

Appendix 1-1

Conceptual Alternatives Evaluation Report



CONCEPTUAL ALTERNATIVES EVALUATION REPORT

DALLAS NORTH TOLLWAY EXTENSION PHASE 4B/5A
FROM FM 428
TO FM 121 / FM 922

COLLIN, COOKE, DENTON AND GRAYSON COUNTIES, TEXAS

JULY 2010





NORTH TEXAS TOLLWAY AUTHORITY

RESOLUTION NO. 10-191

A RESOLUTION OF
THE NORTH TEXAS TOLLWAY AUTHORITY
SELECTING THE PREFERRED ALIGNMENT FOR THE DALLAS NORTH TOLLWAY,
PHASE 4B/5A PROJECT

July 21, 2010

WHEREAS, the North Texas Tollway Authority (the "NTTA") is a regional tollway authority created and operating pursuant to Chapter 366 of the Texas Transportation Code, known as the "Regional Tollway Authority Act" (the "Act"); and

WHEREAS, pursuant to the Bylaws of the NTTA, the Chairman of the Board appointed the North Texas Tollway Authority System Projects and Operations Committee (the "Committee") to review and make recommendations to the Board regarding NTTA turnpike projects and their operations; and

WHEREAS, the staff has briefed the Committee regarding the draft Conceptual Alternatives Evaluation Report and process; and

WHEREAS, representatives from Collin and Denton counties provided presentations to the Committee regarding their preferred alignments; and

WHEREAS, the Dallas North Tollway, Phase 4B/5A extension project will expand the current NTTA system and meet the need of addressing future travel demand in the region and the purpose of providing a transportation improvement to meet that demand;

NOW, THEREFORE, BE IT RESOLVED, that, conditioned upon (1) Denton County furnishing the NTTA \$20 Million in TRIP-08 Bond Program proceeds for the construction of Phase 4B/5A extension project southbound frontage road located in Denton County and \$1.5 Million in that Program's proceeds for use for the design of the Phase 4B/5A project and (2) property owners and other stakeholders providing the right-of-way previously committed in writing or verbally in various public meetings required for the Phase 4B/5A project at no cost to the NTTA, the NTTA Board of Directors selects the Yellow-Red (Middle) or so-called County Line Alignment as set forth in the Conceptual Alternatives Evaluation Report as the preferred alternative for the Dallas North Tollway, Phase 4B/5A project; and directs NTTA staff and consultants to complete the schematic design and environmental evaluation of the preferred alignment.

ATTEST:

Paul N. Wageman, Chairman

Ruby Franklin, Secretary

EXECUTIVE SUMMARY

This report explains the process for developing and evaluating alternatives for the proposed Dallas North Tollway Extension Phase 4B/5A (DNT 4B/5A). The North Texas Tollway Authority (NTTA) is planning the DNT 4B/5A project to address the need for improved transportation mobility to support forecasted population and employment growth north of the planned DNT Phase 4A terminus at Farm to Market Road (FM) 428 in Collin County, Texas. DNT 4B/5A would extend from FM 428 for 11 to 12 miles to provide connectivity with east-west traffic on either FM 121 or FM 922. The planned controlled-access toll road would ultimately have six main lanes and six frontage road lanes and be built in phases.

The development of alternatives for the future extension of the DNT into Grayson County has been underway for over a decade. Multiple DNT 4B/5A alternative alignments were developed in the initial corridor studies for Collin County and Grayson County in 2000. One of those alignments, which follows the Collin/Denton county line throughout most of its length, was approved in January 2005 in resolutions adopted by both Collin County and Denton County commissioners courts. Subsequently in 2008 and 2009, this county line alignment was adopted in similar resolutions by the cities of Gunter and Aubrey, and by the Grayson County Commissioners Court. In 2008, however, Collin County rescinded its resolution endorsing the county line alignment as its preferred route.

This analysis of alternatives has been prepared to allow the NTTA and interested local government entities to identify and preserve a route and associated right of way (ROW) for the future DNT 4B/5A. This approach allows all interested parties to coordinate the eventual construction of the toll road with regional and municipal transportation and land use plans, thereby avoiding or minimizing future disruptions to residences or businesses when NTTA authorizes construction. The NTTA has worked with county and city elected officers and their staff, as well as the public in the development and evaluation of alignment alternatives. In stakeholder meetings held from October 2009 to May 2010, the NTTA met with civic leaders and staff to report on the progress of adapting the project's design to meet local needs and to receive recommendations from stakeholders. Two public meetings were held on March 9 and March 11, 2010 to provide information to members of the community and receive community/stakeholder feedback via the comment process regarding the proposed alternatives.

All aspects of this study were facilitated by initially preparing digital maps of natural resources and man-made features that both guided the routing of alternative tollway alignments and served as the basis for comparing and evaluating the alternatives. These constraints maps were used by project stakeholders in developing the alternative alignments that were evaluated, in addition to the No-Build Alternative. Each of the alternative alignments (designated by color) was proposed/endorsed by local government stakeholders as outlined below:

- Green: proposed by the City of Pilot Point, but not endorsed by a local government entity;
- Yellow: proposed/endorsed by Denton County and City of Pilot Point, and also endorsed by Grayson County, City of Gunter, and City of Aubrey;
- Orange: proposed/endorsed by Collin County and City of Celina; and
- Red: proposed by Grayson County and City of Gunter, and endorsed by all entities.
(The Yellow and Orange alternatives both share the Red Alternative in extending to FM 121.)

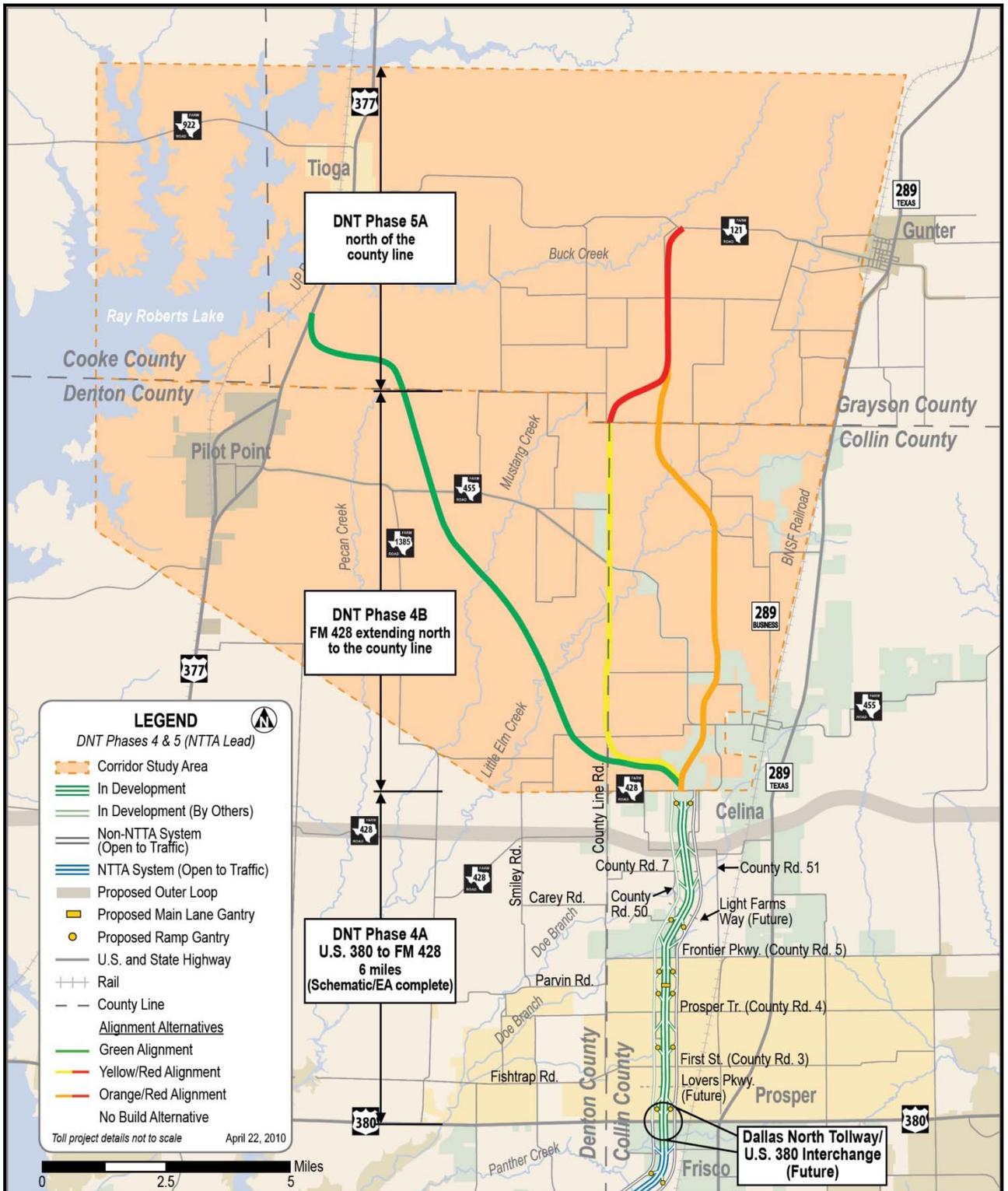
In the Conceptual Alternatives Evaluation Report, the Green Alternative is additionally referenced as the "West" alignment. The Yellow-Red Alternative is also referenced as the "Middle" alignment, and the Orange-Red Alternative is referenced as the "East" alignment.

The evaluation matrix in **Table ES-1** was utilized to compare the specific design characteristics and impacts associated with each alternative. Other socio-economic and environmental factors were evaluated, but only factors with impacts caused by at least one of the alternatives have been included in the table. Public comments indicate relatively little community support for the Green (West) Alternative, but substantially greater support for the Orange-Red (East) and Yellow-Red (Middle) alternatives. The greatest level of public support was expressed for the Yellow-Red (Middle) Alternative from the standpoint of positive comments and statements of intent to donate ROW. The evaluation of alternatives dismissed the No-Build Alternative from further consideration because it does not address the need for north-south mobility in response to future urban growth within the study area. The Green (West) Alternative was also eliminated from further consideration because it lacked stakeholder and public support, had relatively greater environmental impacts and costs as compared to the other build alternatives, and was not compatible with existing regional transportation planning.

This evaluation ultimately focused on the relative suitability of the Yellow-Red (Middle) Alternative and the Orange-Red (East) Alternative in light of the specific evaluation factors shown in **Table ES-1**. The following summarizes key aspects of the evaluation factors:

- **Engineering / Design Features** – The Orange-Red (East) Alternative is shorter in length and has a smaller ROW footprint. This shorter length feature is outweighed by the Yellow-Red (Middle) Alternative's much greater use of existing parallel roads, resulting in fewer impacts on existing land use;
- **Social and Economic Impacts** – The Yellow-Red (Middle) Alternative has substantially fewer socio-economic impacts (e.g., no displaced buildings and less proximity impacts to noise-sensitive areas such as residences, churches, and parks). In addition, the number of property owners within the proposed ROW is half the number of property owners in the Orange-Red (East) Alternative, likely resulting in a more efficient ROW acquisition process.
- **Environmental Impacts** – The Yellow-Red (Middle) Alternative would have slightly less environmental impacts and associated mitigation for harm to natural resources;
- **Project Costs** – Although the preliminary cost estimate of the Orange-Red (East) Alternative is 6.9 percent less than the Yellow-Red (Middle) Alternative, this cost advantage is considered minor given the level of variability in Level F cost estimates. Furthermore, differences between alternatives in terrain and design requirements suggest that schematic-based refinements in cost estimates would result in comparable construction costs (see discussion in report **Section 6.2.3**);
- **Compatibility with Regional Plans** – Both the Yellow-Red (Middle) and Orange-Red (East) alternatives are compatible with regional transportation plans;
- **Public Acceptance** – Comments from the public involvement process demonstrated a greater level of community support for the Yellow-Red (Middle) Alternative. Both the Yellow-Red (Middle) and Orange-Red (East) alternatives were endorsed by city and county governments.

