrollton and Dallas, which is within the US Census-designated Dallas-Fort Worth-Arlington Urbanized Area. The Phase 1 B project area is shown in Exhibit 4.

² All tonnage numbers come from FHWA FAF4.



Exhibit 4: NT MOVES Phase 1 B Project Area



The Dallas-Fort Worth metropolitan area is one of the fastest growing areas in the country. The population of the North Central Texas region has increased from 2.4 million in 1970 to over 7.2 million in 2017, an increase of 200 percent. A significant part of this growth has occurred in the project areas. Exhibit 5 highlights both the past trends and future forecasts for population growth within the adjoining cities along project corridors, Dallas County, and the 12-county NCTCOG Metropolitan Planning Area (MPA).

While forecasted city populations are expected to slow as they approach build out within their jurisdictions, growth elsewhere in the region (particularly in Dallas County) and the strong economic draw of the area will continue to attract significant traffic surges over time. The projected high traffic growth for this corridor attributed to forecasted population increases for both adjacent cities and the North Central Texas region at-large.



Exhibit 5: Population Trends in Phase 1 B Area

Location	1980 Census ¹	1990 Census ¹	2000 Census ¹	2010 Census ¹	2020 Forecast	2040 Forecast	Growth 2010-2040
Carrollton	40,595	82,169	109,576	119,097	132,974	132,978	12%
Dallas	904,078	1,006,877	1,188,580	1,197,816	1,141,059	1,420,781	19%
Farmers Branch	24,863	24,250	27,508	28,616	30,582	34,420	20%
Irving	109,943	155,037	191,615	216,290	259,186	301,541	39%
Dallas County	1,556,390	1,852,810	2,218,899	2,368,139	2,587,960	3,180,529	34%
NCTCOG MPA	3,030,053	4,013,418	5,197,317	6,417,724.00	7,612,993	10,183,523	59%

Notes:

All historical data derived from the 2010 US Census:

<https://www.census.gov/programs-surveys/decennial-census/decade.2010.html>

All future City data derived from the Texas Water Development Board, 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas:

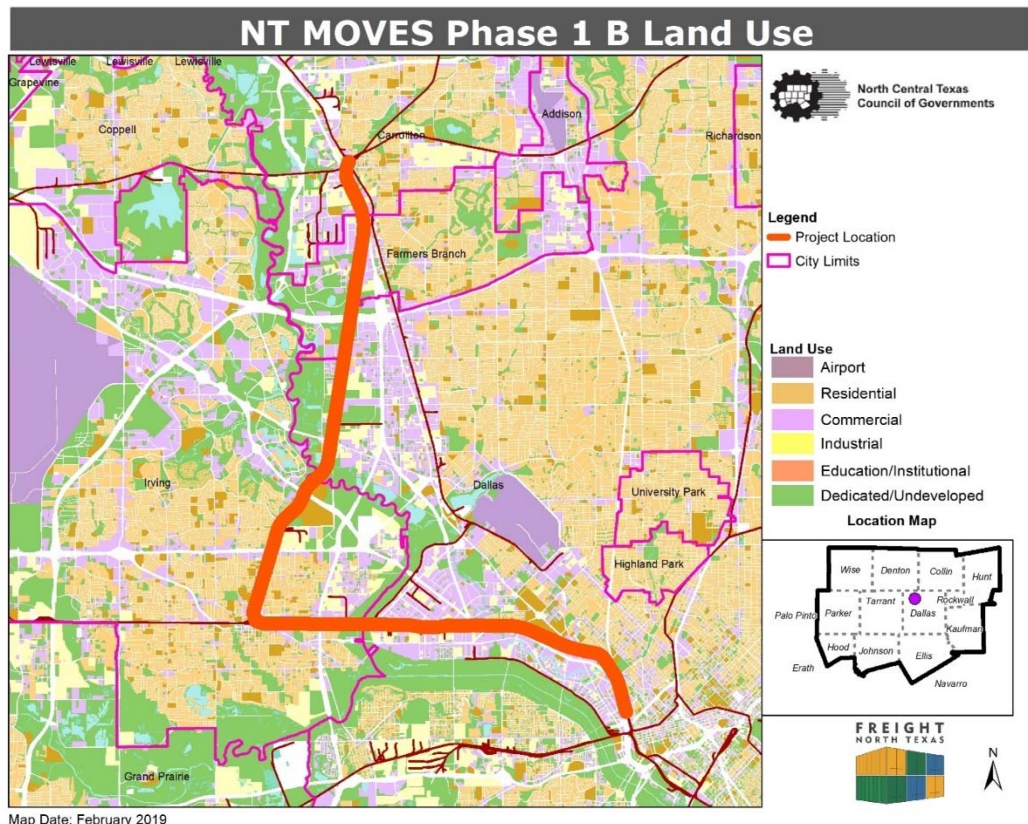
http://www2.twdb.texas.gov/ReportServerExt/Pages/ReportViewer.aspx?%2fProjections%2f2022+Reports%2fpop_Region_search&rs:Command=Re

All Future County data derived from:

<https://data-nctcoggis.opendata.arcgis.com/datasets/2040-nctcog-demographic-forecast-tsz>

The type, intensity, distribution, and availability of specific land uses is an important determinant for identifying travel demand characteristics and prioritizing transportation needs for both passenger rail and freight traffic. Exhibit 6 shows land use in the project area. While population density is a key indicator of transportation needs in most other cases, movements for rail in this area are governed more by it being one of the most concentrated industrial and commercial employment centers in the Dallas-Fort Worth region.

Exhibit 6: NT MOVES Phase 1 B Land Use





3.0 Project Parties

3.1 NCTCOG (Submitting Agency)

NCTCOG is a voluntary association of cities, counties, school districts, and special districts established in January 1966 to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for the 12-county Dallas-Fort Worth MPA. The NCTCOG Transportation Department is responsible for the regional planning process for all transportation modes. The department provides technical support and staff assistance to the Regional Transportation Council (RTC) and its technical committees, which comprise the MPO policy-making structure. The department also provides technical aid to local governments and transportation providers in planning, coordinating, and implementing transportation decisions.

3.2 Dallas Area Rapid Transit (Railway Implementation)

Dallas Area Rapid Transit (DART) operates in the city of Dallas and 12 other surrounding cities with an extensive network of DART Light Rail, Trinity Railway Express commuter rail, bus routes and paratransit services which moves more than 220,000 passengers per day across a 700-square-mile service area.³

3.3 Trinity Metro

Trinity Metro (TM) was created in 1983 as a regional transportation authority of the State of Texas and is not an agency or department of any of its member cities. The agency annually provides nearly 10 million passenger trips on buses, vanpools and the Trinity Railway Express, which it jointly owns and operates with Dallas Area Rapid Transit. The governing body is an eleven-member board of directors with eight appointed by the Fort Worth City Council and three by Tarrant County Commissioners Court.⁴

3.4 Trinity Railway Express

Trinity Railway Express (TRE) began operations in December of 1996. It is jointly owned by DART and Trinity Metro to provide a commuter rail service between downtown Dallas and downtown Fort Worth. The TRE has 10 stations along the route, provides daily service and had over two million annual rides in 2018.

3.5 Texas Department of Transportation

The Texas Legislature originally established the Texas Department of Transportation (TxDOT) in 1917 as the Texas Highway Department. TxDOT has a workforce of more than 12,000 employees and is made up of engineers, administrators, designers, environmental professionals, accountants, maintenance workers, and many other professionals. Headquartered in Austin, TxDOT is made up of 25 district offices and 21 divisions. This project is located in the Dallas TxDOT District which plans, designs, builds, operates, and maintains the

³ <https://www.dart.org/about/aboutdart.asp>

⁴ <https://ridetrinitymetro.org/about/leadership/>



state transportation system in the following counties: Collin, Dallas, Denton, Ellis, Kaufman, Navarro, and Rockwall.

3.6 BNSF Railway

BNSF Railway (BNSF) is one of North America’s leading freight transportation companies operating on 32,500 route miles of track in 28 states and three Canadian provinces. Headquartered in Fort Worth, BNSF employs a workforce of more than 8,800 people in Texas, with an annual payroll of nearly \$1 billion. Nearly 15 percent of BNSF’s vast 32,500-mile rail network, including sections of the Transcon, is in Texas, ensuring goods and commerce flow in and out of the Lone Star State. Annually, BNSF moves more than 5.8 million carloads of freight in Texas, helping to reduce truck traffic and congestion on our highways and reducing emissions. Since 2015, BNSF has been instrumental in locating 57 new or expanded facilities in Texas, creating approximately 1,440 jobs and more than \$4 billion in investments.

4.0 Grant Funds, Sources, and Uses of Project Funds

Exhibit 7 details the estimated project costs in Phase 1 B of the NT MOVES program and the potential project funding sources. The amount of this FY 2019 INFRA Grant request is **\$56 million**, designated for use for construction and design/engineering. The NT MOVES Phase 1 B Projects are proposed to be built with **53 percent (INFRA) federal funds and 47 percent local, other federal and private funds**. The full breakdown is detailed in Exhibit 8.

**Exhibit 7: NT MOVES Project Funding Summary

Regional Rail Study Phase 1 B Projects							
Project	Subdivision	Costs	Funding				Total Funding
			NCTCOG/ Federal	BNSF	DART / TRE	INFRA	
Construct Centralized Traffic Control (CTC), Irving – S. Hebron Construct and Install CTC Siding at Gribble and Elm Fork Bridge Replacement with Doubletrack.	Madill (DART)	\$ 72,700,000	\$ -	\$ -	\$ 30,000,000	\$ 42,700,000	\$ 72,700,000
Double Track Stemmons Freeway Bridge – (DESIGN)	DFW (TRE)	\$ 3,500,000	\$ 2,000,000	\$ -	\$ -	\$ 1,500,000	\$ 3,500,000
Double Track Medical/Market Center to Stemmons Freeway	DFW (TRE)	\$ 23,500,000	\$ 750,000	\$ 2,000,000	\$ 12,000,000	\$ 8,750,000	\$ 23,500,000
DT North Junction to Union Station – (DESIGN)	DFW (TRE)	\$ 3,050,000	\$ 2,250,000	\$ -	\$ -	\$ 800,000	\$ 3,050,000
Implement ClearPath Technology	ALL	\$ 2,250,000	\$ -	\$ -	\$ -	\$ 2,250,000	\$ 2,250,000
Total		\$ 105,000,000	\$ 5,000,000	\$ 2,000,000	\$ 42,000,000	\$ 56,000,000	\$ 105,000,000

**BNSF minimum contribution is \$2M toward the project element identified. Additional scope and matching funds possible, up to \$78 Million total.

The cost to complete NT MOVES Phase 1 B is estimated at \$105 million. Exhibit 8 shows the cost breakdown according to the different elements of the projects combined. To see a full breakdown of the cost per project please see Attachment 5: Project Supporting Documents.



Exhibit 8: NT MOVES Cost by Category

Cost Category	Total Cost	Funding Source	
		INFRA	Other Sources
Design/Engineering	\$ 6,550,000.00	24%	76%
Technology	\$ 2,250,000.00	100%	0%
Construction	\$ 96,200,000.00	54%	46%
General	\$ 25,000,000.00		
Track	\$ 12,000,000.00		
Bridge	\$ 43,500,000.00		
Signal	\$ 15,000,000.00		

5.0 Merit Criteria

5.1 Criterion #1: Support for National or Regional Vitality

NT MOVES Phase 1 B adds rail capacity to the DART-owned Madill Subdivision between Carrollton and Irving and on the TRE line between Irving and Dallas. This capacity will protect the public benefits generated by freight movement by rail. Those public benefits are generated by BNSF’s ongoing freight operations and the increased operations that will be enabled by its 2019 investments in rail capacity on the Madill Subdivision north of Carrollton. Furthermore, track improvements on the TRE and the implementation of Clear Path technology provide freight benefits and will also provide benefits to passenger rail service across the DFW region along with interstate passenger service through Amtrak by maximizing capacity of available assets through more precise dispatching control. The significant national and regional economic benefits cannot be understated as capacity and reliability within the region are improved, providing a multimodal freight alternative to increased truck traffic over the road.

As stated in Section 1.3, North Central Texas is a major freight center for the nation. It is the crossroads of major highways and Class I railroads. As such, the efficient movement of goods and people through this region is vital to regional and national economic vitality. With goods movements flowing to and through the region from the ports of Houston and LA/Long Beach and moving north from Mexico, congestion can slow goods movements both on the highway and the rail system. The NT MOVES Program looks to improve movements across all modes and enhance travel times by minimizing and eliminating rail bottlenecks with the implementation of proposed projects described in this documentation. The expansion of rail lines at such a critical logistical crossroads enhances critical connectivity to the region, the State of Texas and the nation as a whole.

5.1.1 Benefit-Cost Analysis Results

The present value of the NT MOVES Phase 1 cost and its benefits in 2017 dollars is shown in Exhibit 9. Applied to a remaining project cost of \$105 million, a substantial net benefit is achieved for the discounting scenario. Based on a 20-year analysis period, the overall effect of this transportation investment will result in a positive net benefit of approximately \$1.03



billion at seven percent, after subtracting out the residual construction and maintenance and operating costs of the project. The calculations used to determine these totals are discussed in more detail in Attachment 2.

Exhibit 9: NT MOVES PHASE 1 A and B Benefit Cost Analysis

Costs and Benefits	Total Phase 1 (A and B)	Phase 1 A Only
Costs		
Eligible Costs	\$67,020,701	\$48,483,060
Previously incurred Cost	\$28,314,569	\$28,314,569
Total Cost	\$95,335,270	\$76,797,629
Benefits		
Passenger Travel Time Savings	\$6,936,695	\$0
Freight Travel Time Savings- Rail + Truck	\$74,478,940	\$66,862,150
Operating Costs Savings	\$563,483,390	\$518,701,830
Emissions Reductions Benefit	\$25,639,276	\$23,618,908
Crash Reduction Benefit	\$18,522,430	\$17,064,668
Pavement Maint/ Preservation Savings	\$452,936,549	\$416,602,626
Total Societal Benefits	\$1,141,997,280	\$1,042,850,182
Value of Remaining Service Life	\$8,830,114	\$6,808,708
Less Operation and Maintenance Cost	-\$22,258,109	-\$17,582,139
Total Benefit	\$1,128,569,285	\$1,032,076,752
Net Present Value (NPV)	\$1,033,234,015	\$955,279,123
Benefit-Cost Ratio (BCR)	11.84	13.44

The overall net effect of this transportation investment will result in a positive return on investment of **11.84 percent (\$1.13 billion/\$95 million)**, after discounting at seven percent. Though only based on a 20-year period of analysis, the results of this BCA clearly indicate that the NT MOVES Phase 1 will provide a lifetime of regional benefits for travelers and goods movement.

5.2 Criterion #2: Leveraging of Federal Funds

The public partners and BNSF recognize the emphasis placed on maximizing local financial contribution under the INFRA program. To do so, the project team came together within TxDOT’s *DFW Freight and Passenger Rail Study* to pledge a cooperative approach of pursuing these projects under a multi-year program rather than as individual agencies on an individual project basis. This approach enables the parties to create a compelling vision for the entirety of the regional investments being made and, validated by data-driven computer simulation modeling results, demonstrating that while *each one of these projects has independent utility and, on its own, will provide an incremental increase in rail capacity for the region, all are*



necessary to achieve the modeled capacity results. The non-federal financial share on this program of projects is comprised of funds from three sources. First, NCTCOG is contributing \$5 million in funds, which are federal funds, that will be engaged for the design/engineering of the projects. Second, DART and TRE are contributing \$42 million in funds which will be engaged for Construction on Project 1 and Project 3. In addition to these public funds, BNSF will provide a \$2 Million match toward the double tracking of the TRE line (Project 3). This **42% local, non-federal match is committed, stable, and dependable per the parameters outlined in Section C.2 of the Notice of Funding Opportunity.** Furthermore, the partners are committed to maintaining the assets in a state of good repair after implementation. In fact, **the incremental freight traffic growth generated by this program of projects generates ongoing, recurring operating revenue for the public assets** as described in Section 1.0 of this application. **The federal funds sought in this grant application are leveraged by a 42% local, non-federal match.** Given the above, Exhibit 10 is a summary of funding sources and federal share:

Exhibit 10: Funding Sources and Federal Share

SOURCE	AMOUNT	FUNDING SHARE
NCTCOG/ Other Federal	\$5,000,000	5%
DART	\$42,000,000	40%
BNSF	2,000,000	2%
INFRA	56,000,000	53%

5.3 Criterion #3: Potential for Innovation

5.3.1 A New Approach

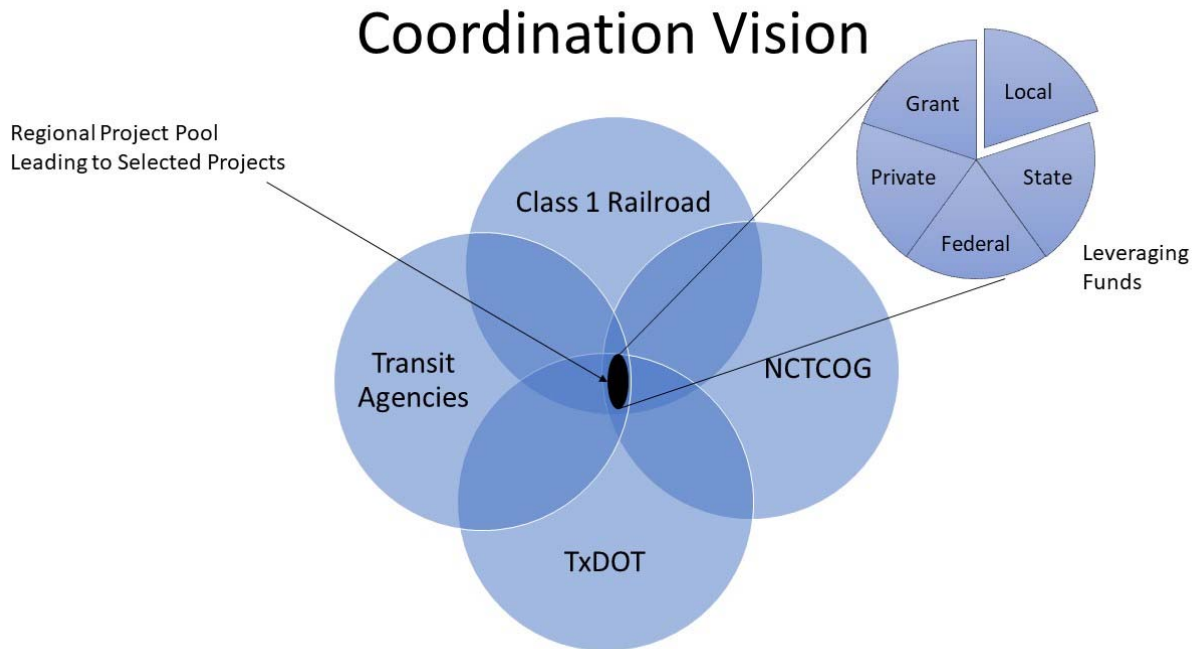
The NT MOVES Program is an ambitious and innovative approach to resolving long standing congestion issues with freight and passenger rail integration in the DFW region. TxDOT Rail Division, NCTCOG and the private rail sector have come together to do a regional rail study to help identify and resolve rail bottle necks and operational issues within the North Central Texas region. While working with the local transit providers and private freight rail providers it was determined that there would need be two phases to this study. Phase 1 would focus on freight and passenger rail integration congestion issues and Phase 2 would focus on rail/highway interaction issues. This has resulted in a systemwide analysis of the rail network in the DFW region and systemized approach to resolving rail issues.

Through Rail Traffic Controller modeling, with input from both the UPRR, BNSF and local transit agencies, the proper projects are being identified and are being addressed as soon as possible. The full study will be completed later this year, but Phase 1 of the study has resulted in the North Texas MOVES program. This approach allows for regional rail partners to come together quickly and work to identify funds to be used for the projects. DART and BNSF have identified opportunities to work together on design and track construction. TxDOT is also supporting the effort through assistance with engineering, design and environmental study support. This all helps to reduce the soft cost, construction timelines and track outages during implementation.



The regional partners are now working together on projects that are the highest priority for all. Please see Exhibit 11 for this coordination vision.

Exhibit 11: Coordination Vision



5.3.2 Operational Improvement

The NT MOVES program is committed to innovation to ensure the rapid implementation of new rail capacity assets and the full utilization of those assets. First, *Phase 1 B includes the implementation of Clear Path technology, developed by Railinc, to increase velocity and efficiency among freight and passenger users in the DFW complex.* This platform, a centerpiece of the Chicago terminal improvement program (CREATE), has proven its effectiveness in improving throughput, safety, and on-time performance in congested, urban rail corridors. Freight carriers in DFW will gain visibility and a clear view of all inbound, through and outbound rail traffic on the shared-use public infrastructure to understand the likely availability of train “slots” through the complex for their traffic. At the same time, the DART-controlled dispatchers of the shared-use assets will be able to see inbound freight demand far enough in advance to provide clearance to traverse the complex with the confidence those through freight moves will not impact passenger on-time performance.

5.4 Criterion #4: Performance and Accountability

NCTCOG proposes that this INFRA Grant be based on the conditional award of traditional build contractor by September 2021 for all projects. If awarded INFRA funding, NCTCOG will work with DART, TM, BNSF and TxDOT to investigate performance incentive clauses. DART has a Resident Construction Manager’s (RCM) Manual to provide policies and procedures upon which the RCM will administer DART’s contracts. The RCM will use these to administer each contract through final design, manufacturing, installation, construction, final testing, and turn over to



DART/TRE. Additionally, NCTCOG will request regular project updates from rail partners as part of future Regional Transportation Council meetings. Once construction has been initiated, progress and status will be monitored through a project specific website to be developed by the contractor.

DART/TRE and BNSF, as stated in Section 5.3, have developed an innovative approach to working together on building Phase 1 B projects. This creates direct accountability by the regional rail partners throughout the construction process. DART/TRE and BNSF, starting with the construction phase and then with the operation of rail traffic on the subdivisions in the Phase 1 B corridor, will work together to ensure that the improvements will be interoperable, and performance will improve. BNSF will coordinate with NCTCOG and DART/TRE on the increased freight rail movements and decreased dwell times at train meets as a performance measure for the improved rail traffic.

6.0 Project Readiness

6.1 Technical Feasibility

The NT MOVES program has been developed over several years, considering the needs of the corridor and desires of local stakeholders. The design of the projects will be developed and approved over the course of the next year. The planning efforts include the preparation of environmental documents, public involvement, traffic analysis, and DART Board approval. The project designs will need to receive approvals from the Federal Railroad Administration (FRA) before the projects can let. Additionally, because the projects' cost estimate is over \$100 million (Major Project), the project will undergo value engineering, and a draft Project Management Plan (PMP) will be prepared. Capital cost estimates included in this application were developed by performing a quantity takeoff of the schematic design. Recent standard unit prices for bid items were applied to the quantities to develop the project construction cost. Construction trackwork and bridges included a 20 percent contingency with a 30 percent contingency for signal work and 15 percent for utility relocation. Additional items such as aesthetics, mobilization, and traffic control were estimated using a percentage of the construction cost based on experience.

6.2 Project Schedule

The NT MOVES Phase 1 B projects are set for an expedited delivery with the means to move ahead well before the INFRA requirement of September 30, 2022, for obligation of funding and construction commencement within 18 months thereafter. The project schedule shown in Exhibit 13 indicates obligation of funding and construction beginning in late 2021. Construction is expected to take 1 to 2 years and the new improvements would be open to rail traffic in 2023.

BNSF and DART/TRE will make the preliminary design documents and performance requirements available to interested contractors. The design and construction will be procured



under a single competitively bid contract awarded through a two-step process. The first step involves a qualifications-based screening to develop a shortlist of qualified contractor teams to provide detailed bids. The second step is a best value assessment of bids from the shortlisted teams.

All necessary activities will be completed to allow INFRA funds to be obligated sufficiently in advance of the statutory deadline and any unexpected delays will not put the funds at risk of expiring before they are obligated. The project can begin construction quickly upon obligation of INFRA funds and grant funds will be spent expeditiously once construction starts. All real property and right-of-way acquisition will be acquired in a timely manner in accordance with 49 Code of Federal Regulations (CFR) part 24, 23 CFR part 710, and other applicable legal requirements.

6.3 Required Approvals

6.3.1 Environmental Status and Approvals

The proposed projects would follow the NEPA process due to the use of federal funds. The FRA would be the designated authority for the NEPA process for all projects within this grant and would be the final reviewer and approver of any NEPA documentation. This grant includes multiple projects in multiple locations and each location would be subjected to FRA's NEPA process, independently. Following FRA's process, each individual project would be covered as a Categorical Exclusion since the projects do not individually or cumulatively have significant impact on the human environment. To facilitate NEPA categorical exclusions, FRA has developed a worksheet for these type of low impact projects. Most of these projects would fall under the "minor rail additions" category for NEPA action and all the listed projects would be categorically excluded in NEPA under FRA. No new right-of-way is anticipated for any project in this grant submittal. These worksheets would be completed as part of the project process and submitted to FRA for approval and NEPA clearance. It is expected these sheets will be completed prior to the grant submittal and approval would occur within a few months after the submittal to FRA. Please see Attachment 5 FRA worksheets for these projects. All the proposed projects would follow any mitigation requirements for potential impacts that may occur including waters of the US, threatened or endangered species and cultural resources.

6.3.2 State and Local Approvals

DART Board Approval, after the Request for Qualification documents, issue solicitation, evaluation, and award recommendations are completed the individual projects will be brought to the DART Board.

- Permits involving waters of the United States will be permitted under nationwide Section 404 permits. No major Section 404 (of the Clean Water Act) issues have been identified.
- A revision to the State Transportation Improvement Program/Transportation Improvement Program (STIP/TIP) will be necessary to add the INFRA Grant funding to the project. The modification will be coordinated between NCTCOG and TxDOT during a quarterly STIP/TIP



modification cycle. It is anticipated that the revision would occur in August 2020 (assuming grant award by May 2020).

6.3.3 Federal Transportation Requirements Affecting State and Local Planning

NCTCOG’s current Long-Range Mobility Plan is *Mobility 2045*. The document includes several rail strategies that are to be implemented to expand both freight and passenger rail services.

Mobility 2045 (www.nctcog.org/trans/plan/mtp/2045) contains several Programs and Projects that support NT MOVES Phase 1. Specific references include:

- Freight System/Network Planning (FP2-120) – This includes implementing recommendations of the Regional Rail Study, which will be completed later this year and contain the projects in the NT MOVES Program.
- Regional Connections: Next Generation Transit Program (TR2-003) – This includes recommendations for improving services through public and private agencies, implementing service as needed in communities throughout the region through 2045.

6.4 Project Risks and Mitigation Strategies

Exhibit 12: Identified Risks and Opportunities

Risk/Opportunity	Chance or Occurrence	Likely Impact to Costs	Likely Impact to Schedule	Potential Mitigation Strategy
Unplanned Work (changed orders)	100%	\$2 million	Unknown	As design moves from 30% to final design this will be mitigated with a contingency
Increased Right-of-Way Costs	25%	\$2 million	None	DART/TRE owns the right-of-way the work is to be done on
Third Party Impacts (permits, utilities, etc.)	25%	\$5 million	6 months	Early coordination with all third-parties
CTC Cost Increase	25%	\$2 million	None	As design moves from 30% to final design this will be mitigated with a contingency
Bridge Rehabilitation	50%	\$10 million	None	As design moves from 30% to final design this will be mitigated with a contingency



6.4.1 Environmental Uncertainties

Project risks should be minimal because the proposed work is Categorically Exempt. Projects are on railroad right-of-way and all stakeholders fully support the project.

7.0 Large/Small Project Requirements

At an estimated cost to complete of \$105 million, NT MOVES Phase 1 B would be considered a large project for award. Exhibit 13 illustrates how the project satisfies statutory requirements enumerated at 23 US Code 117(g).

Exhibit 13: Large Project Requirements

Statutory Requirement	How this project meets the requirement
1. Does the project generate national or regional economic, mobility, safety benefits?	Yes. By increasing capacity and implementing better technology to the Phase 1 B corridor, the projects will relieve both rail and highway congestion; enhance mobility, connectivity, and reliability; improve air quality; enhance safety; and enhance economic competitiveness. See Section 1.3 (Transportation Challenges Addressed) .
2. Is the project cost effective?	Yes. The overall net effect of this transportation investment will result in a positive return on investment of 11.84% (\$1.13Billion/\$95 Million) after discounting at 7%. Though only based on a 20-year period of analysis, the results of this BCA clearly indicate that the NT MOVES Phase 1 B will provide a lifetime of regional benefits for travelers and freight providers. The project is cost effective as shown in the benefit cost analysis summary tables in Section 5.1.1 (Benefit-Cost Analysis Results) .



Statutory Requirement	How this project meets the requirement
<p>3. Does the project contribute to one or more of the National Goals under 23 US Code 150 and shown below?</p> <ul style="list-style-type: none"> ▪ Safety ▪ Infrastructure Condition ▪ Congestion Reduction ▪ System Reliability ▪ Freight Movement and Economic Vitality ▪ Environmental Sustainability ▪ Reduced project delivery delays 	<p>Yes, the project contributes to national goals.</p> <p>The project does result in safety improvements to the BNSF and DART/TRE owned trackage and to the nearby highways as discussed in Section 1.3.4 (Enhancing Safety).</p> <p>The project will replace the track, bridges and signals in the NT MOVES Phase 1 B corridor. This will result in a significant improvement to the infrastructure condition ratings in the region.</p> <p>The program does reduce the rail congestion along throughout the region as discussed in Section 1.3.1 (Relieving Congestion).</p> <p>The program does make improvements to reliability to the NT MOVES Phase 1 B corridor as described in Section 1.3.2 (Enhancing Mobility, Connectivity and Reliability).</p> <p>The program does contribute to improved freight movement and economic vitality as discussed in Section 1.3.5 (Enhancing Economic Competitiveness).</p> <p>The program also contributes to improved economic sustainability as discussed in Section 5.1 (Criterion #1: Support of National or Regional Vitality).</p> <p>Phase 1 B will result in better air quality and will have a positive impact on the environment as discussed in Section 1.3.3 (Improving Air Quality).</p> <p>The Program, as stated in Section 5.3 (Criterion #3: Potential for Innovation), is a collaborative effort that is drawing resources from both the private- and public-sector.</p>
<p>4. Is the project based on the results of preliminary engineering?</p>	<p>Yes, 30% preliminary engineering drawings have been developed or are being developed for the projects as discussed in Section 6 (Technical Feasibility).</p>
<p>5a. With respect to non-federal financial commitments, does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?</p>	<p>Yes, a combination of local, state and private funding sources will be used to design and construct the project (see Exhibit 6 and 7). To ensure long-term operations, the public sector (DART/TRE) will retain ownership of the revenue stream from the track usage, which will be used to operate, maintain, and rehabilitate the corridor.</p>



Statutory Requirement	How this project meets the requirement
5b. Are contingency amounts available to cover unanticipated cost increases?	Yes. Should unanticipated cost increases occur, DART/TRE have federal and state revenue sources that could be used to cover the overruns. The cost estimates included a 20% contingency for track and bridge construction items, 30% for signal work, and 15% for utility relocation.
6. Is it the case that the project cannot be easily and efficiently complete without other Federal funding or financial assistance available to the project sponsor?	The cost to complete NT MOVES Phase 1 B is estimated at approximately \$105 Million. The need for the project has resulted in an expedited schedule that will require immediate funding. The INFRA grant is one of the funding sources that is available to expedite the entire project rather than building it in phases and delaying benefits.
7. Is the project reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project?	Yes. The projects will be Category Exempt as part of the NEPA process, there is no significant right-of-way purchases anticipated, BNSF has already begun Phase 1 A, and the projects for Phase 1 B will be programmed in the TIP/STIP upon grant award. The Phase 1 B projects are expected to begin construction in 2021 as discussed in Section 6.2 (Project Schedule) .

ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

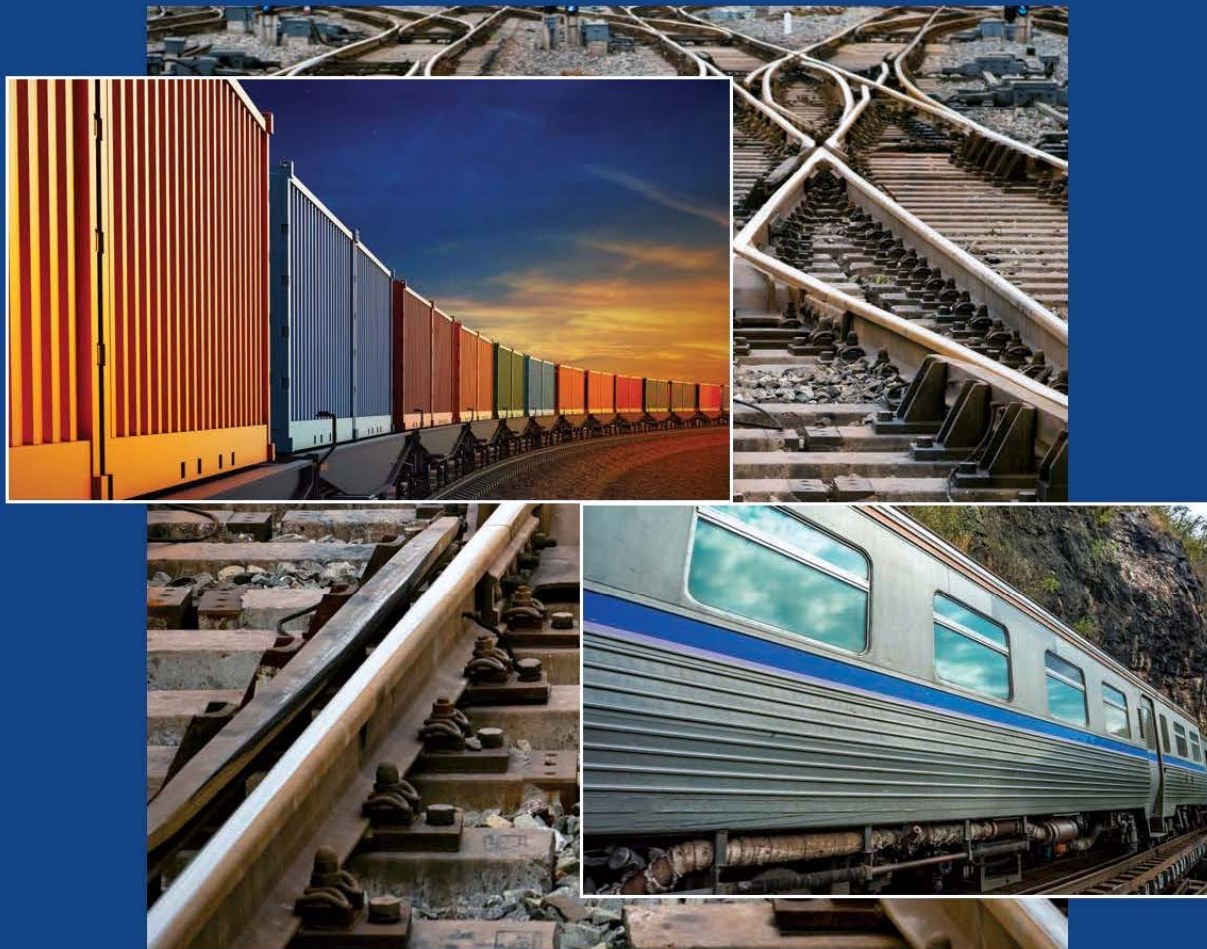
Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	<input type="text" value="1 Project Narrative.pdf"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
2) Please attach Attachment 2	<input type="text" value="2 BCA Methodology.pdf"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
3) Please attach Attachment 3	<input type="text" value="3 BCA_Tables.xlsx"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
4) Please attach Attachment 4	<input type="text" value="4 Letters of Support.pdf"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
5) Please attach Attachment 5	<input type="text" value="5 Project Support Documents.p"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
6) Please attach Attachment 6	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
7) Please attach Attachment 7	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
8) Please attach Attachment 8	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
9) Please attach Attachment 9	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
10) Please attach Attachment 10	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
11) Please attach Attachment 11	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
12) Please attach Attachment 12	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
13) Please attach Attachment 13	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
14) Please attach Attachment 14	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>
15) Please attach Attachment 15	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/>	<input type="button" value="View Attachment"/>

North Texas Multimodal Operations, Velocity, Efficiency, and Safety (MOVES) Program

Phase 1 B

Fy 2019 Infra Grant Application
Attachment 1 – Cover Page And Project Narrative



North Central Texas Council of Governments



Cover Page	
Project Name:	North Texas MOVES Program-Phase 1 B
Project Sponsor	NCTCOG
Was an INFRA application for this project submitted previously? (If Yes, please include title).	No
INFRA Request Amount	\$56,000,000
Estimated federal funding (excl. INFRA)	\$5,000,000
Estimated non-federal funding	\$44,000,000
Future Eligible Project Cost (Sum of previous three rows)	\$105,000,000
Previously incurred project costs (if applicable)	\$0
Previously incurred project cost (if applicable)	\$0
Are matching funds restricted to a specific project component? If so, which one?	Yes – \$42,000,000 is restricted to projects on the DART/TRE rail line. Please see the budget summary for the allotted funds.
Project Eligibility:	
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway Freight Network (NHFN)?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway System (NHS)?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?	\$0
Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	\$105,000,000
Project Location:	
State(s) in which project is located	Texas
Small or large project	Large
Urbanized Area in which project is located, if applicable.	Dallas - Fort Worth - Arlington
Population of Urbanized Area.	7,399,662 (2017)
Is the project currently programmed in the:	
▪ TIP	No
▪ STIP	No
▪ MPO Long Range Transportation Plan	Yes – Mobility 2045: The Metropolitan Transportation Plan for North Central Texas www.nctcog.org/trans/plan/mtp/2045
▪ State Long Range Transportation Plan	No
▪ State Freight Plan	Yes – Texas Freight Mobility Plan www.dot.state.tx.us/move-texas-freight/studies/freight-plan.htm



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- Attachment 3: Benefit-Cost Analysis Tables
- Attachment 4: Letters of Support
- Attachment 5: Project Supporting Documents



Executive Summary

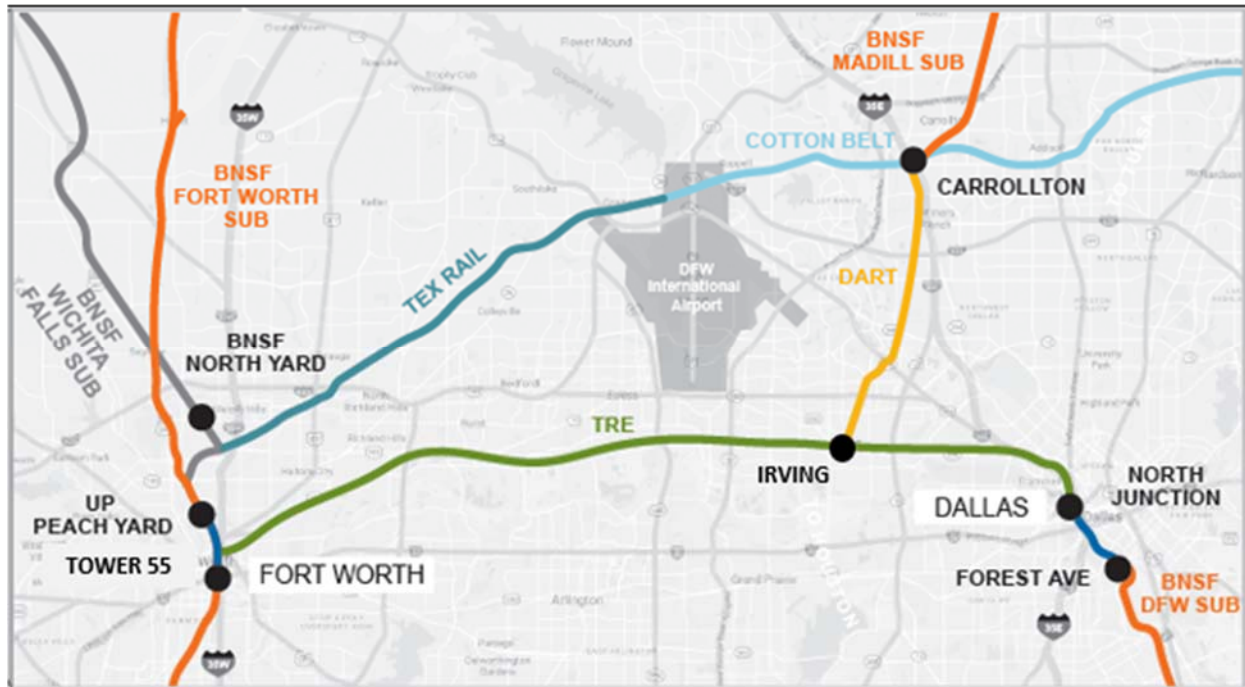
The North Central Texas Council of Governments (NCTCOG) and its partners, Dallas Area Rapid Transit (DART) and Trinity Railway Express (TRE) are pleased to submit this application for an Infrastructure for Rebuilding America (INFRA) discretionary grant for rail improvements on the commuter rail network owned by DART and operated by DART, Trinity Metro (TM), and the Trinity Railway Express commuter service. *The North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (NT MOVES – Phase 1 B) is a long-range plan for increasing freight and passenger mobility in Dallas–Fort Worth (DFW) through strategic investment in rail capacity to improve multimodal transportation.*

This program is unique because *BNSF Railway’s (BNSF) freight franchise utilizes track owned by DART and TM to traverse the metroplex north and south through Dallas and between Fort Worth and Dallas for west – east movement.* At the same time, BNSF customer freight demands in the region have increased significantly. In the spirit of cooperation and partnership, BNSF performed computer simulation modeling to understand the impact future passenger operations would have on BNSF freight operations, over the territory, due to the close operational alignment between the two networks. *The results of BNSF’s technical modeling effort, and subsequent dialogue with the public partners, has yielded a compelling vision for the cooperative growth of both freight and passenger rail operations in DFW.* This dialogue and the scope of opportunity continues to broaden as communities within and beyond the DFW urban core begin to consider how their surface transportation needs are related to the expansion of rail service and how those needs might be addressed in the future through a similar approach.

NT MOVES - Phase 1 B, will accommodate the anticipated freight rail growth on the BNSF network and continued on-time performance of the TRE commuter service. *The composite benefit-cost ratio for all project components is 11.84 or better, with a Net Present Value of 1.03 billion* (as discussed in Section 5.1.1). Tying it all together will be an innovative technology platform called Clear Path™, in use today in the Chicago terminal, to ensure that public and private users of the DFW rail network are communicating to the greatest extent possible to maximize utility of the shared use assets. Future phases of NT MOVES will include additional rail capacity projects, road/rail grade-separation projects on rail corridors throughout the region and accompanying private investment as the region continues to grow. The following is a brief review of the projects in Phase 1, primarily comprised of rail capacity projects, from west to east across the metroplex.



Exhibit 1: Rail Providers Phase 1 B



Centralized Traffic Control and Track Expansion on the Madill Subdivision from the Red River to Irving will enhance train fluidity and capacity on this key route that handles, among other business, tons of aggregate per year moving from origins in southeast Oklahoma to destinations in Irving, Texas, and points further south.

Doubletracking on the TRE is crucial to maintain fluidity of the TRE operation as well as the BNSF freight operation. One portion of this doubletracking, from Medical Market Center to Stemmons Freeway, is ready for construction. Two other projects – doubletracking the Stemmons Freeway IH 35 bridge and the North Junction terminal area – require significant design efforts that must be funded now so that these projects can be made ready for funding under future phases of the North Texas MOVES program.

Design and develop a concept of operations for this traffic management application and implement the hardware and software backbone structure of Clear Path technology, enormously successful in the nation’s busiest freight rail hub, Chicago. Clear Path technology will empower all agencies and users of the DFW metroplex rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex.

Public investments in the NT MOVES, Phase 1 B, program are designed to integrate seamlessly with significant private investment and rail capacity on the BNSF network based upon the outcome of sophisticated computer simulation modeling. The program performs well in all four INFRA program Merit Criteria priorities, explained in more detail later in the application.



- **Support of National or Regional Economic Vitality:** As discussed in Section 1.3.5, the infrastructure improvements afforded by this project will enhance national and regional freight flows to and from Southern California, the Pacific Northwest, Chicago, and Mexico, as well as regional traffic originating and terminating between Texas and the Midwest. The rail capacity projects will benefit passenger and commuter service across the DFW metroplex and interstate passenger service operated by Amtrak, which provides multimodal commuter solutions that take people and cars off the highway.
- **Leveraging of Federal Funding:** As discussed in Section 5.2, the total project budget for NT MOVES Phase 1 B is \$105 million. The project partners request \$56 million in federal funds, approximately 53% of the overall budget, representing significant leverage of matching funds and non-federal local funds. DART/TRE have pledged \$42 million, North Central Texas Council of Governments has pledged \$5 million, and BNSF has pledged \$2 million (that could grow to as much as \$78M) in private capital to fund elements of the program. In addition, BNSF is spending approximately \$30 million in rail capacity projects on its adjacent network (not pledged as matching funds), which generates public benefits protected by the public's complementary investment on its network. Furthermore, these projects enable additional freight traffic to utilize the DART-owned trackage, which results in increased revenues paid from BNSF to the transit agencies for a long-term, sustainable source of operating income for the public rail network.
- **Potential for Innovation:** NCTCOG and DART have studied the successful implementation of Clear Path technology in support of the Chicago rail network under the CREATE program and they have committed to implement the platform in the DFW region. This innovation enables sharing of dispatch and train movement information across the transit agencies and freight operators to fully utilize capacity offered by public, shared-use rail assets. Furthermore, BNSF, DART, NCTCOG, and the Texas Department of Transportation (TxDOT) are working to identify opportunities to collaborate on design development and track construction to reduce soft costs, construction timelines, and track outages during implementation.
- **Performance and Accountability:** The project partners have performed the work necessary to ensure these projects are ready to implement upon the award of grant funds and execution of grant agreements. In addition, the partners will commit to specific service level improvements for the freight and passenger utilization of the assets that receive federal funds. For BNSF, this provides the ability to operate additional freight trains daily, north to south over the lower Madill Subdivision and east end of the Trinity Railway Express line. For the commuter agencies, this means the ability to increase service and optimize efficiency. Finally, BNSF is also on schedule to install privately-funded network infrastructure before the publicly-funded network features are installed.



1.0 Project Summary

NT MOVES is an emerging program of road and railway improvements in the DFW region intended to enhance freight and passenger mobility across all modes. Projects in NT MOVES Phase 1 A were identified by BNSF as freight capacity needs to serve customers in the region and those projects are underway, 100% funded by BNSF, not pledged as matching funds, and scheduled to be complete before the publicly-funded network features are installed. Phase 1 B projects, the subject of this application, are located on the DART-owned corridor between Carrollton and Irving and the TRE rail line between Irving and Dallas. NT MOVES also contemplates future grade separations and capacity improvements on the roads and highways across the region with which those rail lines interact. The deliberate, technical approach via rail simulation computer modeling that yielded this portfolio of projects has been adopted by BNSF and the public partners and demonstrates the interdependency of these projects. Rail Traffic Controller (RTC) software was used with input from TxDOT and the regional rail partners. Rail operation simulations were completed to determine the projects most needed to relieve freight congestion. By modeling current and future freight and passenger demands along regional corridors, the highest priority projects were identified that would allow the best path forward.

1.1 Project Size and Elements

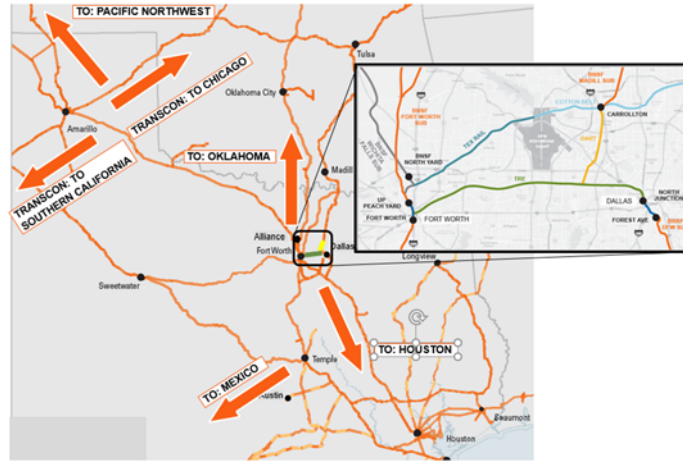
The Trinity Railway Express (TRE), jointly owned by DART and Trinity Metro, is a vital commuter artery for the DFW region, connecting downtown Dallas with downtown Fort Worth and three stops in the mid-cities. Initiated in 1996, its ridership has maintained an average annual ridership since 2013 and it currently serves more than 2 million passengers per year by means of 340 trains per week. At the same time, it hosts freight railroad operations by BNSF, Fort Worth and Western, and Dallas Garland and Northeastern who move more than 2.64 million carloads across various segments of the line each year, as well as daily Amtrak movements. *The Madill Sub between Carrollton and Irving and the east end of the TRE (Irving to Dallas) handles the majority of freight traffic on the line due to the north-south link, it connects BNSF's Madill and DFW rail line Subdivisions.* DART also owns the lower end of the Madill Subdivision between Irving and Carrollton. While no passenger service operates on this line today, it is a critical section of railroad for freight operations, including two high-volume bulk aggregate customers.

The DFW region is a central node for the BNSF rail network in Texas. BNSF assets in and through DFW are critical to serving the freight demand driven by the booming population growth of the "Texas Triangle," the geography between the three metropolitan areas of DFW, Austin, and Houston. The three primary arteries for BNSF through DFW are the Fort Worth Subdivision on the west, through the City of Fort Worth; the Creek, Madill, and DFW rail line Subdivisions on the east through the City of Dallas and over the publicly-owned DART network; and over the TRE line between Fort Worth and Dallas. The Fort Worth Subdivision also serves traffic into and out of the BNSF Alliance Hub. This intermodal and manifest serving yard, at the confluence of IH 35W and the Fort Worth Alliance Airport, "billed as the world's first purely industrial airport" has grown rapidly since its construction in 1994 and facilitated more than 915,000 intermodal lifts in 2018. It is BNSF's third busiest intermodal terminal, by lift count. This region serves



cross-country rail traffic – to and from Southern California, the Pacific Northwest, Chicago, and Mexico – as well as regional traffic originating and terminating between Texas and the Midwest.

Exhibit 2: The BNSF Network



Today, these routes' ability to handle freight traffic are severely imbalanced due substantially to the public's inability to invest in rail capacity. Under BNSF's trackage rights agreement with DART and TRE, which extends from Carrollton to Irving and between Ft. Worth and Dallas, BNSF has the right to operate its freight trains over the public network and relies upon the availability of freight capacity on the lower Madill Sub, between Carrollton and Irving, to serve multiple customers in this region. For example, 30 – 40 BNSF freight trains traverse the Fort Worth Subdivision daily, 6 – 10 BNSF trains traverse the east side route via Creek, Madill, DART/TRE and DFW rail line subdivisions daily, and only 1 – 2 BNSF trains per day can traverse the TRE line between Fort Worth and Dallas. Computer simulation modeling performed by BNSF demonstrates that the public network investment requested in this grant application is part of the overall program of projects required to realize the calculated public benefits while protecting existing freight capacity on the publicly-owned portion of the network. **Without investment to accommodate freight movement over the public network, the freight rail capacity through Dallas and the surrounding communities south toward Houston will be negatively impacted. NT MOVES Phase 1 B is a portion of the system of projects, validated by computer simulation modeling and input from the public and private sectors, that adds capacity to facilitate freight movement on the Fort Worth and Dallas freight routes, and commuter operations between Fort Worth and Dallas.** Each construction project is described in more detail below and illustrated in Exhibit 3. When completed, this program will deliver a fully-Centralized Traffic Controlled (CTC) railroad between Denison and Dallas, with doubletracking of the TRE largely complete between Irving and Dallas.¹ In addition to these construction projects, there are two DESIGN projects for which funds are being sought in order

¹ The only remaining singletrack sections of TRE between Irving and Dallas will be the Stemmons Freeway Bridge and the Union Station area, which will require significant design development, engineering, and environmental review. Funds for these efforts are sought under this program of projects.



to progress what are likely to be multi-year design efforts. The design project would be realized as construction projects in later Phases of the NT MOVES program.

Exhibit 3: NT MOVES – Phase 1 B Projects



- 1. Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Construct and Install CTC Siding at Gribble** – Install automatic rail traffic signal system between South Hebron and Elm Fork Bridge. Install power switches that can be controlled remotely (by a Dispatcher) from main line into new 10,300 linear foot siding (~ 7,300 LF clear) at Gribble. Construct doubletrack from Gribble to siding at MP 707.6, replacing and doubletracking deteriorating Elm Fork Bridge. Project increases main line capacity for through train traffic by enabling expeditious movement of trains off and on the main track. This improvement also enables trains to more easily park clear of the main line during unloading activity at Gribble, allowing other trains to pass. Preliminary engineering of this project is complete, and it is eligible for a NEPA CATEX. *This project, which provides independent utility upon completion, is comprised of a track capacity and a signal component. It is the focus of a BCA alternative in this application that calculates public benefit if USDOT chooses to fund only this project. Further, if desired, USDOT could choose to fund only the track portion of this project and an incremental public benefit related to freight mobility could still be achieved.*
- 2. DT Stemmons Freeway Bridge** – (DESIGN) Replace existing and construct new second rail bridge, parallel to the existing, over Stemmons Freeway (IH 35E) to increase rail



capacity by enabling simultaneous train operations over the bridge (0.1 miles) and completing doubletracking of the TRE between Irving and Dallas. This project will also eliminate the roadway freight constraint caused by the existing rail bridge, which is identified as a low-clearance bridge by TxDOT over the critical IH 35E arterial. Its low clearance also subjects the existing rail bridge to frequent strikes, interrupting rail operations over the TRE. This bridge has experienced nine bridge strikes by trucks traveling under it from May 2006 to September 2018.

- 3. DT Medical Market Center to Stemmons Freeway** – Replace existing culvert and Obsession Bridge, Inwood Bridge, and Knight’s Branch Bridge with new doubletrack structures and construct doubletrack from Medical Market Center Blvd. to Stemmons Freeway Bridge. *This project has been pursued previously as part of a BUILD grant submitted by NCTCOG in 2018 and is being submitted for simultaneous consideration under the 2019 State of Good Repair grant program for its benefits to intercity passenger rail.* Preliminary engineering of this project is complete, and it is eligible for a NEPA CATEX.
- 4. DT North Junction to Union Station** – (DESIGN) Construct new track connecting North Junction to Union Station, for use by TRE and BNSF (0.5 miles), and complete doubletracking of the TRE between Irving and Dallas. This project will likely require improvements to the west leg of the wye, which features doubletrack owned by Union Pacific across IH 35E. This project will also likely require modification of Riverfront Boulevard (six lanes with median) and Union Blvd., adjacent to the Dealey Plaza historical preservation area.
- 5. Implement Clear Path Technology** (not shown on map) – Design, develop concept of operations, and implement hardware and software backbone structure that will enable all agencies and users of the DFW metroplex rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex. This system will increase capacity of the DFW rail network in the territory between Alliance, Burleson, Dorchester, and Lancaster by facilitating inter-carrier operations and enhancing the flow of passenger and freight trains through the complex.

BNSF NETWORK PROJECTS (NT MOVES Phase I A)

In addition to construction and design projects in Phase 1 B, for which funds are being sought, BNSF has funded projects on their portion of the Madill Subdivision. These projects make up Phase 1 A of the MOVES program and are 100% funded, **not pledged as private capital match under this application**, and will go to construction in 2019. The BNSF completion of these projects is critical to the success of the NT MOVES Program and an example of the reliability the rail partners have with each other in the DFW region. **See Attachment 4: NT MOVES Phase 1 A Summary** for more details. The BNSF Network Projects for 2019 construction include:



1. **Convert Hebron Siding to Centralized Traffic Control (CTC) and Extend – Upgrade track** on existing 4,250 LF siding and extend approximately 8,000 LF and add CTC signaling. This will increase track capacity by expediting dispatch clearance for train movement into and out of the siding and enabling the siding to hold longer trains. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.
2. **Construct CTC on Madill Subdivision (Denison – S. Hebron)** – Install automatic rail traffic signal system between Denison and South Hebron to increase track capacity by expediting dispatch clearance for train movement. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.
3. **New Siding, MP 648-650 (Sherman)** – Construct 11,500 LF siding on the Madill Subdivision in the vicinity of MP 648 – 650. This will increase track capacity by enabling meet/pass train movements on the rail corridor. BNSF anticipates construction of this project will be completed before the public infrastructure sought by this application is installed.

1.2 Project History and Context

The North Texas MOVES program is a unique multimodal public-private funding partnership to improve rail and roadway transportation in the region. The program was born from the Texas Freight Mobility Plan and a TxDOT initiative to improve freight and passenger rail mobility in the DFW region. The computer simulation modeling performed during the TxDOT study indicates the necessity of the rail capacity improvements identified in this Phase 1 B application, to ensure near-term fluidity of freight movement across the publicly-owned rail network. TxDOT’s modeling indicates the public network investment must accompany BNSF’s planned capacity improvements in order to protect the public benefits generated by the BNSF investment. It is also appropriate to consider the DFW complex as a central node in BNSF’s Texas freight network, with fluidity of freight operations over the publicly-owned network as vital to its overall health and successful growth.

1.3 Transportation Challenges Addressed

The NT MOVES Phase 1 B creates a unique opportunity for the Dallas-Fort Worth region to implement an innovative and efficient means for addressing urban transportation needs while balancing costs and impacts to the community and to the environment. *The projects are anticipated to significantly help relieve congestion; enhance mobility, connectivity, and reliability; improve regional air quality; and improve safety along the TRE/BNSF corridors.*

1.3.1 Relieving Congestion

Rail congestion is ongoing and a critical issue to the movement of goods and passengers in the DFW region. NT MOVES Phase 1 B focuses on the congestion entangling three rail subdivisions, the TRE, DFW and the BNSF/DART Madill. These subdivisions are already experiencing high



levels of congestion due to the unique capital investment and operating environment of a Class I railroad on a publicly-owned commuter route. Rail improvements on the public network are needed now to curb future congestion issues. The proposed projects for NT MOVES Phase 1 begin the process of reducing congestion by adding capacity, signaling and technology that benefits all users of these corridors.

1.3.2 Enhancing Mobility, Connectivity, and Reliability

The TRE, DFW and the BNSF/DART Madill subdivisions are a vital component of the regional long-range transportation plan (*Mobility 2045*, www.nctcog.org/trans/plan/mtp/2045). These corridors provide opportunities for a more efficient use of existing rail network and is a more appropriate response to growing environmental and fiscal constraints in addressing transportation needs. Improving freight rail mobility and reliability are important freight planning initiatives for the North Central Texas region. It is what lead to the creation of the NT MOVES program and is an important part of *Mobility 2045*. As congestion grows and reliability of the roadways worsens, the role rail plays in moving goods will grow and become a greater economic driver now and into the future. Improvements to these corridors would 1) make higher speed movements available to all corridor users; 2) create opportunities to add new freight and passenger services; and 3) create revenue generation (from additional freight movement over the public network as well as passenger rail) to pay for ongoing corridor operation and maintenance needs.

1.3.3 Improving Air Quality

Ten counties in the Dallas-Fort Worth area are classified as nonattainment for ozone. While regional air quality has improved, the region still does not meet the federal standard. Failure to meet federal standards for air quality could result in additional emission control requirements that negatively affect local businesses. Transportation and diesel-powered locomotives are a significant source of air pollutants.

The NT MOVES Phase 1 B program will improve the operations of both freight and passenger rail movements that will reduce emissions from traditional vehicle trips due to the mode shift. As congestion along the corridors is reduced, locomotive idling time can decline by several hours every day.

1.3.4 Enhancing Safety

Safety is an significant driver of all projects, both highway and rail. NT MOVES Phase 1 B is focused on rail operational improvements that will reduce accidents and increase safety by upgrading older rail infrastructure and inducing a mode shift through additional passenger service. The improvements will also lessen the interaction between passenger and freight rail trains on a single shared-use track.

There are no planned grade separations in NT MOVES Phase 1, however, there are Centralized Traffic Control (CTC) improvements for the entire Madill subdivision, resulting in more efficient movements throughout the corridor. A major benefit is the reduction in dwell time occupying



at-grade crossings. The proposed improvements mean fewer encounters between cars, pedestrians and trains and faster response times for emergency vehicles that must cross the tracks to reach their destination. This is critical in smaller cities because of the limited number of rail crossings.

The planned improvements of NT MOVES Phase 1 B will result in mode shifts for both passenger and freight rail, resulting in fewer crashes on the surrounding highways. Streamlined freight operations, through rail expansion, are anticipated throughout the region, not just in the project corridors. This means more freight rail movements and fewer trucks on the highways, lessening the number of truck-involved incidents in the areas served by freight rail, near project improvement locations. Improved passenger rail operations will shift rail travel appeal consequently reducing the number of cars on the roadways and therefore fewer crashes in these areas.

1.3.5 Enhancing Economic Competitiveness (National and Regional Significance)

As the fourth largest metropolitan area in the US, the Dallas-Fort Worth region is responsible for one-third of the Gross Domestic Product of the State of Texas. The North Central Texas region is centrally located within the lower 48 states making it a logistical sweet spot for a primary distribution center, or inland port, for the southwestern US and the nation. Trucks leaving the region can reach the majority of the nation within 72 hours. This area is situated at the crossroads of east/west rail lines from the ports of Los Angeles/Long Beach to the eastern US and the north/south rail lines from Mexico and the Port of Houston to the Upper Midwest.

Transporting freight is a key component of the regional economy. Over 380,000² tons of freight move to and from the region in a single year. Moving this much freight through the region requires a well-developed rail system. Three Class 1 railroads (BNSF, UPRR and KCS) and two short lines as well as the Trinity Railway Express and Amtrak operate in the region. A key component to this system is freight and passenger movement on the corridors identified in the NT MOVES Phase 1 B program. In addition to the importance these Phase 1 corridors have to the success of rail movements in the North Central Texas area, there are state and national impacts as well, on the movement of goods across the country as depicted in Exhibit 3, above.

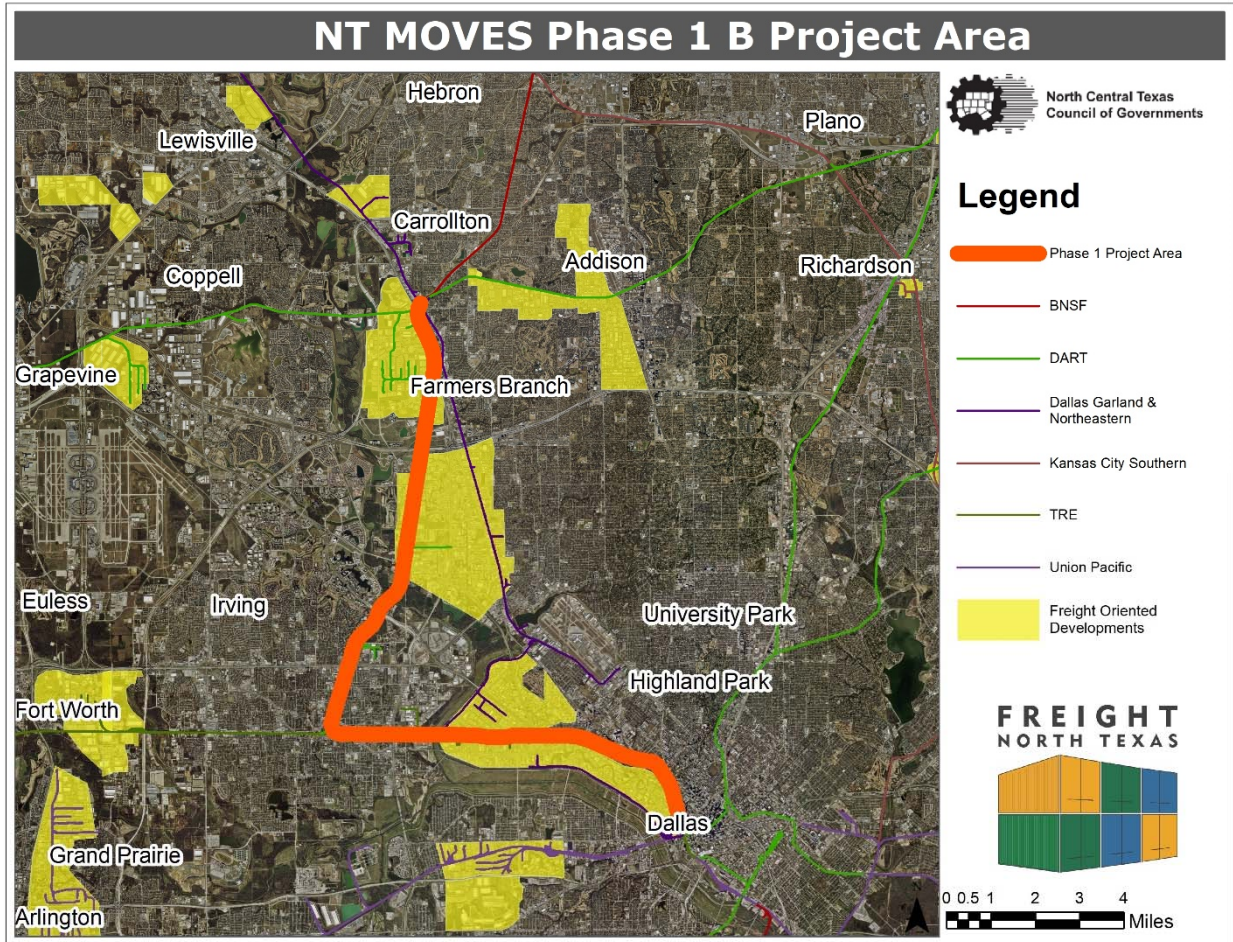
2.0 Project Location

The NT MOVES Phase 1 B projects are located in the western portions of Dallas County and Collin County. The public projects are within the Cities of Irving, Farmer's Branch, Carrollton and Dallas, which is within the US Census-designated Dallas-Fort Worth-Arlington Urbanized Area. The Phase 1 B project area is shown in Exhibit 4.

² All tonnage numbers come from FHWA FAF4.



Exhibit 4: NT MOVES Phase 1 B Project Area



The Dallas-Fort Worth metropolitan area is one of the fastest growing areas in the country. The population of the North Central Texas region has increased from 2.4 million in 1970 to over 7.2 million in 2017, an increase of 200 percent. A significant part of this growth has occurred in the project areas. Exhibit 5 highlights both the past trends and future forecasts for population growth within the adjoining cities along project corridors, Dallas County, and the 12-county NCTCOG Metropolitan Planning Area (MPA).

While forecasted city populations are expected to slow as they approach build out within their jurisdictions, growth elsewhere in the region (particularly in Dallas County) and the strong economic draw of the area will continue to attract significant traffic surges over time. The projected high traffic growth for this corridor attributed to forecasted population increases for both adjacent cities and the North Central Texas region at-large.



Exhibit 5: Population Trends in Phase 1 B Area

Location	1980 Census ¹	1990 Census ¹	2000 Census ¹	2010 Census ¹	2020 Forecast	2040 Forecast	Growth 2010-2040
Carrollton	40,595	82,169	109,576	119,097	132,974	132,978	12%
Dallas	904,078	1,006,877	1,188,580	1,197,816	1,141,059	1,420,781	19%
Farmers Branch	24,863	24,250	27,508	28,616	30,582	34,420	20%
Irving	109,943	155,037	191,615	216,290	259,186	301,541	39%
Dallas County	1,556,390	1,852,810	2,218,899	2,368,139	2,587,960	3,180,529	34%
NCTCOG MPA	3,030,053	4,013,418	5,197,317	6,417,724.00	7,612,993	10,183,523	59%

Notes:

All historical data derived from the 2010 US Census:

<https://www.census.gov/programs-surveys/decennial-census/decade.2010.html>

All future City data derived from the Texas Water Development Board, 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas:

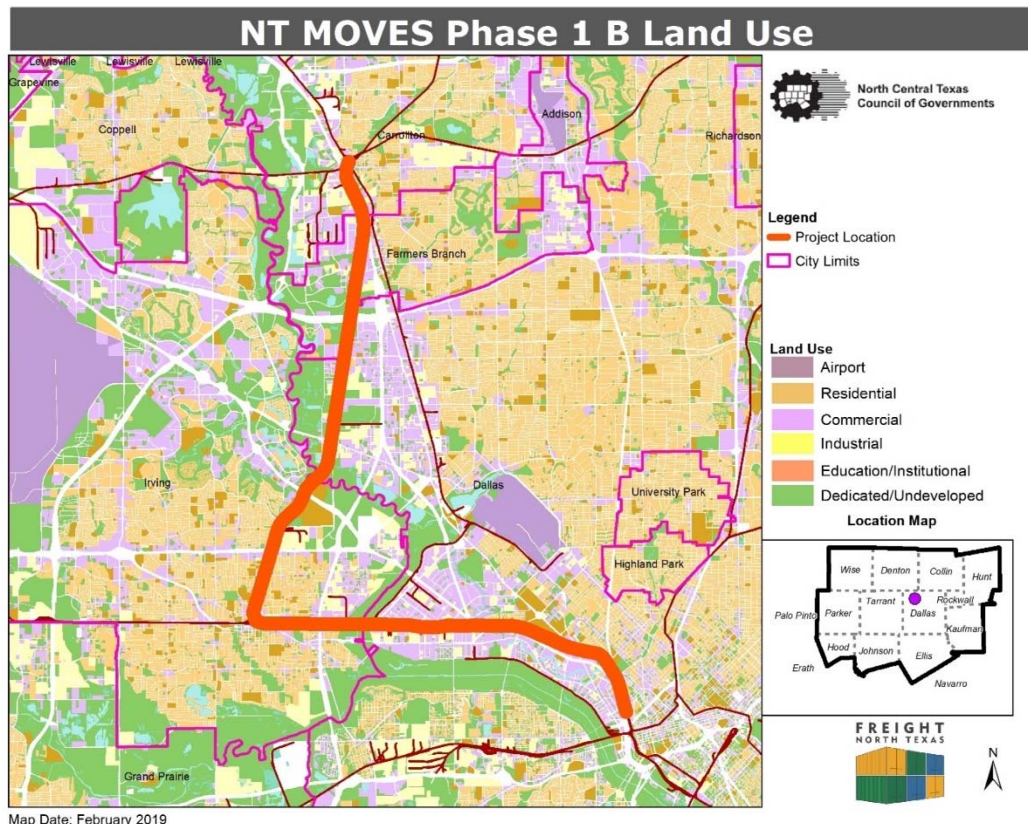
http://www2.twdb.texas.gov/ReportServerExt/Pages/ReportViewer.aspx?%2fProjections%2f2022+Reports%2fpop_Region_search&rs:Command=Re

All Future County data derived from:

<https://data-nctcoggis.opendata.arcgis.com/datasets/2040-nctcog-demographic-forecast-tsz>

The type, intensity, distribution, and availability of specific land uses is an important determinant for identifying travel demand characteristics and prioritizing transportation needs for both passenger rail and freight traffic. Exhibit 6 shows land use in the project area. While population density is a key indicator of transportation needs in most other cases, movements for rail in this area are governed more by it being one of the most concentrated industrial and commercial employment centers in the Dallas-Fort Worth region.