In addition to the above major evaluation factors, conceptual level traffic projections for the alternatives were analyzed but found to be comparable for all build alternatives based on available data. All build alternatives would likely result in commercial development along frontage roads, yielding economic benefits including new jobs, and a general increase in community commerce, real estate values, and tax revenues. The Orange-Red (East) Alternative offers such economic benefits to Collin County and Grayson County, and the Yellow-Red (Middle) Alternative would distribute such economic benefits among Collin, Denton and Grayson counties.



Map Source: www.ntta.org, February 2010

Figure ES-1. Project Vicinity Map

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

Table ES-1. Evaluation Matrix of Alignment Alternatives

Note: The most favorable alternative(s) corresponding to the features or impacts evaluated are highlighted in green shading.

ALTERNATIVE FEATURES AND POTENTIAL IMPACTS ²	ALIGNMENT ALTERNATIVES ¹			
	Travels northwest to Pilot Point; connects to U.S. 377	Southern portion follows Collin-Denton county line; connects to FM 121	Southern portion is all within Collin County; connects to FM 121	
	Green (West)	Yellow-Red (Middle)	Orange-Red (East)	
ENGINEERING / DESIGN FEATURES (see Sections 3.3 and 4.2.1)				
Alignment Length (miles)	12.3	11.9	11.1	
Length on Existing Parallel Roads (miles)	0.1	4.8	1.1	
Estimated Total ROW Area Needed (acres)	596	577	538	
Area of Existing Road ROW in Prop. ROW (acres)	6	28	11	
Estimated Net ROW Area Needed to Acquire (acres)	590	549	527	
SOCIAL AND ECONOMIC IMPACTS (see Section 4.2.1)				
# of Displaced Residences in ROW	0	0	1	
# of Displaced Commercial & Non-Cmcl. Buildings	0	0	2 ³	
# of Noise-Sensitive Areas within 300 feet of ROW	1	3	12	
# of Property Owners within ROW	17	17	34	
# of Pipelines Crossed by ROW	1	1	2	
ENVIRONMENTAL IMPACTS (see Section 4.2.2)				
# of Streams Crossed by ROW	13	10	12	
ROW within 100-Year Floodplain (acres)	77.7	70.8	49.2	
Other Open Water in ROW (acres)	1.8	0.6	3.0	
Emergent Wetlands in ROW (acres)	0.3	0.1	0.5	
Riparian Forest in ROW (acres)	1.9	25.3	15.2	
Upland Forest in ROW (acres)	3.8	2.0	3.8	
Prime Farmland in ROW (acres)	238.4	107.8	77.0	
PROJECT COSTS (in \$ Millions) (see Section 3.3)				
Estimated Right-of-Way (ROW) Costs (\$Million)	\$20	\$19	\$22	
Estimated Project Cost, Including Construction, ROW and Agency Costs, Year 2010 (\$Million)	\$888	\$864	\$804	
OTHER IMPACTS / ATTRIBUTES (see Sections 4.2.3 and 5.3)				
Compatibility with Regional Plans (see legend below) ⁴	-	+	+	
Public Acceptance (see legend below) ⁴	O	++	+	
Notes:				
1. All build alternatives are subject to future design refinements, which may affect values shown in this table.				
2. Table cells shaded green denote features that are most favorable and impacts that are least adverse, as compared to the other build alternatives.				
3. These displacements are agricultural buildings, one of which is located on the same parcel as the displaced residence, above.				
4. Legend:				
Major Negative Effect	Some Negative Effect	No Effect, Neutral	Some Positive Effect	Major Positive Effect
--	-	O	+	++

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ACRONYMS AND ABBREVIATIONS

all-ETC	All electronic toll collection
ADT	Average Daily Traffic
DFW	Dallas-Fort Worth
DNT 4A	Dallas North Tollway Extension Phase 4A
DNT 4B/5A	Dallas North Tollway Extension Phase 4B/5A
e.g.	<i>exempli gratia</i> (for example)
EWG	Executive Work Group (i.e., elected official stakeholders)
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Farm-to-Market Road
GCRMA	Grayson County Regional Mobility Authority
GIS	Geographic information system
i.e.	<i>id est</i> (that is)
I- #	Interstate Highway (e.g., I-35)
MPDR	Monthly Project Delivery Report
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NCTCOG	North Central Texas Council of Governments
NRCS	Natural Resources Conservation Service
NTTA	North Texas Tollway Authority
NWI	National Wetlands Inventory
QMS	Quality Management System
ROW	Right of way
SDMPO	Sherman – Denison Metropolitan Planning Organization
SH	State Highway
TWG	Technical Work Group (e.g., county/city staff members)
TxDOT	Texas Department of Transportation
U.S. #	United States Highway (e.g., U.S. 75)
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VMT	Vehicle miles traveled
VPD	Vehicles Per Day
WSA	Wilbur Smith Associates

1.0 PROJECT DESCRIPTION AND ANALYSIS METHODOLOGY

1.1 SCOPE OF THE PROJECT

This report explains the process for developing and evaluating alternatives for the proposed Dallas North Tollway Extension Phase 4B/5A (DNT 4B/5A). The North Texas Tollway Authority (NTTA) is planning the DNT 4B/5A project to address the need for improved transportation mobility to support forecasted population and employment growth north of the planned DNT Phase 4A terminus at Farm to Market Road (FM) 428 in Collin County, Texas. The project vicinity map in **Figure 1-1** shows the regional setting for the northern portion of the existing DNT and planned DNT Phase 4A extension. The proposed DNT 4B/5A facility would extend from FM 428 for approximately 11 to 12 miles to provide connectivity with east-west traffic on either FM 121 or FM 922. Depending on the northern terminus selected for this project, the tollway would include some combination of Collin, Cooke, Denton and/or Grayson counties. The planned controlled-access toll road would ultimately have six main lanes and six frontage road lanes and be built in phases. Construction of the frontage roads would occur first, followed by the main lanes. The analysis of alternatives in this report was prepared in compliance with NTTA environmental policies and guidelines.

The primary purpose for conducting an analysis of alternatives at this point in time is to allow the NTTA and interested local government entities to identify and preserve a route and associated right of way (ROW) for the future DNT 4B/5A extension. This approach allows all interested parties to coordinate the eventual phased construction of the proposed facility with regional and municipal transportation and land use plans, thereby avoiding or minimizing future disruptions to residences or businesses when NTTA authorizes construction of the tollway extension.

Because involvement of local government leaders is vital to this planning effort, the NTTA has worked with county and city elected officers and their staff, as well as the public in the development and evaluation of alignment alternatives. In stakeholder meetings held from October 2009 to May 2010, the NTTA met with civic leaders and staff to report on the progress of adapting the project's design to meet local needs and to receive recommendations from stakeholders. Two public meetings were held on March 9 and March 11, 2010 to provide information to members of the community about the proposed alternatives and receive community and stakeholder feedback via the comment process regarding these alternatives.

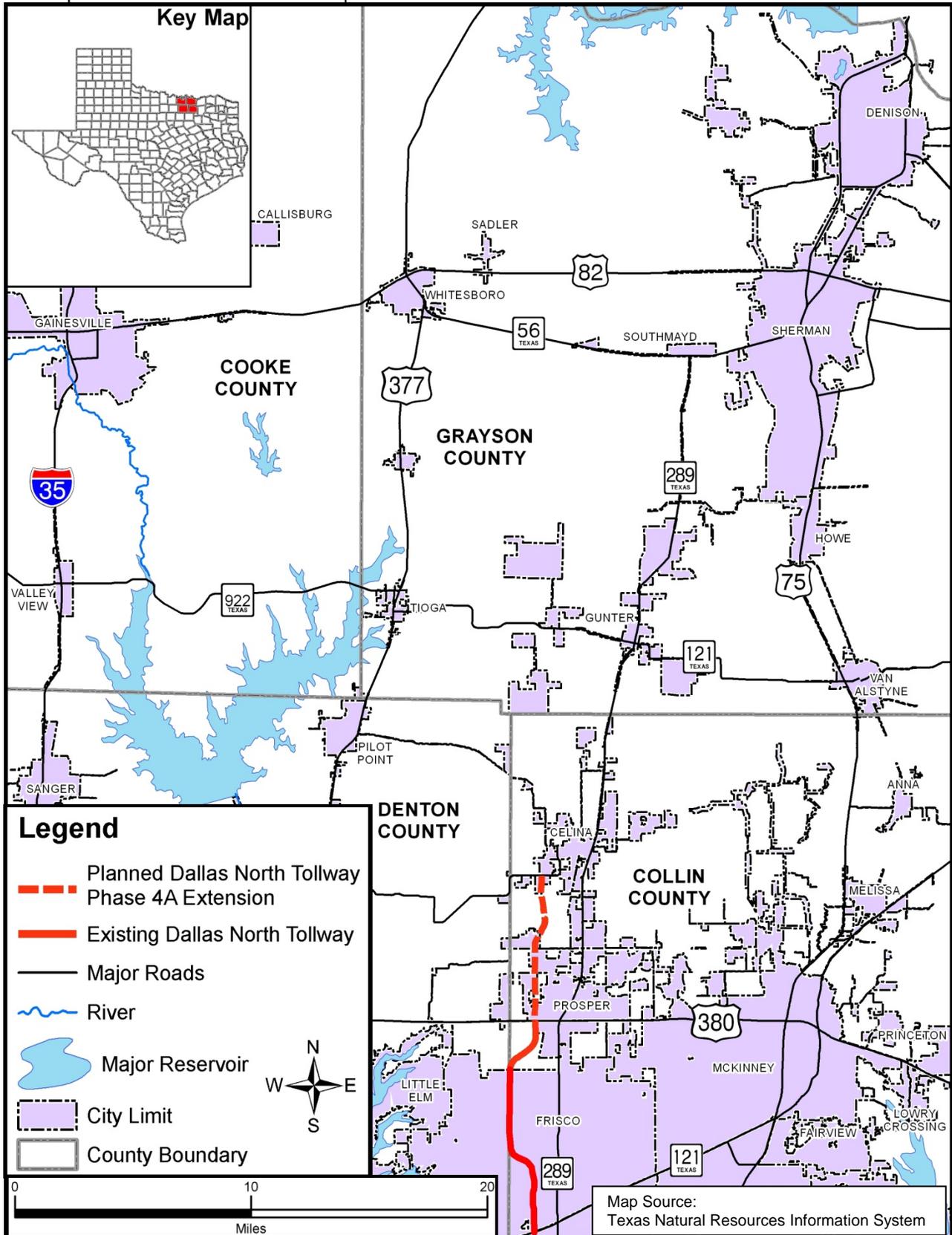


Figure 1-1. Project Vicinity Map

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

Additional details on the stakeholder and public involvement process are presented in **Section 5.0**. Based on the information presented in this comprehensive analysis of alternatives, it is expected that the NTTA Board will select a preferred alternative for DNT 4B/5A for which a preliminary design schematic and environmental evaluation will be conducted.