Exhibit 6: NT MOVES Phase 1 B Land Use





3.0 Project Parties

3.1 NCTCOG (Submitting Agency)

NCTCOG is a voluntary association of cities, counties, school districts, and special districts established in January 1966 to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for the 12-county Dallas-Fort Worth MPA. The NCTCOG Transportation Department is responsible for the regional planning process for all transportation modes. The department provides technical support and staff assistance to the Regional Transportation Council (RTC) and its technical committees, which comprise the MPO policy-making structure. The department also provides technical aid to local governments and transportation providers in planning, coordinating, and implementing transportation decisions.

3.2 Dallas Area Rapid Transit (Railway Implementation)

Dallas Area Rapid Transit (DART) operates in the city of Dallas and 12 other surrounding cities with an extensive network of DART Light Rail, Trinity Railway Express commuter rail, bus routes and paratransit services which moves more than 220,000 passengers per day across a 700-square-mile service area.³

3.3 Trinity Metro

Trinity Metro (TM) was created in 1983 as a regional transportation authority of the State of Texas and is not an agency or department of any of its member cities. The agency annually provides nearly 10 million passenger trips on buses, vanpools and the Trinity Railway Express, which it jointly owns and operates with Dallas Area Rapid Transit. The governing body is an eleven-member board of directors with eight appointed by the Fort Worth City Council and three by Tarrant County Commissioners Court.⁴

3.4 Trinity Railway Express

Trinity Railway Express (TRE) began operations in December of 1996. It is jointly owned by DART and Trinity Metro to provide a commuter rail service between downtown Dallas and downtown Fort Worth. The TRE has 10 stations along the route, provides daily service and had over two million annual rides in 2018.

3.5 Texas Department of Transportation

The Texas Legislature originally established the Texas Department of Transportation (TxDOT) in 1917 as the Texas Highway Department. TxDOT has a workforce of more than 12,000 employees and is made up of engineers, administrators, designers, environmental professionals, accountants, maintenance workers, and many other professionals. Headquartered in Austin, TxDOT is made up of 25 district offices and 21 divisions. This project is located in the Dallas TxDOT District which plans, designs, builds, operates, and maintains the

³ <https://www.dart.org/about/aboutdart.asp>

⁴ <https://ridetrinitymetro.org/about/leadership/>



state transportation system in the following counties: Collin, Dallas, Denton, Ellis, Kaufman, Navarro, and Rockwall.

3.6 BNSF Railway

BNSF Railway (BNSF) is one of North America’s leading freight transportation companies operating on 32,500 route miles of track in 28 states and three Canadian provinces. Headquartered in Fort Worth, BNSF employs a workforce of more than 8,800 people in Texas, with an annual payroll of nearly \$1 billion. Nearly 15 percent of BNSF’s vast 32,500-mile rail network, including sections of the Transcon, is in Texas, ensuring goods and commerce flow in and out of the Lone Star State. Annually, BNSF moves more than 5.8 million carloads of freight in Texas, helping to reduce truck traffic and congestion on our highways and reducing emissions. Since 2015, BNSF has been instrumental in locating 57 new or expanded facilities in Texas, creating approximately 1,440 jobs and more than \$4 billion in investments.

4.0 Grant Funds, Sources, and Uses of Project Funds

Exhibit 7 details the estimated project costs in Phase 1 B of the NT MOVES program and the potential project funding sources. The amount of this FY 2019 INFRA Grant request is **\$56 million**, designated for use for construction and design/engineering. The NT MOVES Phase 1 B Projects are proposed to be built with **53 percent (INFRA) federal funds and 47 percent local, other federal and private funds**. The full breakdown is detailed in Exhibit 8.

**Exhibit 7: NT MOVES Project Funding Summary

Regional Rail Study Phase 1 B Projects							
Project	Subdivision	Costs	Funding				Total Funding
			NCTCOG/ Federal	BNSF	DART / TRE	INFRA	
Construct Centralized Traffic Control (CTC), Irving – S. Hebron Construct and Install CTC Siding at Gribble and Elm Fork Bridge Replacement with Doubletrack.	Madill (DART)	\$ 72,700,000	\$ -	\$ -	\$ 30,000,000	\$ 42,700,000	\$ 72,700,000
Double Track Stemmons Freeway Bridge – (DESIGN)	DFW (TRE)	\$ 3,500,000	\$ 2,000,000	\$ -	\$ -	\$ 1,500,000	\$ 3,500,000
Double Track Medical/Market Center to Stemmons Freeway	DFW (TRE)	\$ 23,500,000	\$ 750,000	\$ 2,000,000	\$ 12,000,000	\$ 8,750,000	\$ 23,500,000
DT North Junction to Union Station – (DESIGN)	DFW (TRE)	\$ 3,050,000	\$ 2,250,000	\$ -	\$ -	\$ 800,000	\$ 3,050,000
Implement ClearPath Technology	ALL	\$ 2,250,000	\$ -	\$ -	\$ -	\$ 2,250,000	\$ 2,250,000
Total		\$ 105,000,000	\$ 5,000,000	\$ 2,000,000	\$ 42,000,000	\$ 56,000,000	\$ 105,000,000

**BNSF minimum contribution is \$2M toward the project element identified. Additional scope and matching funds possible, up to \$78 Million total.

The cost to complete NT MOVES Phase 1 B is estimated at \$105 million. Exhibit 8 shows the cost breakdown according to the different elements of the projects combined. To see a full breakdown of the cost per project please see Attachment 5: Project Supporting Documents.



Exhibit 8: NT MOVES Cost by Category

Cost Category	Total Cost	Funding Source	
		INFRA	Other Sources
Design/Engineering	\$ 6,550,000.00	24%	76%
Technology	\$ 2,250,000.00	100%	0%
Construction	\$ 96,200,000.00	54%	46%
General	\$ 25,000,000.00		
Track	\$ 12,000,000.00		
Bridge	\$ 43,500,000.00		
Signal	\$ 15,000,000.00		

5.0 Merit Criteria

5.1 Criterion #1: Support for National or Regional Vitality

NT MOVES Phase 1 B adds rail capacity to the DART-owned Madill Subdivision between Carrollton and Irving and on the TRE line between Irving and Dallas. This capacity will protect the public benefits generated by freight movement by rail. Those public benefits are generated by BNSF’s ongoing freight operations and the increased operations that will be enabled by its 2019 investments in rail capacity on the Madill Subdivision north of Carrollton. Furthermore, track improvements on the TRE and the implementation of Clear Path technology provide freight benefits and will also provide benefits to passenger rail service across the DFW region along with interstate passenger service through Amtrak by maximizing capacity of available assets through more precise dispatching control. The significant national and regional economic benefits cannot be understated as capacity and reliability within the region are improved, providing a multimodal freight alternative to increased truck traffic over the road.

As stated in Section 1.3, North Central Texas is a major freight center for the nation. It is the crossroads of major highways and Class I railroads. As such, the efficient movement of goods and people through this region is vital to regional and national economic vitality. With goods movements flowing to and through the region from the ports of Houston and LA/Long Beach and moving north from Mexico, congestion can slow goods movements both on the highway and the rail system. The NT MOVES Program looks to improve movements across all modes and enhance travel times by minimizing and eliminating rail bottlenecks with the implementation of proposed projects described in this documentation. The expansion of rail lines at such a critical logistical crossroads enhances critical connectivity to the region, the State of Texas and the nation as a whole.

5.1.1 Benefit-Cost Analysis Results

The present value of the NT MOVES Phase 1 cost and its benefits in 2017 dollars is shown in Exhibit 9. Applied to a remaining project cost of \$105 million, a substantial net benefit is achieved for the discounting scenario. Based on a 20-year analysis period, the overall effect of this transportation investment will result in a positive net benefit of approximately \$1.03



billion at seven percent, after subtracting out the residual construction and maintenance and operating costs of the project. The calculations used to determine these totals are discussed in more detail in Attachment 2.

Exhibit 9: NT MOVES PHASE 1 A and B Benefit Cost Analysis

Costs and Benefits	Total Phase 1 (A and B)	Phase 1 A Only
Costs		
Eligible Costs	\$67,020,701	\$48,483,060
Previously incurred Cost	\$28,314,569	\$28,314,569
Total Cost	\$95,335,270	\$76,797,629
Benefits		
Passenger Travel Time Savings	\$6,936,695	\$0
Freight Travel Time Savings- Rail + Truck	\$74,478,940	\$66,862,150
Operating Costs Savings	\$563,483,390	\$518,701,830
Emissions Reductions Benefit	\$25,639,276	\$23,618,908
Crash Reduction Benefit	\$18,522,430	\$17,064,668
Pavement Maint/ Preservation Savings	\$452,936,549	\$416,602,626
Total Societal Benefits	\$1,141,997,280	\$1,042,850,182
Value of Remaining Service Life	\$8,830,114	\$6,808,708
Less Operation and Maintenance Cost	-\$22,258,109	-\$17,582,139
Total Benefit	\$1,128,569,285	\$1,032,076,752
Net Present Value (NPV)	\$1,033,234,015	\$955,279,123
Benefit-Cost Ratio (BCR)	11.84	13.44

The overall net effect of this transportation investment will result in a positive return on investment of **11.84 percent (\$1.13 billion/\$95 million)**, after discounting at seven percent. Though only based on a 20-year period of analysis, the results of this BCA clearly indicate that the NT MOVES Phase 1 will provide a lifetime of regional benefits for travelers and goods movement.

5.2 Criterion #2: Leveraging of Federal Funds

The public partners and BNSF recognize the emphasis placed on maximizing local financial contribution under the INFRA program. To do so, the project team came together within TxDOT’s *DFW Freight and Passenger Rail Study* to pledge a cooperative approach of pursuing these projects under a multi-year program rather than as individual agencies on an individual project basis. This approach enables the parties to create a compelling vision for the entirety of the regional investments being made and, validated by data-driven computer simulation modeling results, demonstrating that while *each one of these projects has independent utility and, on its own, will provide an incremental increase in rail capacity for the region, all are*



necessary to achieve the modeled capacity results. The non-federal financial share on this program of projects is comprised of funds from three sources. First, NCTCOG is contributing \$5 million in funds, which are federal funds, that will be engaged for the design/engineering of the projects. Second, DART and TRE are contributing \$42 million in funds which will be engaged for Construction on Project 1 and Project 3. In addition to these public funds, BNSF will provide a \$2 Million match toward the double tracking of the TRE line (Project 3). This **42% local, non-federal match is committed, stable, and dependable per the parameters outlined in Section C.2 of the Notice of Funding Opportunity.** Furthermore, the partners are committed to maintaining the assets in a state of good repair after implementation. In fact, **the incremental freight traffic growth generated by this program of projects generates ongoing, recurring operating revenue for the public assets** as described in Section 1.0 of this application. **The federal funds sought in this grant application are leveraged by a 42% local, non-federal match.** Given the above, Exhibit 10 is a summary of funding sources and federal share:

Exhibit 10: Funding Sources and Federal Share

SOURCE	AMOUNT	FUNDING SHARE
NCTCOG/ Other Federal	\$5,000,000	5%
DART	\$42,000,000	40%
BNSF	2,000,000	2%
INFRA	56,000,000	53%

5.3 Criterion #3: Potential for Innovation

5.3.1 A New Approach

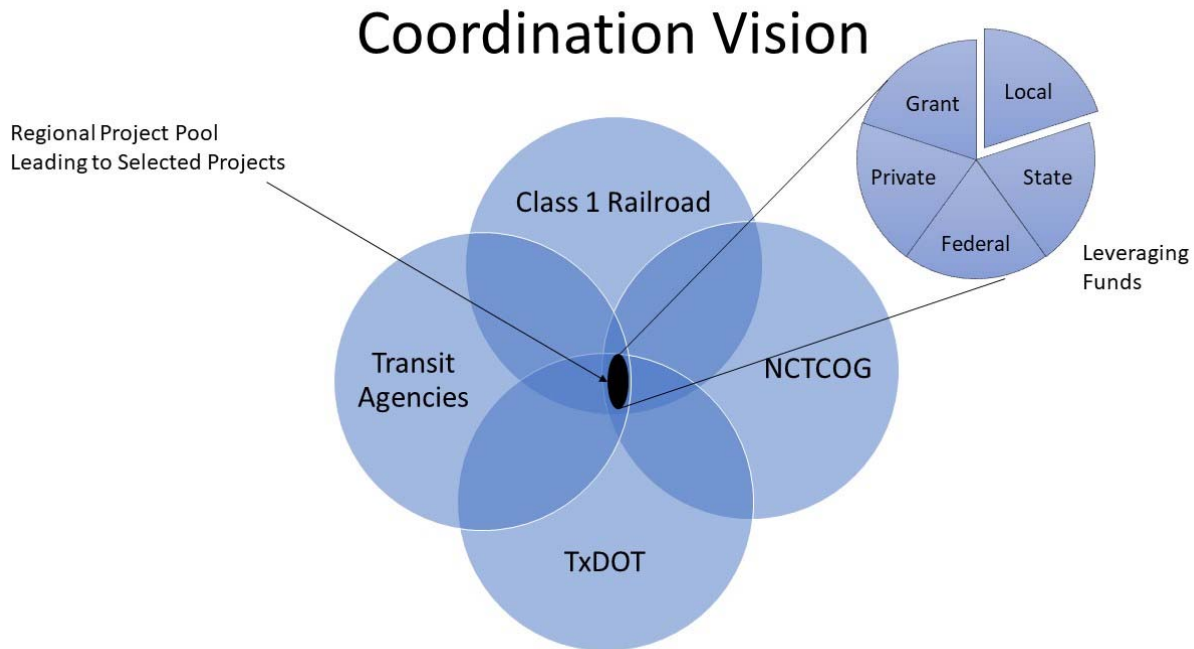
The NT MOVES Program is an ambitious and innovative approach to resolving long standing congestion issues with freight and passenger rail integration in the DFW region. TxDOT Rail Division, NCTCOG and the private rail sector have come together to do a regional rail study to help identify and resolve rail bottle necks and operational issues within the North Central Texas region. While working with the local transit providers and private freight rail providers it was determined that there would need be two phases to this study. Phase 1 would focus on freight and passenger rail integration congestion issues and Phase 2 would focus on rail/highway interaction issues. This has resulted in a systemwide analysis of the rail network in the DFW region and systemized approach to resolving rail issues.

Through Rail Traffic Controller modeling, with input from both the UPRR, BNSF and local transit agencies, the proper projects are being identified and are being addressed as soon as possible. The full study will be completed later this year, but Phase 1 of the study has resulted in the North Texas MOVES program. This approach allows for regional rail partners to come together quickly and work to identify funds to be used for the projects. DART and BNSF have identified opportunities to work together on design and track construction. TxDOT is also supporting the effort through assistance with engineering, design and environmental study support. This all helps to reduce the soft cost, construction timelines and track outages during implementation.



The regional partners are now working together on projects that are the highest priority for all. Please see Exhibit 11 for this coordination vision.

Exhibit 11: Coordination Vision



5.3.2 Operational Improvement

The NT MOVES program is committed to innovation to ensure the rapid implementation of new rail capacity assets and the full utilization of those assets. First, *Phase 1 B includes the implementation of Clear Path technology, developed by Railinc, to increase velocity and efficiency among freight and passenger users in the DFW complex.* This platform, a centerpiece of the Chicago terminal improvement program (CREATE), has proven its effectiveness in improving throughput, safety, and on-time performance in congested, urban rail corridors. Freight carriers in DFW will gain visibility and a clear view of all inbound, through and outbound rail traffic on the shared-use public infrastructure to understand the likely availability of train “slots” through the complex for their traffic. At the same time, the DART-controlled dispatchers of the shared-use assets will be able to see inbound freight demand far enough in advance to provide clearance to traverse the complex with the confidence those through freight moves will not impact passenger on-time performance.

5.4 Criterion #4: Performance and Accountability

NCTCOG proposes that this INFRA Grant be based on the conditional award of traditional build contractor by September 2021 for all projects. If awarded INFRA funding, NCTCOG will work with DART, TM, BNSF and TxDOT to investigate performance incentive clauses. DART has a Resident Construction Manager’s (RCM) Manual to provide policies and procedures upon which the RCM will administer DART’s contracts. The RCM will use these to administer each contract through final design, manufacturing, installation, construction, final testing, and turn over to



DART/TRE. Additionally, NCTCOG will request regular project updates from rail partners as part of future Regional Transportation Council meetings. Once construction has been initiated, progress and status will be monitored through a project specific website to be developed by the contractor.

DART/TRE and BNSF, as stated in Section 5.3, have developed an innovative approach to working together on building Phase 1 B projects. This creates direct accountability by the regional rail partners throughout the construction process. DART/TRE and BNSF, starting with the construction phase and then with the operation of rail traffic on the subdivisions in the Phase 1 B corridor, will work together to ensure that the improvements will be interoperable, and performance will improve. BNSF will coordinate with NCTCOG and DART/TRE on the increased freight rail movements and decreased dwell times at train meets as a performance measure for the improved rail traffic.

6.0 Project Readiness

6.1 Technical Feasibility

The NT MOVES program has been developed over several years, considering the needs of the corridor and desires of local stakeholders. The design of the projects will be developed and approved over the course of the next year. The planning efforts include the preparation of environmental documents, public involvement, traffic analysis, and DART Board approval. The project designs will need to receive approvals from the Federal Railroad Administration (FRA) before the projects can let. Additionally, because the projects' cost estimate is over \$100 million (Major Project), the project will undergo value engineering, and a draft Project Management Plan (PMP) will be prepared. Capital cost estimates included in this application were developed by performing a quantity takeoff of the schematic design. Recent standard unit prices for bid items were applied to the quantities to develop the project construction cost. Construction trackwork and bridges included a 20 percent contingency with a 30 percent contingency for signal work and 15 percent for utility relocation. Additional items such as aesthetics, mobilization, and traffic control were estimated using a percentage of the construction cost based on experience.

6.2 Project Schedule

The NT MOVES Phase 1 B projects are set for an expedited delivery with the means to move ahead well before the INFRA requirement of September 30, 2022, for obligation of funding and construction commencement within 18 months thereafter. The project schedule shown in Exhibit 13 indicates obligation of funding and construction beginning in late 2021. Construction is expected to take 1 to 2 years and the new improvements would be open to rail traffic in 2023.

BNSF and DART/TRE will make the preliminary design documents and performance requirements available to interested contractors. The design and construction will be procured



under a single competitively bid contract awarded through a two-step process. The first step involves a qualifications-based screening to develop a shortlist of qualified contractor teams to provide detailed bids. The second step is a best value assessment of bids from the shortlisted teams.

All necessary activities will be completed to allow INFRA funds to be obligated sufficiently in advance of the statutory deadline and any unexpected delays will not put the funds at risk of expiring before they are obligated. The project can begin construction quickly upon obligation of INFRA funds and grant funds will be spent expeditiously once construction starts. All real property and right-of-way acquisition will be acquired in a timely manner in accordance with 49 Code of Federal Regulations (CFR) part 24, 23 CFR part 710, and other applicable legal requirements.

6.3 Required Approvals

6.3.1 Environmental Status and Approvals

The proposed projects would follow the NEPA process due to the use of federal funds. The FRA would be the designated authority for the NEPA process for all projects within this grant and would be the final reviewer and approver of any NEPA documentation. This grant includes multiple projects in multiple locations and each location would be subjected to FRA's NEPA process, independently. Following FRA's process, each individual project would be covered as a Categorical Exclusion since the projects do not individually or cumulatively have significant impact on the human environment. To facilitate NEPA categorical exclusions, FRA has developed a worksheet for these type of low impact projects. Most of these projects would fall under the "minor rail additions" category for NEPA action and all the listed projects would be categorically excluded in NEPA under FRA. No new right-of-way is anticipated for any project in this grant submittal. These worksheets would be completed as part of the project process and submitted to FRA for approval and NEPA clearance. It is expected these sheets will be completed prior to the grant submittal and approval would occur within a few months after the submittal to FRA. Please see Attachment 5 FRA worksheets for these projects. All the proposed projects would follow any mitigation requirements for potential impacts that may occur including waters of the US, threatened or endangered species and cultural resources.

6.3.2 State and Local Approvals

DART Board Approval, after the Request for Qualification documents, issue solicitation, evaluation, and award recommendations are completed the individual projects will be brought to the DART Board.

- Permits involving waters of the United States will be permitted under nationwide Section 404 permits. No major Section 404 (of the Clean Water Act) issues have been identified.
- A revision to the State Transportation Improvement Program/Transportation Improvement Program (STIP/TIP) will be necessary to add the INFRA Grant funding to the project. The modification will be coordinated between NCTCOG and TxDOT during a quarterly STIP/TIP



modification cycle. It is anticipated that the revision would occur in August 2020 (assuming grant award by May 2020).

6.3.3 Federal Transportation Requirements Affecting State and Local Planning

NCTCOG’s current Long-Range Mobility Plan is *Mobility 2045*. The document includes several rail strategies that are to be implemented to expand both freight and passenger rail services.

Mobility 2045 (www.nctcog.org/trans/plan/mtp/2045) contains several Programs and Projects that support NT MOVES Phase 1. Specific references include:

- Freight System/Network Planning (FP2-120) – This includes implementing recommendations of the Regional Rail Study, which will be completed later this year and contain the projects in the NT MOVES Program.
- Regional Connections: Next Generation Transit Program (TR2-003) – This includes recommendations for improving services through public and private agencies, implementing service as needed in communities throughout the region through 2045.

6.4 Project Risks and Mitigation Strategies

Exhibit 12: Identified Risks and Opportunities

Risk/Opportunity	Chance or Occurrence	Likely Impact to Costs	Likely Impact to Schedule	Potential Mitigation Strategy
Unplanned Work (changed orders)	100%	\$2 million	Unknown	As design moves from 30% to final design this will be mitigated with a contingency
Increased Right-of-Way Costs	25%	\$2 million	None	DART/TRE owns the right-of-way the work is to be done on
Third Party Impacts (permits, utilities, etc.)	25%	\$5 million	6 months	Early coordination with all third-parties
CTC Cost Increase	25%	\$2 million	None	As design moves from 30% to final design this will be mitigated with a contingency
Bridge Rehabilitation	50%	\$10 million	None	As design moves from 30% to final design this will be mitigated with a contingency



6.4.1 Environmental Uncertainties

Project risks should be minimal because the proposed work is Categorically Exempt. Projects are on railroad right-of-way and all stakeholders fully support the project.

7.0 Large/Small Project Requirements

At an estimated cost to complete of \$105 million, NT MOVES Phase 1 B would be considered a large project for award. Exhibit 13 illustrates how the project satisfies statutory requirements enumerated at 23 US Code 117(g).

Exhibit 13: Large Project Requirements

Statutory Requirement	How this project meets the requirement
1. Does the project generate national or regional economic, mobility, safety benefits?	Yes. By increasing capacity and implementing better technology to the Phase 1 B corridor, the projects will relieve both rail and highway congestion; enhance mobility, connectivity, and reliability; improve air quality; enhance safety; and enhance economic competitiveness. See Section 1.3 (Transportation Challenges Addressed) .
2. Is the project cost effective?	Yes. The overall net effect of this transportation investment will result in a positive return on investment of 11.84% (\$1.13Billion/\$95 Million) after discounting at 7%. Though only based on a 20-year period of analysis, the results of this BCA clearly indicate that the NT MOVES Phase 1 B will provide a lifetime of regional benefits for travelers and freight providers. The project is cost effective as shown in the benefit cost analysis summary tables in Section 5.1.1 (Benefit-Cost Analysis Results) .



Statutory Requirement	How this project meets the requirement
<p>3. Does the project contribute to one or more of the National Goals under 23 US Code 150 and shown below?</p> <ul style="list-style-type: none"> ▪ Safety ▪ Infrastructure Condition ▪ Congestion Reduction ▪ System Reliability ▪ Freight Movement and Economic Vitality ▪ Environmental Sustainability ▪ Reduced project delivery delays 	<p>Yes, the project contributes to national goals.</p> <p>The project does result in safety improvements to the BNSF and DART/TRE owned trackage and to the nearby highways as discussed in Section 1.3.4 (Enhancing Safety).</p> <p>The project will replace the track, bridges and signals in the NT MOVES Phase 1 B corridor. This will result in a significant improvement to the infrastructure condition ratings in the region.</p> <p>The program does reduce the rail congestion along throughout the region as discussed in Section 1.3.1 (Relieving Congestion).</p> <p>The program does make improvements to reliability to the NT MOVES Phase 1 B corridor as described in Section 1.3.2 (Enhancing Mobility, Connectivity and Reliability).</p> <p>The program does contribute to improved freight movement and economic vitality as discussed in Section 1.3.5 (Enhancing Economic Competitiveness).</p> <p>The program also contributes to improved economic sustainability as discussed in Section 5.1 (Criterion #1: Support of National or Regional Vitality).</p> <p>Phase 1 B will result in better air quality and will have a positive impact on the environment as discussed in Section 1.3.3 (Improving Air Quality).</p> <p>The Program, as stated in Section 5.3 (Criterion #3: Potential for Innovation), is a collaborative effort that is drawing resources from both the private- and public-sector.</p>
<p>4. Is the project based on the results of preliminary engineering?</p>	<p>Yes, 30% preliminary engineering drawings have been developed or are being developed for the projects as discussed in Section 6 (Technical Feasibility).</p>
<p>5a. With respect to non-federal financial commitments, does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?</p>	<p>Yes, a combination of local, state and private funding sources will be used to design and construct the project (see Exhibit 6 and 7). To ensure long-term operations, the public sector (DART/TRE) will retain ownership of the revenue stream from the track usage, which will be used to operate, maintain, and rehabilitate the corridor.</p>

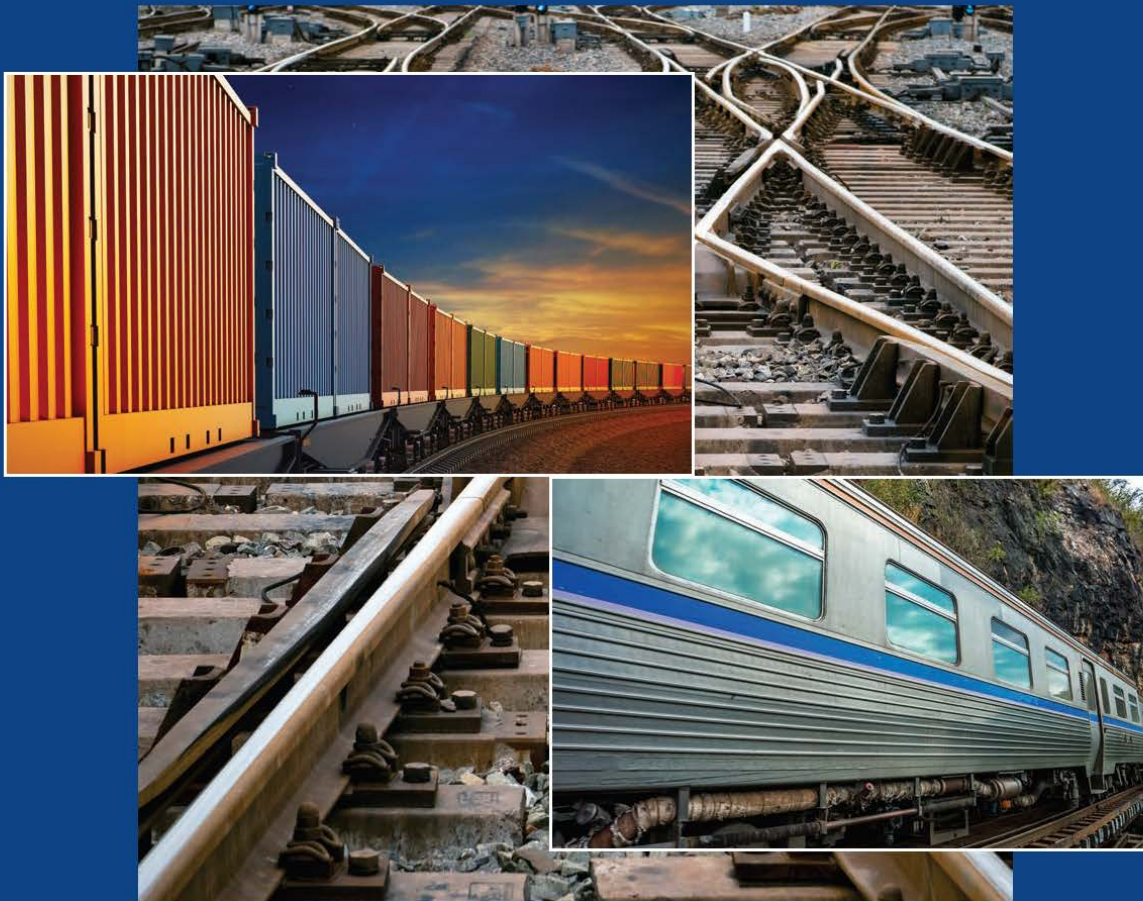


Statutory Requirement	How this project meets the requirement
5b. Are contingency amounts available to cover unanticipated cost increases?	Yes. Should unanticipated cost increases occur, DART/TRE have federal and state revenue sources that could be used to cover the overruns. The cost estimates included a 20% contingency for track and bridge construction items, 30% for signal work, and 15% for utility relocation.
6. Is it the case that the project cannot be easily and efficiently complete without other Federal funding or financial assistance available to the project sponsor?	The cost to complete NT MOVES Phase 1 B is estimated at approximately \$105 Million. The need for the project has resulted in an expedited schedule that will require immediate funding. The INFRA grant is one of the funding sources that is available to expedite the entire project rather than building it in phases and delaying benefits.
7. Is the project reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project?	Yes. The projects will be Category Exempt as part of the NEPA process, there is no significant right-of-way purchases anticipated, BNSF has already begun Phase 1 A, and the projects for Phase 1 B will be programmed in the TIP/STIP upon grant award. The Phase 1 B projects are expected to begin construction in 2021 as discussed in Section 6.2 (Project Schedule) .



North Texas Multimodal Operations, Velocity, Efficiency, and Safety (MOVES) Program Phase 1 B

FY 2019 INFRA Grant Application
Attachment 2 – Benefit-Cost Analysis Methodology



North Central Texas Council of Governments



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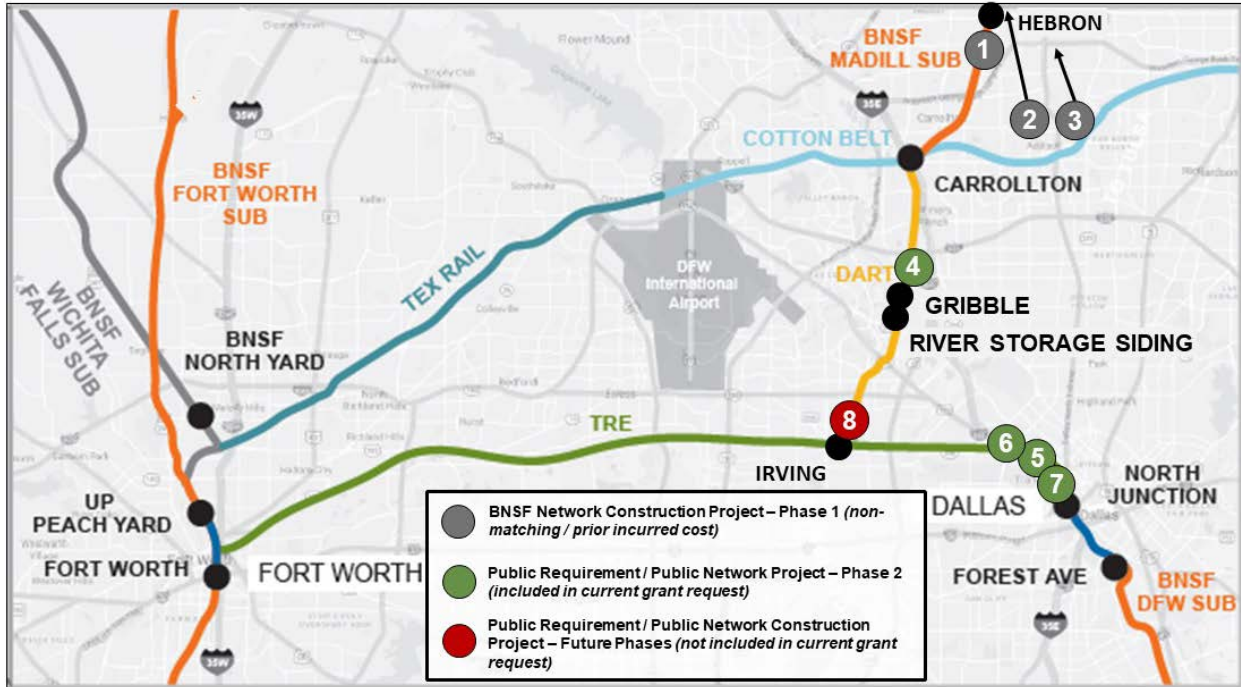


List of Exhibits

Exhibit 1: Project Area 1
Exhibit 2: Madill Subdivision 2
Exhibit 3: Rail Line Capacity 5
Exhibit 4: Future Rail Line Capacity 7



Exhibit 1: Project Area



Phase 1 A: BNSF 2019 Investment in Upper Madill Subdivision

1. Install Madill Sub CTC, Denison – South Hebron
2. Extend Hebron Siding to 8,000 LF and install CTC
3. Construct new 10,000 LF Siding with CTD, Sherman, TX

Phase 1 B: Public Investment in Lower Madill Subdivision and TRE

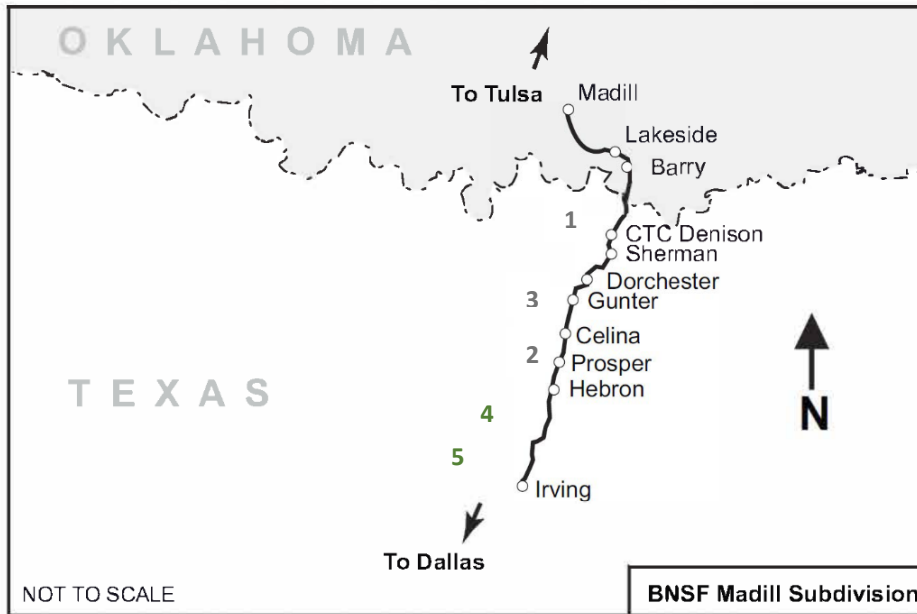
4. South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement
5. DT Medical Market Center to Stemmons Freeway
6. Design for Stemmons Freeway Bridge Doubletrack
7. Design for North Junction to Union Station Doubletrack
 - ClearPath Technology (not shown on map)

Future Phases

8. Gribble to Irving: Construct CTC, Irving Siding, and Irving Wye DT with Speed Increase



Exhibit 2: Madill Subdivision



I. METHODOLOGY – BENEFIT COST ANALYSIS

This memorandum provides detailed documentation of the Benefit-Costs Analysis (BCA) performed to evaluate the public benefits generated from the Madill Subdivision project package of the NT MOVES Phase 1 B. This BCA calculates the public benefits resulting from investments on the BNSF network north of Carrollton (Projects 1 – 3, above) that are 100% funded by BNSF and will be executed in 2019, concurrent with the submittal and evaluation of this grant application. The BNSF investment is not pledged as matching funds in the grant application. They are necessary for the movement of aggregates and other rock material from southern Oklahoma to Irving, Texas. Public benefits are accrued as these materials travel by train rather than by truck. To simplify the Benefit Cost Analysis, this document does not address public benefits derived from BNSF's movement of other goods on the route, which also consume freight capacity over the noted segments.