1.2 NEED FOR THE PROJECT

The proposed project is needed to address future travel demands resulting from projected population growth and associated development in the northern Denton and Collin County area as well as southern Cooke and Grayson counties. The project is also needed to provide an alternative north-south route to relieve congestion on at least some of the following existing highways: U.S. Highway (U.S.) 75, State Highway (SH) 289, U.S. 377, and Interstate Highway (I-) 35. The following sections provide population and employment statistics and traffic data for the DNT 4B/5A project area in support of the foregoing statements of need for the proposed project.

1.2.1 Population and Employment

Continued growth in population and employment has created a need for a more efficient transportation system in the Dallas-Fort Worth (DFW) Metropolitan Area. The North Central Texas Council of Governments (NCTCOG) has prepared a demographic forecast which projects that the population for the ten counties surrounding the DFW urban core will increase by approximately 80 percent and employment by approximately 72 percent from 2000 to 2030.¹ By the year 2030, this ten-county urban area is expected to have over 9,000,000 residents supporting approximately 5,400,000 jobs, as shown in **Table 1-1**.

¹ NCTCOG, 2030 Demographic Forecast (April 2003); <http://www.nctcog.org/ris/demographics/forecast/publication.pdf>. The NCTCOG ten-county urban area includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties.

Table 1-1. North Central Texas Regional Demographic Projections

Category	2000	2010	2020	2030	Percent Change 2000 – 2030
Population	5,067,400	6,328,200	7,646,600	9,107,900	80%
Households	1,886,700	2,350,300	2,851,400	3,396,100	80%
Employment	3,158,200	3,897,000	4,658,700	5,416,700	72%
Source: NCTCOG, 2030 Demographic Forecast (April 2003); http://www.nctcog.org/ris/demographics/forecast/publication.pdf .					

On average, the region is expected to add population at a rate of nearly 135,000 persons per year and employment at a rate of approximately 75,000 jobs per year from 2000 to 2030. A graphic depiction of the projected increase in population over the 30 year period within the NCTCOG area is shown in **Figure 1-2**. Similarly, **Figure 1-3** demonstrates the employment growth within the NCTCOG area. Both of these figures clearly indicate that urban growth is anticipated in the area north of U.S. 380.

This general regional growth trend is also evident north of the DFW Metropolitan Area, as demonstrated by the population data for Cooke and Grayson counties in **Table 1-2** (for completeness, data for Collin and Denton counties and cities near the DNT 4B/5A project have been included in the table). The cities within the project study area (described in **Section 2.1**) are all expected to experience at least a threefold increase in population by 2030, in comparison to the corresponding city populations from 2000. Detailed transportation planning by the Sherman – Denison Metropolitan Planning Organization (SDMPO) similarly reflects the expected population growth trends in **Table 1-2** for Grayson County.² The SDMPO anticipates that the steady growth trends in the area that date back to the 1960s will continue, and that most of the growth will occur near Lake Texoma and east and west of the City of Denison. This expected population growth is linked with expected growth in manufacturing-related employment south of the City of Sherman, as well as widespread construction-related employment in Grayson County.

² Metropolitan Transportation Plan for the Sherman-Denison Study Area. Transportation Outlook 2035: Creating a Blueprint for the Sherman-Denison Region's Future. Sherman-Denison MPO (November 18, 2009); <http://www.sdmpo.org/Publications/2035%20MTP%20approved%20111809.pdf>.

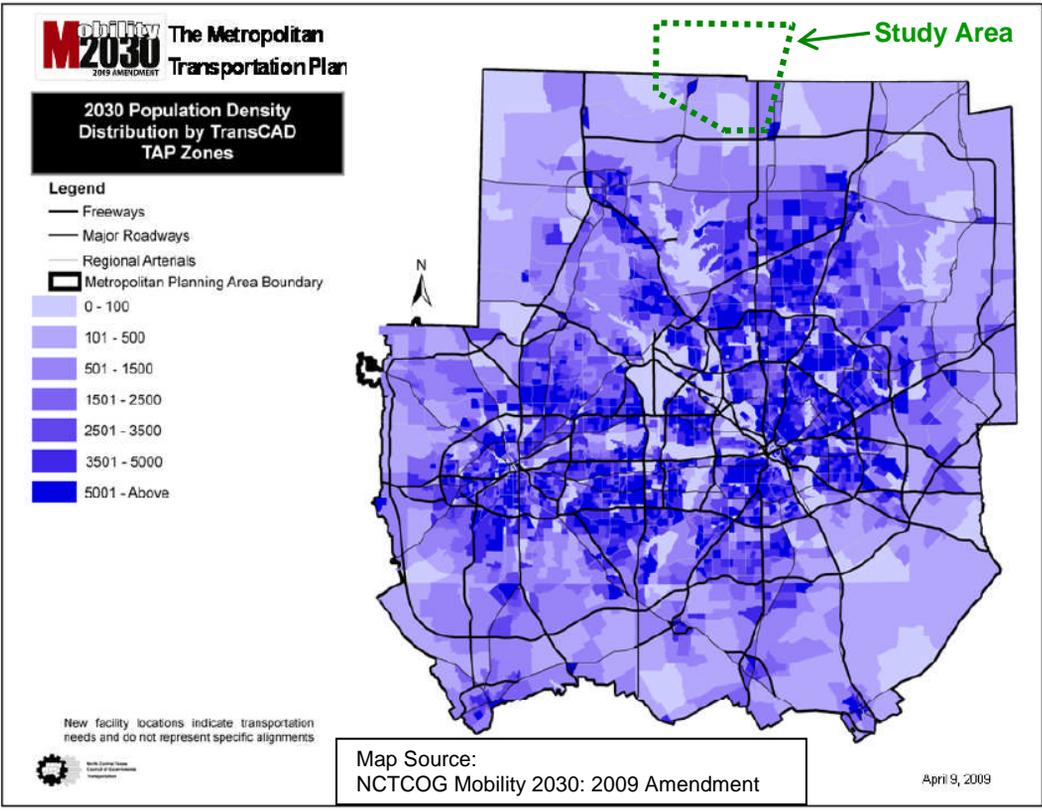
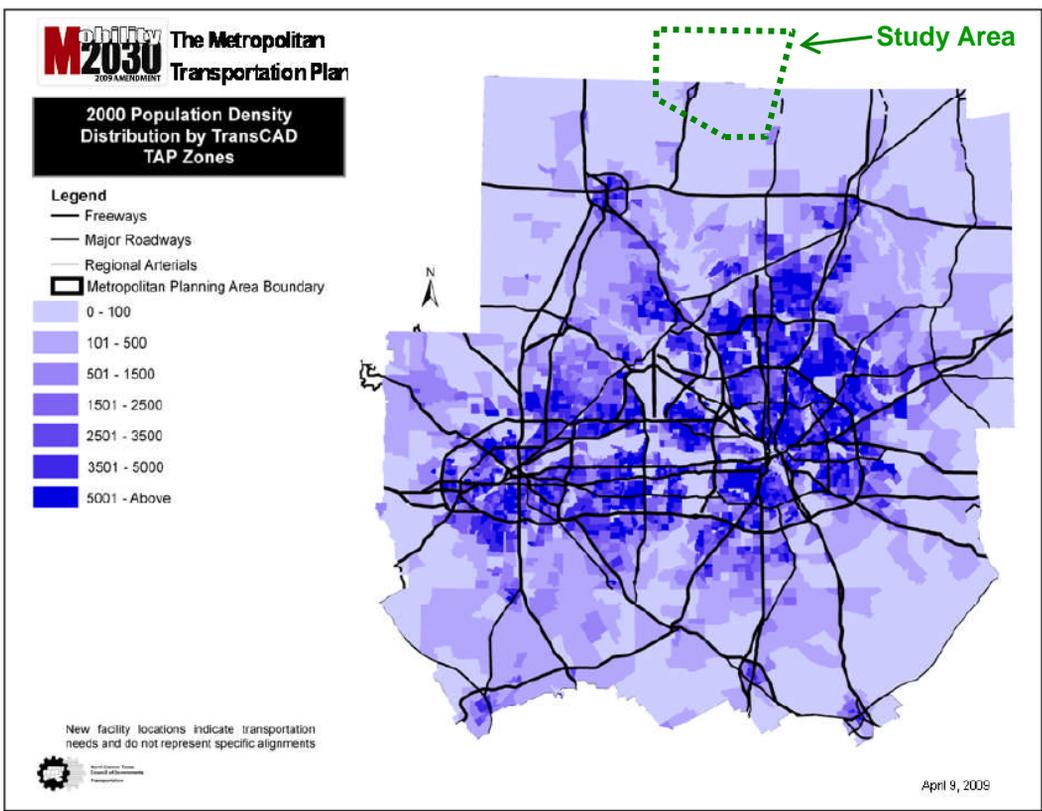


Figure 1-2. Population Patterns for 2000 and 2030
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

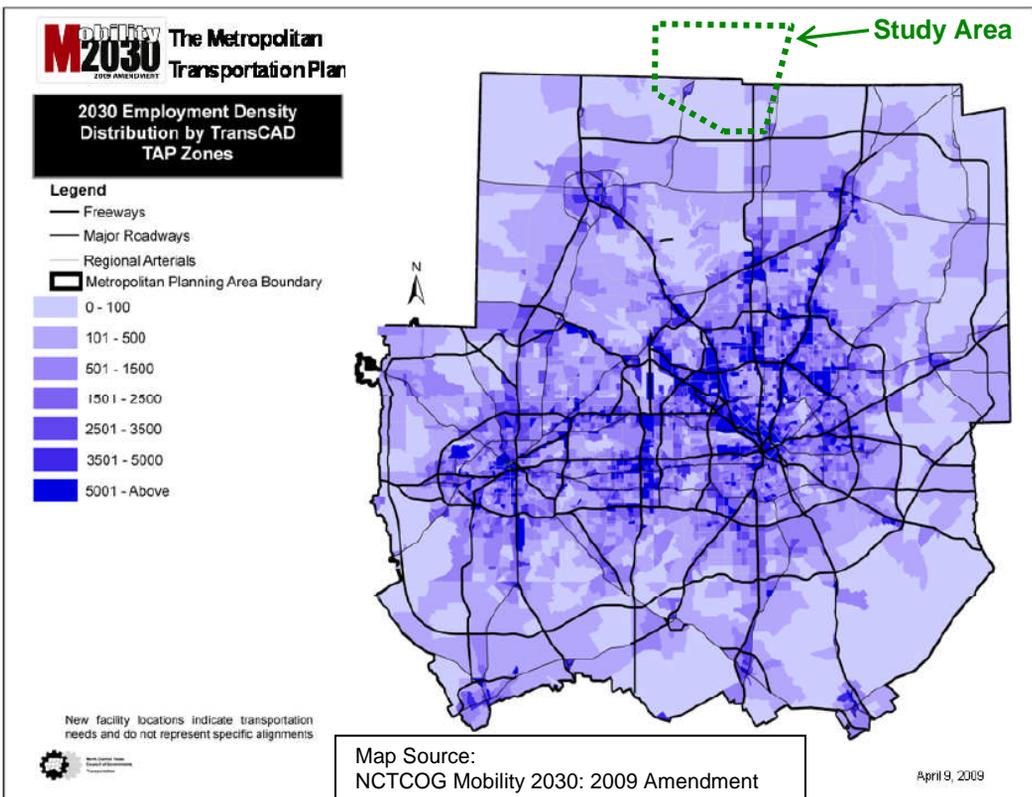
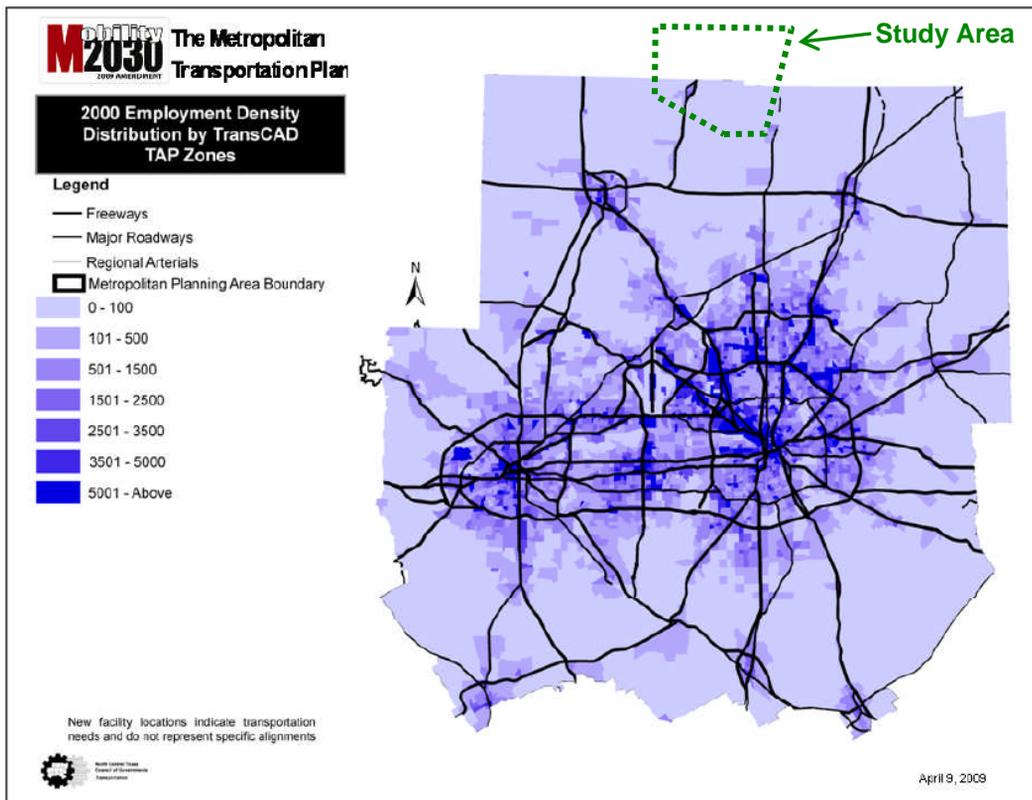


Figure 1-3. Employment Patterns for 2000 and 2030

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

Table 1-2. Regional Population Trends

Location	2000 Census	2010 Estimated Population	2030 Estimated Population	Percent Change 2000 – 2030
Collin County	491,774	756,088	1,249,795	154%
City of Celina	1,861	5,000	48,000	2479%
Denton County	432,976	720,064	1,184,744	174%
City of Pilot Point	3,538	8,000	12,000	239%
Cooke County	36,363	42,675	53,379	47%
City of Gainesville	15,538	18,601	22,500	45%
Grayson County	110,595	133,913	188,537	70%
City of Collinsville	1,235	2,035	3,635	194%
City of Denison	22,773	25,000	30,000	32%
City of Gunter	1,230	3,000	6,000	388%
City of Sherman	35,082	39,300	50,600	44%
Town of Tioga	754	1,100	3,500	364%
City of Whitesboro	3,760	6,000	8,500	126%

Source: Texas Water Development Board, 2006 Regional Water Plan Population Projections Data for cities and counties; <http://www.twdb.state.tx.us/wrpi/data/proj/popproj.htm>.

1.2.2 Existing Transportation Network

In many instances rapid growth in the DFW region is surpassing the transportation system's ability to accommodate it, resulting in increased traffic congestion. Daily transportation demand for the region in 2007 totaled 151 million vehicle miles traveled (VMT) on area freeways, arterials, and local streets. According to NCTCOG studies, the regional traffic demand is expected to increase to 242 million VMT in 2030 within the NCTCOG 10-county area.³ When viewed in terms of the hourly capacity of the road network to move traffic, this level of projected VMT for 2030 translates into an estimated 36 percent increase in travel time due to congestion. This level of travel time increase is anticipated even if all planned transportation improvements are carried out. **Figure 1-4** represents the congestion levels expected in the 10-county NCTCOG area by 2030, and indicates an increase in congestion is likely to occur within the study area, particularly within Denton County.

³ NCTCOG, Mobility 2030: The Metropolitan Transportation Plan for the DFW Area – 2009 Amendment (2009) (see Chapter 20, System Performance Summary); <http://www.nctcog.org/trans/mtp/2030/2009Amendment.asp>.

Currently, the DNT extends from downtown Dallas northward to U.S. 380 in the City of Frisco, a distance of approximately 32 miles. The existing facility is a six-lane, limited access tollway throughout its entire length. Throughout most of the DNT's northern portion (i.e., north of I-635), the DNT also includes two or three-lane frontage roads in both north and south directions.

The project area is generally characterized by a network of two-lane county roads that provide access to residences and agricultural fields, none of which serve as major transportation thoroughfares. SH 289 and U.S. 377 are undivided two-lane roadways present within the study area. SH 289 follows the eastern boundary of the study area and U.S. 377 is located in the western portion of the study area. These roadways are the only north-south principal arterials in the study area and are approximately ten miles apart. The cities of Pilot Point and Tioga are located along U.S. 377 and the cities of Celina and Gunter are located along SH 289.

1.2.3 Traffic Projections and Level of Service

The Transportation Planning and Programming Division of the Texas Department of Transportation (TxDOT) estimated traffic volumes for the year 2008 on the primary north-south roadways (i.e., SH 289 and U.S. 377) within and near the planned DNT 4B/5A corridor.⁴ As shown in **Table 1-3**, the traffic volumes for these roadways within this corridor area are comparable. That is, traffic volumes range from 11,300 to 11,900 vehicles per day (VPD) at the southern end of the corridor area to 3,500 to 4,800 VPD near the northern end. As population and employment continue to move northward, congestion of these two-lane roadways would increase.

⁴ TxDOT Transportation Planning and Programming Division. Dallas, Paris, and Wichita Falls Districts Traffic Maps for Collin, Cooke, Denton, and Grayson counties (2008); ftp://ftp.dot.state.tx.us/pub/txdot-info/tpp/traffic_counts/2008/.

Table 1-3. Estimated Traffic for SH 289 and U.S. 377

ROAD NAME	POINT AT WHICH TRAFFIC WAS ESTIMATED	ESTIMATED TRAFFIC VOLUME (VEHICLES PER DAY)
SH 289	Prosper: at FM 1461 intersection	11,900
	Celina: south of FM 455	7,100
	Celina: south of B289	4,700
	Celina: near Grayson County line	3,700
	Gunter: south of FM 121	3,500
U.S. 377	Krugerville: south of FM 428	11,300
	Krugerville: north of FM 3524 intersection	8,400
	Pilot Point: south side of city limits	8,600
	Pilot Point: near Grayson County line	6,600
	Tioga: north of Grayson County line	6,200
	Tioga: north of FM 922 intersection	4,800

Source: TxDOT Transportation Planning and Programming Division. Dallas, Paris, and Wichita Falls Districts Traffic Maps for Collin, Cooke, Denton, and Grayson counties (2008); ftp://ftp.dot.state.tx.us/pub/txdot-info/tpp/traffic_counts/2008/.

Outside the DNT 4B/5A corridor but within the north Texas area, two major highways provide access from the Dallas-Fort Worth area to northern Texas and Oklahoma. I-35 is a four-lane divided highway from the City of Corinth northward, and extends north through the cities of Sanger and Gainesville before crossing into Oklahoma. U.S. 75 is a four-lane divided highway that extends north from Dallas and connects highly urbanized cities with the more rural areas of Collin and Grayson counties. U.S. 75 passes through the cities of Sherman and Denison before crossing into Oklahoma. I-35 carries traffic volume ranging from 32,000 VPD south of the City of Gainesville to 50,000 VPD north of the City of Denton, and U.S. 75 carries traffic volume ranging from 35,000 VPD south of the City of Sherman to 44,000 VPD near the City of Melissa.⁵ NCTCOG has made future traffic projections for these roadways that assume planned improvements to both facilities, but increasing urbanization and congestion trends indicate that these highways will remain congested over the next 20 years. The peak hour level of service for both I-35 and U.S. 75 is estimated to be C+ by the year 2030 near the northern extent of the regional metropolitan planning boundary (i.e., the northern limits of Collin and Denton counties).

⁵ TxDOT Transportation Planning and Programming Division. Dallas, Paris, and Wichita Falls Districts Traffic Maps for Collin, Cooke and , Denton, and Grayson counties (2008); ftp://ftp.dot.state.tx.us/pub/txdot-info/tpp/traffic_counts/2008/.

Traffic volume for I-35 is estimated to be 71,800 VPD in 2030, and U.S. 75 is estimated to be 56,700 VPD.⁶ The expected levels of congestion in the NCTCOG area are shown graphically in **Figure 1-4**.

Extending the DNT north into Cooke or Grayson counties would improve access and mobility for the residents of the City of Pilot Point and the City of Gunter and Town of Tioga, as well as northern Collin and Denton counties and southern Cooke and Grayson counties. Local traffic circulation patterns are expected to improve and opportunities for new development would occur adjacent to the DNT 4B/5A frontage roads. As indicated in the Sherman – Denison Metropolitan Transportation Plan (MTP), the proposed DNT 4B/5A is viewed as a companion facility to a proposed Grayson County tollway that will provide a seamless connection to SH 289 south of the North Texas Regional Airport.