Next, this BCA evaluates the Build and No-Build scenarios for the grouping of projects on the lower Madill Sub, south of Carrollton, (Projects 4 – 8) identified by computer simulation modeling as necessary to support freight mobility on the publicly-owned network between Carrollton, Irving, and Dallas. Impacts to freight mobility over this territory negatively impact the public benefits and freight capacity generated by the BNSF investment north of Carrollton. While Projects 4 – 8 are required to protect the public benefits and freight capacity generated by BNSF investment, only Projects 4 - 7 are included in this grant application with local matching contribution provided primarily by DART and NCTCOG. *An additional iteration of the BCA has been included to identify the benefits associated with Project 4 in case that is the only project able to be funded under this application.* Project 8 will be pursued in future phases and federal funding rounds.



The BCA demonstrates the cost effectiveness of this set of projects in terms of benefit-cost ratios (BCR) and net present value (NPV). The following description provides the methodology for the detailed calculations of public benefits and costs of the proposed BNSF Madill Subdivision Rail Improvement set of projects. Benefits are assumed to incur after each project is completed. Thus, benefits can be seen to run from 2020 for a 25-year time span of benefits to 2045 to match with the other project packages' BCAs calculated for the Phase 1 of the NT MOVES INFRA FY19 Grant Application.

Table 1: Executive Summary Matrix of Project - Improvements to THE BNSF Madill Subdivision NORTH OF CARROLLTON

Current Status/Baseline and Problem to be Addressed	Change to Baseline or Alternatives	Types of Impacts
<p>The Madill subdivision runs from Irving, TX to Madill, OK. There are 6 to 8 trains per day (loads and empties) that transit this route, mostly carrying construction aggregate (rock).</p> <p>Currently, over 12.3 million tons of Aggregate Products move southbound annually along this Corridor from Madill, OK to Irving, TX.</p> <p>It is anticipated that over 80% of these Products could be moved by Rail if there was additional rail capacity. Currently, it is estimated that is at least 3.1 million tons transported from Madill, OK to the DFW area by Truck (114,000 truck-loads) each year.</p>	<p>Adding one new siding of 10,000 LF at Sherman, extending the existing siding at Hebron, and installing a centralized traffic control (CTC) system on the railroad from Denison to South Hebron will allow trains to pass along the single-track sections of the Madill subdivision more efficiently. These projects also enhance safety and increase the train capacity within the Madill Subdivision.</p> <p>The analysis assumes capacity begins to come on line in 2020 and by 2021, 80% of the rock can be moved by rail. The improvements will increase the capacity on the BNSF network by 7 trains of all types transiting this subdivision.</p>	<p>Improve freight travel time, reduce highway congestion and travel cost for local highways users by removing trucks from the Highway, improve air quality, reduce automobile crashes, and increase state of good repair roads and highways involved.</p> <p>Adding CTC technology will enhance safety on the subdivision by providing the central dispatcher to view the position of the trains on his console.</p>

The BNSF Madill siding and dispatch improvements were selected based upon BNSF's internal modeling and evaluation process in support of its capital investment strategy, which includes consideration of the aggregates demand modeled here as well as other commodities not included in order to simplify the analysis.



Table 2: Executive Summary Matrix of Project - Improvements to THE DART-OWNED Madill Subdivision, CARROLLTON TO IRVING, and the EAST END OF THE TRE, IRVING TO DALLAS

Current Status/Baseline and Problem to be Addressed	Change to Baseline or Alternatives	Types of Impacts
<p>The lower portion of the Madill Subdivision runs from Carrollton, TX to Irving, TX and has capacity to handle approximately 14 BNSF freight trains per day, many of which carrying construction aggregate (rock) from southern Oklahoma to the station at Gribble and points south.</p> <p>Currently, over 12.3 million tons of Aggregate Products move southbound annually along this Corridor from Madill, OK to Irving, TX.</p> <p>It is anticipated that over 80% of these Products could be moved by Rail if there was additional rail capacity. Currently, it is estimated that is at least 3.1 million tons transported from Madill, OK to the DFW area by Truck (114,000 truck-loads) each year.</p>	<p>Projects 4 – 10, above, enable improvements of up to 7 trains per day of additional freight movement on the lower Madill and east end of the TRE.</p> <p>It is further assumed that these improvements will enable an additional Aggregate Freight Train to run from Gribble to Dallas, and beyond.</p>	<p>Improve freight travel time, improve passenger travel time, reduce highway congestion and travel cost for local highways users by removing trucks from the Highway, improve air quality, reduce automobile crashes, and increase state of good repair roads and highways involved.</p> <p>Adding CTC technology will enhance safety on the subdivision by providing the central dispatcher to view the position of the trains on his console.</p>

Period of Analysis

Costs, benefits and ongoing maintenance costs were evaluated for a period of 28 years beginning in 2017 and ending in 2045.

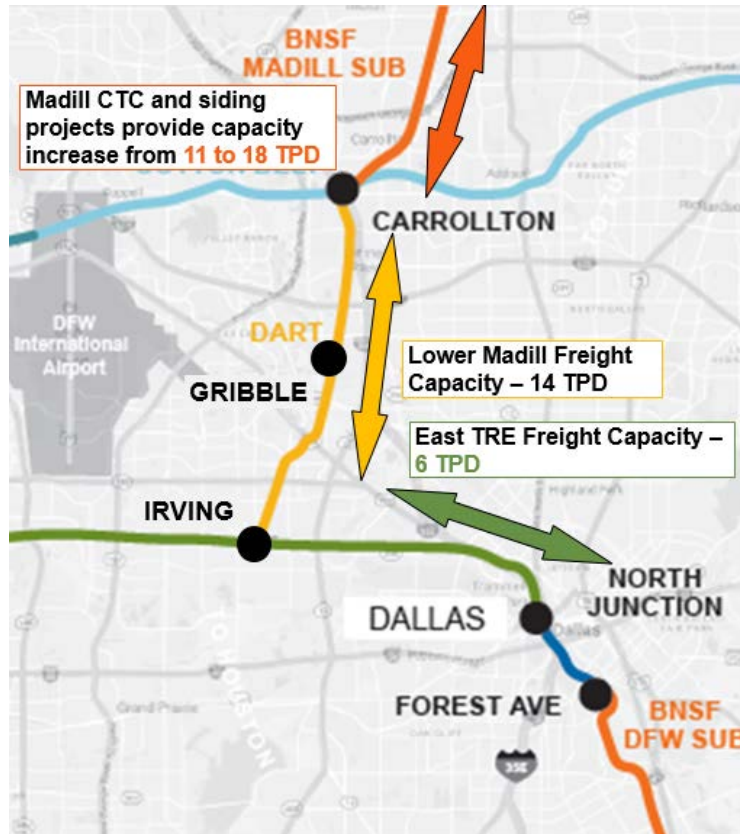
No Build Scenario

The no-build alternative scenario in this benefit cost analysis (BCA) represents current rail and truck volumes of Aggregate moved through the corridor and assumes completion of Projects 1 – 3 by BNSF in 2019, since those projects are on the BNSF network and are 100% funded by BNSF. The current freight capacity of the Madill Subdivision north of Carrollton, owned by BNSF, is approximately 11 trains per day (TPD). These investments will increase the overall rail capacity of the subdivision north of Carrollton by 7 trains per day. The freight capacity of the



lower Madill Subdivision between Carrollton and Irving, owned by DART, is approximately 14 TPD. However, under the No-Build Scenario, public benefits are limited, in 2022 and beyond, to those derived by 2 TPD of aggregate movement between southern OK and Gribble, effectively negating the benefits of the BNSF capacity investment north of Carrollton.

Exhibit 3: Rail Line Capacity



When comparing the rail route to the over-the-road route, travel distance by road is estimated, conservatively, to be 110 miles between Madill, OK and Irving, TX. The rail route is usually estimated to be 20% longer than the truck route, or approximately 120% of the truck miles. In this case, the rail miles can be calculated based upon Rail Mile Posts on the subdivision. Madill, OK is at MP 602.6, whereas Gribble, TX is MP 708.6 equaling 106.0 rail miles. Total volume in 2018 was estimated at 12.3 million tons of Aggregate Products of which 3.1 million (25%) was moved by Truck and 9.2 million (75%) by Rail due to the capacity limitation of the rail-line.

Full Build Alternative – Projects 4 - 8

The Build Alternative includes the assumptions outlined below this BCA document. Freight Rail Traffic, Freight traffic volumes (vehicle miles traveled), and congestion forecast are presented in the BCA BNSF Madill Subdivision BCA spreadsheet for current conditions (2018), for no-build as well as build conditions for the years 2019 through 2045. Construction on the BNSF improvements will start and are anticipated to be completed in 2019.



This scenario assumes, like the No Build Scenario, that approximately \$30 million in capital investments is made on the BNSF Madill Subdivision by BNSF in 2019 via projects 1 – 3. These investments will increase the overall rail capacity of the subdivision north of Carrollton by 7 trains per day.

Projects 4 – 8 contemplated on the lower Madill and the east end of the TRE protect the existing freight capacity of 14 TPD on the lower Madill and provide capacity for freight growth up to 7 trains per day between Carrollton and Dallas, as demonstrated by RTC modeling completed by BNSF Railway. The proposed improvements on the Full Build Scenario include:

4. South Hebron (MP 693) to River Storage Siding (MP 708.6): Construct Centralized Traffic Control (CTC), Gribble Siding, and Elm Fork Bridge Replacement with Doubletrack – Install automatic rail traffic signal system between South Hebron and River Storage Siding. Install power switches that can be controlled remotely (by a Dispatcher) from main line into new 10,300 linear foot siding (~ 7,300 LF clear) at Gribble. Construct doubletrack from Gribble to siding at MP 707.6, replacing and doubletracking Elm Fork Bridge. Project increases main line capacity for through train traffic by enabling expeditious movement of trains off and on the main track. Also enables trains to more easily park clear of the main line during unloading activity at Gribble, allowing other trains to pass.
5. DT Medical Market Center to Stemmons Freeway – Replace existing culvert and Obsession Bridge, Inwood Bridge, and Knight’s Branch Bridge with new doubletrack structures. Construct doubletrack from Medical Market Center Blvd to Stemmons Freeway Bridge to increase rail capacity by enabling simultaneous train operations.
6. DT Stemmons Freeway Bridge – Complete doubletrack between Irving and Dallas by replacing existing and construct new second rail bridge, parallel to the existing, over Stemmons Freeway to increase rail capacity by enabling simultaneous train operations over the bridge.
7. DT North Junction to Union Station – Complete doubletrack between Irving and Dallas by constructing new track connecting North Junction to Union Station for use by TRE and BNSF. Project increases rail capacity by enabling simultaneous train operations.
8. River Storage Siding (MP 708.6) to Irving (MP 711): Construct CTC, Irving Siding, and Irving Wye DT and Speed Increase – Install automatic rail traffic signal system between Gribble and Irving Wye. Install power switches that can be controlled remotely (by a Dispatcher) off existing yard track to create new 10,000 LF linear foot siding at existing Irving Yard. Construct doubletrack from proposed siding through Irving Wye and increase track speed from 10 MPH to 30 MPH. Install power switch and second main line to increase rail capacity by enabling simultaneous train operations over the wye. Project increases rail

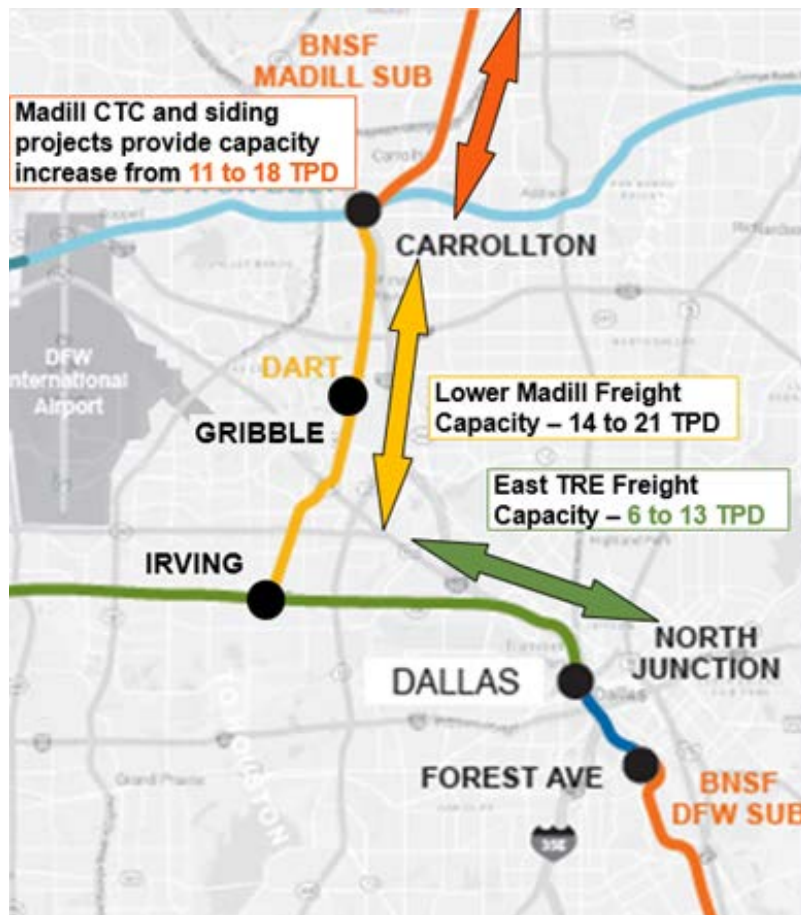


capacity by enabling simultaneous operations of two trains at the same location and the expeditious movement of trains off and on the main track.

- 9. Implement Clear Path™ Technology (not shown) – Design, develop concept of operations, and implement hardware and software backbone structure that will enable all agencies and users of the DFW metroplex rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex. This system will increase capacity of the DFW rail network by facilitating inter-carrier operations and enhancing the flow of passenger and freight trains through the complex.

Therefore, under the Full Build Scenario, public benefits are derived from the aggregate business currently moving on the line (4 TPD, loads and empties) plus anticipated aggregate freight growth of 3 TPD (loads and empties). These additional 3 TPD area accommodated by the existing capacity on the lower Madill plus the additional freight capacity created by Projects 4 – 8.

Exhibit 4: Future Rail Line Capacity



This additional capacity will allow at least 80% of the aggregate moving through the Corridor to parts of the Dallas-Fort Worth area and south to be transported by rail instead of by truck. To



be conservative, the same routing is used as described in the No-Build scenario. The Table 3 below indicates the projects and infrastructure that will be built under the Build Scenario.

Table 3: Matrix of Project Improvements in NT MOVES

Project Name	Project #	Infrastructure Changes with Build Scenario
Phase 1A: 2019 Investments		
Install Madill Sub CTC, Denison (MP 637) to South Hebron (MP 693)	1	Add 56 miles of CTC
Extend Hebron Siding to 8,000 LF and Install CTC	2	Add 1,800 track feet Add 8,000 linear feet of CTC
New 10,000 LF Siding, MP 648 - 650 (Sherman)	3	Add 10,000 track feet and CTC
Phase 1B: 2020-2022 Investments		
South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement and DT	4	Add 20,000 track feet Add 12 miles of CTC Plus 1 bridge replacement
DT Medical Market Center to Stemmons Freeway	5	Add 6,300 track feet (main line) Plus 3 bridge replacements
Design and Implement of ClearPath		Design and Implementation of Technology
Design Stemmons Freeway Bridge Doubletrack	6	Design
Design North Junction to Union Station Doubletrack	7	Design
Future Phases		
Gribble to Irving: Construct CTC, Irving Siding, and Irving Wye DT with Speed Increase	8	Add 19,000 track feet Add 4 miles CTC
Construct Stemmons Freeway Bridge Doubletrack		Add track
Construct North Junction to Union Station Doubletrack		Add track

Partial Build Alternative – Project 4

This scenario assumes, like the No Build Scenario, that approximately \$30 million in capital investments is made on the BNSF Madill Subdivision by BNSF in 2019 via projects 1 – 3. These investments will increase the overall rail capacity of the subdivision north of Carrollton by 7 trains per day. Further, this scenario assumes that only Project 4, *South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement*, is implemented. This is the northernmost project on the DART-owned portion of the Madill Sub, immediately adjacent to the BNSF network. In this alternative, the CTC system constructed by BNSF on its own network and terminating at South Hebron would be extended continuously to the River Storage Siding south of Gribble at milepost 707.6. A new 10,300 linear foot siding would be constructed at Gribble and doubletracking would be constructed across the deteriorating Elm Fork Bridge, which would be replaced and accompanied by a parallel span. This project increases main line capacity for through train traffic by enabling expeditious movement of trains off and on the main track and enables trains to more easily park clear of the main line during unloading activity at destination sites at Gribble, allowing other trains to pass.

Like the No-Build scenario, in this scenario public benefits are limited in 2022 and beyond. For purposes of this analysis we have assumed the public benefits of this project to accrue based on 2 TPD of aggregate movement between southern Oklahoma and Gribble, like the No-Build



Alternative, plus an additional 1 TPD (0.5 load and 0.5 empty) into and out of the destination sites at Gribble.

Table 4: Matrix of Project Improvements to Madill Subdivision (partial Build alternative)

Project Name	Project #	Infrastructure Changes with Build Scenario
Phase 1A: 2019 Investments		
Install Madill Sub CTC, Denison (MP 637) to South Hebron (MP 693)	1	Add 56 miles of CTC
Extend Hebron Siding to 8,000 LF and Install CTC	2	Add 1,800 track feet Add 8,000 linear feet of CTC
New 10,000 LF Siding, MP 648 - 650 (Sherman)	3	Add 10,000 track feet and CTC
Phase 1B: 2020-2022 Investments		
South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement and DT	4	Add 20,000 track feet Add 12 miles of CTC Plus 1 bridge replacement

Table 5: Metrics of Project Improvements to the TRE subdivision (Partial Build alternative)

Project Name	Project #	Infrastructure Changes with Build Scenario
Phase 1B: 2020-2022 Investments		
DT Medical Market Center to Stemmons Freeway	5	Add 6,300 track feet (main line) Plus 3 bridge replacements
ClearPath		Design and Implementation of Technology

Table 6: Metrics of Net Change upon Construction of the Build alternative Phase 1B

Subdivision	No-Build	Build	Change
Madill Subdivision- Project 4: South Hebron to Gribble			
Miles of Mainline	12	1.2	13.2
Sidings	0	1	2
Miles of CTC	0	12	12.0
TRE Subdivision- Project 5: Irving to Stemmons Highway			
Miles of Mainline	5.5	1.2	6.7

The construction of this Madill project package under Phase 1B (project 4) will build 1 siding, replace 1 bridge, build 1.2 miles of mainline and add 12 miles of CTC to the Subdivision. The construction of TRE improvements in Phase 1B (project 6)- Medical Market Center to Stemmons Freeway DT will replace three bridges and add 1.2 miles of mainline track. ClearPath will be designed and implemented during Phase 1B.



BCA Model Development

The Excel Spreadsheet Model is divided into multiple Tabs that calculate the respective Benefits and Costs. Table 7 summarizes the Outcomes of each Benefit and Cost category, indicates whether the outcome is monetized, quantified or qualified and identified the corresponding Tab in the Excel spreadsheet.

Table 8 summarized the results of the Benefit calculations by Outcome, identifies the description of the results, inputs, impacts and displays the real dollars and discounted results at 7%. Table 9 details the results of the Benefits and Costs on an Annual Basis.



Table 7: Long-term outcome of improvements on the NT MOVES Phase 1



Checkmarks indicate applicable Monetized, Quantified, and Qualitative elements

Impact #	Long-Term Outcomes	Impact Categories	Description	Monetized	Quantified	Qualitative	Reference Tab
1	Economic Vitality	Decreased Shipping Costs	Decreased operating cost achieve by moving more Aggregate by Rail	✓	✓		Op Cost Savings Truck vs. Rail
2	Mobility	Reduced Passenger Travel Time	Improvements to TRE Corridor improves travel time for current passengers	✓	✓		TRE Travel Time
3		Reduced Truck Travel Time	Reduced Travel Cost to Truck Drivers by not having to move Aggregate	✓	✓		Truck Freight Travel Time Saved
4		Reduced Freight Travel Time at grade crossings	Improvements to Rail Corridor improves rail travel time for current trains	✓	✓		RR Freight Travel Time
5	State of Good Repair	Reduced Maintenance and Preservation on Roadways	Reduced VMT on Roads and Highways	✓	✓		Road Maint. Savings
6	Community and Environmental	Reduced Carbon Emissions	Reducing truck VMT will reduced CO ² Emissions	✓	✓		Emissions
7		Reduced Air Emissions	Reducing Truck VMT will reduced other air emissions	✓	✓		Emissions
8	Safety	Improved Road Safety	Removing Trucks off the roads will improve road safety	✓	✓		Safety
9		Enhance Rail Safety	Adding CTC to portions of the Madill Sub currently without CTS will enhance rail safety			✓	Safety

Cost #	Category	Cost Categories	Description	Monetized	Quantified	Qualitative	Reference Tab
C1	Capital Costs	Capital Costs by Year of Expenditure	Cash flows of all capital expenditures	✓	✓		Cost
C2	Life Cycle Costs	O&M Costs by Year of Expenditure	Cash flows of all O&M expenditures	✓	✓		Costs
C3	Residual Value	Remaining life of the Asset	Estimated Life of the assets adjusted to remaining life at end of analysis period	✓	✓		Residual Value

Note that C2 and C3 are reduced from the Project benefits in the BCR calculation.



Table 8: NT MOVES Phase 1 impacts are summarized on the Impact Tab

NT MOVES INFRA FY19 BCA PHASE 1- All projects

Benefit-Cost Analysis Assumptions for BNSF Madill Subdivision Improvements

Long-term Outcomes	Description	Inputs	Impacts	Value (real 2017\$)	Discounted Value (@ 7%)
	Reduction of Passenger Travel Time	Number of passengers on TRE	1.6 million passenger and transit operator hours saved	\$24,177,471	\$6,936,695
Congestion Reduction & Freight Mobility	Reductions in travel time for current freight trains in the corridor	Average daily trains and travel time figures provided by BNSF.	1449 hours of freight rail travel time reductions over analysis period	\$162,650	\$56,835
	Reduction in truck travel times due to conversion to rail	Number of trucks removed from the road times number of driving hours times average truck operator hourly cost.	8.5 million truck travel hours saved	\$242,874,305	\$74,422,105
Economic Competitiveness	Reduction in Vehicle Operating Costs along the Corridor	Average annual ton miles converted to rail times the differential rail vs. truck rate per ton mile.	No-Build Total Operating costs vs Build Operating costs by mode	\$1,844,481,114	\$563,483,390
Safety	Reduced fatalities and accidents from improvements to intersections which will result in reduced average crash rates	Removing truck VMT off the local highways	4 fatal accidents plus 417 injury accidents potentially prevented	\$70,841,222	\$18,522,430
Environmental Sustainability	Reductions of emissions associated with movement of Aggregate on the Madill Subdivision	Average daily trip (ADT) and travel time figures provided by Transpo group, idling vehicle emission rates provided by EPA	NOx reduced by 9058 ST VOC reduced by 919 ST PM reduced by 588 ST CO ₂ reduced by 4.0 million MT	\$84,785,320	\$25,639,276
State of Good Repair	Elimination/deferral of roadway preservation investment on Roadways and Highways	Reduction of annual VMT by Trucks	12.4 billion miles taken off the roads and highways with conversion to rail	\$1,482,471,033	\$452,936,549
				\$3,749,793,115	\$1,141,997,280

Table 9: Benefit Cost Summary NT MOVES Phase 1

NT MOVES INFRA FY19 BCA PHASE 1- All projects

Benefit Costs Detailed Summary

Year	Aggregate Product Volumes	Costs					Benefits					Total	NPV		
		Capital Investment	TRE Travel Time Savings	Freight Travel Time Savings - Rail	Freight Travel Time Savings - Truck	Operating Cost Savings Truck vs. Rail	Emissions	Safety	Road Maint. Savings	Life Cycle Costs	Residual			Total Benefits	
2017		(\$1,500,000)												\$0	(\$1,500,000)
2018		\$0												\$0	\$0
2019		(\$30,700,000)												\$0	(\$30,700,000)
2020	12,823,180	\$0	\$0	\$0	\$791,171	\$6,137,729	\$262,038	\$235,566	\$4,929,603	(\$644,000)	\$11,712,106	\$11,712,106	\$11,712,106		
2021	13,079,643	\$	\$0	\$0	\$2,584,136	\$20,047,160	\$864,449	\$769,408	\$16,101,157	(\$644,000)	\$39,722,312	\$39,722,312	\$39,722,312		
2022	13,341,236	(\$92,000,000)	\$0	\$0	\$3,027,488	\$23,486,583	\$1,049,569	\$901,413	\$18,863,578	(\$644,000)	\$46,884,631	\$46,884,631	\$46,884,631		
2023	13,608,061	\$0	\$869,005	\$7,072	\$4,430,360	\$32,566,779	\$1,453,387	\$1,252,092	\$26,202,127	(\$2,539,000)	\$64,231,822	\$64,231,822	\$64,231,822		
2024	13,880,222	\$0	\$885,567	\$7,072	\$4,881,623	\$36,145,155	\$1,613,216	\$1,389,430	\$29,076,149	(\$2,539,000)	\$71,459,219	\$71,459,219	\$71,459,219		
2025	14,157,827	\$	\$902,130	\$7,072	\$5,352,111	\$39,795,098	\$1,775,983	\$1,529,515	\$32,007,652	(\$2,539,000)	\$78,830,561	\$78,830,561	\$78,830,561		
2026	14,440,983	\$	\$918,693	\$7,072	\$5,832,009	\$43,518,040	\$1,942,005	\$1,672,401	\$34,997,785	(\$2,539,000)	\$86,349,005	\$86,349,005	\$86,349,005		
2027	14,729,803	\$	\$935,255	\$7,072	\$6,321,505	\$47,315,441	\$2,111,348	\$1,818,145	\$38,047,721	(\$2,539,000)	\$94,017,487	\$94,017,487	\$94,017,487		
2028	15,024,399	\$	\$951,818	\$7,072	\$6,820,791	\$51,188,790	\$2,284,077	\$1,966,804	\$41,158,655	(\$2,539,000)	\$101,839,007	\$101,839,007	\$101,839,007		
2029	15,324,887	\$	\$968,381	\$7,072	\$7,330,062	\$55,139,606	\$2,460,261	\$2,118,436	\$44,331,808	(\$2,539,000)	\$109,816,626	\$109,816,626	\$109,816,626		
2030	15,631,384	\$	\$984,944	\$7,072	\$7,849,519	\$59,169,438	\$2,639,969	\$2,273,100	\$47,568,424	(\$2,539,000)	\$117,953,466	\$117,953,466	\$117,953,466		
2031	15,944,012	\$	\$1,001,506	\$7,072	\$8,379,365	\$63,279,867	\$2,823,271	\$2,430,858	\$50,869,773	(\$2,539,000)	\$126,252,712	\$126,252,712	\$126,252,712		
2032	16,262,892	\$	\$1,018,069	\$7,072	\$8,919,808	\$67,472,505	\$3,010,239	\$2,591,717	\$54,237,148	(\$2,539,000)	\$134,717,612	\$134,717,612	\$134,717,612		
2033	16,588,150	\$	\$1,034,632	\$7,072	\$9,471,060	\$71,748,995	\$3,200,946	\$2,755,903	\$57,671,871	(\$3,039,000)	\$142,851,478	\$142,851,478	\$142,851,478		
2034	16,919,913	\$	\$1,051,194	\$7,072	\$10,033,337	\$76,111,015	\$3,395,467	\$2,923,317	\$61,175,288	(\$2,539,000)	\$152,157,690	\$152,157,690	\$152,157,690		
2035	17,258,312	\$	\$1,067,757	\$7,072	\$10,606,859	\$80,560,275	\$3,772,063	\$3,094,079	\$64,748,774	(\$2,539,000)	\$161,317,879	\$161,317,879	\$161,317,879		
2036	17,603,478	\$	\$1,084,320	\$7,072	\$11,191,852	\$85,098,521	\$3,984,371	\$3,268,256	\$68,393,729	(\$2,539,000)	\$170,489,122	\$170,489,122	\$170,489,122		
2037	17,955,547	\$	\$1,100,883	\$7,072	\$11,788,545	\$89,727,531	\$4,200,926	\$3,445,917	\$72,111,584	(\$2,539,000)	\$179,843,458	\$179,843,458	\$179,843,458		
2038	18,314,658	\$	\$1,117,445	\$7,072	\$12,397,171	\$94,449,122	\$4,421,812	\$3,627,132	\$75,903,795	(\$3,039,000)	\$188,884,549	\$188,884,549	\$188,884,549		
2039	18,680,951	\$	\$1,134,008	\$7,072	\$13,017,970	\$99,265,145	\$4,647,115	\$3,811,970	\$79,771,851	(\$2,539,000)	\$199,116,131	\$199,116,131	\$199,116,131		
2040	19,054,570	\$	\$1,150,571	\$7,072	\$13,651,185	\$104,177,488	\$4,876,924	\$4,000,506	\$83,717,268	(\$2,539,000)	\$209,042,014	\$209,042,014	\$209,042,014		
2041	19,435,662	\$	\$1,167,133	\$7,072	\$14,297,065	\$109,188,078	\$5,111,330	\$4,192,812	\$87,741,594	(\$2,539,000)	\$219,166,083	\$219,166,083	\$219,166,083		
2042	19,824,375	\$	\$1,183,696	\$7,072	\$14,955,862	\$114,298,879	\$5,350,424	\$4,388,964	\$91,846,405	(\$2,539,000)	\$229,492,302	\$229,492,302	\$229,492,302		
2043	20,220,863	\$	\$1,200,259	\$7,072	\$15,627,835	\$119,511,897	\$5,594,299	\$4,589,039	\$96,033,313	(\$3,039,000)	\$239,524,714	\$239,524,714	\$239,524,714		
2044	20,625,280	\$	\$1,216,822	\$7,072	\$16,313,247	\$124,829,175	\$5,843,053	\$4,793,116	\$100,303,960	(\$2,539,000)	\$250,767,443	\$250,767,443	\$250,767,443		
2045	21,037,785	\$	\$1,233,384	\$7,072	\$17,012,368	\$130,252,799	\$6,096,781	\$5,001,274	\$104,660,019	(\$2,539,000)	\$262,434,695	\$262,434,695	\$262,434,695		
		\$ (124,200,000)	\$ 24,177,471	\$162,650	\$242,874,305	\$1,844,481,114	\$84,785,320	\$70,841,222	\$1,482,471,033	\$ (61,829,000)	\$58,710,000	\$3,749,793,115	\$3,749,793,115		
					Freight Travel Time \$	243,036,955			Public Benefits \$	3,749,793,115					



A. Mobility

Passenger Travel Time Savings

TRE passengers will benefit from a shorter total trip time for the TRE to travel from Texas & Pacific Station in Fort Worth to Dallas Union Station following implementation of improvements. This was calculated based on the transit trip time savings provided by the travel model across all origin and destination pairs represented here by the project segment from Medical Market Center to Stemmons Freeway. Existing riders are counted at the All Purposes travel time value of \$16.10 per hour while forecast new riders attracted by reduced headways are valued at \$8.05 per hour as described in USDOT BCA 2018 Guidance. Weekday and Saturday riders are initially separate based on separate annual counts. Transit Rail Operators are counted at \$48.90 per hour.

$$TRE \text{ Passenger Travel Time Savings} = (T * (R1+R3) * S) + (T * (R2+R4) * (S/2)) + (TO * S)$$

T = Transit Trip Travel Time Savings (hours)

R1 = Weekday Riders Base (no-build)

R2 = New Weekday Riders (build)

R3 = Saturday Riders Base (no-build)

R4 = New Saturday Riders (build)

TO = Transit Operators

S = Value of Travel time savings

Freight Travel Time Savings- Rail Medical Center to Stemmons Freeway

Improved speed and capacity in the TRE corridor will translate to a reduction in delay for freight moved throughout the corridor resulting in a travel time savings of 6.5 minutes. The estimate was based on the replacement of two bridges with current speed restrictions for freight trains on the Inwood Bridge and Obsession Bridge-. The travel time savings is converted to hours and multiplied by the number of freight trains in the corridor and their associated number of engineers. NCTCOG staff estimates 2 to 3 engineers on board each train for average of 2.5 per train with per hour travel time value of \$44.90 as provided in 2018 BCA Guidance. Rail traffic on the TRE is bidirectional with an average daily train count of 95 trains, of which approximately 70 are passenger trains, and 25 are freight as counted from Federal Railroad Administration Safety data on rail crossings (<http://fragis.fra.dot.gov/GISFRASafety/>). **For this analysis, only an incremental 1 Aggregate Train was used as the basis for the Freight Travel Time Savings.** Freight train trips were held constant over time due to insufficient data on freight modal diversion and/or freight traffic growth.

$$Freight \text{ travel time savings} = T * N * X * D * S$$

T = Freight Travel Time Savings (hours)

N = Number of freight trips in corridor

X = Number of engineers per train

D = Days per Year

S = Value of Travel time savings

Freight Travel Time Savings- Rail- Madill Subdivision



BNSF is investing in capacity on the Madill Subdivision north of Carrollton in 2019. The existing and anticipated train activity on the BNSF Madill Sub north of Carrollton will also operate over the DART-owned Madill Sub from Carrollton to Irving and the TRE from Irving to Dallas. Projects 4 – 8 on the Madill Subdivision and the east end of the TRE are intended to protect existing freight capacity on the Madill Subdivision between Carrollton and Irving and enable 2% annual freight growth on the route between Carrollton and Dallas from 2022 – 2030.