1.3 PROJECT PURPOSE

1.3.1 General Statement of Purpose

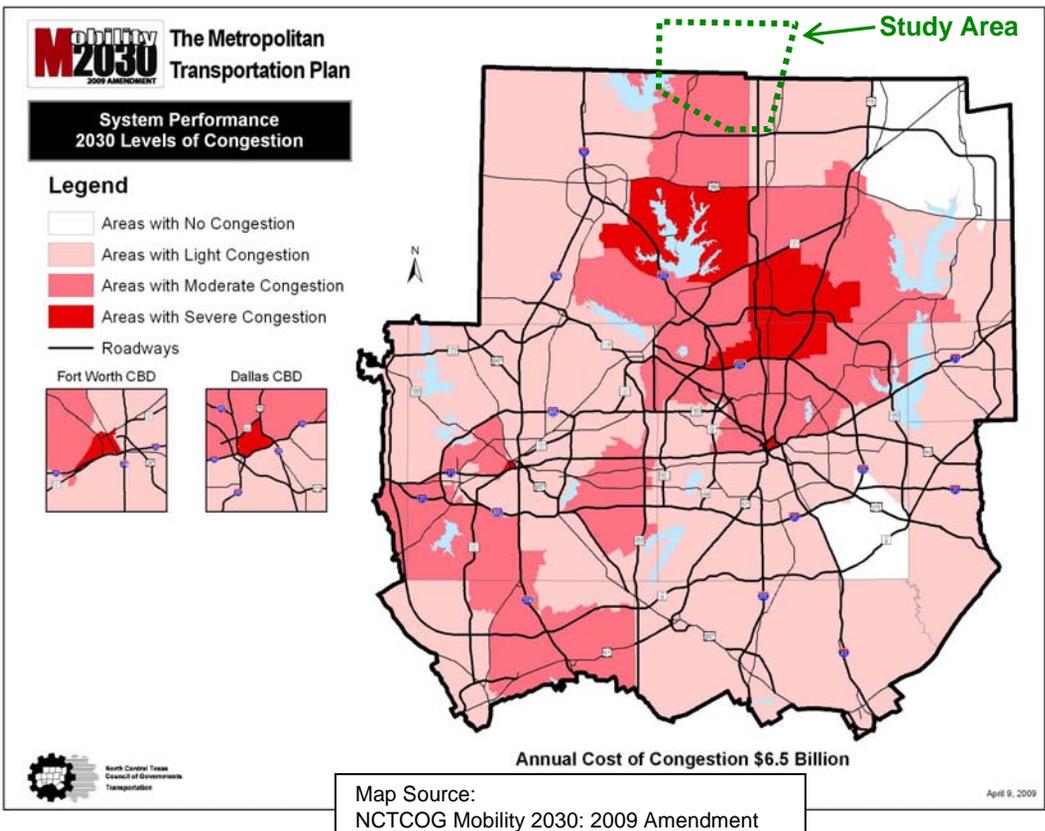
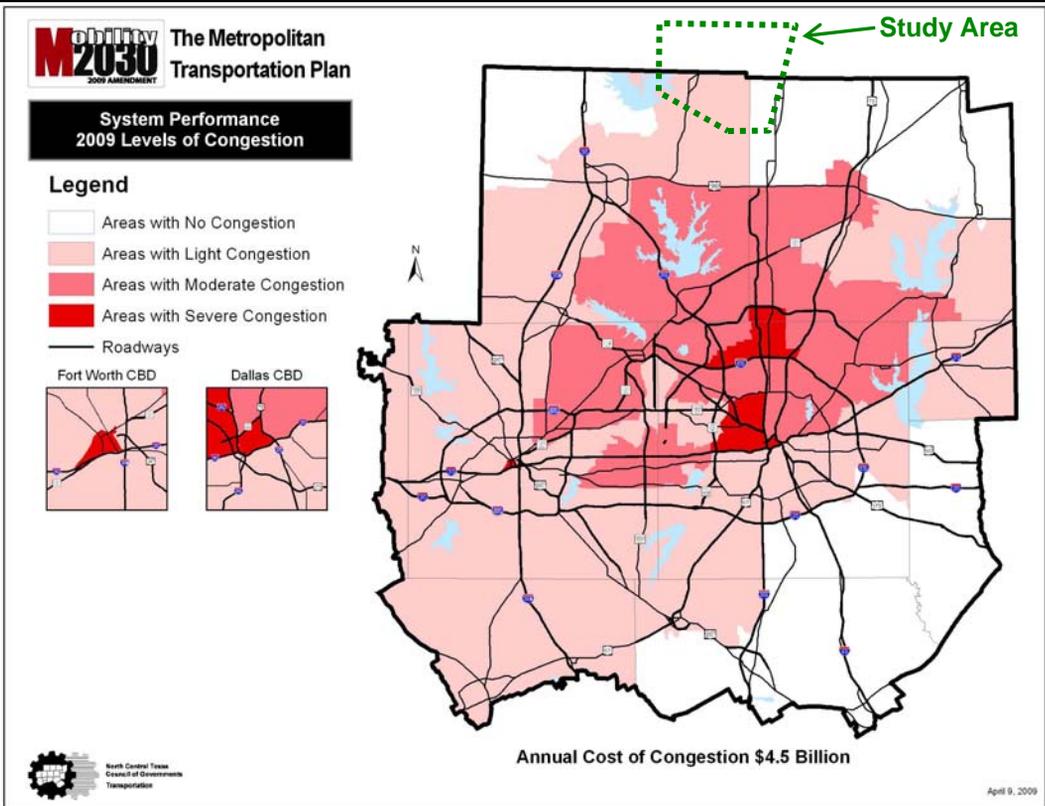
The purpose of the DNT 4B/5A project is to provide transportation improvements for the residents in northern Collin and Denton counties and southern Cooke and Grayson counties to address the area's rapid growth and transportation demand. Several specific aspects of this general purpose are discussed in the next section.

1.3.2 Specific Purposes of the Proposed Action

The planned transportation improvements are intended to satisfy the purposes outlined and discussed briefly below:

Improve Mobility – As the DFW Metropolitan Area extends northward, transportation mobility has become a critical need of north Texas residents, and the proposed project should enhance mobility. The lack of adequate transportation options causes residents to have limited access to job opportunities, and employers are denied full access to the region's pool of job skills and talents. Limited transportation options also result in increasing amounts of unproductive time spent moving people and goods from one point to another. Economic costs associated with traffic congestion have a direct effect on the competitiveness of the area and its ability to create

⁶ NCTCOG, Mobility 2030: The Metropolitan Transportation Plan for the DFW Area – 2009 Amendment (2009) (see Chapter 20, System Performance Summary); <http://www.nctcog.org/trans/mtp/2030/2009Amendment.asp>.



Map Source:
NCTCOG Mobility 2030: 2009 Amendment

Figure 1-4. Traffic Congestion Areas for 2009 and 2030

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

and sustain long-term employment opportunities. These and other benefits to regional mobility have led to the inclusion of the proposed DNT 4B/5A as a programmed highway in the NCTCOG MTP (see **Appendix A-1**) as well as inclusion as an integral part of mobility for the SDMPPO MTP.

Reduce Traffic Congestion – The project should help reduce traffic congestion within the study area by addressing future traffic demands as congestion levels are expected to increase. The traffic capacity constraints of existing country roads and the availability of only two rural two-lane highways in the study area have led to the proposed extension. In addition, it is anticipated that some traffic on I-35 and U.S. 75 would elect to use the proposed DNT 4B/5A facility, thereby reducing congestion for these freeways.

Increase People and Goods-Carrying Capacity – The project should increase transportation capacity with minimal disruptions to existing facilities. There are physical limitations and other substantial problems (i.e., cost, business disruptions, and other impacts) associated with improving the capacity of existing roadways for additional vehicle trips in the study corridor. Substantially expanding SH 289 and U.S. 377 from arterial roads to a freeway would be problematic, as development already exists along many segments and at major intersections of these roadways. For example, expanding the ROW to the necessary 400 feet (see **Section 3.2.1** for geometric design criteria) throughout these corridors to accommodate a controlled-access freeway would result in substantial impacts to the communities and properties through which these roads would pass. Extending the DNT could reduce development pressures adjacent to SH 289 and U.S. 377 in the study area. The nearest north-south limited-access freeways are I-35 and U.S. 75, each located about ten miles west and east, respectively, from the center of the DNT 4B/5A study area. Construction of another north-south roadway in the project area could also increase efficiency of emergency services and vehicles within the project corridor.

Enhance Safety – Transportation safety is of the utmost importance for the traveling public and NTTA, and the proposed project should facilitate safe travel. The presence of numerous driveways and cross streets along SH 289 and U.S. 377 increases the potential for incidents and collisions. The lack of median and street lights also contributes to reduced safety on

existing north-south arterials. The proposed project would provide a safer and more secure alternative to local motorists.

Minimize Social, Economic and Environmental Effects on Both Human and Natural Environments – The proposed project would help to avoid or minimize impacts to local communities and natural resources in the area. The fundamental purpose of identifying a route for the proposed DNT 4B/5A extension is to preserve the ROW and allow for staged tollway development prior to substantial urban development within the corridor. The primary benefit for this approach is avoidance of the social, economic and environmental impacts that would occur if ROW were acquired closer in time to actual construction of the tollway. Postponing ROW acquisition far into the future could necessitate displacing residences and commercial buildings, in addition to creating proximity impacts to noise-sensitive areas such as parks and schools. Consequently, local government officials have been active participants in long-range transportation planning as this is a cornerstone for municipal land use planning and zoning to address existing conditions and planned population growth.

1.4 DESCRIPTION OF THE PROJECT

As generally described in **Section 1.3**, the project goals associated with DNT 4B/5A include the following: improve mobility within Collin, Denton, Grayson and Cooke counties; meet future traffic demand; improve safety on existing roadways; and minimize negative environmental and socio-economic impacts while achieving affordable and cost-effective transportation solutions. An assessment of potential DNT 4B/5A alignment alternatives was completed to determine their ability to meet these objectives (see **Section 4.0**).

The proposed project consists of two phases, 4B and 5A, with Phase 4B extending from FM 428 north to the Collin County/Grayson County line and Phase 5A extending from the county line to either FM 121 near the City of Gunter or FM 922 near the Town of Tioga, depending on route selection. As previously described, DNT 4B/5A would operate as a controlled access, urban tollway with six tolled main lanes (three in each direction) and three non-tolled frontage road lanes in each direction. The project would be built in phases, beginning with the frontage roads followed by the tolled main lanes. Interchange and ramp layouts have been identified for all of the proposed alignment alternatives, which generally follow in accordance with thoroughfare plans for the cities of Celina, Gunter, Pilot Point, and Collin, Denton, and Grayson counties. Additional details on the proposed design criteria and configurations for these alternatives may

be found in **Section 3.2** of this report, and a detailed description of the alternatives is presented in **Section 3.3**.

1.5 ALTERNATIVES ANALYSIS METHODOLOGY

The DNT 4B/5A alternatives analysis process was modeled according to the Conceptual Alternatives Analysis procedure in the NTTA Quality Management System (QMS) Manual.⁷ This alternatives analysis of DNT 4B/5A is intended to provide comparative information that can be assessed about project alternatives. The methods utilized to first identify and then evaluate the characteristics and potential impacts associated with the proposed alignments are presented below.

1.5.1 Corridor Influence Mapping

The initial step in the development of alternatives was to assess the general landscape and environment in which the alignments would likely be proposed for routing. To accomplish this, a constraints analysis was completed to identify the human and natural obstacles that could prevent the routing of an alternative along a specific area of study. To accomplish this task, available spatial data relating to natural and man-made features was compiled or digitized in instances where spatial data was unavailable. For example, potential wetland areas were digitized from National Wetland Inventory (NWI) maps prepared by the U.S. Fish and Wildlife Service (USFWS), and the locations of flood control reservoirs were obtained from the Natural Resources Conservation Service (NRCS). **Section 2.2** provides an inventory of the data acquired for this constraints analysis process. A man-made feature constraints map and a natural feature constraints map were developed based on these data, thus identifying areas desired for preservation and avoidance in the determination of proposed alignments.

1.5.2 Development of Alignment Alternatives

Beginning in October 2009, the above constraints analysis data was presented to two stakeholder work groups: an Executive Work Group (EWG) consisting primarily of local elected officials and executive-level staff; and a Technical Work Group (TWG) consisting primarily of technical staff from government entities. The various entities comprising the EWG (e.g., cities, counties and MPOs) and the TWG (e.g., Grayson County Regional Mobility Authority (GCRMA), NCTCOG and TxDOT) were tasked to propose potential alignment alternatives factoring in their preferences, along with verifying man-made and natural feature constraints. Three distinct

⁷ NTTA QMS Manual, Conceptual Alternatives Analysis, Section 3.0 Program Development Process, Subsection 3.1 Schematic Design, SD-01.

alignment alternatives were received which provided access to the western, middle and eastern sections of the study area. Continuous feedback from these entities was obtained and further refined to avoid or minimize impacts via an iterative process with the design engineers, resulting in the identification of potential alignment alternatives amongst which a comparative analysis could be conducted.

1.5.3 Evaluation of Alignment Alternatives

Each of the alignment alternatives was evaluated based on the following measures: environmental impacts, socio-economic impacts, compatibility with local and regional planning, engineering design, project development cost and public input. An evaluation matrix was utilized to compare the specific design characteristics and impacts associated with each alternative. The evaluation matrix and a discussion of potential impacts associated with the proposed alternatives are presented in **Section 6.0**. It is anticipated that the NTTA Board will consider the information compiled in this report in making the selection of a preferred alternative.

2.0 CORRIDOR INFLUENCE MAPPING

2.1 STUDY AREA DESCRIPTION

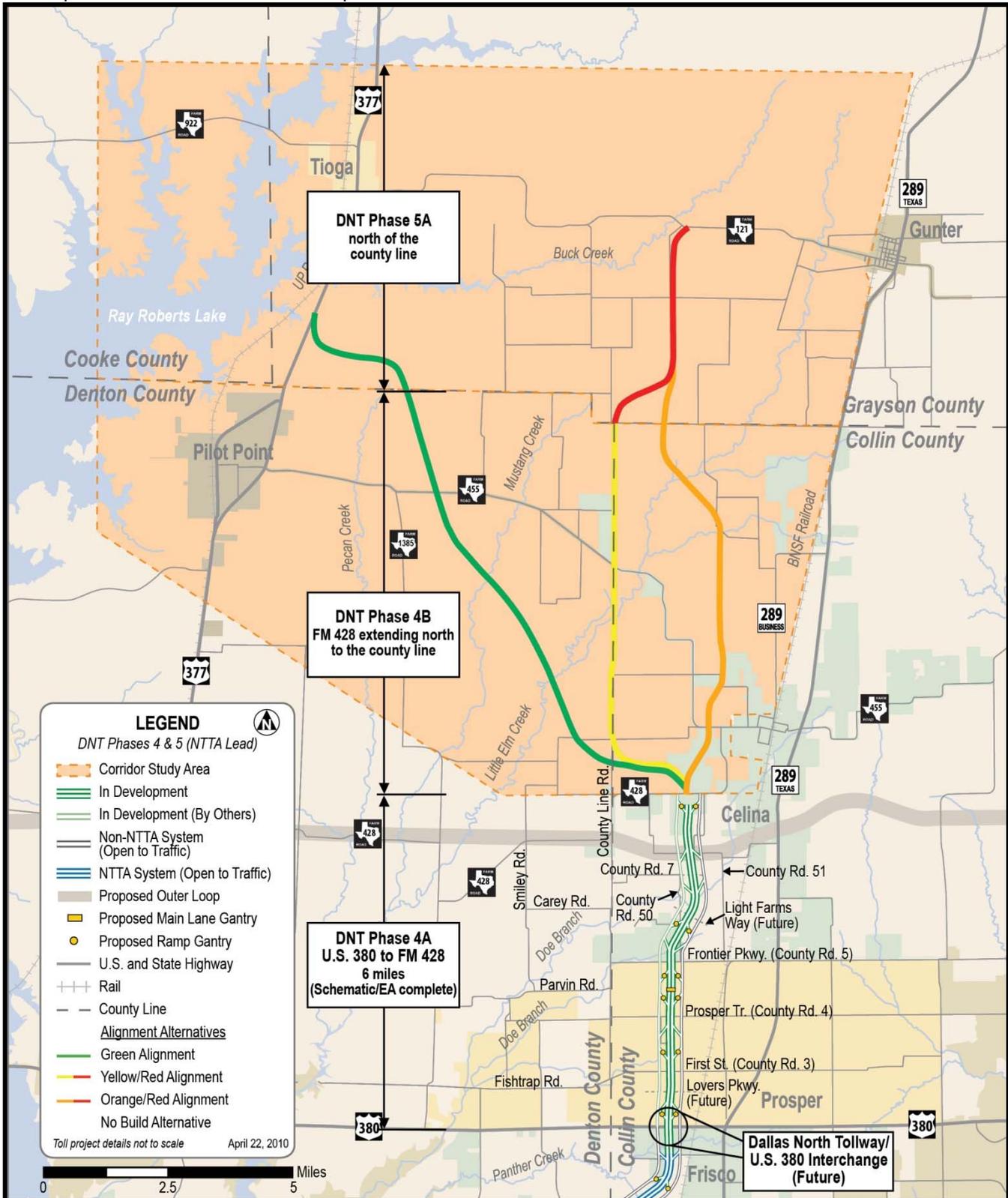
A study area was delineated for the purposes of developing and assessing potential DNT 4B/5A alignment alternatives, as shown in **Figure 2-1**. The study area encompasses portions of Collin, Denton, Grayson and Cooke counties, and is approximately 159 square miles in size. The study area limits outline an area, which could contain the range of alternatives that meet the need and purpose of the proposed project. For purposes of visibility, the large study boundary spans a breadth of area appropriate for illustrating the regional context of the DNT 4B/5A extension and thus, alignment compatibility with existing and planned transportation corridors (e.g., the proposed Grayson County tollway, and FM 922 connecting to I-35), which are shown in **Figure 2-2**. Such regional connectivity amongst roadways functionally structures the future roadway system as to best prepare for and accommodate the anticipated population and employment increases in this four-county region. Below are brief descriptions of the study area boundaries:

Southern boundary: FM 428 is the northern terminus of DNT Extension Phase 4A, which is coincident with the DNT 4B/5A southern terminus. As all of the proposed DNT 4B/5A alignment alternatives share this fixed southern terminus, the southern study area boundary extends to the east and west of this point.

Western boundary: Ray Roberts Lake is a prominent natural feature within the vicinity of the proposed transportation corridor and serves as a logical western boundary of the study area.

Northern boundary: The northern project boundary is an east-west line located approximately one mile north of FM 922, which is the northernmost of the two logical termini under consideration.

Eastern boundary: The Burlington Northern Santa Fe Railroad and FM 289 operate as major north-south transportation corridors to the east of the proposed DNT 4B/5A corridor. Portions of this railway and roadway combine to form a line of logical demarcation for the eastern study area boundary.



Map Source: www.ntta.org, February 2010

Figure 2-1. Project Study Area Map

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

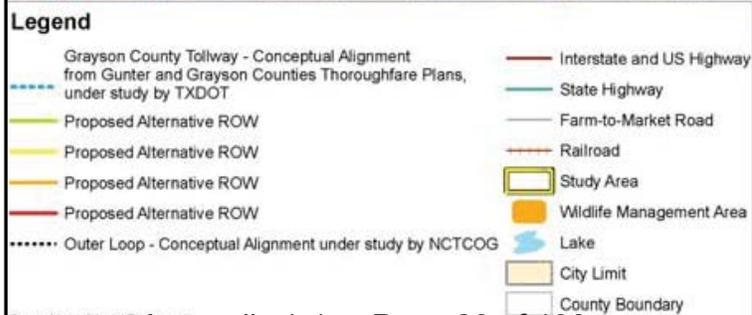
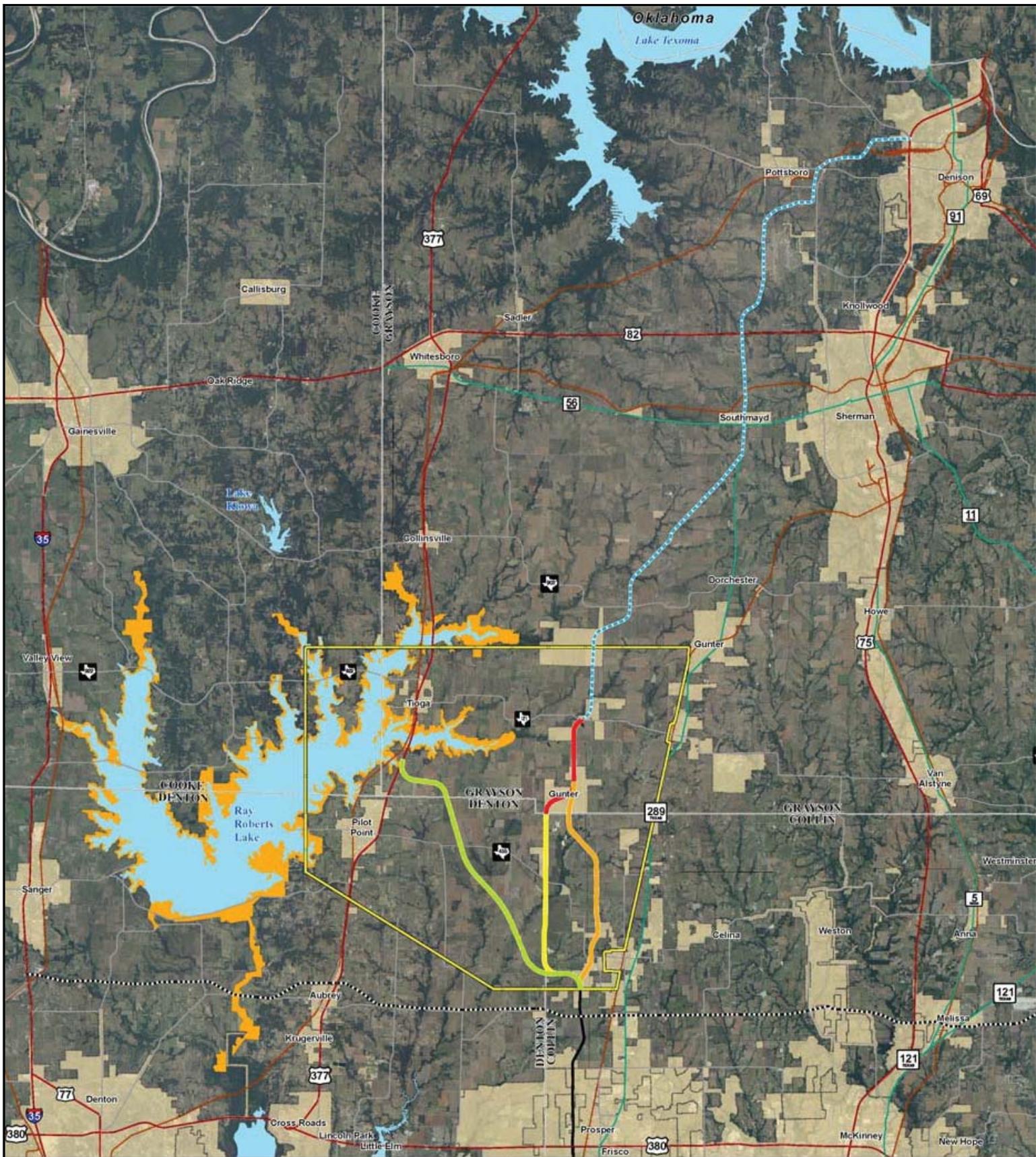
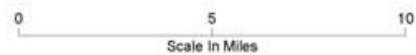


Figure 2-2. Regional Map of Dallas North Tollway



Agricultural land use continues to dominate the landscape in the corridor study area, but substantial residential and industrial developments have occurred in recent decades. The DNT 4B/5A study area is located within the Elm Fork Trinity River Basin and surface topography is nearly flat to gently sloping with streams flowing generally in a northeast to southwest direction across the study area. The project area lies within the Blackland Prairie region of north central Texas, which is characterized by dark heavy-textured soils that have been farmed over the past century. Originally, the primary crop raised was cotton, but in recent years most agricultural fields are used primarily to produce sorghum and hay, with some corn production, and pasture for livestock. As discussed above in **Section 1.2**, urban development has been occurring in the study area at a steady rate and substantial shifts in land use have been experienced in and around the several cities within the study area.