Public network investment and an operating plan for equipment is required in order to overcome modeled travel time delay of 5.1 minutes per trip when future commuter rail moves are introduced to the TRE between Irving and Dallas. The estimate was prepared by BNSF staff based upon their Rail Traffic Control (RTC) rail simulation model which simulates the rail movements through the Dallas-Ft. Worth Metroplex. The modeled network includes the additional capacity being installed by BNSF in 2019 through the addition of Centralized Traffic Control (CTC) from Denison to South Hebron, the extension and CTC of Hebron Siding, and construction of a new 10,000 LF siding at Sherman, TX.

This analysis is based upon annual freight movements. Although, the capacity has been tested to ensure that the projected volume can be accommodated within the 52 weeks of seven days per week service resulting in 360 days per year.

Freight Travel Time Savings- Truck

The estimate was prepared based on the number of trucks that are estimated to be taken off the road with the availability of increased rail capacity. No change in the current speed for trucks was assumed. The travel time savings of 2 hours per truck trip is multiplied by the number of freight trucks taken off the corridor and the associated number of truck drivers. USDOT estimates 1 truck driver in each truck with per hour travel time value of \$28.60 as provided in 2018 BCA Guidance.

$$\text{Freight travel time savings- Truck} = T * N * X * S$$

- T = Freight Travel Time Savings- Truck (hours)
- N = Number of freight truck trips saved in corridor
- X = Number of drivers per truck
- S = Value of Travel time savings per truck driver

Congestion Delay Savings

Driver Cost Savings were not calculated for this project package.

Driver Cost Savings

Driver Cost Savings were not calculated for this project package.

B. Economic Vitality

Operating Cost Savings



Operating Cost Savings are calculate based upon the saving achieved from converting truck miles to rail miles to transport Aggregate Products from Madill, OK to Irving, TX. The Operating Costs of Build Truck miles plus Build Rail miles are subtracted from No-Build Operating Costs

$$\text{Operating Cost Savings} = (\text{TVMT1} * \text{T\$}) - [(\text{RVMT} * \text{R\$}) + (\text{TVMT2} * \text{T\$})]$$

TVMT1 = No-Build Truck Miles

RVMT = Build Rail Miles

TVMT2 = Build Truck Miles

T\$ = Operating cost per mile for Trucks

R\$ = Operating cost per mile for Rail

C. Air Quality

Regional Roadway Emissions Reductions

Air quality benefits for this project are derived from increased rail capacity on the Madill Subdivision and modal diversion to train from truck 25-year analysis period. This result in lowering commercial truck emissions. Reduction estimates were developed by taking the difference between the No-Build and the Build scenarios total emissions. Annual estimates were calculated for Nitrogen Oxides (NOX), Volatile Organic Compounds (VOCs), Particulate Matter and Carbon dioxide (CO₂).

$$\text{Air Quality Benefit} = [(R * V)]$$

R = Reduction in Pollutant in short tons (Metric Tons for CO₂)

V = Value of reduction per short ton/ metric ton

D. Safety

Reduction in Vehicle Crashes

The reduction in Truck vehicle miles traveled (VMT) as a result of shift to freight rail will reduce the likelihood of roadway truck crashes. Number of crashes for a parallel Highway corridor to the freight rail corridor (IH-35 East and IH-45 south of I-30) divided by the 2018 annual VMT in the corridor was used to determine the existing annual crash rate per VMT. The daily VMT was multiplied by 365 to get an annual value because crash data is from all days of the year.

The number of crashes were obtained from TxDOT's Crash Records Information System (CRIS) by KABCO Accident Classification System categories. This data is only composed of TxDOT "Reportable Crashes". A "Reportable Motor Vehicle Traffic Crash" is defined by TxDOT as any crash involving motor vehicle in transport that occurs or originates on a traffic way, results in injury to or death of any person, or damage to the property of any one person to the apparent extent of \$1,000. A traffic way is defined as any land way open to the public as a matter of right or custom for moving persons or property from one place to another.



$$\text{Annual Crash Reduction} = C1 - ((C1/VMT1) * VMT2)$$

C1 = Crash Incidents no-build highway corridor

VMT1 = Commercial Vehicle Miles Traveled in no-build scenario

VMT2 = Commercial Vehicle Miles Traveled in build scenario

E. State of Good Repair

Highway Maintenance Cost and Preservation Savings

The estimated savings in Road maintenance and Preservation costs of removing commercial vehicles off the Madill Sub. Corridor from Madill, OK to Irving, TX is calculated. These calculations can be found in the BCA Excel file under the Road Maintenance Savings Tab.

$$\text{Annual Road Maintenance/ Preservation Cost Savings} = (M1 - M2)$$

M1 = Annual cost of road maintenance, no-build (dollars)

M2 = Annual cost of road maintenance, build (dollars)

F. Residual Value

Remaining Service Life of Project Improvements

New rail capital improvements in this project will have a remaining service life beyond the 25-year benefit calculation in this BCA. The current value of each new sidings and CTC investments will be divided by the years of its life span and then discounted annually. Value remaining after the end of the 25-year calculation will be added to the benefit calculation. All project elements with life spans beyond the project are included in the attached excel tables under the Residual Value Tab. All project components not included are expected to last as long as the project analysis period.

$$\text{Residual Value} = [(U - Y) / U] * C$$

U = Useful Service Life of Project

Y = Years of Analysis Period

C = Cost of Project Component

II. Costs

A. Capital Construction

Proposed construction costs were obtained from BNSF. Construction costs were estimated based on the proposed construction schedule and activities for each quarter. Detail for future capital construction cost estimates per project component are located in the “Cost-Lifecycle” tab of the Budget Excel file. The total construction cost estimates used in this BCA are given in 2017 real dollars. The following table summarizes each component’s capital construction cost in 2017 dollars, including costs incurred prior to the grant application up through 2045. Additional information on the annual costs from 2017-2045 in 2017 dollars are found on the “Costs-Lifecycle” tab of the BCA Tables Excel file. Costs incurred prior to the grant application include design and engineering costs for the improvements.



Table 10: Construction Cost per Project Component for NT MOVES Phase 1

Component ID	Component Name	Construction Cost (2017 dollars)
Phase 1A	Prior Incurred Costs	\$ 1,500,000
1	Install Madill Sub CTC, Denison (MP 637) to South Hebron (MP 693)	\$ 15,000,000
2	Extend Hebron Siding to 8,000 LF and Install CTC	\$ 6,000,000
3	New 10,000 LF Siding, MP 648 - 650 (Sherman)	\$ 8,000,000
Subtotal Phase 1A (prior +2019)		\$ 30,500,000
Phase 1B	2020-2022	
4	South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement and DT	\$ 68,000,000
5	DT Medical Market Center to Stemmons Freeway	\$ 24,000,000
	Design and Implement of ClearPath Technology	\$ 5,000,000
Subtotal Phase 1B		\$ 97,000,000
Total Project		\$120,500,000

Table 11: implementation schedule of Project Component

Implementation Schedule	Project #	Phase I: PE/NEPA	Phase II: FD	Phase III: Construction
Install Madill Sub CTC, Denison (MP 637) to South Hebron (MP 693)	1	completed	completed	2019
Extend Hebron Siding to 8,000 LF and Install CTC	2	completed	completed	2019
New 10,000 LF Siding, MP 648 - 650 (Sherman)	3	completed	completed	2019
South Hebron to Gribble: Construct CTC, Gribble Siding, and Elm Fork Bridge Replacement and DT	4	2019	2020-21	2022
DT Medical Market Center to Stemmons Freeway	5	2019	2020-21	2022
Design and Implement of ClearPath Technology				2023

III. B. Operations and Maintenance (Life Cycle Costs)

The remaining operating and maintenance (O&M) costs for this project used in the BCA include the costs as described below. Following the BCA guidance, the O&M costs include only the incremental cost of the “build” scenario, which are the costs required to provide the service levels used in the BCA benefits calculations. Overall O&M costs expressed in 2017 real dollars, based upon an O&M estimate provided by BNSF for the capital improvements. Sidings and CTC improvements are schedule to be completed by 2020. The incremental cost of increased O&M cost is estimated at 2% of baseline capital improvements (\$2017) for O&M costs per year from 2020 - 2045. ClearPath’s Life-cycle costs are estimated at \$50,000 per year plus a major upgrade at year 10,15 and 20. This estimate is based upon a detailed O&M schedule by asset type as seen below.

Details for the Life-Cycle Costs (O&M cost) estimate are located in in the “Cost_Lifecycle” tab of the BCA Tables Excel file.



Table 12: project ongoing annual maintenance costs (\$2017)

Assumptions	Annual Maint.	Notes
Madill Phase 1A	\$644,000	2% of Asset cost
Phase 1B	\$1,840,000	2% of Asset cost
Clear Path	\$55,000	Estimate by NCTCOG
Annual Maint.	\$2,539,000	
Clear Path Major upgrades	\$500,000	Year 10,15 and 20

IV. Summary of Benefits and Costs

A. Result Ratio

Results of the benefit cost comparison are summarized in Table 3. The benefits are assumed to incur after project completion, for a 25-year life span of the projects from 2020 to 2045 to match the BCA of other Project Packages. Costs are calculated from 2017 to 2045. All monetized estimates were discounted at a 7% rate to 2017. The details tables (Excel) have a tab detailing the calculations of each benefit and the model outputs of truck and rail volumes, VMT for Trucks, Vehicle hours saved on both rail and road, operating cost savings from the conversion of Aggregate tonnage from road to rail, Emission savings, Crash reduction, O&M costs, Residual of the investments. A cost summary table is also included.

Table 13: NT MOVES Improvements Phase 1 Project Benefit/Cost Summary

NT MOVES INFRA FY19 BCA PHASE 1- All projects

Benefit and Cost Summary Table

Costs and Benefits	Nominal Total Value	Discounted to 2017 (7%)
Costs		
Eligible Costs	\$97,000,000	\$67,020,701
Previously incurred Cost	\$32,200,000	\$28,314,569
Total Cost	\$129,200,000	\$95,335,270
Benefits		
Passenger Travel Time Savings	\$24,177,471	\$6,936,695
Freight Travel Time Savings- Rail + Truck	\$243,036,955	\$74,478,940
Operating Costs Savings	\$1,844,481,114	\$563,483,390
Emissions Reductions Benefit	\$84,785,320	\$25,639,276
Crash Reduction Benefit	\$70,841,222	\$18,522,430
Pavement Maint/ Preservation Savings	\$1,482,471,033	\$452,936,549
Total Societal Benefits	\$3,749,793,115	\$1,141,997,280
Value of Remaining Service Life	\$58,710,000	\$8,830,114
Less Operation and Maintenance Cost	-\$61,829,000	-\$22,258,109
Total Benefit	\$3,746,674,115	\$1,128,569,285
Net Present Value (NPV)	\$3,617,474,115	\$1,033,234,015
Benefit-Cost Ratio (BCR)	29.00	11.84



BCR at 7% is estimated to be 12:1 based upon \$129.2 million total investment into the Madill and TRE Subdivisions which will provide additional rail capacity on the subdivision to enable conversion of the transportation of Aggregate Products currently moving on truck to be transported by rail within the corridor from Madill, OK to Gribble, TX and from Gribble to Dallas, TX and beyond.

V. BCA Results for the Madill Subdivision Improvements

A. Result Ratio

The Madill Subdivision Improvements were modeled as a stand-alone BCA. The following is a summary of those results. A stand-alone spreadsheet has been prepared for the Madill Subdivision as noted above. Results of the benefit cost comparison for the Madill Sub Improvements of NT MOVES Phase 1 Project package are summarized in Table 14.

Table 14: BNSF MAdill subdivision Improvements Project Benefit/Cost Summary
NT MOVES: BNSF Madill Subdivision Improvements - INFRA FY19 - BCA- Phase 1
Benefit and Cost Summary Table

Costs and Benefits	Nominal Total Value	Discounted to 2017 (7%)
Costs		
Eligible Costs	\$68,000,000	\$48,483,060
Previously incurred Cost	\$32,200,000	\$28,314,569
Total Cost	\$100,200,000	\$76,797,629
Benefits		
Freight Travel Time Savings- Rail + Truck	\$221,239,263	\$66,862,150
Operating Costs Savings	\$1,716,325,468	\$518,701,830
Emissions Reductions Benefit	\$78,949,740	\$23,618,908
Crash Reduction Benefit	\$65,872,432	\$17,064,668
Pavement Maint/ Preservation Savings	\$1,378,490,793	\$416,602,626
Total Societal Benefits	\$3,460,877,696	\$1,042,850,182
Value of Remaining Service Life	\$45,270,000	\$6,808,708
Less Operation and Maintenance Cost	-\$48,024,000	-\$17,582,139
Total Benefit	\$3,458,123,696	\$1,032,076,752
Net Present Value (NPV)	\$3,357,923,696	\$955,279,123
Benefit-Cost Ratio (BCR)	34.51	13.44

BCR at 7% is estimated to be 13:1 based upon \$100.2 million total investment into the Madill Subdivision during Phase 1 which will provide additional rail capacity on the subdivision to



enable conversion of the transportation of Aggregate Products currently moving on truck to be transported by rail within the corridor from Madill, OK to Gribble, TX

B.Summary Tables

Table 15: impacts are summarized on the Impact Tab

NT MOVES: BNSF Madill Subdivision Improvements - INFRA FY19 - BCA- Phase 1

Long-term Outcomes	Description	Inputs	Impacts	Value (real 2017\$)	Discounted Value (@7%)
Congestion Reduction & Freight Mobility	Reductions in travel time for current freight trains in the corridor	Average daily trains and travel time figures provided by BNSF.	0 hours of freight rail travel time reductions over analysis period	\$0	\$0
	Reduction in truck travel times due to conversion to rail	Number of trucks removed from the road times number of driving hours times average truck operator hourly cost.	7.7 million truck travel hours saved	\$221,239,263	\$66,862,150
Economic Competitiveness	Reduction in Vehicle Operating Costs along the Corridor	Average annual ton miles converted to rail times the differential rail vs. truck rate per ton mile.	No-Build Total Operating costs vs Build Operating costs by mode	\$1,716,325,468	\$518,701,830
Safety	Reduced fatalities and accidents from improvements to intersections which will result in reduced average crash rates	Removing truck VMT off the local highways	3.8 fatalities and 388 injury accidents are estimated to be prevented	\$65,872,432	\$17,064,668
Environmental Sustainability	Reductions of emissions associated with movement of Aggregate on the Madill Subdivision	Average daily trip (ADT) and travel time figures provided by Transpo group, idling vehicle emission rates provided by EPA	NOx reduced by 7570 ST VOC, reduced by 816 ST PM reduced by 524 ST CO ₂ reduced by 3.3 million MT	\$78,949,740	\$23,618,908
State of Good Repair	Elimination/deferral of roadway preservation investment on Roadways and Highways	Reduction of annual VMT by Trucks	11.5 billion miles taken off the roads and highways with conversion to rail	\$1,378,490,793	\$416,602,626
				\$3,460,877,696	\$1,042,850,182

North Texas Multimodal Operations, Velocity, Efficiency, and Safety (MOVES) Program

Phase 1 B

FY 2019 INFRA Grant Application
Attachment 4 – Letters of Support



North Central Texas Council of Governments



COMMISSIONER DR. THERESA M. DANIEL ROAD & BRIDGE DISTRICT 1

February 26, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

Dallas County is pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG’s rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART’s Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, Dallas County fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact me at 214-653-6668.

Sincerely,

A handwritten signature in black ink that reads "Dr. Theresa M. Daniel".

Dr. Theresa M. Daniel
Dallas County Commissioner 1

411 Elm Street, Administration Building,
2nd Floor, Dallas, Texas 75202
(214) 653-6668



Dallas Area Rapid Transit
P.O. Box 660163
Dallas, Texas 75266-0163
214/749-3278

February 25, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Dear Secretary Chao:

Dallas Area Rapid Transit (DART) is pleased to support the U.S. Department of Transportation's 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES, Phase 1).

North Texas MOVES represents the initial projects in NCTCOG's rail capacity improvement program. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter rail network. It will also encourage passenger and freight rail to operate more efficiently and effectively throughout the Dallas-Fort Worth region.

North Texas MOVES will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by DART and Trinity Metro; the planned expansion of commuter service on DART's Cotton Belt commuter rail project (anticipated to be operational in 2022); and expected freight rail growth on private networks.

The grant proposal also includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize the utility of shared-use assets.

Again, DART fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES program. Thank you for your time and consideration. If you have any questions, please contact me at 214-749-2544 or Eron Linn, Federal Relations Manager, at 214-749-2707.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary C. Thomas", with a long horizontal flourish extending to the right.

Gary C. Thomas
President/Executive Director



February 27, 2019

SENATOR PAT FALLON
NORTH TEXAS ★ DISTRICT 30

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

Our office is pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG's rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART's Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, our office fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact us at 512-463-0130

For Texas and Liberty,

A handwritten signature in black ink, appearing to read "Pat Fallon".

Pat Fallon, Member
State Senator - District 30

CAPITOL OFFICE:
ROOM GE.7
P.O. BOX 12068
AUSTIN, TEXAS 78711
(512) 463-0130



Pat.Fallon@Senate.Texas.Gov

DISTRICT OFFICE:
3305 SOUTH MAYHILL RD.
SUITE 125
DENTON, TEXAS 76208
(940) 320-6782



February 26, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

The City of Fort Worth is pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG's rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART's Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, the City of Fort Worth fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact 817-392-6118.

Sincerely,

Betsy Price
Mayor

BETSY PRICE, MAYOR

CITY OF FORT WORTH ★ 200 TEXAS STREET ★ FORT WORTH, TEXAS 76102
(817) 392-6118 ★ FAX (817) 392-2409



KAY GRANGER
UNITED STATES CONGRESS

February 26, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

I am writing to offer my support for the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG’s rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART’s Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

This grant request deserves every consideration if doing so would be consistent with applicable law, rules, and regulations. If I may be of further assistance or answer any questions, please do not hesitate to contact my office.

Sincerely,

Kay Granger
Member of Congress

NOT PRINTED AT GOVERNMENT EXPENSE



Rick Stopfer
Mayor

February 14, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

The City of Irving is pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG’s rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART’s Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, the City of Irving fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration

Sincerely,

Richard H. Stopfer
Mayor
City of Irving



NATHAN JOHNSON
STATE SENATOR • DISTRICT 16

February 26, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

I am pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG’s rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART’s Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

For these reasons, I fully support the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact me at 512-463-0116.

Sincerely,

A handwritten signature in black ink, appearing to read "Nathan Johnson".

State Senator Nathan Johnson, District 19

NMJ/ja

CAPITOL OFFICE
P.O. BOX 12068 • AUSTIN, TEXAS 78711-2068 • OFFICE: 512.463.0116 • FAX: 512.463.5555
nathan.johnson@senate.texas.gov

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FAX: 817/488-6648

E-MAIL: jane.nelson@senate.texas.gov



The Senate of the State of Texas

Jane Nelson
Senate District 12

Committees:

FINANCE, CHAIR
TRANSITION LEGISLATIVE OVERSIGHT
COMMITTEE, CO-CHAIR
STATE AFFAIRS
LEGISLATIVE BUDGET BOARD
LEGISLATIVE AUDIT COMMITTEE
PARTNERSHIP ADVISORY COMMITTEE

February 25, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

I am writing to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial project in NCTCOG’s rail capacity improvement program. The requested funding will enable critical rail capacity improvements that support passenger and freight growth. North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro. Projects include capacity and operation improvements to the TRE and DART rail lines. In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

This proposed project will benefit my constituents and the whole North Texas region. I respectfully request that you give this proposal your utmost consideration.

Very truly yours,

A handwritten signature in black ink that reads "Jane Nelson". The signature is fluid and cursive, with the first name being more prominent.

Senator Jane Nelson

February 25, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

Trinity Metro is pleased to support the U.S. Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG's rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART's Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operation improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, Trinity Metro fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact me at Paul.Ballard@RideTM.org.

Sincerely,



Paul J Ballard
President/CEO
Trinity Metro



Burnett Plaza | 801 Cherry Street | Suite 850 | Fort Worth, Texas 76102 | 817.215.8700 | www.RideTrinityMetro.org



03/01/2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

The City of Carrollton is pleased to support the US Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1).

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG’s rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

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In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

Again, The City of Carrollton fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, please contact Jacqueline Williams at 972-466-4892.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin W. Falconer", with a long, sweeping underline.

Kevin W. Falconer, Mayor

MAYOR'S OFFICE

1945 East Jackson Road, Carrollton, TX 75006 | 972.466.3001 | Fax: 972.466.3252
P.O. Box 110535, Carrollton, TX 75011-0535 | cityofcarrollton.com



The Transportation Policy Body for the North Central Texas Council of Governments
(Metropolitan Planning Organization for the Dallas-Fort Worth Region)

March 1, 2019

The Honorable Elaine L. Chao
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Chao:

On behalf of the Regional Transportation Council (RTC), which serves as the Metropolitan Planning Organization for the Dallas-Fort Worth (DFW) area, I am pleased to support the United States Department of Transportation 2019 Infrastructure for Rebuilding America (INFRA) grant application submitted by the North Central Texas Council of Governments (NCTCOG) for the **North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (North Texas MOVES–Phase 1)**.

North Texas MOVES–Phase 1 represents the initial projects in NCTCOG's rail capacity improvement program. The result of data-driven computer modeling, this program leverages investment by multiple public agencies. The requested funding will enable critical rail capacity improvements that support passenger and freight growth on the publicly-owned commuter network and encourage passenger and freight rail fluidity through the Dallas-Fort Worth region.

North Texas MOVES–Phase 1 will accommodate the continued on-time performance of the Trinity Railway Express (TRE) commuter service, jointly owned by Dallas Area Rapid Transit (DART) and Trinity Metro; the planned expansion of commuter service on DART's Cotton Belt project (anticipated to be in service in 2022); and expected freight rail growth on private networks. Projects include capacity and operational improvements to the TRE and DART rail lines.

In addition to these projects, the grant proposal includes design and engineering elements for improvements that will be included in later phases of the North Texas MOVES program. Finally, the innovative ClearPath technology platform will facilitate communication between public and private operators of the regional rail network to maximize utility of shared-use assets.

This project is consistent with the programs and policies in Mobility 2045: The Metropolitan Transportation Plan for North Central Texas. All federally funded surface transportation projects must also be included in the Transportation Improvement Program. If the project is successful in receiving funds, the Regional Transportation Council will support its inclusion in the 2019-2022 Transportation Improvement Program for North Central Texas.

P.O. Box 5888 • Arlington, Texas 76005-5888 • (817) 695-9240 • FAX (817) 640-3028
<http://www.nctcog.org/trans>

Secretary Elaine L. Chao
Page Two

March 1, 2019

Again, the RTC fully supports the 2019 INFRA grant application submitted by NCTCOG for the North Texas MOVES-Phase 1 program. Thank you for your time and consideration. If you have any questions, feel free to contact Michael Morris, P.E., Director of Transportation for NCTCOG at (817) 695-9241 or mmorris@nctcog.org.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Fickes', with a stylized flourish at the end.

Gary Fickes, Chair
Regional Transportation Council
Commissioner, Tarrant County

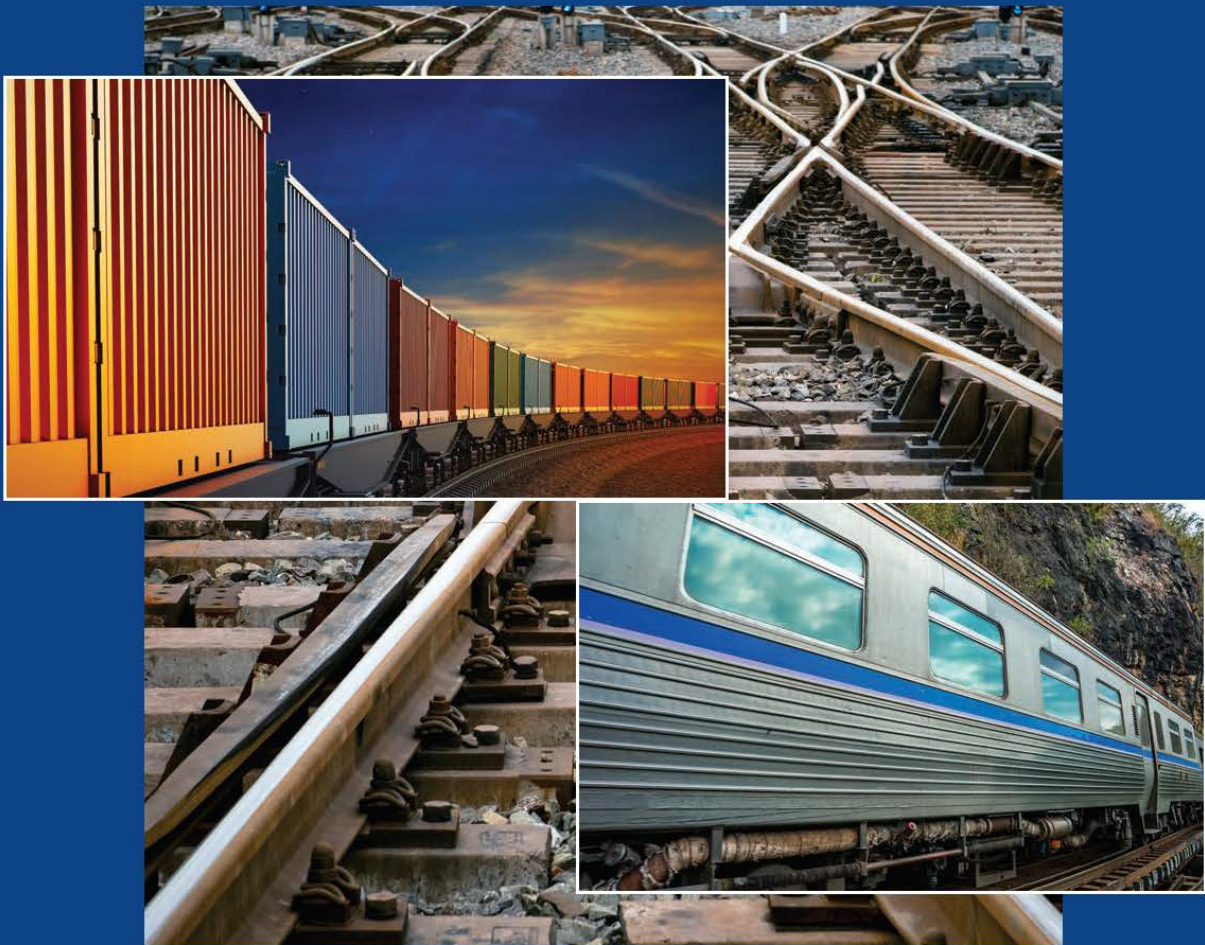
KR:al

cc: Michael Morris, P.E., Director of Transportation, NCTCOG

North Texas Multimodal Operations, Velocity, Efficiency, and Safety (MOVES) Program

Phase 1 B

FY 2019 INFRA Grant Application
Attachment 5 – Project Supporting Documentation



North Central Texas Council of Governments



Table of Contents

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3.0 Doubletrack Medical Market Center to Stemmons Freeway	2
4.0 Implement ClearPath Technology.....	3



1.0 Project Support Documents

This attachment contains the supporting documents for the construction and technology projects included in the NT MOVES Phase 1 B INFRA Grant Application. The support documents include:

Schedule for the implementation of the projects

- Project Scopes
- Preliminary Engineer Estimates
- Preliminary Design Drawings
- FRA Categorical Exemption Worksheet (**Has Not Been Submitted to FRA**)

This information is to supplement and support the data already contained in Attachment 1: Project Narrative



1.1 Projects Schedule

	2020				2021				2022				2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project 1 Construct Centralized Traffic Control (CTC), Irving – S. Hebron Construct and Install CTC Siding at Gribble and Elm Fork Bridge Replacement with Doubletrack.	E	E														
			D	D	D	D										
							P	P								
									C	C	C	C	C	C		
Project 2 Double Track Stemmons Freeway Bridge (Design)			E	E												
					D	D	D	D								
									P	P	P					
												C	C	C	C	
Project 3 Medical Market Center to Stemmons Freeway	E	E														
	D	D	D	D												
					P	P	P									
									C	C	C	C	C			
Project 4 DT North Junction to Union Station (Design)	E	E														
					D	D	D	D								
									P	P	P					
												C	C	C	C	
Project 5 Implement ClearPath Technology																
		D	D	D												
					P	P										
									C	C						

Legend

E Environmental D Design P Procurement C Construction



2.0 Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Install CTC Siding at Gribble and Elm Fork Bridge Replacement with Doubletrack

Project Scope: The project includes installation of CTC from Irving north to South Hebron, with that installing a new siding at Gribble and Elm Fork Bridge replacement. Work would be on the DART portion of the Madill Subdivision. The limits are Mile Posts (MP) 709.5 to 704 for the track work. The CTC work would continue till MP 693.5 to meet the CTC project by the BNSF in NT MOVES Phase 1 A. The Bridge work includes the replacement and rehab of the following Bridges:

- Bridge 705.28 - 180' (new + replace)
- Bridge 705.61 - 250' (double track)
- Bridge 706.36 - 165'
- Bridge 707.00 - 385' (curve)
- Bridge 707.43 - 825' (new + rehab)

The track work includes the following:

- Upgrade 2 Grade Crossings
- Construct 5 New Bridges, Replace 1, & Rehab 1
- Install 8 - No. 11 - 141# HT Turnouts
- Install 2 - No. 20 - 141# RBM Power Turnout
- Remove 8 Turnouts
- Remove 2,280 TF Of Existing Rail
- Shift 1,720 TF Of Existing Rail
- Upgrade 3,930 TF Of Existing Rail
- Construct 23,650 TF 141# Rail

To see the scope laid out on track chart see below

Engineers Cost Estimate: See Below. Please note that the Estimate contains cost for the project with or without CTC upgrades.

Preliminary Design Drawings: See Below

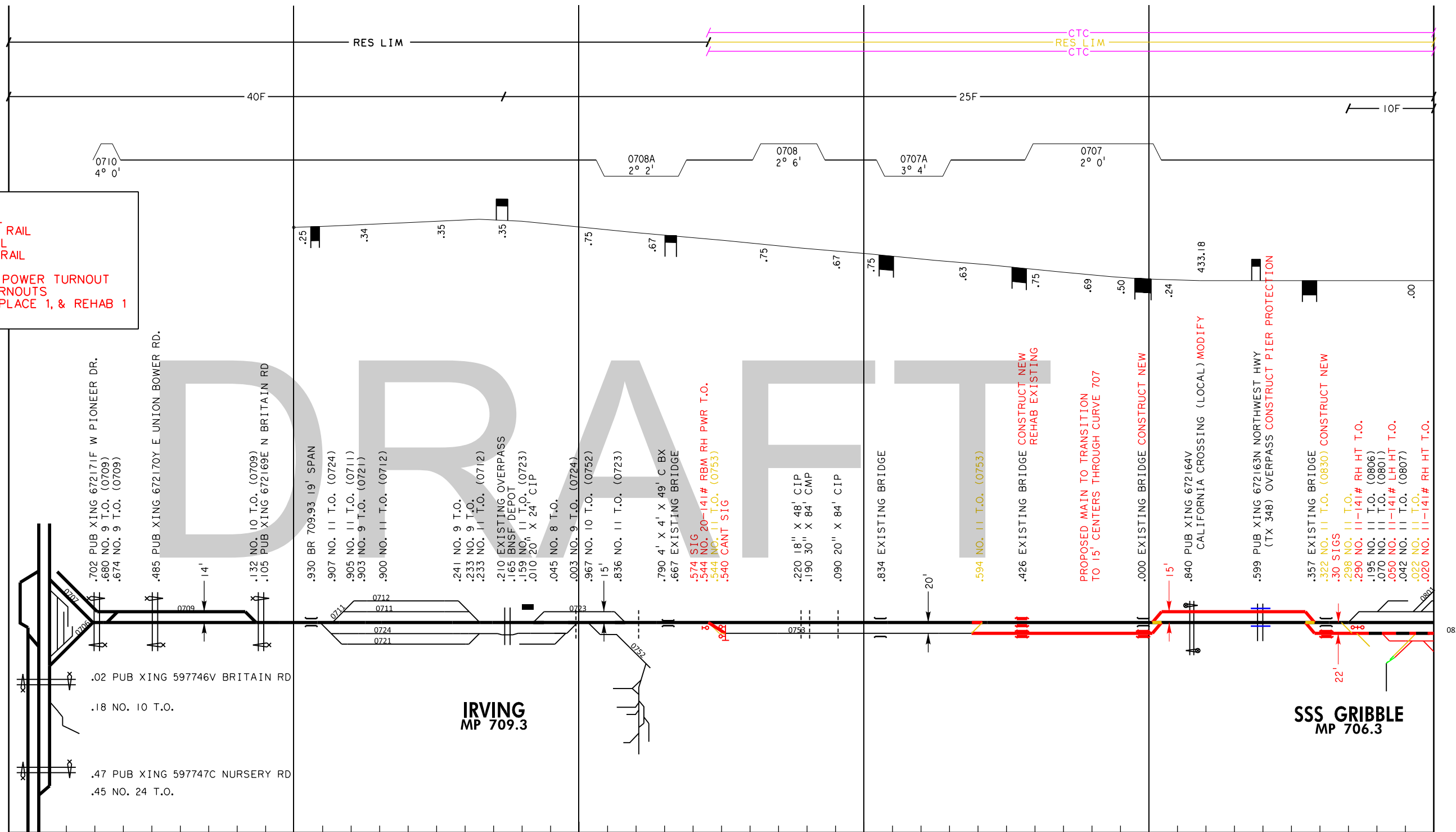
Environment: See Below. **Has Not Been Submitted to FRA**



**Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Install CTC Siding at
Gribble and Elm Fork Bridge Replacement with Doubletrack**

Track Charts

March 2018

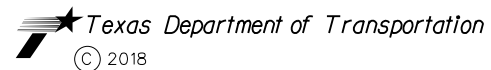


SCOPE OF WORK:
 CONSTRUCT 23,650 TF 141* RAIL
 UPGRADE 3,930 TF OF EXISTING RAIL
 SHIFT 1,720 TF OF EXISTING RAIL
 REMOVE 2,280 TF OF EXISTING RAIL
 REMOVE 8 TURNOUTS
 INSTALL 2 - NO. 20 - 141* RBM POWER TURNOUT
 INSTALL 8 - NO. 11 - 141* HT TURNOUTS
 CONSTRUCT 5 NEW BRIDGES, REPLACE 1, & REHAB 1
 UPGRADE 2 GRADE CROSSINGS

LEGEND:

- EXISTING TRACK
- CONSTRUCT
- REMOVE
- RELOCATE FROM
- RELOCATE TO
- UPGRADE TRACK
- NEW ACCESS ROAD
- REVISED OPERATION

PRELIMINARY- SUBJECT TO CHANGE



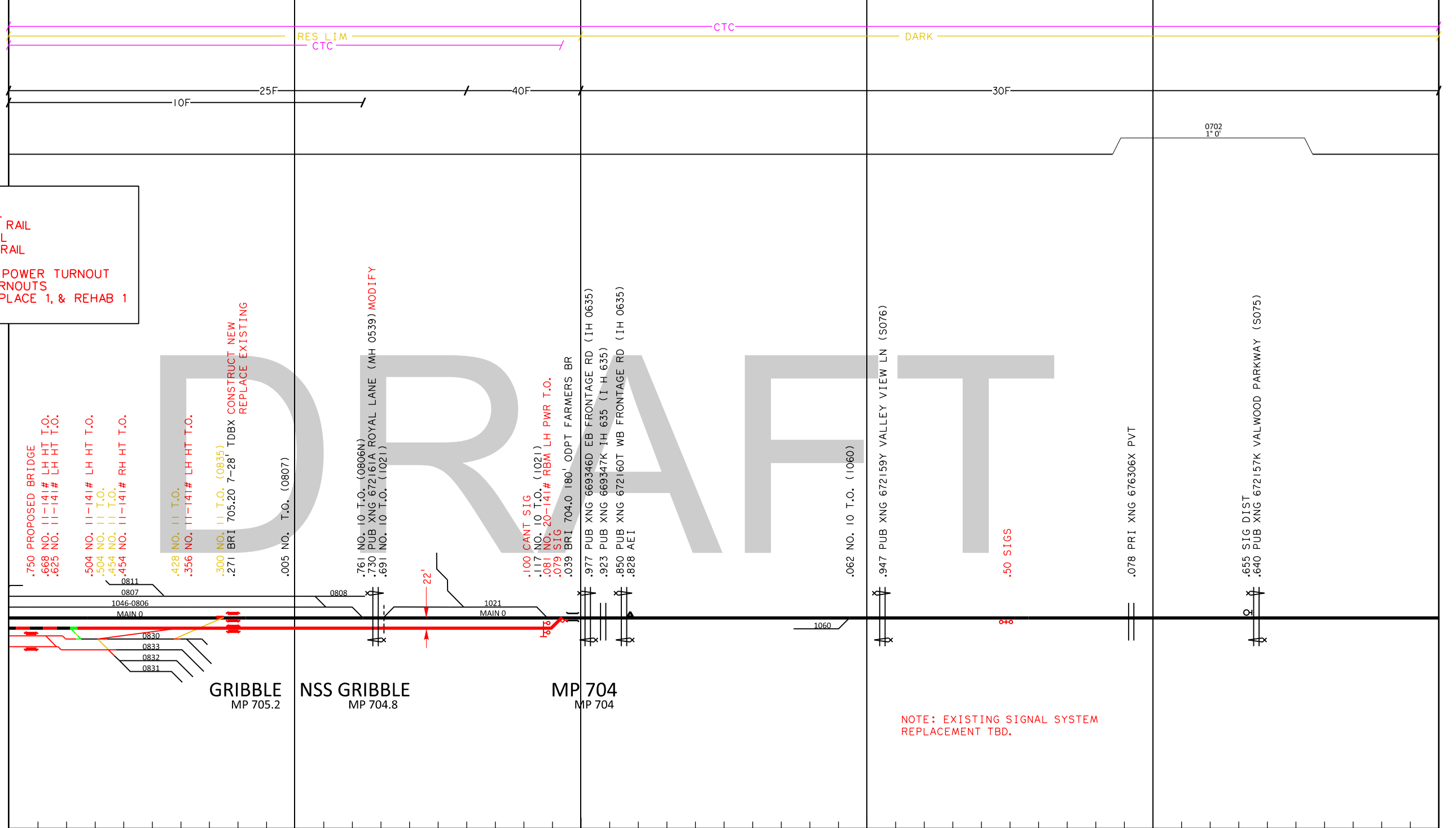
**TEXAS DIVISION
 MADILL SUBDIVISION
 LINE SEGMENT 1046
 NCT FREIGHT MOBILITY STUDY**

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DRAWING NO. T-101	
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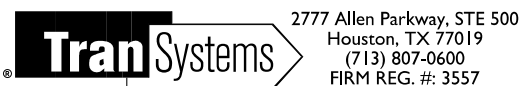
SCOPE OF WORK:
 CONSTRUCT 23,650 TF 141" RAIL
 UPGRADE 3,930 TF OF EXISTING RAIL
 SHIFT 1,720 TF OF EXISTING RAIL
 REMOVE 2,280 TF OF EXISTING RAIL
 REMOVE 8 TURNOUTS
 INSTALL 2 - NO. 20 - 141" RBM POWER TURNOUT
 INSTALL 8 - NO. 11 - 141" HT TURNOUTS
 CONSTRUCT 5 NEW BRIDGES, REPLACE 1, & REHAB 1
 UPGRADE 2 GRADE CROSSINGS



LEGEND:

- EXISTING TRACK
- CONSTRUCT
- REMOVE
- RELOCATE FROM
- RELOCATE TO
- UPGRADE TRACK
- NEW ACCESS ROAD
- CTC
- REVISED OPERATION

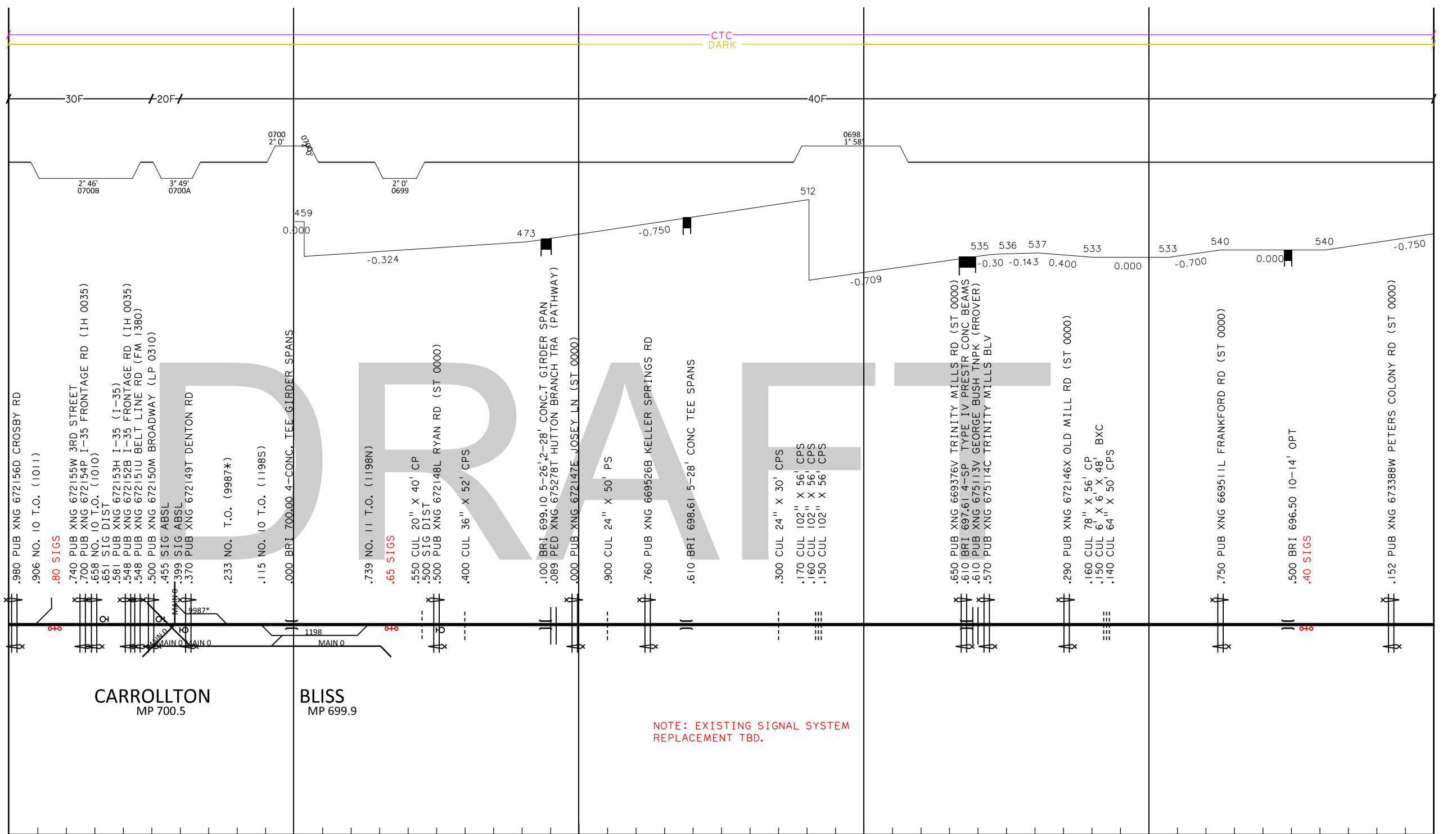
PRELIMINARY- SUBJECT TO CHANGE



TEXAS DIVISION
 MADILL SUBDIVISION
 LINE SEGMENT 1046
 NCT FREIGHT MOBILITY STUDY

CONTRACT NO. 101180049	
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LEGEND:

- EXISTING TRACK
- CONSTRUCT
- REMOVE
- RELOCATE FROM
- RELOCATE TO
- UPGRADE TRACK
- NEW ACCESS ROAD
- CTC
- REVISED OPERATION

NOTE: EXISTING SIGNAL SYSTEM REPLACEMENT TBD.

PRELIMINARY- SUBJECT TO CHANGE

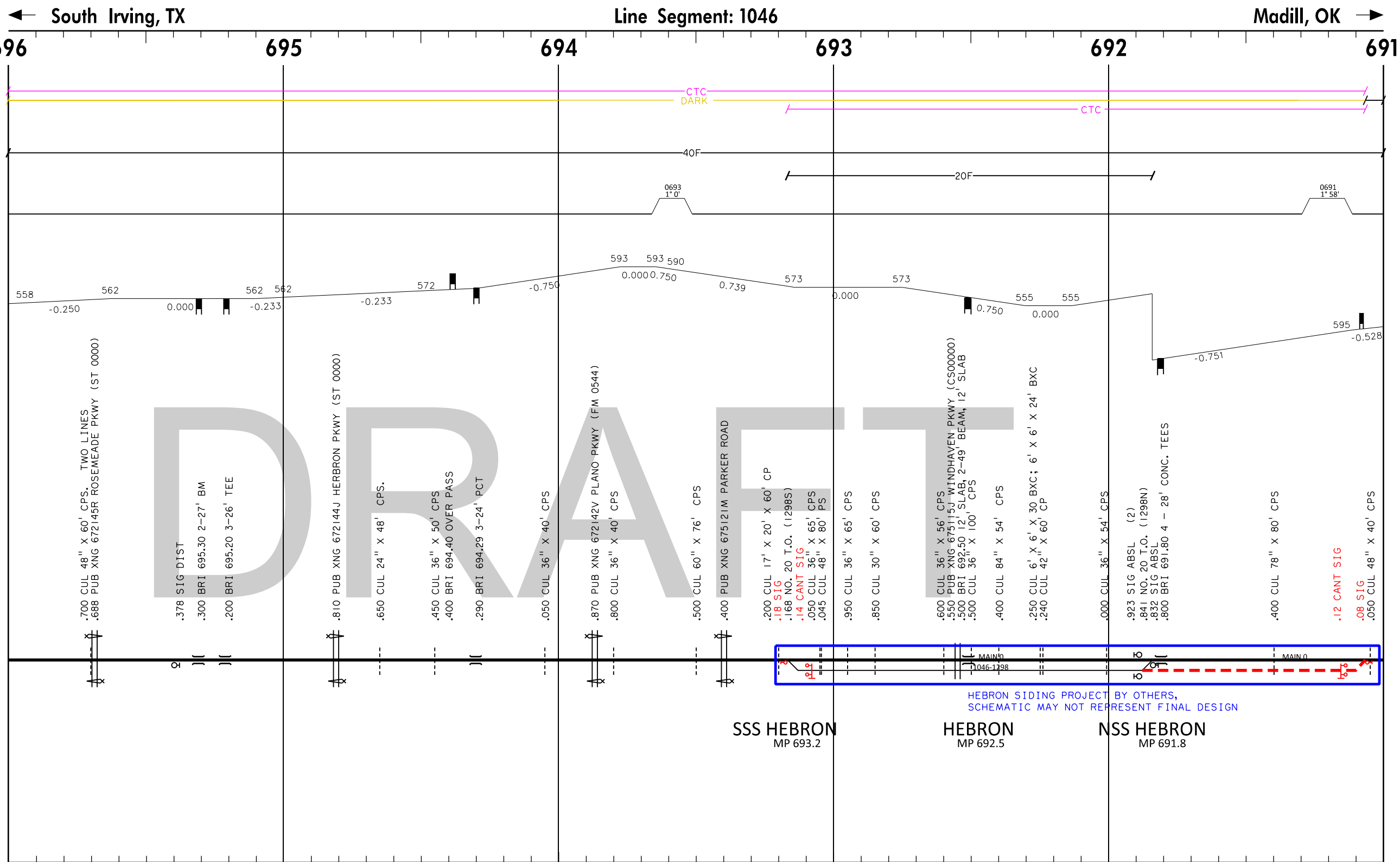


2777 Allen Parkway, STE 500
Houston, TX 77019
(713) 807-0600
FIRM REG. #: 3557

**TEXAS DIVISION
MADILL SUBDIVISION
LINE SEGMENT 1046
NCT FREIGHT MOBILITY STUDY**

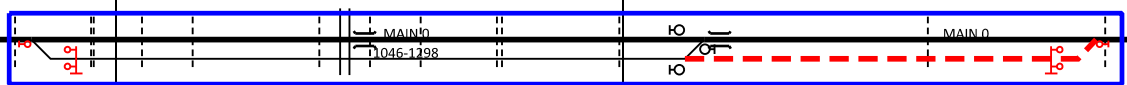
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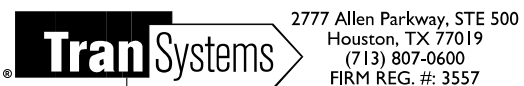
- EXISTING TRACK
- CONSTRUCT
- REMOVE
- RELOCATE FROM
- RELOCATE TO
- UPGRADE TRACK
- NEW ACCESS ROAD
- CTC
- REVISED OPERATION



HEBRON SIDING PROJECT BY OTHERS,
SCHEMATIC MAY NOT REPRESENT FINAL DESIGN

SSS HEBRON MP 693.2
HEBRON MP 692.5
NSS HEBRON MP 691.8

PRELIMINARY- SUBJECT TO CHANGE



TEXAS DIVISION
MADILL SUBDIVISION
LINE SEGMENT 1046
NCT FREIGHT MOBILITY STUDY

CONTRACT NO. 101180049	
DRAWING NO. T-104	
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PREVIEW Date: Mar 04, 2019

Workspace ID: WS00248143 Funding Opportunity Number: NSFHP-19-INFRA19



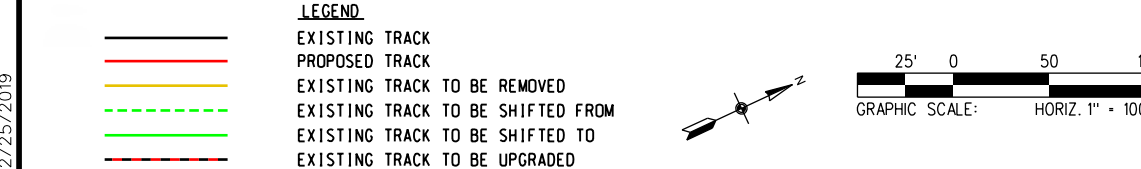
**Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Install CTC Siding at
Gribble and Elm Fork Bridge Replacement with Doubletrack**

Preliminary Design Drawing

March 2018



Notes: UPGRADE TO NO. 20 TURNOUT AT MP 709+44 FOR RIVER STORAGE SIDING. NOT SHOWN ON DRAWINGS.



LEGEND:
 — EXISTING TRACK
 — PROPOSED TRACK
 — EXISTING TRACK TO BE REMOVED
 — EXISTING TRACK TO BE SHIFTED FROM
 — EXISTING TRACK TO BE SHIFTED TO
 — EXISTING TRACK TO BE UPGRADED

DISCLAIMER: THE EXACT LOCATION, DESIGN AND RIGHT-OF-WAY FOR THE PROPOSED ALIGNMENT CANNOT BE DETERMINED FROM THIS CONCEPT AND COULD BE DIFFERENT THAN SHOWN. THE DESIGN IS CONCEPTUAL IN NATURE AND WAS DEVELOPED WITH READILY AVAILABLE INFORMATION. PRELIMINARY DESIGN IS NEEDED TO REFINE THE PROJECT ELEMENTS AND POTENTIAL RIGHT-OF-WAY REQUIREMENTS. AT THE TIME OF DESIGN, ALL APPLICABLE GUIDELINES WOULD BE UTILIZED AND COULD BE DIFFERENT FROM THAT SHOWN. THIS PLAN IS NOT FOR CONSTRUCTION.

CONTRACT NO. 101180049
 DRAWING NO. C-01
 REVISION 0
 SHEET NO. 1 of 3
 SCALE AS SHOWN

Texas Department of Transportation
 © 2018

TranSystems
 2777 Allen Parkway, STE 500
 Houston, TX 77019
 (713) 807-0600
 FIRM REG. #: 3557

PREVIEW Date: Mar 04, 2019
 Workspace ID: NS00248143 Funding Opportunity Number: NSRF-19-1495419

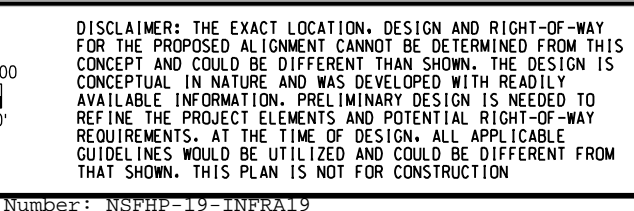
SOUTH IRVING, TX
RR SOUTH

MADILL, OK
RR NORTH



LEGEND:

	EXISTING TRACK
	PROPOSED TRACK
	EXISTING TRACK TO BE REMOVED
	EXISTING TRACK TO BE SHIFTED FROM
	EXISTING TRACK TO BE SHIFTED TO
	EXISTING TRACK TO BE UPGRADED

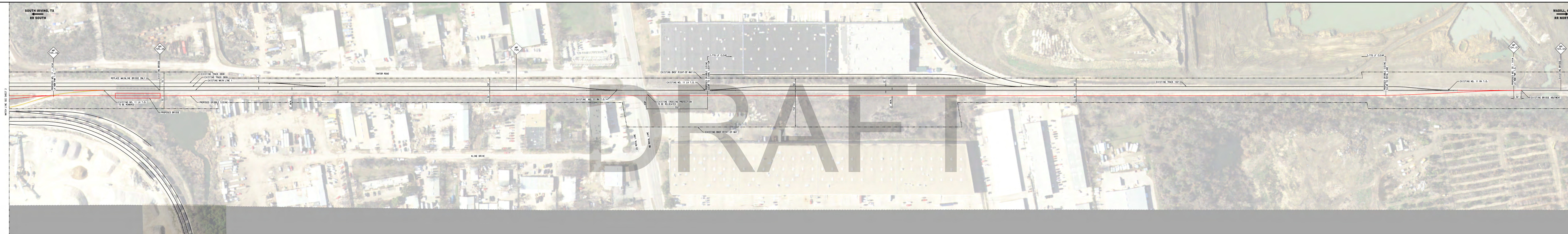


DISCLAIMER: THE EXACT LOCATION, DESIGN AND RIGHT-OF-WAY FOR THE PROPOSED ALIGNMENT CANNOT BE DETERMINED FROM THIS CONCEPT AND COULD BE DIFFERENT THAN SHOWN. THE DESIGN IS CONCEPTUAL IN NATURE AND WAS DEVELOPED WITH READILY AVAILABLE INFORMATION. PRELIMINARY DESIGN IS NEEDED TO REFINE THE PROJECT ELEMENTS AND POTENTIAL RIGHT-OF-WAY REQUIREMENTS. AT THE LINE OF DESIGN, ALL APPLICABLE GUIDELINES WOULD BE UTILIZED AND COULD BE DIFFERENT FROM THAT SHOWN. THIS PLAN IS NOT FOR CONSTRUCTION.

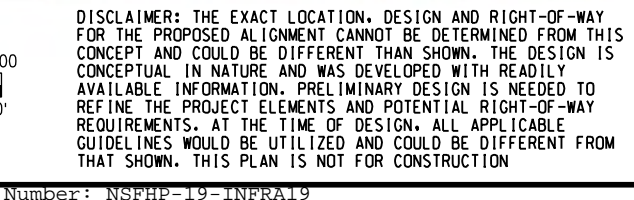
<p>2777 Allen Parkway, STE 500 Houston, TX 77019 (713) 807-0600 FIRM REG. #: 3557</p>	<p>CONTRACT NO. 101180049 DRAWING NO. C-02 REVISION 0 2 of 3 SCALE AS SHOWN</p>
	<p>Freight Mobility Study South Irving, Texas Proposed Gribble Siding Madill Subdivision, Line Segment 1046</p>

SOUTH IRVING, TX
← RR SOUTH

MADILL, OK
→ RR NORTH



- LEGEND:**
- EXISTING TRACK
 - PROPOSED TRACK
 - EXISTING TRACK TO BE REMOVED
 - EXISTING TRACK TO BE SHIFTED FROM
 - EXISTING TRACK TO BE SHIFTED TO
 - EXISTING TRACK TO BE UPGRADED



DISCLAIMER: THE EXACT LOCATION, DESIGN AND RIGHT-OF-WAY FOR THE PROPOSED ALIGNMENT CANNOT BE DETERMINED FROM THIS CONCEPT AND COULD BE DIFFERENT THAN SHOWN. THE DESIGN IS CONCEPTUAL IN NATURE AND HAS DEVELOPED WITH READILY AVAILABLE INFORMATION. PRELIMINARY DESIGN IS NEEDED TO REFINE THE PROJECT ELEMENTS AND POTENTIAL RIGHT-OF-WAY REQUIREMENTS. AT THE LINE OF DESIGN, ALL APPLICABLE GUIDELINES WOULD BE UTILIZED AND COULD BE DIFFERENT FROM THAT SHOWN. THIS PLAN IS NOT FOR CONSTRUCTION.

<p>Texas Department of Transportation © 2018</p>	<p>2777 Allen Parkway, STE 500 Houston, TX 77019 (713) 807-0600 FIRM REG. #: 3557</p>	<p>CONTRACT NO. 101180049</p>	
		<p>DRAWING NO. C-03</p>	
<p>REVISION 0</p>		<p>SHEET NO. 3 of 3</p>	
<p>SCALE: AS SHOWN</p>		<p>SCALE: AS SHOWN</p>	



**Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Install CTC Siding at
Gribble and Elm Fork Bridge Replacement with Doubletrack**

Preliminary Engineer's Cost Estimate

March 2018

**Opinion of Probable Cost
River Storage Siding with Elm Fork Bridge + Gribble Siding + CTC to Hebron**

Prepared by: TranSystems
Date: February 24, 2019
Project Number: P101180049

Engineer's Opinion of Probable Cost

Item No.	Item Description	Trackwork Estimate	Trackwork + Signal Estimate
1.0	Sitework - Site Preparation	\$ 1,187,950.00	\$ 1,187,950.00
2.0	Earthwork/Grading & Drainage	\$ 3,903,900.00	\$ 3,903,900.00
3.0	Trackwork	\$ 10,488,900.00	\$ 10,488,900.00
4.0	Signal	\$ 910,000.00	\$ 19,110,000.00
5.0	Site Utilities/Permitting	\$ 1,920,000.00	\$ 1,920,000.00
6.0	Bridge	\$ 24,936,000.00	\$ 24,936,000.00
7.0	Engineering & Construction Management	\$ 7,802,400.00	\$ 11,078,400.00
8.0	GRAND TOTAL	\$ 51,149,150.00	\$ 72,625,150.00
		Rounded \$ 51,200,000.00	\$ 72,700,000.00

DRAFT

Opinion of Probable Cost						
Gribble Siding						
Prepared by: TranSystems						
Date: February 24, 2019						
Project Number: P101180049						
Engineer's Opinion of Probable Cost						
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Cost	Subtotal
1.0	Sitework - Site Preparation					
1.1	Mobilization	1	EA	\$ 850,000.00	\$ 850,000.00	
1.2	Clearing and Grubbing	14	AC	\$ 4,500.00	\$ 63,000.00	
1.3	Erosion Control	1	LS	\$ 120,000.00	\$ 120,000.00	
	Subtotal					\$ 1,033,000.00
	Miscellaneous: 15%					\$ 154,950.00
	Total					\$ 1,187,950.00
2.0	Earthwork/Grading & Drainage					
2.1	Grading	16,700	CY	\$ 15.00	\$ 250,500.00	
2.2	12" Subballast	20,500	CY	\$ 65.00	\$ 1,332,500.00	
2.3	Seeding	9	AC	\$ 5,000.00	\$ 45,000.00	
2.4	Crash Walls - Northwest Hwy	190	LF	\$ 2,500.00	\$ 475,000.00	
2.5	Drainage	1	LS	\$ 400,000.00	\$ 400,000.00	
2.6	Subgrade Improvements (stabilization, over excavation, etc...)	1	LS	\$ 500,000.00	\$ 500,000.00	
	Subtotal					\$ 3,003,000.00
	Miscellaneous: 30%					\$ 900,900.00
	Total					\$ 3,903,900.00
3.0	Trackwork					
3.1	Proposed Track	23,650	TF	\$ 250.00	\$ 5,912,500.00	
3.2	Shifted Track	1,720	TF	\$ 35.00	\$ 60,200.00	
3.3	Tie - Grade 5 - 14 Man Gang	1,150	EA	\$ 150.00	\$ 172,500.00	
3.4	Ballast: Includes Tons, Unloading, & Worktrain	6,000	NT	\$ 29.00	\$ 174,000.00	
3.5	Rail Relay - 136# on Wood Ties	7,900	LF	\$ 33.00	\$ 260,700.00	
3.6	Upgraded Track	3,930	TF	\$ 25.00	\$ 98,250.00	
3.7	Install No. 20 - 141# RBM Power Turnout	2	EA	\$ 230,000.00	\$ 460,000.00	
3.8	Install No. 11 - 141# Hand Throw Turnout	8	EA	\$ 175,000.00	\$ 1,400,000.00	
3.9	Concrete Crossing	136	TF	\$ 600.00	\$ 81,600.00	
3.10	Existing Track Removal	2,280	TF	\$ 25.00	\$ 57,000.00	
3.11	Existing Turnout Removal	8	EA	\$ 8,000.00	\$ 64,000.00	
	Subtotal					\$ 8,740,750.00
	Miscellaneous: 20%					\$ 1,748,150.00
	Total					\$ 10,488,900.00
4.0	Signal					
4.1	Control Point	0	LS	\$ 14,000,000.00	\$ -	
	MP 708.54 S Gribble					
	MP 706.3 Intermediate					
	MP 704.08 N Gribble					
	MP 702.5 Intermediate					
	MP 700.8 S Carrollton					
	MP 699.5 N Carrollton					
	MP 696.4 Intermediate					
	MP 692.7 S Hebron					
	MP 69x.x N Hebron					
	Various Grade Crossings					
4.2	Grade Crossing Warning Device Upgrade	2	EA	\$ 350,000.00	\$ 700,000.00	
	MP 706.840 California 672164V					
	MP 704.730 Royal 672161A					
	Subtotal					\$ 700,000.00
	Miscellaneous: 30%					\$ 210,000.00
	Total					\$ 910,000.00
5.0	Site Utilities/Permitting					
5.1	Utility Protection/Relocation/Installation (Electric, Septic, Gas)	1	LS	\$ 1,000,000.00	\$ 1,000,000.00	
5.2	Intersection Upgrade	2	EA	\$ 50,000.00	\$ 100,000.00	
	MP 706.840 California 672164V					
	MP 704.730 Royal 672161A					
5.3	General Permitting	1	LS	\$ 500,000.00	\$ 500,000.00	
	Subtotal					\$ 1,600,000.00
	Miscellaneous: 20%					\$ 320,000.00
	Total					\$ 1,920,000.00
6.0	Bridge					
6.1	Railroad Bridges					
	Bridge 705.28 - 180' (new + replace)	360	TF	\$ 8,000.00	\$ 2,880,000.00	
	Bridge 705.75 - 250' (double track)	500	TF	\$ 8,000.00	\$ 4,000,000.00	
	Bridge 706.49 - 165'	165	TF	\$ 8,000.00	\$ 1,320,000.00	
	Bridge 707.10 - 385' (curve)	385	TF	\$ 8,000.00	\$ 3,080,000.00	
	Bridge 707.46 - 825' (new + rehab)	1	LS	\$ 9,500,000.00	\$ 9,500,000.00	
	Subtotal					\$ 20,780,000.00
	Miscellaneous: 20%					\$ 4,156,000.00
	Total					\$ 24,936,000.00
7.0	Engineering & Construction Management					
7.1	Engineering	6.0%	LS	\$ 43,346,750.00	\$ 2,600,800.00	
7.2	Construction Management	8.0%	LS	\$ 43,346,750.00	\$ 3,467,700.00	
7.3	Unallocated	4.0%	LS	\$ 43,346,750.00	\$ 1,733,900.00	
	Total					\$ 7,802,400.00
8.0	GRAND TOTAL					\$ 51,149,150.00
						Rounded \$ 51,200,000.00

Opinion of Probable Cost						
Gribble Siding						
Prepared by: TranSystems						
Date: February 24, 2019						
Project Number: P101180049						
Engineer's Opinion of Probable Cost						
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Cost	Subtotal
1.0	Sitework - Site Preparation					
1.1	Mobilization	1	EA	\$ 850,000.00	\$ 850,000.00	
1.2	Clearing and Grubbing	14	AC	\$ 4,500.00	\$ 63,000.00	
1.3	Erosion Control	1	LS	\$ 120,000.00	\$ 120,000.00	
	Subtotal					\$ 1,033,000.00
	Miscellaneous: 15%					\$ 154,950.00
	Total					\$ 1,187,950.00
2.0	Earthwork/Grading & Drainage					
2.1	Grading	16,700	CY	\$ 15.00	\$ 250,500.00	
2.2	12" Subballast	20,500	CY	\$ 65.00	\$ 1,332,500.00	
2.3	Seeding	9	AC	\$ 5,000.00	\$ 45,000.00	
2.4	Crash Walls - Northwest Hwy	190	LF	\$ 2,500.00	\$ 475,000.00	
2.5	Drainage	1	LS	\$ 400,000.00	\$ 400,000.00	
2.6	Subgrade Improvements (stabilization, over excavation, etc...)	1	LS	\$ 500,000.00	\$ 500,000.00	
	Subtotal					\$ 3,003,000.00
	Miscellaneous: 30%					\$ 900,900.00
	Total					\$ 3,903,900.00
3.0	Trackwork					
3.1	Proposed Track	23,650	TF	\$ 250.00	\$ 5,912,500.00	
3.2	Shifted Track	1,720	TF	\$ 35.00	\$ 60,200.00	
3.3	Tie - Grade 5 - 14 Man Gang	1,150	EA	\$ 150.00	\$ 172,500.00	
3.4	Ballast: Includes Tons, Unloading, & Worktrain	6,000	NT	\$ 29.00	\$ 174,000.00	
3.5	Rail Relay - 136# on Wood Ties	7,900	LF	\$ 33.00	\$ 260,700.00	
3.6	Upgraded Track	3,930	TF	\$ 25.00	\$ 98,250.00	
3.7	Install No. 20 - 141# RBM Power Turnout	2	EA	\$ 230,000.00	\$ 460,000.00	
3.8	Install No. 11 - 141# Hand Throw Turnout	8	EA	\$ 175,000.00	\$ 1,400,000.00	
3.9	Concrete Crossing	136	TF	\$ 600.00	\$ 81,600.00	
3.10	Existing Track Removal	2,280	TF	\$ 25.00	\$ 57,000.00	
3.11	Existing Turnout Removal	8	EA	\$ 8,000.00	\$ 64,000.00	
	Subtotal					\$ 8,740,750.00
	Miscellaneous: 20%					\$ 1,748,150.00
	Total					\$ 10,488,900.00
4.0	Signal					
4.1	Control Point	1	LS	\$ 14,000,000.00	\$ 14,000,000.00	
	MP 708.54 S Gribble					
	MP 706.3 Intermediate					
	MP 704.08 N Gribble					
	MP 702.5 Intermediate					
	MP 700.8 S Carrollton					
	MP 699.5 N Carrollton					
	MP 696.4 Intermediate					
	MP 692.7 S Hebron					
	MP 69x.x N Hebron					
	Various Grade Crossings					
4.2	Grade Crossing Warning Device Upgrade	2	EA	\$ 350,000.00	\$ 700,000.00	
	MP 706.840 California 672164V					
	MP 704.730 Royal 672161A					
	Subtotal					\$ 14,700,000.00
	Miscellaneous: 30%					\$ 4,410,000.00
	Total					\$ 19,110,000.00
5.0	Site Utilities/Permitting					
5.1	Utility Protection/Relocation/Installation (Electric, Septic, Gas)	1	LS	\$ 1,000,000.00	\$ 1,000,000.00	
5.2	Intersection Upgrade	2	EA	\$ 50,000.00	\$ 100,000.00	
	MP 706.840 California 672164V					
	MP 704.730 Royal 672161A					
5.3	General Permitting	1	LS	\$ 500,000.00	\$ 500,000.00	
	Subtotal					\$ 1,600,000.00
	Miscellaneous: 20%					\$ 320,000.00
	Total					\$ 1,920,000.00
6.0	Bridge					
6.1	Railroad Bridges					
	Bridge 705.28 - 180' (new + replace)	360	TF	\$ 8,000.00	\$ 2,880,000.00	
	Bridge 705.61 - 250' (double track)	500	TF	\$ 8,000.00	\$ 4,000,000.00	
	Bridge 706.36 - 165'	165	TF	\$ 8,000.00	\$ 1,320,000.00	
	Bridge 707.00 - 385' (curve)	385	TF	\$ 8,000.00	\$ 3,080,000.00	
	Bridge 707.43 - 825' (new + rehab)	1	LS	\$ 9,500,000.00	\$ 9,500,000.00	
	Subtotal					\$ 20,780,000.00
	Miscellaneous: 20%					\$ 4,156,000.00
	Total					\$ 24,936,000.00
7.0	Engineering & Construction Management					
7.1	Engineering	6.0%	LS	\$ 61,546,750.00	\$ 3,692,800.00	
7.2	Construction Management	8.0%	LS	\$ 61,546,750.00	\$ 4,923,700.00	
7.3	Unallocated	4.0%	LS	\$ 61,546,750.00	\$ 2,461,900.00	
	Total					\$ 11,078,400.00
8.0	GRAND TOTAL					\$ 72,625,150.00
						Rounded
						\$ 72,700,000.00



**Construct Centralized Traffic Control (CTC), Irving – S. Hebron and Install CTC Siding at
Gribble and Elm Fork Bridge Replacement with Doubletrack**

FRA Category Exemption Worksheet

March 2018

Expiration 08/31/2018

OMB No. 2130-0548

Public reporting burden for this information collection is estimated to average 176 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for this information collection is 2130-0548. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection, including suggestions for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave., N.W., Washington D.C. 20590.