2.2 INVENTORY OF DATA ACQUIRED

As described in **Section 1.5**, numerous spatial data sources and types were utilized in the mapping of environmentally sensitive areas and other land use constraints within the study area. A summary of these data types is presented below for natural features, man-made features and local government plans/districts. Additional information about the data types, associated sources and the year of preparation for each is included in **Appendix A-2**.

Natural Features: aerial photography, 100-year floodplains, golf courses, parks and recreation areas, prime farmland soils, streams and water bodies, NRCS-financed flood control reservoirs, threatened or endangered species observations, topography, wetland features, upland and riparian forests and wildlife management areas;

Man-Made Features – Cultural Resources: archeological sites, cemeteries, historical markers and National Register of Historic Places listed properties;

Man-Made Features – Transportation and Transmission Facilities: airports and airstrips, railroads, roads, communication towers, high voltage power transmission lines and natural gas pipelines;

Other Man-Made Features and Facilities: buildings, city limits and extraterritorial jurisdictions, county boundaries, hazardous material sites, property parcels and ownership for Collin, Cooke,

Denton and Grayson counties, public facilities and land, schools, parks, United States Corps of Engineers (USACE) land boundaries, and petroleum product wells; and

Local Government Plans and Utility Districts: Celina, Gunter, Collin County, Denton County and Grayson County thoroughfare plans; Gunter existing and future land use plans; Pilot Point zoning map; Tioga existing and future land use maps; and maps of sewer and water utility district boundaries.

2.3 CONSTRAINTS MAPPING

Using the data outlined in **Section 2.2**, features of the natural and human environment were overlaid on aerial photography using a geographic information system (GIS) software program to create a natural features constraints map and a man-made features constraints map. These two constraints maps, which also show the locations of the proposed alignment alternatives described in **Section 3.3**, are included in **Appendix B** at a map scale of one inch to 4,000 feet. Reduced size copies of these constraints maps have also been included for convenience as **Figures 2-3** and **2-4**.

Due to the large study area for this project, limited onsite field verification of constraints information was performed. Upon selection of a preferred alternative, field surveys within the proposed ROW will be performed as part of the process for preparing an environmental evaluation for the proposed DNT 4B/5A facility.

Figure 2-3
Constraints Map:
Natural Features
DNT Extension Phase 4B/5A



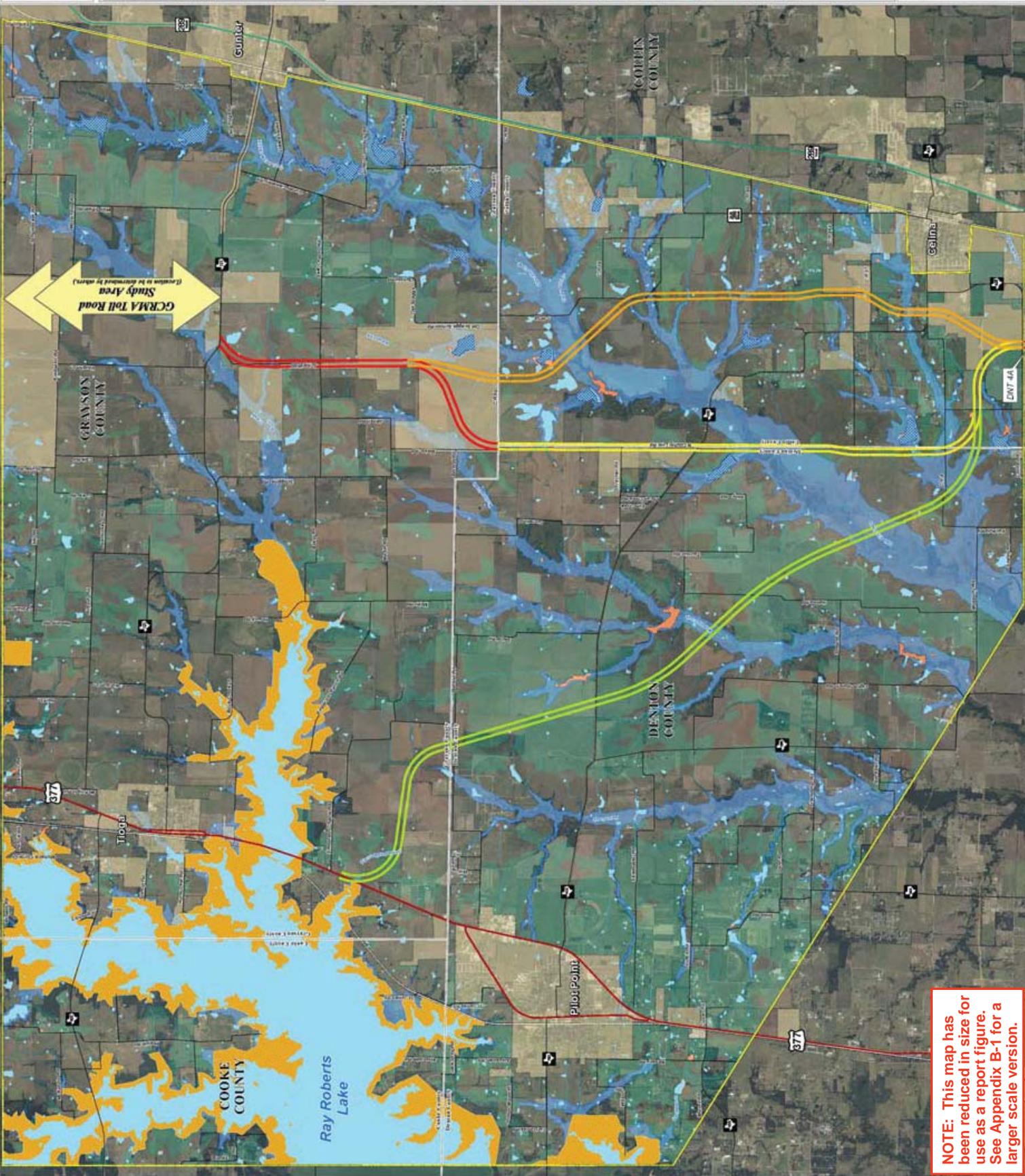
Legend

- Green Alternative ROW
- Yellow Alternative ROW
- Orange Alternative ROW
- Red Alternative ROW
- Study Area
- USACE Property
- Prime Farmland Soil
- NRCS Flood Control Reservoir
- Wetland: Emergent Vegetation
- Wetland: Bottomland Forest
- Floodplain
- Lake or Pond
- Stream or River
- US Highway
- State Highway
- Farm-to-Market Road & Other Road
- Railroad
- County Boundary

0 2,000 4,000
 Scale in Feet

N
 W E S

MTTA
 NORTH TEXAS TOLLWAY AUTHORITY
 Natural Resource Inventory (NRI) 2008
 Map Issued: June 22, 2015



NOTE: This map has been reduced in size for use as a report figure. See Appendix B-1 for a larger scale version.

Figure 2-4
Constraints Map:
Man-Made Features
DNT Extension Phase 4B/5A



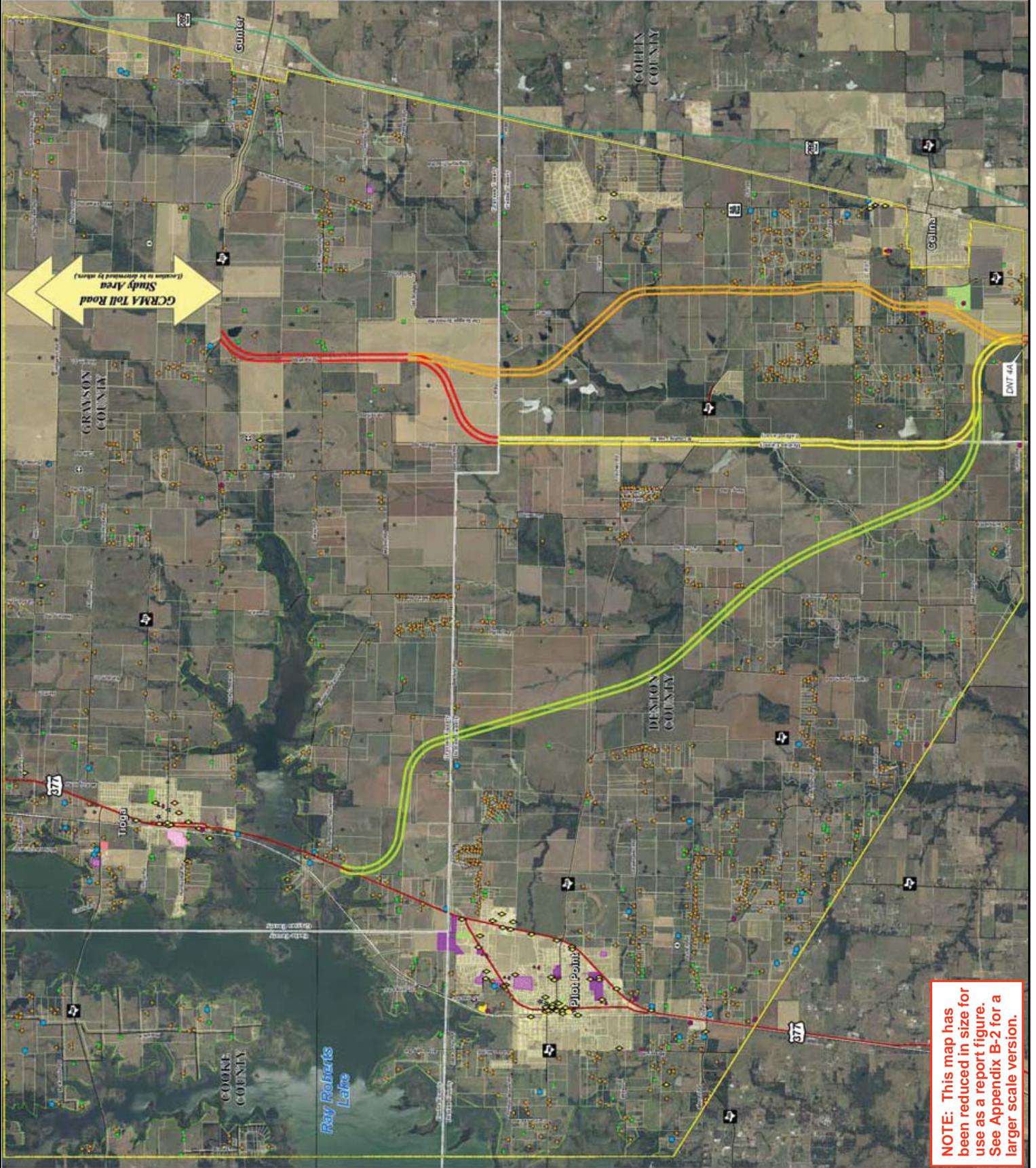
Legend

- Green Alternative ROW
- Yellow Alternative ROW
- Orange Alternative ROW
- Red Alternative ROW
- Study Area
- Microwave Tower
- Oil/Gas Well
- Historical Marker
- Agricultural Facility
- Commercial Facility
- Public Facility
- Residence
- Potential Hazardous Material Site
- Landfill
- Private Airstrip
- School
- USACE Property
- Other Federal Property
- State of Texas Property
- City of Colina Property
- City of Pilot Point Property
- City of Trigo Property
- Pilot Point ISD Property
- Trigo ISD Property
- Place Boundary
- Golf Course
- Park
- Cemetery
- Pipeline
- US Highway
- State Highway
- Farm-to-Market Road & Other Road
- Railroad
- City Limit
- County Boundary

Scale In Feet
 0 2,000 4,000

N
 W E S

NTTA
 NORTH TEXAS TOLLWAY AUTHORITY
 Division of Asset Management
 Natural Resource Mapping Program (10/17/2028)
 Map Version: June 22, 2018



NOTE: This map has been reduced in size for use as a report figure. See Appendix B-2 for a larger scale version.