Federal Railroad Administration (FRA)
CATEGORICAL EXCLUSION WORKSHEET

The purpose of this worksheet is to assist Project sponsors in gathering and organizing materials for environmental analysis required under the National Environmental Policy Act (NEPA), particularly for projects that may qualify as Categorical Exclusions. Categorical Exclusions are categories of actions (i.e. types of projects) that the FRA has determined, based on its experience, typically do not individually or cumulatively have a significant effect on the human environment and which generally do not require the preparation of either an environmental impact statement (EIS) or an environmental assessment (EA). Decisions to prepare EAs and EISs are made by FRA.

Submission of the worksheet by itself does not meet NEPA requirements. FRA must concur in writing with the Categorical Exclusion recommendation for NEPA requirements to be met.

The Project sponsor is responsible for providing FRA with a sufficient level of documentation and analysis to help inform FRA's determination that a Categorical Exclusion is the appropriate NEPA class of action. Documentation and analysis may include background research, results of record searches, field investigations, field surveys, and any past planning or studies.

Instructions for completing this worksheet are available on the FRA website at: <http://www.fra.dot.gov/eLib/Details/L02708>. Please complete this worksheet using compatible word processing software and submit and transmit the completed form in MS Word electronic format.

The following documents must be submitted along with this worksheet:

1. Include maps or diagram of the Project area that identifies locations of critical resource areas, wetlands, potential historic sites, or sensitive noise receptors such as schools, hospitals, and residences.
 2. Include maps or diagrams of the proposed modifications to existing railways, roadways, and parking facilities.
 3. Copies of all agency correspondence particularly with permitting agencies.
 4. Representative photographs of the Project area.
-

I. PROJECT DESCRIPTION

Project Sponsor Federal Railroad Administration	Date Submitted to FRA	FRA Funding (TIGER, HSIPR, Rail Line Relocation, RRIF, etc.) or other FRA Action
Contact Person	Phone	E-mail address
Proposed Project Title The North Texas Multimodal Operations, Velocity, Efficiency and Safety Program (NT MOVES)		
Location (Include Street Address, City or Township, County, and State)		
Elm Fork Bridge Replacement with doubletrack bridge		
Replace existing Inwood Bridge with new doubletrack structure		
Replace existing Knight's Branch Bridge with new doubletrack structure		
Doubletrack from Medical Market Center Blvd to Stemmons Freeway Bridge		
Doubletrack from Irving to Dallas		
Centralized Traffic Control (CTC)between Irving and Carrollton		
NEPA Contact Steve Salin	Phone 214-749-2828	E-mail Address SSalin@dart.org
Description of Proposed Action (Project): Fully describe the Project including specifics that may be of environmental concern such as: <i>widening an embankment to stabilize roadbed; repairing or replacing bridge pier foundations, extending culverts, including adding rip-rap in a waterway; earthwork and altering natural (existing) drainage patterns and creating a new water discharge; contaminated water needing treatment; building a new or adding on to a shop building; fueling or collection of fuel or oil and contaminated water; building or extending a siding; and building or adding on to a yard. Where applicable fully describe the operational characteristics of the facility to be improved by the proposed action and any anticipated operational changes that may result.</i>		
Centralized Traffic Control (CTC)and Track Expansion on the Madill Subdivision to facilitate the commuter equipment moves between Irving and Carrollton in support of DART's future Cotton Belt service includes:		
<ol style="list-style-type: none"> 1. Trinity Railway Express (TRE)doubletracking from Irving to Dallas 2. Doubletracking, from Medical Market Center to Stemmons Freeway. 3. Doubletracking the Inwood, Knight's Branch and Elm Fork bridges 		
Purpose and Need of Proposed Action (Project).		
The implementaion of this project will improve flexibility and safety in the Burlington Northern Santa Fe (BNSF) freight and the TRE commuter rail operations in this shared use assets corridor		

II. NEPA CLASS OF ACTION

Please check the category or categories that the Project best fits. If no category applies, contact FRA as an EA or EIS may need to be prepared.

- Changes in plans for a Project for which an environmental document has been prepared, where the changes would not alter the environmental impacts of the action. (*Describe the full consequences of the changes only in part III*)
- Maintenance of: existing railroad equipment; track and bridge structures; electrification, communication, signaling, or security facilities; stations; maintenance-of-way and maintenance-of-equipment bases; and other existing railroad-related facilities. (*"Maintenance" means work, normally provided on a periodic basis, which does not change the existing character of the facility, and may include work characterized by other terms under specific FRA programs*)
- Temporary replacement of an essential rail facility if repairs are commenced immediately after the occurrence of a natural disaster or catastrophic failure.
- Operating assistance to a railroad to continue existing service or to increase service to meet demand, where the assistance will not result in a change in the effect on the environment.
- Financial assistance for the construction of minor loading and unloading facilities, provided that proposals are consistent with local zoning, do not involve the acquisition of a significant amount of land, and do not significantly alter the traffic density characteristics of existing rail or highway facilities.
- Minor rail line additions *including construction of side tracks, passing tracks, crossovers, short connections between existing rail lines, and new tracks within existing rail yards*, provided that such additions are consistent with existing zoning, do not involve acquisition of a significant amount of right of way, and do not substantially alter the traffic density characteristics of the existing rail lines or rail facilities.
- Acquisition of existing railroad equipment, track and bridge structures, electrification, communication, signaling or security facilities, stations, maintenance of way and maintenance of equipment bases, and other existing railroad facilities or the right to use such facilities, for the purpose of conducting operations of a nature and at a level of use similar to those presently or previously existing on the subject properties.
- Research, development and/or demonstration of advances in signal, communication and/or train control systems on existing rail lines provided that such research, development and/or demonstrations do not require the acquisition of substantial amounts of right-of-way, and do not substantially alter the traffic density characteristics of the existing rail line.
- Improvements to existing facilities to service, inspect, or maintain rail passenger equipment, *including expansion of existing buildings, the construction of new buildings and outdoor facilities, and the reconfiguration of yard tracks.*
- Alterations to existing facilities, locomotives, stations and rail cars in order to make them accessible for the elderly and persons with disabilities, *such as modifying doorways, adding or modifying lifts, constructing access ramps and railings, modifying restrooms, and constructing accessible platforms.*
- Bridge rehabilitation, reconstruction or replacement, the rehabilitation or maintenance of the rail elements of docks or piers for the purposes of intermodal transfers, and the construction of bridges, culverts, or grade separation projects, predominantly within existing right-of-way, that do not involve extensive in-water construction activities, *such as projects replacing bridge components including stringers, caps, piles, or decks, the construction of roadway overpasses to replace at-grade crossings, construction or reconstruction of approaches and/or embankments to bridges, or construction or replacement of short span bridges.*
- Acquisition (including purchase or lease), rehabilitation, or maintenance of vehicles or equipment that does not cause a substantial increase in the use of infrastructure within the existing right-of-

way or other previously disturbed locations, *including locomotives, passenger coaches, freight cars, trainsets, and construction, maintenance or inspection equipment.*

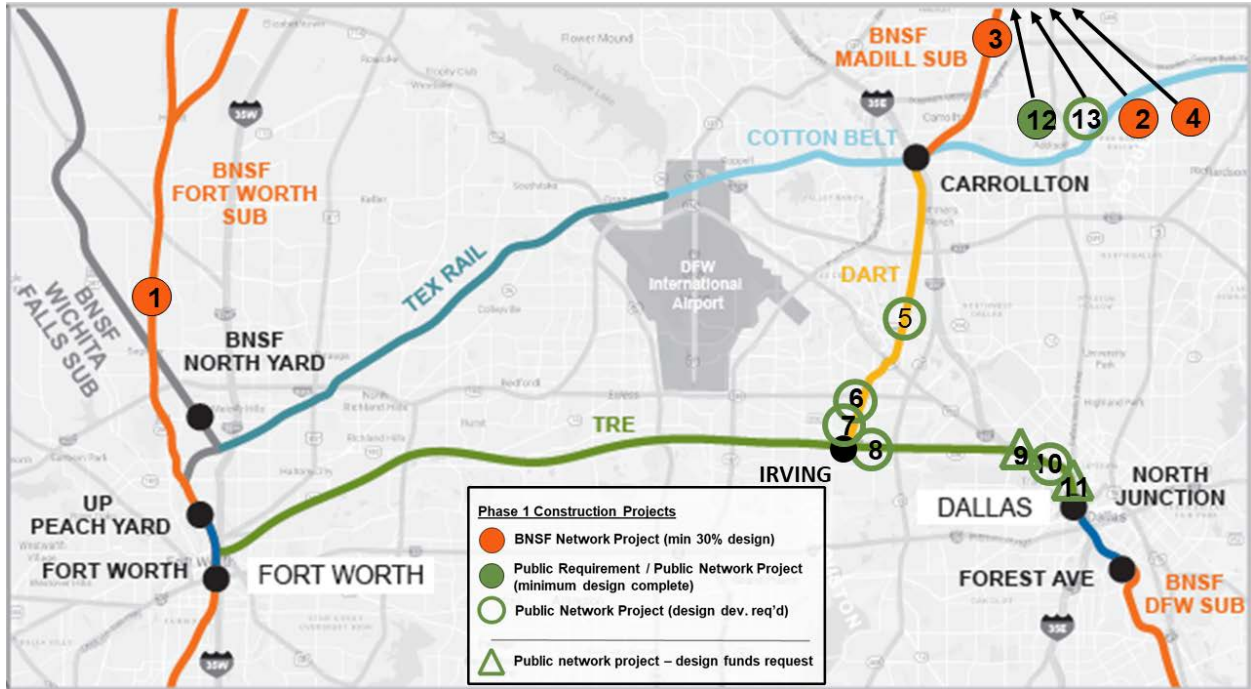
- Installation, repair and replacement of equipment and small structures designed to promote transportation safety, security, accessibility, communication or operational efficiency that take place predominantly within the existing right-of-way and do not result in a major change in traffic density on the existing rail line or facility, *such as the installation, repair or replacement of surface treatments or pavement markings, small passenger shelters, passenger amenities, benches, signage, sidewalks or trails, equipment enclosures, and fencing, railroad warning devices, train control systems, signalization, electric traction equipment and structures, electronics, photonics, and communications systems and equipment, equipment mounts, towers and structures, information processing equipment, and security equipment, including surveillance and detection cameras.*
- Environmental restoration, remediation and pollution prevention activities in or proximate to existing and former railroad track, infrastructure, stations and facilities conducted in conformance with applicable laws, regulations and permit requirements, *including activities such as noise mitigation, landscaping, natural resource management activities, replacement or improvement to storm water oil/water separators, installation of pollution containment systems, slope stabilization, and contaminated soil removal or remediation activities.*
- Assembly or construction of facilities or stations that are consistent with existing land use and zoning requirements, do not result in a major change in traffic density on existing rail or highway facilities and result in approximately less than ten acres of surface disturbance, *such as storage and maintenance facilities, freight or passenger loading and unloading facilities or stations, parking facilities, passenger platforms, canopies, shelters, pedestrian overpasses or underpasses, paving, or landscaping.*
- Track and track structure maintenance and improvements when carried out predominantly within the existing right-of-way that do not cause a substantial increase in rail traffic beyond existing or historic levels, *such as stabilizing embankments, installing or reinstalling track, re-grading, replacing rail, ties, slabs and ballast, installing, maintaining, or restoring drainage ditches, cleaning ballast, constructing minor curve realignments, improving or replacing interlockings, and the installation or maintenance of ancillary equipment.*

III. PROJECT INFORMATION

Potential impacts from both construction and changes to operations (where applicable) should be analyzed and identified for each resource type below. Where appropriate, the Project sponsor may commit to mitigation measures to avoid, reduce, or minimize impacts, including the use of Best Management Practices (BMP). Mitigation measures necessary to comply with other laws or regulations (e.g. Clean Water Act Section 404) should also be identified and the impacts from mitigation considered.

A. Affected Environment: *Briefly describe the ecosystems and environmental conditions in the area affected by the Project (defined as broadly as necessary to evaluate potential impacts and address Project area habitats).*

The Project area is located within the cities of Dallas, Irving and Carrollton along the TRE Right-Of-Way. The project area is surrounded by commercial and light industrial land uses. Unimproved areas adjacent to the proposed project areas are considered to be maintained grassland vegetation.



B. Location & Land Use: Briefly describe the existing land use of the Project site and surrounding properties and resources and identify and discuss any potential inconsistencies the Project might have with local land use plans and policies.

The Project area is located within the cities of Dallas, Irving and Carrollton along the TRE Right-Of-Way. The project area is surrounded by commercial and light industrial land uses. Unimproved areas adjacent to the proposed project areas are considered to be maintained grassland vegetation.

As the project area is dominated by commercial, retail, and light industrial land use this track upgrade would not significantly alter the project area, and therefore would have no impacts on land use of the adjacent areas.

C. Cultural Resources: Is the Project of the type where there is no potential to affect historic properties? Check yes or no depending on whether resources have been identified in the immediate vicinity of the Project (Area of Potential Effect)

Yes, explain how Project has no potential to affect historic properties. (Continue to D)

A review of appropriate local state and federal resources listing concludes that the proposed project will have no significant impacts to cultural and natural resources, ecologically sensitive area, historic properties, and/or archeological sites within the area of potential effect of the TRE Track improvement. On the basis of this information, it is believed that no impacts to significant cultural properties would occur. If in the course of construction, unforeseen discoveries of cultural remains are made, work would cease immediately and the Texas Historic Commission (THC) will be consulted for instructions on how to proceed.

No, there is potential to affect historic properties. Describe identification procedures to determine the existence of cultural resources in the Project area.

Describe any resource(s) identified in the project area and then describe any potential effect of the Project on the resource(s).

Has consultation with the State Historic Preservation Office occurred?

No, contact FRA

Yes, describe and attach relevant correspondence

What resources of interest to Federally-recognized Native American Tribes are known to be present in the Project area?

D. Parks and Recreational Facilities: Are there any publicly owned park, wildlife and waterfowl refuge, or recreational area of national, state, or local significance within or directly adjacent to the Project area?

- No, include a short statement describe efforts to identify parks and recreational facilities in the Project area.

No use of public parkland or recreation areas in the proposed project areas are required. No mitigation is necessary.

There are no significant impact to wetlands on or near the project areas anticipated; therefore there would be no mitigation treatments required.

- Yes, include a detailed description of the property, including map or drawing, describe the recreational uses of the property, any unique characteristics of the property, any consultations with the entity with legal jurisdiction over the property, and the potential impact on the property.

E. Transportation: *Would the Project have any effect (beneficial or adverse) on transportation including but not limited to other railway operations, road traffic, or increase the demand for parking?*

- No, explain why the Project would have no effect (beneficial or adverse) on transportation

The addition of these improvements is not anticipated to have any significant changes in the traffic level of service (LOS) around the project area. The proposed project is expected to cause no increase in the daily traffic on surrounding road networks. The increase in train speed due to the proposed project would minimize the amount of time for the intersection gates closing this improving traffic flow. The minimal increase in vehicular traffic due to this action requires no mitigation treatments

- Yes, describe potential transportation, traffic, and parking impacts, and address capacity constraints and potential impacts to existing railroad and highway operations. Also, summarize any consultation that has occurred with other railroads or highway authorities whose operations this Project will impact.

F. Noise and Vibration: *Are there any sensitive receptors in the Project area?*

No, describe why there are no sensitive receptors (residences, parks, schools, hospitals, public gathering spaces) in or near the Project area. (Continue to G)

There are no noise sensitive receptors located within the proximity of the proposed TRE track improvement areas. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor containing existing commercial, retail, and light industrial uses. The proposed project would have no significant impact and no mitigation would be required.

The proposed track upgrades do not alter the dominate vibration sources (railroad traffic) in this project area. It would have no significant impacts and no mitigation will be required.

Yes, will the Project change the noise and/or vibration exposure of the sensitive receptors when applying the screening distances for noise and vibration assessment found in FRA and Federal Transit Administration's noise impacts assessment guidance manuals? Such changes in exposure might include changes in noise emissions and/or events, or changes in vibration emissions and/or events.

If the Project is anticipated to change the noise or vibration exposure of sensitive receptors, complete and attach a General Noise and/or Vibration Assessment. Describe the results of the Assessment and any mitigation that will address potential impacts.

G. Air Quality: *Is the Project located in a Non-Attainment or Maintenance area?*

No, identify any air emissions increases or benefits that the project will create.
(Continue to H)

The proposed project would produce a temporary increase in fugitive dust (including PM10) and unquantifiable amounts of hydrocarbons, NOX, CO, and CO2 during the construction phase.

Regular equipment maintenance, including emissions checks, would reduce impacts to air quality. No open burning of construction debris, trash, or refuse would be allowed in construction areas

Yes, for which of the following pollutants:

- Carbon Monoxide (CO) Ozone (O₃), volatile organic compounds or Nitrous Oxides (NO_x)
 Particulate Matter (PM₁₀ and PM_{2.5})

Will the Project, both during construction and operation, result in new emissions of criteria pollutants including Carbon Monoxide (CO), Ozone (O₃), volatile organic compounds, or Nitrous Oxides NO_x, Particulate Matter (PM₁₀ and PM_{2.5})?

No Yes, Attach an emissions analysis for General Conformity regarding CO, O₃, PM₁₀, and NO_x.

Based on the emissions analysis, will the Project increase concentrations of ambient criteria pollutants to levels that exceed the NAAQS, lead to the establishment of a new non-attainment area, or delay achievement of attainment?

No Yes, Describe any substantial impacts from the Project.

H. Hazardous Materials: *Does the Project involve the use or handling of hazardous materials?*

No (continue to I)

Yes, describe the use and measures that will mitigate any potential for release and contamination.

I. Hazardous Waste: *Is the Project site in a developed area or was previously developed or used for industrial or agricultural production,*

No, describe the steps taken to determine that hazardous materials are not present on the Project site. (Continue to J)

The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Yes. *If yes, is it likely that hazardous materials will be encountered by undertaking the Project? (Prior to acquiring land or a facility with FRA funds, FRA must be consulted regarding the potential presence of hazardous materials)*

Yes, complete a Phase I site assessment and attach.

No, explain why it is unlikely that hazardous materials will be encountered.

If a Phase I survey was completed, is a Phase II site assessment recommended?

No, explain why a Phase II site assessment is not recommended.

Yes, describe the mitigation and clean-up measures that will be taken to remediate any hazardous materials present and what steps will be taken to ensure that the local community is protected from contamination during construction and operation of the Project.

J. Property Acquisition: *Is property acquisition needed for the Project?*

No (continue to K)

Yes, indicate how much property and whether the acquisition will result in relocation of businesses or individuals. **Note:** *acquiring property prior to completing the NEPA process and receiving written FRA concurrence in the NEPA recommendation may jeopardize Federal financial participation in the Project.*

K. Community Impacts and Environmental Justice: *Is the Project likely to result in impacts to adjacent communities? Impacts might be both beneficial (e.g. economic benefits) or adverse (e.g. reduction in community cohesion).*

No, describe the steps taken to determine whether the Project might result in impacts to adjacent communities. (Continue to L)

The proposed project will have no impacts on neighborhood cohesion and social interaction and will not disturb existing neighborhoods. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor, no displacement will be required. Thus no mitigation is recommended.

Yes, characterize the socio-economic profile of the affected community, including the presence of minority or low-income populations.

Describe any potential adverse effects to communities, including noise, visual and barrier effects. Indicate whether the Project will have a disproportionately high and adverse effect on minority or low-income populations. Describe outreach efforts targeted specifically at minority or low-income populations.

L. Impacts On Wetlands: *Does the Project temporarily or permanently impact wetlands or require alterations to streams or waterways?*

No, describe the steps taken to determine that the Project is not likely to temporarily or permanently impact wetlands or require alterations to streams or waterways.

There is no significant impact to wetlands on or near the project area anticipated; therefore there would be no mitigation treatments required. The US Army Corp of Engineers has been consulted and has provided a clearing house letter stating no individual 404 permit

will be required.

Yes, show wetlands and waters on the site map and classification. Describe the Project's potential impact to on-site and adjacent wetlands and waters and attach any correspondence with the US Army Corps of Engineers.

Is a Section 404 Permit necessary?

Yes, attach all permit related documentation

404 Permit is being coordinated with US Army Corps of Engineers.

No

M. Floodplain Impacts: *Is the Project located within the 100-year floodplain or are regulated floodways affected?*

No (continue to N)

Yes, describe the potential for impacts due to changes in floodplain capacity or water flow, if any and how the Project will comply with Executive Order 11988. If impacts are likely, attach scale maps describing potential impacts and describe any coordination with regulatory entities.

N. Water Quality: *Are protected waters of special quality or concern, or protected drinking water resources present at or directly adjacent to the Project site?*

No, describe the steps taken to identify *protected waters of special quality or concern, or protected drinking water resources present at or directly adjacent to the Project site.*

Yes, describe water resource and the potential for impact from the Project, and any coordination with regulatory entities.

O. Navigable Waterways: *Does the Project cross or have effect on a navigable waterway?*

No (continue to P)

Yes, describe potential for impact and any coordination with US Coast Guard.

P. Coastal Zones: *Is the Project in a designated coastal zone?*

No (continue to Q)

Yes, describe coordination with the State regarding consistency with the coastal zone management plan and attach the State finding if available.

Q. Prime and Unique Farmlands: *Does the Project impact any prime or unique farmlands?*

No, describe the steps taken to identify *impacts to prime or unique farmlands*.

The proposed project will have no impacts on prime or unique farmlands. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Yes, describe potential for impact and any coordination with the Soil Conservation Service of the US Department of Agriculture.

R. Critical Habitat and Endangered Species: *Are there any designated critical habitat areas (woodlands, prairies, wetlands, rivers, lakes, streams, and geological formations determined to be essential for the survival of a threatened or endangered species) within or directly adjacent to the Project site?*

No, describe the steps taken to identify critical habitat within or directly adjacent to the Project site.

The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Geology

The proposed project will have minimal impact on geological resources at the Inwood bridge and Knight's Branch bridge areas; thus no mitigation treatments would be necessary

Soils

Direct impacts to soils include removal of vegetation during construction, which will cause exposure of the soil, short term increased susceptibility to wind and water erosion may occur, Storm Water Pollution Prevention Plans (SWPPP) and Best Management Practices (BMP) will be developed as a mitigation measure during construction. The SWPPP and BMP will be installed for controlling runoff, erosion, and sedimentation during construction. Long term impacts would be insignificant.

Yes, describe them and the potential for impact.

Are any Threatened or endangered species located in or adjacent to the site?

No, describe the steps taken to identify the presence of endangered species directly adjacent to the Project site.

Threatened or Endangered species that are known to occur in Dallas County include the interior least tern and the black-capped vireo and whooping crane (USFWS 1995b). Since maintained grassland vegetation is not considered suitable habitat for either of the endangered species found in Dallas County, it is not likely that impacts to the Threatened or Endangered species would result from this proposed project. Thus no mitigation treatments would be necessary.

Yes, describe them and the potential for impact. Describe any consultation with the State and the US Fish and Wildlife Service about the impacts to these natural areas and on threatened

and endangered fauna and flora that may be affected. If required prepare a biological assessment and attach it and any applicable agency correspondence.

S. Public Safety: *Will the Project result in any public safety impacts?*

No, describe method used to determine whether the Project results in any safety or security impacts

The Dallas Area Rapid Transit (DART) has developed several policies, including DART Safety System Program Plan, that will be actively implemented to ensure that safety and security at the proposed project site is maximized. The proposed project would have no significant adverse impact related to safety and security and thus no mitigation treatments would be required.

Yes, describe the safety or security concerns and the measures that would need to be taken to provide for the safe and secure operation of the Project during and after its construction.

T. Cumulative Impacts: A “cumulative impact” is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts may include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or resulting from smaller actions that individually have no significant impact. Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern.

Are cumulative impacts likely? No Yes, describe the impacts:

U. Indirect Impacts: “Indirect impacts” are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Are Indirect impacts likely? No Yes, describe the impacts:

V. Commitments: List all measures, procedures and practices that have been incorporated into the Project avoid and minimize impacts, if any, as identified in the above sections of this worksheet.

W. Public Notification: *Briefly describe any public outreach efforts undertaken on behalf of the Project, if any. Indicate opportunities the public has had to comment on the Project (e.g., Board meetings, open houses, special hearings).*

Has the Project generated any public discussion or concern, even though it may be limited to a relatively small subset of the community? Indicate any concerns expressed by agencies or the public regarding the Project.

X. Related Federal, State, or Local Actions: *Does the Project require any additional actions (e.g., permits) by other Agencies? Attach copies of relevant correspondence. It is not necessary to attach voluminous permit applications if a single cover Agency transmittal will indicate that a permit has been granted. Permitting issues should be described in the relevant resource discussion above.*

- Section 106** *Historic Properties*
- Section 401/404 of the Clean Water Act;** *Wetlands and Water Quality*
- Section 402 of the Clean Water Act**
- USCG 404** *Navigable Waterways*
- Migratory Bird Treaty Act**
- Endangered Species Act** *Threatened and Endangered Biological Resources*
- Magnuson-Stevens Fishery Conservation and Management Act** *Essential Fish Habitat*
- Safe Drinking Water Act**
- Section 6(f) Land and Conservation Act**
- Other State or Local Requirements** (Describe)



3.0 Doubletrack Medical Market Center to Stemmons Freeway

Project Scope: The project is to complete a second track from Stemmons Freeway (MP 639.5) to West Perkins (MP 640.7). This is approx. 1.2 miles of track work. In addition to this track work a new double track bridge for Obsession (MP 639.6), new second track bridge for Knights Branch (MP 640.3), second track bridge and rehab for Inwood (MP 640.41) are to be constructed.

Engineers Cost Estimate: See Below

Preliminary Design Drawings: Signed and Sealed Documents

Environment: See Below. **Has Not Been Submitted to FRA**



Doubletrack Medical Market Center to Stemmons Freeway

Preliminary Engineer's Cost Estimate

March 2018



DFW SUB DOUBLE TRACKS PROGRAM - CIVIL / STRUCTURES CONSTRUCTION ESTIMATE
DALLAS AREA RAPID TRANSIT - TRINITY RAILWAY EXPRESS
DALLAS, TEXAS

FTA CODE	PAY ITEM		DESCRIPTION	MP 640.3	MP 640.41	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SPEC REFER	SEQ NO#		Bridge Knights Branch 2nd Track - New Bridge	Bridge Inwood 2nd Track - New Bridge				
PART A - SITE PREPARATION									
1	02100	001	SITE PREPARATION (CLEARING & GRUBBING)	1	1	2	LS	\$ 500,000.00	\$ 1,000,000.00
SUB-TOTAL SITE PREPARATION						0			\$ 1,000,000.00
PART B - SW3P									
2	01562		SILT FENCE	1	1	2	LS	\$ 25,000.00	\$ 50,000.00
	01562	001	ROCK BERMS			0	LF		
		002	DITCH CHECK			0	EA		
		003	STORM SEWER INLET PROTECTION			0	LF		
		004	STABILIZED CONSTRUCTION ENTRANCE			0	SY		
		005	TURBIDITY BARRIER			0	LF		
3	02931	001	SEEDING AND SODDING - NON-IRRIGATED AREAS (HYDROSEEDING)			0	AC		
SUB-TOTAL SW3P						0			\$ 50,000.00
PART C - DEMOLITION									
4	02050	001	DEMOLITION OF CONCRETE (MEDIAN)			0	SY	\$18.82	\$ -
5	02050	002	SIDEWALK/TRAIL REMOVAL			0	SY	\$9.16	\$ -
6	02050	003	SELECTIVE DEMOLITION (SAWCUT)	15		15	LF	\$10.00	\$ 150.00
7	02411	001	SELECTIVE DEMOLITION			0	LS	\$22,883.54	\$ -
8	02411	002	GATE REMOVAL (REMOVE AND REPLACE)			0	LF	\$75.00	\$ -
9	02469	001	TRACK DEMOLITION - REMOVE EXISTING TIES & TRACK COMPLETE IN PLACE			0	TF	\$176.80	\$ -
10	02100	001	HAZARDOUS MATERIALS (LEAD BASED PAINT/ASBESTOS SURVEY AND ABATEMENT/DISPOSAL)			0	LS	\$53,012.04	\$ -
SUB-TOTAL DEMOLITION						0			\$ 150.00
PART D - EARTHWORK									
11	02220	001	UNCLASSIFIED COMMON EXCAVATION			0	LS	\$220,000.00	\$ -
12	02220	002	BORROW (TRACK)		1634	1,634	CY	\$21.81	\$ 35,637.54
SUB-TOTAL EARTHWORK						0			\$ 35,637.54
PART E - GUIDEWAY									
13	02220	003	COMPACTED SUBGRADE (8" DEPTH)	1	1	2	LS	\$104,000.00	\$ 208,000.00
14	02243	001	SOIL STABILIZATION: LIME TREATMENT	1379	665	2,044	TON	\$156.65	\$ 320,192.60
15	02243	002	SOIL STABILIZATION: LIME TREATMENT (8" DEPTH)	13,134	6,334	19,468	SY	\$3.41	\$ 66,385.88
16	02246	001	GEOSYNTHETICS (GEOTEXTILE BOND BREAKER)			0	SY	\$2.26	\$ -
17	02451	002	SUB-BALLAST (8" DEPTH)	2,627	1,267	3,894	CY	\$56.73	\$ 220,906.62
SUB-TOTAL GUIDEWAY						0			\$ 815,485.10
PART F - TRACKWORK									
18	02450	001	INSTALL BALLAST & FURNISHED TRACK AND TIES COMPLETE IN PLACE	3,940	1,900	5,840	TF	\$340.00	\$ 1,985,600.00
19	02450	002	INSTALL BALLAST & FURNISHED TRACK AND TIES COMPLETE IN PLACE AT BRIDGE	162	125	287	TF	\$476.49	\$ 136,752.63
20	02451	001	INSTALL NEW SUB-BALLAST COMPLETE IN PLACE			0	CY	\$56.73	\$ -
21	02454	001	RESURFACING TRACK			0	TF	\$28.33	\$ -
SUB-TOTAL TRACKWORK						0			\$ 2,122,352.63
PART G - SPECIAL TRACKWORK									
22	02470	001	HIGHWAY GRADE CROSSING - TRACKWORK			0	TF	\$ 2,593.78	\$ -
23	02471	001	HIGHWAY GRADE CROSSING - CIVIL WORK			0	TF	\$ 3,887.84	\$ -
24	02459	001	NO. 11 TURNOUT INSTALLATION			0	EA	\$205,300.00	\$ -
25	02459	002	NO. 15 TURNOUT INSTALLATION			0	EA	\$200,000.00	\$ -
26	02459	003	NO. 20 TURNOUT INSTALLATION			0	EA	\$300,000.00	\$ -
27	02459	004	SECTIONAL RELEASE IN THE NEW DALWOR INTERLOCKING ALLOWANCE			0	LS	\$ 100,000.00	\$ -
SUB-TOTAL SPECIAL TRACKWORK						0			\$ -
PART H - ROADWAY									
28	02550	001	REINFORCED CONCRETE MEDIAN (8" DEPTH)			0	SY	\$111.00	\$ -
29	02525	001	CONCRETE SIDEWALK (4" DEPTH)			0	SY	\$50.00	\$ -
30	02525	002	CONCRETE CURB (MONO)			0	LF	\$75.00	\$ -
SUB-TOTAL ROADWAY PAVEMENT						0			\$ -
PART I - TRAFFIC CONTROL									
31	02600	001	MAINTENANCE AND CONTROL OF TRAFFIC			0	LS	\$1,057,000.00	\$ -
SUB-TOTAL TRAFFIC CONTROL						0			\$ -
PART J - DRAINAGE									
32	02700	001	GRATE INLET TY PSL(FG)(3'X3')			0	EA	\$11,000.00	\$ -
33	02700	002	18" CLASS V REINF CONC STORM SEWER PIPE			0	LF	\$150.00	\$ -
34	02700	003	SET TY P-CD (3:1)			0	EA	\$25,000.00	\$ -
35	02271	001	GRATE INLET-CONCRETE RIPRAP APRON			0	CY	\$500.00	\$ -
SUB-TOTAL DRAINAGE						0			\$ -
PART K - LANDSCAPING									
36	02900	001	LANDSCAPING-GENERAL			0	LS	\$18,566.31	\$ -
37	02910	001	TOPSOIL AND FINISHED GRADING (4")			0	SY	\$1.56	\$ -
SUB-TOTAL LANDSCAPING						0			\$ -
PART L - BRIDGE									
EXISTING STRUCTURE REMOVAL									
38	02220	004	SOIL EXCAVATION			0	LS	\$15,000.00	\$ -
39	02220	005	REMOVE EXISTING BRIDGE			0	LS	\$56,000.00	\$ -
40	02220	006	REMOVE TIMBER APPROACH SPANS			0	LS	\$100,000.00	\$ -
SLOPE PROTECTION									
41	02271	001	SLOPE PROTECTION - CLASS I STONE RIPRAP PROTECTION			0	CY	\$ 166.20	\$ -
DRIVEN PILES									
42	02360	001	HP14x89 STEEL PILES			0	LF	\$85.00	\$ -
43	02360	002	C10x20			0	LF	\$40.00	\$ -
DRILLED SHAFT FOUNDATIONS									
44	02375	001	DRILLED SHAFT FOUNDATION (30" DIA)	1281		1,281	LF	\$155.00	\$ 198,555.00
45	02375	002	DRILLED SHAFT FOUNDATION (54" DIA)		456	456	LF	\$470.00	\$ 214,320.00



DFW SUB DOUBLE TRACKS PROGRAM - CIVIL / STRUCTURES CONSTRUCTION ESTIMATE
DALLAS AREA RAPID TRANSIT - TRINITY RAILWAY EXPRESS
DALLAS, TEXAS

CAST-IN-PLACE CONCRETE										
46	03300	001	ABUTMENT CONCRETE 4000 PSI	20	64	84	CY	\$1,750.00	\$ 147,000.00	
47	03300	002	BENT CAP CONCRETE 4000 PSI	48	56	104	CY	\$2,150.00	\$ 223,600.00	
48	03300	003	COLUMN CONCRETE 4000 PSI	79	34	113	CY	\$1,850.00	\$ 209,050.00	
49	03300	004	PEDESTAL RECONSTRUCTION CONCRETE 4000 PSI			0	CY	\$12,677.03	\$ -	
BEARINGS										
50	03370	001	ELASTOMERIC BEARING (SPECIAL)	18	6	24	EA	\$ 30.00	\$ 720.00	
51	03370	002	EXPANSION BEARING FOR STEEL SPAN (85'-0" DECK PLATE GIRDER SPAN)			0	EA	\$ 4,839.00	\$ -	
52	03370	003	FIXED BEARING FOR STEEL SPAN (85'-0" DECK PLATE GIRDER SPAN)			0	EA	\$ 4,839.00	\$ -	
53	03370	004	EXPANSION BEARING FOR STEEL SPAN (100'-0" DECK PLATE GIRDER SPAN)			0	EA	\$ 4,839.00	\$ -	
54	03370	005	FIXED BEARING FOR STEEL SPAN (100'-0" DECK PLATE GIRDER SPAN)			0	EA	\$ 4,839.00	\$ -	
STRUCTURAL PRECAST CONCRETE										
55	03430	001	PRECAST PRESTR CONC DOUBLE CELL BOX BEAM (DB30) W/ 24" CURB / WALKWAY			0	LF	\$750.00	\$ -	
56	03430	002	PRECAST CONC WINGWALL W30-S/T 4000 PSI CONC	4	4	8	EA	\$4,290.00	\$ 34,320.00	
57	03430	003	PRECAST PRESTR CONC SLAB BEAM (SB20) W/ 24" CURB / WALKWAY	320		320	LF	\$750.00	\$ 240,000.00	
STRUCTURAL STEEL - BRIDGES										
58	05120	001	STR STEEL (ROLLED BEAM, DIAPHRAGM & STIFFENER)		222,844	222,844	LB	\$ 3.29	\$ 733,156.76	
59	05120	002	STEEL PLATE GIRDERS RETROFIT			0	LB	\$ 30.00	\$ -	
METAL FABRICATIONS										
60	05520	001	MISC STEEL - HANDRAIL, WALKWAY GRATING, BEAM STOPS AND COVER PLATES, DECK PL	3,367		3,367	LB	\$5.65	\$ 19,023.55	
WATERPROOFING										
61	07121	002	SPRAY-APPLIED WATERPROOFING	2,268	2,375	4,643	SF	\$ 19.14	\$ 88,867.02	
TIMBER TIES										
62			TIMBER BALLAST CURB			0	LF	\$42.73	\$ -	
TEMPORARY SHORING										
63	XXXX	001	TEMPORARY SHORING DESIGN AND APPROVAL COMPLETE IN PLACE			0	LS	\$25,000.00	\$ -	
64	XXXX	002	TEMPORARY SHORING FOR BRIDGE EXCAVATION COMPLETE IN PLACE			0	LS	\$99,500.00	\$ -	
COATINGS FOR STEEL										
65	09970	001	PAINTING, CLEANING AND ABATEMENT (EXISTING STEEL DECK PLATE GIRDER SPANS)			0	LS	\$175,000.00	\$ -	
SUB-TOTAL BRIDGE							0		\$ 2,108,612.33	
PART M - RETAINING WALLS										
<i>RETAINING WALL RW-1</i>										
03302	1		RETAINING WALL (T-WALL)			0	SF	\$87.31	\$ -	
METAL FABRICATIONS										
05520	1		MISCELLANEOUS STEEL - HANDRAIL			0	LB	\$5.65	\$ -	
<i>RETAINING WALL RW-2</i>										
03302	1		RETAINING WALL (T-WALL)			0	SF	\$81.90	\$ -	
METAL FABRICATIONS										
05520	1		MISCELLANEOUS STEEL - HANDRAIL			0	LB	\$5.65	\$ -	
SUB-TOTAL RETAINING WALL									\$ -	
PART N - SIGNALS										
66	17001	001	SIGNALS	1		1	LS	\$1,100,000.00	\$ 1,100,000.00	
SUB-TOTAL SIGNALS									\$ 1,100,000.00	
TOTAL BY PART										
PART A - SITE PREPARATION									\$ 1,000,000.00	
PART B - SW3P									\$ 50,000.00	
PART C - DEMOLITION									\$ 150.00	
PART D - EARTHWORK									\$ 35,637.54	
PART E - GUIDEWAY									\$ 815,485.10	
PART F - TRACKWORK									\$ 2,122,352.63	
PART G - SPECIAL TRACKWORK									\$ -	
PART H - ROADWAY									\$ -	
PART I - TRAFFIC CONTROL									\$ -	
PART J - DRAINAGE									\$ -	
PART K - LANDSCAPING									\$ -	
PART L - BRIDGE									\$ 2,108,612.33	
PART M - RETAINING WALLS									\$ -	
PART N - SIGNALS									\$ 1,100,000.00	
SUB TOTAL PART A - PART N									\$ 7,232,237.60	
01001	GENERAL REQUIREMENTS								9.75%	\$ 705,143.17
01505	MOBILIZATION								3.00%	\$ 216,967.13
	BOND								1.00%	\$ 72,322.38
	RAILROAD WORKER PROTECTION TRAINING & BADGING								ALLOW	\$ 707,200.00
	FACILITIES CONSTRUCTION MANAGEMENT								8.00%	\$ 595,936.38
	DESIGN								10.10%	\$ 752,369.68
	QUALITY COMPLIANCE								2.00%	\$ 148,984.09
	SAFETY COMPLIANCE								1.00%	\$ 74,492.05
	PROJECT MANAGEMENT								2.10%	\$ 156,433.30
	OCIP - OWNER CONTROL INSURANCE PROGRAM								3.00%	\$ 223,476.14
GRAND TOTAL									\$ 10,885,561.91	



**DFW SUB DOUBLE TRACKS PROGRAM - CIVIL / STRUCTURES CONSTRUCTION ESTIMATE
DALLAS AREA RAPID TRANSIT - TRINITY RAILWAY EXPRESS
DALLAS, TEXAS**

FTA CODE	PAY ITEM		DESCRIPTION	MP 639.6 Bridge Obsession Mainlane & 2nd Track	MP 640.41 Bridge Inwood Mainlane - Rehab	TOTAL AMOUNT
	SPEC REFER	SEQ NO#				
			FACILITIES CONSTRUCTION	\$ 8,684,909.00	\$ 1,142,356.99	\$ 9,827,265.99
						\$ -
			GENERAL REQUIREMENTS	\$ 1,148,690.63	\$ 271,697.16	\$ 1,420,387.79
						\$ -
			FACILITIES CONSTRUCTION MANAGEMENT	\$ 180,646.11	\$ 11,880.51	\$ 192,526.62
			DESIGN	\$ 406,782.09	\$ 149,956.94	\$ 556,739.03
			QUALITY COMPLIANCE	\$ 22,580.76	\$ 2,970.13	\$ 25,550.89
			OCIP - OWNER CONTROL INSURANCE PROGRAM	\$ 286,002.74	\$ 40,782.14	\$ 326,784.88
			GRAND TOTAL	\$ 10,729,611.33	\$ 1,619,643.88	\$ 12,349,255.20

Engineer cost estimate based on the signed and sealed documents



Doubletrack Medical Market Center to Stemmons Freeway

FRA Category Exemption Worksheet

March 2018

Expiration 08/31/2018

OMB No. 2130-0548

Public reporting burden for this information collection is estimated to average 176 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for this information collection is 2130-0548. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection, including suggestions for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave., N.W., Washington D.C. 20590.

Federal Railroad Administration (FRA)
CATEGORICAL EXCLUSION WORKSHEET

The purpose of this worksheet is to assist Project sponsors in gathering and organizing materials for environmental analysis required under the National Environmental Policy Act (NEPA), particularly for projects that may qualify as Categorical Exclusions. Categorical Exclusions are categories of actions (i.e. types of projects) that the FRA has determined, based on its experience, typically do not individually or cumulatively have a significant effect on the human environment and which generally do not require the preparation of either an environmental impact statement (EIS) or an environmental assessment (EA). Decisions to prepare EAs and EISs are made by FRA.

Submission of the worksheet by itself does not meet NEPA requirements. FRA must concur in writing with the Categorical Exclusion recommendation for NEPA requirements to be met.

The Project sponsor is responsible for providing FRA with a sufficient level of documentation and analysis to help inform FRA's determination that a Categorical Exclusion is the appropriate NEPA class of action. Documentation and analysis may include background research, results of record searches, field investigations, field surveys, and any past planning or studies.

Instructions for completing this worksheet are available on the FRA website at: <http://www.fra.dot.gov/eLib/Details/L02708>. Please complete this worksheet using compatible word processing software and submit and transmit the completed form in MS Word electronic format.

The following documents must be submitted along with this worksheet:

1. Include maps or diagram of the Project area that identifies locations of critical resource areas, wetlands, potential historic sites, or sensitive noise receptors such as schools, hospitals, and residences.
 2. Include maps or diagrams of the proposed modifications to existing railways, roadways, and parking facilities.
 3. Copies of all agency correspondence particularly with permitting agencies.
 4. Representative photographs of the Project area.
-

I. PROJECT DESCRIPTION

Project Sponsor Federal Railroad Administration	Date Submitted to FRA	FRA Funding (TIGER, HSIPR, Rail Line Relocation, RRIF, etc.) or other FRA Action
Contact Person	Phone	E-mail address
Proposed Project Title The North Texas Multimodal Operations, Velocity, Efficiency and Safety Program (NT MOVES)		
Location (Include Street Address, City or Township, County, and State)		
Elm Fork Bridge Replacement with doubletrack bridge		
Replace existing Inwood Bridge with new doubletrack structure		
Replace existing Knight's Branch Bridge with new doubletrack structure		
Doubletrack from Medical Market Center Blvd to Stemmons Freeway Bridge		
Doubletrack from Irving to Dallas		
Centralized Traffic Control (CTC)between Irving and Carrollton		
NEPA Contact Steve Salin	Phone 214-749-2828	E-mail Address SSalin@dart.org
Description of Proposed Action (Project): Fully describe the Project including specifics that may be of environmental concern such as: <i>widening an embankment to stabilize roadbed; repairing or replacing bridge pier foundations, extending culverts, including adding rip-rap in a waterway; earthwork and altering natural (existing) drainage patterns and creating a new water discharge; contaminated water needing treatment; building a new or adding on to a shop building; fueling or collection of fuel or oil and contaminated water; building or extending a siding; and building or adding on to a yard. Where applicable fully describe the operational characteristics of the facility to be improved by the proposed action and any anticipated operational changes that may result.</i>		
Centralized Traffic Control (CTC)and Track Expansion on the Madill Subdivision to facilitate the commuter equipment moves between Irving and Carrollton in support of DART's future Cotton Belt service includes:		
<ol style="list-style-type: none"> 1. Trinity Railway Express (TRE)doubletracking from Irving to Dallas 2. Doubletracking, from Medical Market Center to Stemmons Freeway. 3. Doubletracking the Inwood, Knight's Branch and Elm Fork bridges 		
Purpose and Need of Proposed Action (Project).		
The implementaion of this project will improve flexibility and safety in the Burlington Northern Santa Fe (BNSF) freight and the TRE commuter rail operations in this shared use assets corridor		

II. NEPA CLASS OF ACTION

Please check the category or categories that the Project best fits. If no category applies, contact FRA as an EA or EIS may need to be prepared.

- Changes in plans for a Project for which an environmental document has been prepared, where the changes would not alter the environmental impacts of the action. (*Describe the full consequences of the changes only in part III*)
- Maintenance of: existing railroad equipment; track and bridge structures; electrification, communication, signaling, or security facilities; stations; maintenance-of-way and maintenance-of-equipment bases; and other existing railroad-related facilities. (*"Maintenance" means work, normally provided on a periodic basis, which does not change the existing character of the facility, and may include work characterized by other terms under specific FRA programs*)
- Temporary replacement of an essential rail facility if repairs are commenced immediately after the occurrence of a natural disaster or catastrophic failure.
- Operating assistance to a railroad to continue existing service or to increase service to meet demand, where the assistance will not result in a change in the effect on the environment.
- Financial assistance for the construction of minor loading and unloading facilities, provided that proposals are consistent with local zoning, do not involve the acquisition of a significant amount of land, and do not significantly alter the traffic density characteristics of existing rail or highway facilities.
- Minor rail line additions *including construction of side tracks, passing tracks, crossovers, short connections between existing rail lines, and new tracks within existing rail yards*, provided that such additions are consistent with existing zoning, do not involve acquisition of a significant amount of right of way, and do not substantially alter the traffic density characteristics of the existing rail lines or rail facilities.
- Acquisition of existing railroad equipment, track and bridge structures, electrification, communication, signaling or security facilities, stations, maintenance of way and maintenance of equipment bases, and other existing railroad facilities or the right to use such facilities, for the purpose of conducting operations of a nature and at a level of use similar to those presently or previously existing on the subject properties.
- Research, development and/or demonstration of advances in signal, communication and/or train control systems on existing rail lines provided that such research, development and/or demonstrations do not require the acquisition of substantial amounts of right-of-way, and do not substantially alter the traffic density characteristics of the existing rail line.
- Improvements to existing facilities to service, inspect, or maintain rail passenger equipment, *including expansion of existing buildings, the construction of new buildings and outdoor facilities, and the reconfiguration of yard tracks.*
- Alterations to existing facilities, locomotives, stations and rail cars in order to make them accessible for the elderly and persons with disabilities, *such as modifying doorways, adding or modifying lifts, constructing access ramps and railings, modifying restrooms, and constructing accessible platforms.*
- Bridge rehabilitation, reconstruction or replacement, the rehabilitation or maintenance of the rail elements of docks or piers for the purposes of intermodal transfers, and the construction of bridges, culverts, or grade separation projects, predominantly within existing right-of-way, that do not involve extensive in-water construction activities, *such as projects replacing bridge components including stringers, caps, piles, or decks, the construction of roadway overpasses to replace at-grade crossings, construction or reconstruction of approaches and/or embankments to bridges, or construction or replacement of short span bridges.*
- Acquisition (including purchase or lease), rehabilitation, or maintenance of vehicles or equipment that does not cause a substantial increase in the use of infrastructure within the existing right-of-

way or other previously disturbed locations, *including locomotives, passenger coaches, freight cars, trainsets, and construction, maintenance or inspection equipment.*

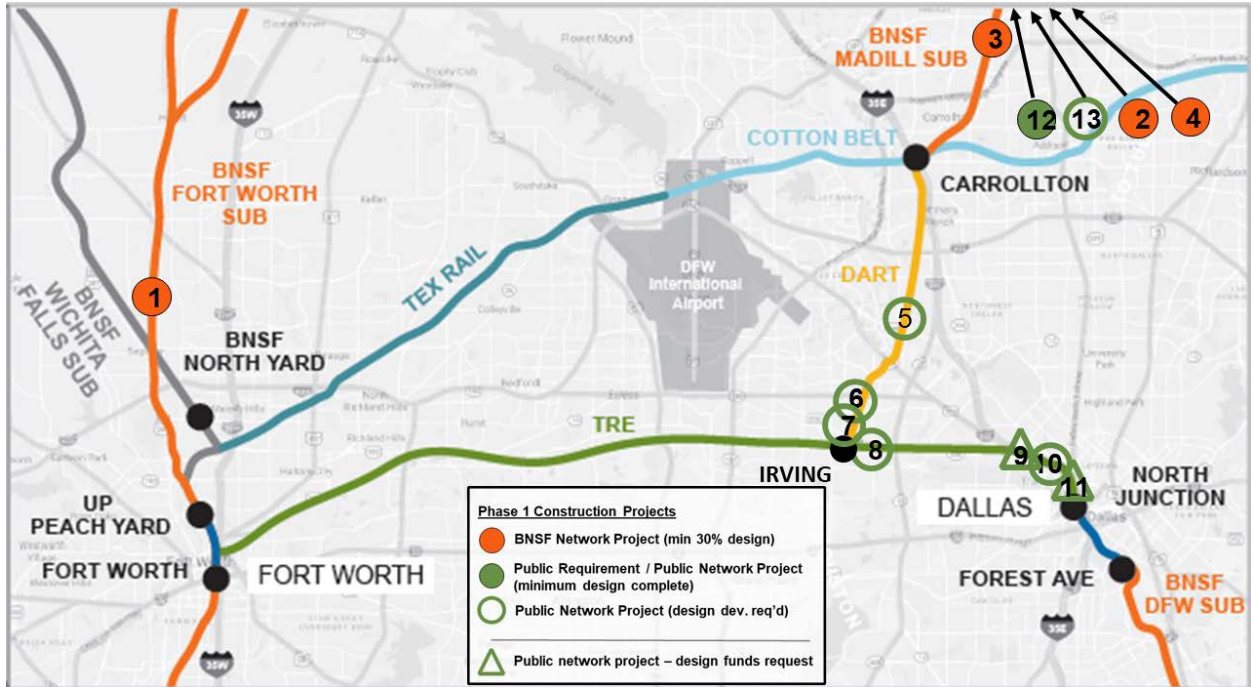
- Installation, repair and replacement of equipment and small structures designed to promote transportation safety, security, accessibility, communication or operational efficiency that take place predominantly within the existing right-of-way and do not result in a major change in traffic density on the existing rail line or facility, *such as the installation, repair or replacement of surface treatments or pavement markings, small passenger shelters, passenger amenities, benches, signage, sidewalks or trails, equipment enclosures, and fencing, railroad warning devices, train control systems, signalization, electric traction equipment and structures, electronics, photonics, and communications systems and equipment, equipment mounts, towers and structures, information processing equipment, and security equipment, including surveillance and detection cameras.*
- Environmental restoration, remediation and pollution prevention activities in or proximate to existing and former railroad track, infrastructure, stations and facilities conducted in conformance with applicable laws, regulations and permit requirements, *including activities such as noise mitigation, landscaping, natural resource management activities, replacement or improvement to storm water oil/water separators, installation of pollution containment systems, slope stabilization, and contaminated soil removal or remediation activities.*
- Assembly or construction of facilities or stations that are consistent with existing land use and zoning requirements, do not result in a major change in traffic density on existing rail or highway facilities and result in approximately less than ten acres of surface disturbance, *such as storage and maintenance facilities, freight or passenger loading and unloading facilities or stations, parking facilities, passenger platforms, canopies, shelters, pedestrian overpasses or underpasses, paving, or landscaping.*
- Track and track structure maintenance and improvements when carried out predominantly within the existing right-of-way that do not cause a substantial increase in rail traffic beyond existing or historic levels, *such as stabilizing embankments, installing or reinstalling track, re-grading, replacing rail, ties, slabs and ballast, installing, maintaining, or restoring drainage ditches, cleaning ballast, constructing minor curve realignments, improving or replacing interlockings, and the installation or maintenance of ancillary equipment.*

III. PROJECT INFORMATION

Potential impacts from both construction and changes to operations (where applicable) should be analyzed and identified for each resource type below. Where appropriate, the Project sponsor may commit to mitigation measures to avoid, reduce, or minimize impacts, including the use of Best Management Practices (BMP). Mitigation measures necessary to comply with other laws or regulations (e.g. Clean Water Act Section 404) should also be identified and the impacts from mitigation considered.

A. Affected Environment: *Briefly describe the ecosystems and environmental conditions in the area affected by the Project (defined as broadly as necessary to evaluate potential impacts and address Project area habitats).*

The Project area is located within the cities of Dallas, Irving and Carrollton along the TRE Right-Of-Way. The project area is surrounded by commercial and light industrial land uses. Unimproved areas adjacent to the proposed project areas are considered to be maintained grassland vegetation.



B. Location & Land Use: Briefly describe the existing land use of the Project site and surrounding properties and resources and identify and discuss any potential inconsistencies the Project might have with local land use plans and policies.

The Project area is located within the cities of Dallas, Irving and Carrollton along the TRE Right-Of-Way. The project area is surrounded by commercial and light industrial land uses. Unimproved areas adjacent to the proposed project areas are considered to be maintained grassland vegetation.

As the project area is dominated by commercial, retail, and light industrial land use this track upgrade would not significantly alter the project area, and therefore would have no impacts on land use of the adjacent areas.

C. Cultural Resources: Is the Project of the type where there is no potential to affect historic properties? Check yes or no depending on whether resources have been identified in the immediate vicinity of the Project (Area of Potential Effect)

Yes, explain how Project has no potential to affect historic properties. (Continue to D)

A review of appropriate local state and federal resources listing concludes that the proposed project will have no significant impacts to cultural and natural resources, ecologically sensitive area, historic properties, and/or archeological sites within the area of potential effect of the TRE Track improvement. On the basis of this information, it is believed that no impacts to significant cultural properties would occur. If in the course of construction, unforeseen discoveries of cultural remains are made, work would cease immediately and the Texas Historic Commission (THC) will be consulted for instructions on how to proceed.

No, there is potential to affect historic properties. Describe identification procedures to determine the existence of cultural resources in the Project area.

Describe any resource(s) identified in the project area and then describe any potential effect of the Project on the resource(s).

Has consultation with the State Historic Preservation Office occurred?

No, contact FRA

Yes, describe and attach relevant correspondence

What resources of interest to Federally-recognized Native American Tribes are known to be present in the Project area?

D. Parks and Recreational Facilities: Are there any publicly owned park, wildlife and waterfowl refuge, or recreational area of national, state, or local significance within or directly adjacent to the Project area?

- No, include a short statement describe efforts to identify parks and recreational facilities in the Project area.

No use of public parkland or recreation areas in the proposed project areas are required. No mitigation is necessary.

There are no significant impact to wetlands on or near the project areas anticipated; therefore there would be no mitigation treatments required.

- Yes, include a detailed description of the property, including map or drawing, describe the recreational uses of the property, any unique characteristics of the property, any consultations with the entity with legal jurisdiction over the property, and the potential impact on the property.

E. Transportation: *Would the Project have any effect (beneficial or adverse) on transportation including but not limited to other railway operations, road traffic, or increase the demand for parking?*

- No, explain why the Project would have no effect (beneficial or adverse) on transportation

The addition of these improvements is not anticipated to have any significant changes in the traffic level of service (LOS) around the project area. The proposed project is expected to cause no increase in the daily traffic on surrounding road networks. The increase in train speed due to the proposed project would minimize the amount of time for the intersection gates closing this improving traffic flow. The minimal increase in vehicular traffic due to this action requires no mitigation treatments

- Yes, describe potential transportation, traffic, and parking impacts, and address capacity constraints and potential impacts to existing railroad and highway operations. Also, summarize any consultation that has occurred with other railroads or highway authorities whose operations this Project will impact.

F. Noise and Vibration: *Are there any sensitive receptors in the Project area?*

No, describe why there are no sensitive receptors (residences, parks, schools, hospitals, public gathering spaces) in or near the Project area. (Continue to G)

There are no noise sensitive receptors located within the proximity of the proposed TRE track improvement areas. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor containing existing commercial, retail, and light industrial uses. The proposed project would have no significant impact and no mitigation would be required.

The proposed track upgrades do not alter the dominate vibration sources (railroad traffic) in this project area. It would have no significant impacts and no mitigation will be required.

Yes, will the Project change the noise and/or vibration exposure of the sensitive receptors when applying the screening distances for noise and vibration assessment found in FRA and Federal Transit Administration's noise impacts assessment guidance manuals? Such changes in exposure might include changes in noise emissions and/or events, or changes in vibration emissions and/or events.

If the Project is anticipated to change the noise or vibration exposure of sensitive receptors, complete and attach a General Noise and/or Vibration Assessment. Describe the results of the Assessment and any mitigation that will address potential impacts.

G. Air Quality: *Is the Project located in a Non-Attainment or Maintenance area?*

No, identify any air emissions increases or benefits that the project will create.
(Continue to H)

The proposed project would produce a temporary increase in fugitive dust (including PM10) and unquantifiable amounts of hydrocarbons, NOX, CO, and CO2 during the construction phase.

Regular equipment maintenance, including emissions checks, would reduce impacts to air quality. No open burning of construction debris, trash, or refuse would be allowed in construction areas

Yes, for which of the following pollutants:

- Carbon Monoxide (CO) Ozone (O₃), volatile organic compounds or Nitrous Oxides (NO_x)
 Particulate Matter (PM₁₀ and PM_{2.5})

Will the Project, both during construction and operation, result in new emissions of criteria pollutants including Carbon Monoxide (CO), Ozone (O₃), volatile organic compounds, or Nitrous Oxides NO_x, Particulate Matter (PM₁₀ and PM_{2.5})?

No Yes, Attach an emissions analysis for General Conformity regarding CO, O₃, PM₁₀, and NO_x.

Based on the emissions analysis, will the Project increase concentrations of ambient criteria pollutants to levels that exceed the NAAQS, lead to the establishment of a new non-attainment area, or delay achievement of attainment?

No Yes, Describe any substantial impacts from the Project.

H. Hazardous Materials: *Does the Project involve the use or handling of hazardous materials?*

No (continue to I)

Yes, describe the use and measures that will mitigate any potential for release and contamination.

I. Hazardous Waste: *Is the Project site in a developed area or was previously developed or used for industrial or agricultural production,*

No, describe the steps taken to determine that hazardous materials are not present on the Project site. (Continue to J)

The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Yes. *If yes, is it likely that hazardous materials will be encountered by undertaking the Project? (Prior to acquiring land or a facility with FRA funds, FRA must be consulted regarding the potential presence of hazardous materials)*

Yes, complete a Phase I site assessment and attach.

No, explain why it is unlikely that hazardous materials will be encountered.

If a Phase I survey was completed, is a Phase II site assessment recommended?

No, explain why a Phase II site assessment is not recommended.

Yes, describe the mitigation and clean-up measures that will be taken to remediate any hazardous materials present and what steps will be taken to ensure that the local community is protected from contamination during construction and operation of the Project.

J. Property Acquisition: *Is property acquisition needed for the Project?*

No (continue to K)

Yes, indicate how much property and whether the acquisition will result in relocation of businesses or individuals. **Note:** *acquiring property prior to completing the NEPA process and receiving written FRA concurrence in the NEPA recommendation may jeopardize Federal financial participation in the Project.*

K. Community Impacts and Environmental Justice: *Is the Project likely to result in impacts to adjacent communities? Impacts might be both beneficial (e.g. economic benefits) or adverse (e.g. reduction in community cohesion).*

No, describe the steps taken to determine whether the Project might result in impacts to adjacent communities. (Continue to L)

The proposed project will have no impacts on neighborhood cohesion and social interaction and will not disturb existing neighborhoods. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor, no displacement will be required. Thus no mitigation is recommended.

Yes, characterize the socio-economic profile of the affected community, including the presence of minority or low-income populations.

Describe any potential adverse effects to communities, including noise, visual and barrier effects. Indicate whether the Project will have a disproportionately high and adverse effect on minority or low-income populations. Describe outreach efforts targeted specifically at minority or low-income populations.

L. Impacts On Wetlands: *Does the Project temporarily or permanently impact wetlands or require alterations to streams or waterways?*

No, describe the steps taken to determine that the Project is not likely to temporarily or permanently impact wetlands or require alterations to streams or waterways.

There is no significant impact to wetlands on or near the project area anticipated; therefore there would be no mitigation treatments required. The US Army Corp of Engineers has been consulted and has provided a clearing house letter stating no individual 404 permit

will be required.

Yes, show wetlands and waters on the site map and classification. Describe the Project's potential impact to on-site and adjacent wetlands and waters and attach any correspondence with the US Army Corps of Engineers.

Is a Section 404 Permit necessary?

Yes, attach all permit related documentation

404 Permit is being coordinated with US Army Corps of Engineers.

No

M. Floodplain Impacts: *Is the Project located within the 100-year floodplain or are regulated floodways affected?*

No (continue to N)

Yes, describe the potential for impacts due to changes in floodplain capacity or water flow, if any and how the Project will comply with Executive Order 11988. If impacts are likely, attach scale maps describing potential impacts and describe any coordination with regulatory entities.

N. Water Quality: *Are protected waters of special quality or concern, or protected drinking water resources present at or directly adjacent to the Project site?*

No, describe the steps taken to identify *protected waters of special quality or concern, or protected drinking water resources present at or directly adjacent to the Project site.*

Yes, describe water resource and the potential for impact from the Project, and any coordination with regulatory entities.

O. Navigable Waterways: *Does the Project cross or have effect on a navigable waterway?*

No (continue to P)

Yes, describe potential for impact and any coordination with US Coast Guard.

P. Coastal Zones: *Is the Project in a designated coastal zone?*

No (continue to Q)

Yes, describe coordination with the State regarding consistency with the coastal zone management plan and attach the State finding if available.

Q. Prime and Unique Farmlands: *Does the Project impact any prime or unique farmlands?*

No, describe the steps taken to identify *impacts to prime or unique farmlands*.

The proposed project will have no impacts on prime or unique farmlands. The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Yes, describe potential for impact and any coordination with the Soil Conservation Service of the US Department of Agriculture.

R. Critical Habitat and Endangered Species: *Are there any designated critical habitat areas (woodlands, prairies, wetlands, rivers, lakes, streams, and geological formations determined to be essential for the survival of a threatened or endangered species) within or directly adjacent to the Project site?*

No, describe the steps taken to identify critical habitat within or directly adjacent to the Project site.

The proposed project will be located within existing TRE Right-Of-Way in an established transportation corridor.

Geology

The proposed project will have minimal impact on geological resources at the Inwood bridge and Knight's Branch bridge areas; thus no mitigation treatments would be necessary

Soils

Direct impacts to soils include removal of vegetation during construction, which will cause exposure of the soil, short term increased susceptibility to wind and water erosion may occur, Storm Water Pollution Prevention Plans (SWPPP) and Best Management Practices (BMP) will be developed as a mitigation measure during construction. The SWPPP and BMP will be installed for controlling runoff, erosion, and sedimentation during construction. Long term impacts would be insignificant.

Yes, describe them and the potential for impact.

Are any Threatened or endangered species located in or adjacent to the site?

No, describe the steps taken to identify the presence of endangered species directly adjacent to the Project site.

Threatened or Endangered species that are known to occur in Dallas County include the interior least tern and the black-capped vireo and whooping crane (USFWS 1995b). Since maintained grassland vegetation is not considered suitable habitat for either of the endangered species found in Dallas County, it is not likely that impacts to the Threatened or Endangered species would result from this proposed project. Thus no mitigation treatments would be necessary.

Yes, describe them and the potential for impact. Describe any consultation with the State and the US Fish and Wildlife Service about the impacts to these natural areas and on threatened

and endangered fauna and flora that may be affected. If required prepare a biological assessment and attach it and any applicable agency correspondence.

S. Public Safety: *Will the Project result in any public safety impacts?*

No, describe method used to determine whether the Project results in any safety or security impacts

The Dallas Area Rapid Transit (DART) has developed several policies, including DART Safety System Program Plan, that will be actively implemented to ensure that safety and security at the proposed project site is maximized. The proposed project would have no significant adverse impact related to safety and security and thus no mitigation treatments would be required.

Yes, describe the safety or security concerns and the measures that would need to be taken to provide for the safe and secure operation of the Project during and after its construction.

T. Cumulative Impacts: A “cumulative impact” is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts may include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or resulting from smaller actions that individually have no significant impact. Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern.

Are cumulative impacts likely? No Yes, describe the impacts:

U. Indirect Impacts: “Indirect impacts” are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Are Indirect impacts likely? No Yes, describe the impacts:

V. Commitments: List all measures, procedures and practices that have been incorporated into the Project avoid and minimize impacts, if any, as identified in the above sections of this worksheet.

W. Public Notification: *Briefly describe any public outreach efforts undertaken on behalf of the Project, if any. Indicate opportunities the public has had to comment on the Project (e.g., Board meetings, open houses, special hearings).*

Has the Project generated any public discussion or concern, even though it may be limited to a relatively small subset of the community? Indicate any concerns expressed by agencies or the public regarding the Project.

X. Related Federal, State, or Local Actions: *Does the Project require any additional actions (e.g., permits) by other Agencies? Attach copies of relevant correspondence. It is not necessary to attach voluminous permit applications if a single cover Agency transmittal will indicate that a permit has been granted. Permitting issues should be described in the relevant resource discussion above.*

- Section 106** *Historic Properties*
- Section 401/404 of the Clean Water Act;** *Wetlands and Water Quality*
- Section 402 of the Clean Water Act**
- USCG 404** *Navigable Waterways*
- Migratory Bird Treaty Act**
- Endangered Species Act** *Threatened and Endangered Biological Resources*
- Magnuson-Stevens Fishery Conservation and Management Act** *Essential Fish Habitat*
- Safe Drinking Water Act**
- Section 6(f) Land and Conservation Act**
- Other State or Local Requirements** (Describe)

FRA Categorical Exclusion Worksheet

<i>For Agency Use</i>	<i>Date Received:</i>
<i>Reviewed By:</i>	<i>Recommendation for action:</i>
<i>Date:</i>	<input type="checkbox"/> <i>Accept</i> <input type="checkbox"/> <i>Return for Revisions</i> <input type="checkbox"/> <i>Not Eligible</i>
<i>Comments:</i>	
<i>Concurrence by Approving Official:</i>	<i>Date:</i>

For Agency Use

Will the Proposal result in the use of a resource protected by 49 U.S.C. §303 (Section 4(f)) of the Department of Transportation Act of 1966?

YES
 NO

Is the proposal an integral part of a program of current Federally supported actions which, when considered separately, would not be classified as major actions, but when considered together may result in substantial impacts?

YES
 NO



4.0 Implement ClearPath Technology

Proposal for potential inclusion in grant application by North Central Texas Council of Governments and Dallas/Ft. Worth metropolitan freight and commuter passenger railroads

Mission:

Utilize technology to enable more efficient use of rail infrastructure in the Dallas/Ft. Worth metropolitan area (“Gateway”).

ROM Estimates:

- Development and Implementation ROM: \$2,250,000
- Estimated time to full implementation: Approximately 2 Years

Summary:

This project will deliver a browser-based suite of applications that provides networked visibility to gateway operations including inbound train lineup, train and locomotive consist, crew status, train location and infrastructure status across all gateway railroads. Railroad-provided data will be collected in standard formats, including some in near real-time, to facilitate gateway status visualization on a consolidated and accurate geospatially enabled map. Functionality will also include train route forecasting, performance metrics and historical trend analysis.

The application will allow approved users to:

1. Better collaborate in cross-railroad train movement planning
2. Move more freight trains across passenger territory during “curfew” times without negatively affecting passenger operations
3. Quickly identify and respond to immediate or emerging train movement problems
4. Identify opportunities for continuous operations efficiency improvements
5. Make well informed strategic investment decisions

Data collected during ongoing operations will be utilized to:

1. Forecast corridor availability and future areas of potential oversubscription
2. Propose a “Clear Path” for freight trains through passenger territory, including:
 - a. estimated times of arrival at junctions and interlockings
 - b. estimated freight train transit times over passenger territory
 - c. “Windows of opportunity” for freight trains to operate during passenger curfew
3. Perform basic “what-if” scenarios via dispatch string line graph

Key performance metrics will also be developed to provide ongoing terminal status updates to key stakeholders.

Since the exchange of operating bulletins and railcar yard inventory railcar yard dwell have minimal impact on Dallas/Ft. Worth train operations, functionality supporting these functions will not be deployed.