3.0 DEVELOPMENT OF ALIGNMENT ALTERNATIVES

3.1 HISTORICAL BACKGROUND

The process of defining the type of roadway and the location of an alignment to meet the need and purpose for the proposed project dates back to the 1990s. In 1998, the NTTA commissioned a toll road corridor study to develop alternative transportation corridors for the future extension of the DNT from U.S. 380 northward into Grayson County. Subsequently, in July 2000, corridor studies in both Collin County and Grayson County were completed.⁸

Both of these county corridor studies examined the type of facility and potential alignments for meeting future transportation needs. These studies utilized an analysis of aerial photography to identify natural and man-made features that would influence the location of road alignments. The development of alignments sought to minimize crossings of water features, railroads, major developed areas and other attributes that would create undesirable socio-economic or environmental impacts. Both corridor studies used a process of balancing impacts to sensitive facilities (i.e., churches, schools and cemeteries), existing residential and commercial facilities, and natural resources with the need for improving mobility in the area. The studies also identified and discussed a range of facility alternatives including a limited access regional tollway, limited access county arterial and a farm-to-market road.

Six alternatives were considered for the extension of the DNT. For the DNT 4B/5A study area, two alignments were considered in Collin County that generally ran due north of the existing DNT. These two alignments then diverged into three different alignments north of the Grayson County Line. Two of these three alignments crossed FM 121 west of Gunter, and one was routed in a southwesterly direction around Gunter. These three alignments branched into even more potential alignment routes north of FM 121 and continued northward towards the western outskirts of the cities of Sherman and Denison.

Neither of the corridor studies completed in 2000 made a recommendation as to facility or location alternatives, but the studies did outline the general steps necessary for further development of a toll road project. A noteworthy aspect of this process is the necessity for Denton, Collin and Grayson counties to acquire ROW as means of preserving transportation

⁸ Collin County Corridor Study, NTTA, July 31, 2000; Grayson County Corridor Study, NTTA, July 31, 2000.

corridors, as Texas law does not give county governments zoning authority. In the absence of the ability to restrict land use and development in unincorporated county areas, the county may seek voluntary donations of ROW and/or purchase it.

Continual progress has been made on the DNT extension (Phases 4A, 4B and 5A) since the corridor studies of 2000. In preparation for the DNT Extension Phase 4A (DNT 4A) from U.S. 380 to FM 428, the NTTA and Collin County began a public involvement process with property owners and associated municipalities. Subsequently, the NTTA, Collin County and Town of Prosper signed an interlocal agreement in October 2003 covering ROW, utility services and northbound service road construction for the DNT 4A. In November 2007, schematic design, public involvement and environmental documentation began for DNT 4A. The NTTA Board of Directors approved the schematic and environmental assessment in September 2008.

During the above time period, concurrent work was being completed on DNT 4B/5A. In January 2005, Collin and Denton counties approved resolutions designating the Denton/Collin County Line as the preferred DNT 4B alignment. The Denton/Collin County line alignment was also designated as the preferred 4B route in similar resolutions by the City of Pilot Point in January 2008, the cities of Gunter and Aubrey in May 2008, and the Grayson County Commissioners Court in April 2009.

In May 2008, Collin County rescinded its resolution supporting the Denton/Collin County Line alignment. In January 2009, Collin County adopted a resolution designating DNT 4B as a Collin County Toll Road Authority project. In March 2009, the expansion of the DNT 4B/5A study area was approved by the NTTA Board of Directors to capture more of Denton and Grayson counties, to add the southeast portion of Cooke County and to ultimately preserve the long-term viability of the DNT corridor.

Executive Work Group (EWG) and Technical Work Group (TWG) stakeholder meetings were held from October 2009 to May 2010 for gathering input on potential alignment alternatives. These alternatives were also presented to the public for their comments in two public meetings held in March 2010 (see **Section 5.0** and **Appendix C-1**). A timeline detailing the overall genesis of all phases of the DNT facility (from 1964 to present), which includes an accounting of the various milestones described above in relation to DNT 4B/5A, is presented in **Appendix A-3**.

3.2 DESIGN ELEMENTS

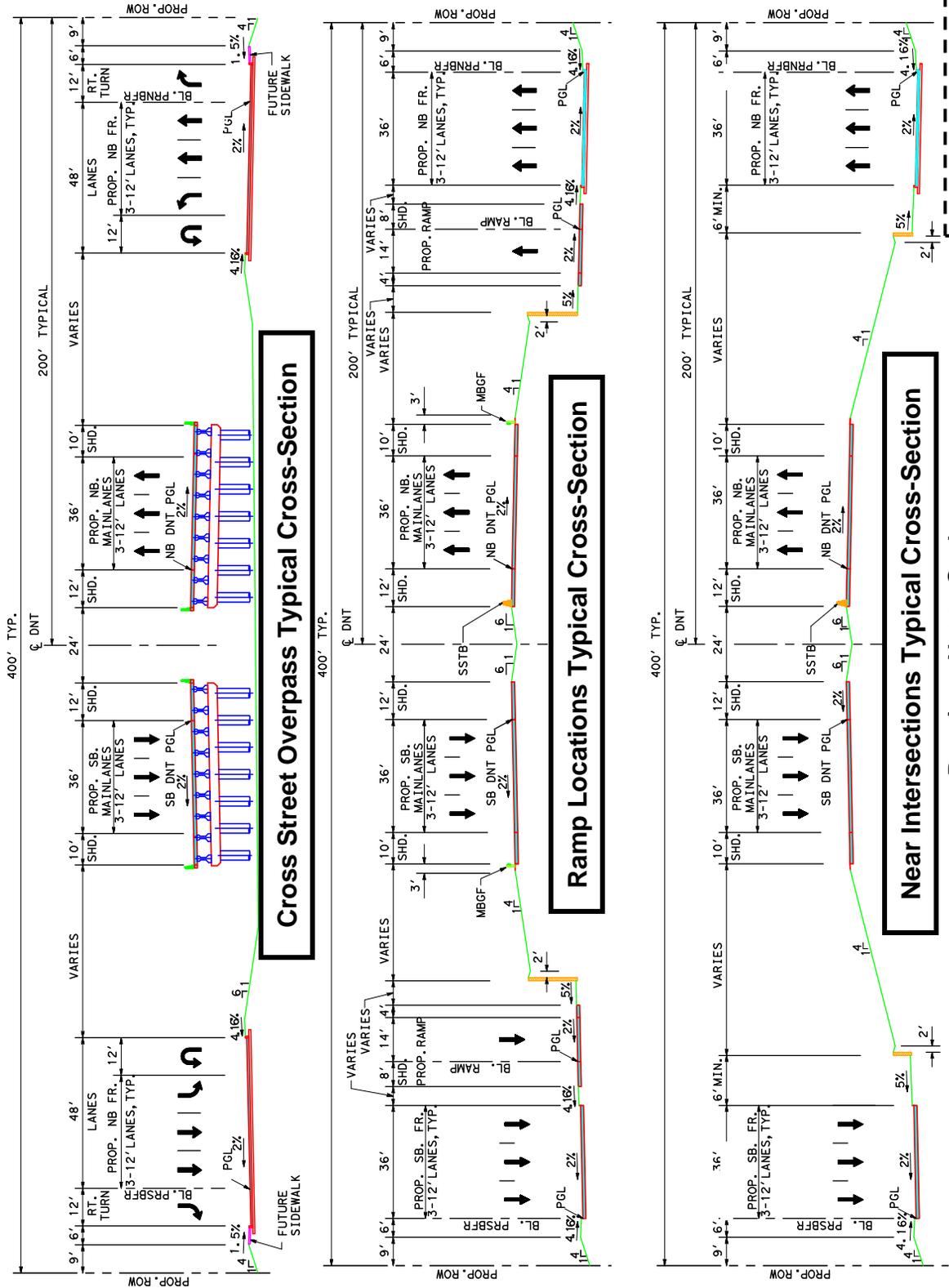
The DNT 4B/5A would extend from the northern terminus of DNT Phase 4A (DNT 4A) at FM 428 northward to one of two logical termini, FM 121 or FM 922, depending on the alignment alternative selected. The proposed project would span approximately 11 to 12 miles and would function as an access controlled urban tollway with a design speed of 70 miles per hour. The posted speed (not yet determined) would be set to meet safety needs.

3.2.1 Geometric Design Criteria

The toll road ultimately will have six main lanes with three lanes in each direction, all of which would be tolled. Non-tolled frontage roads are part of the design, with a three-lane northbound frontage road and a three-lane southbound frontage road. Uniform ROW width for the project is 400 feet, which accommodates cross street interchanges, exit and entrance ramping, and the toll gantries for all electronic toll collection. Interchange design is based upon the thoroughfare plans for Collin, Denton and Grayson counties and are spaced approximately one-mile apart. The basic configuration of cross-street interchanges provides for grade separation of the main lanes with exit and entrance ramps at cross-street grade. Design of the proposed project follows the standards and guidelines set by the NTTA QMS, TxDOT Roadway Design Manual, NTTA Design Guidelines, and the American Association of State Highway and Transportation Officials design policies. The diagrams of typical cross sections for the proposed project are shown in **Figure 3-1**, and NTTA approved design criteria are presented in **Appendix A-4**.

3.2.2 Right of Way

All required ROW, along with any associated drainage easements, is intended to be acquired by Collin/Denton/Grayson counties through donation or purchase from the property owners. In lieu of an interlocal agreement with all affected governmental agencies, all displacement and subsequent relocation efforts would be consistent with the NTTA ROW Acquisition Policy, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, the Civil Rights Act of 1964, and the Urban Development Act of 1974.



-- Drawings Not to Scale --

- 2 OR 3 MAIN LANES
- 2 OR 3 LANE FRONTAGE ROAD
- 2% OR 2.5% CROSS FALL
- ON MAIN LANES (IF 3 LANE)

Figure 3-1. Proposed Typical Cross-Sections (Page 1 of 2)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

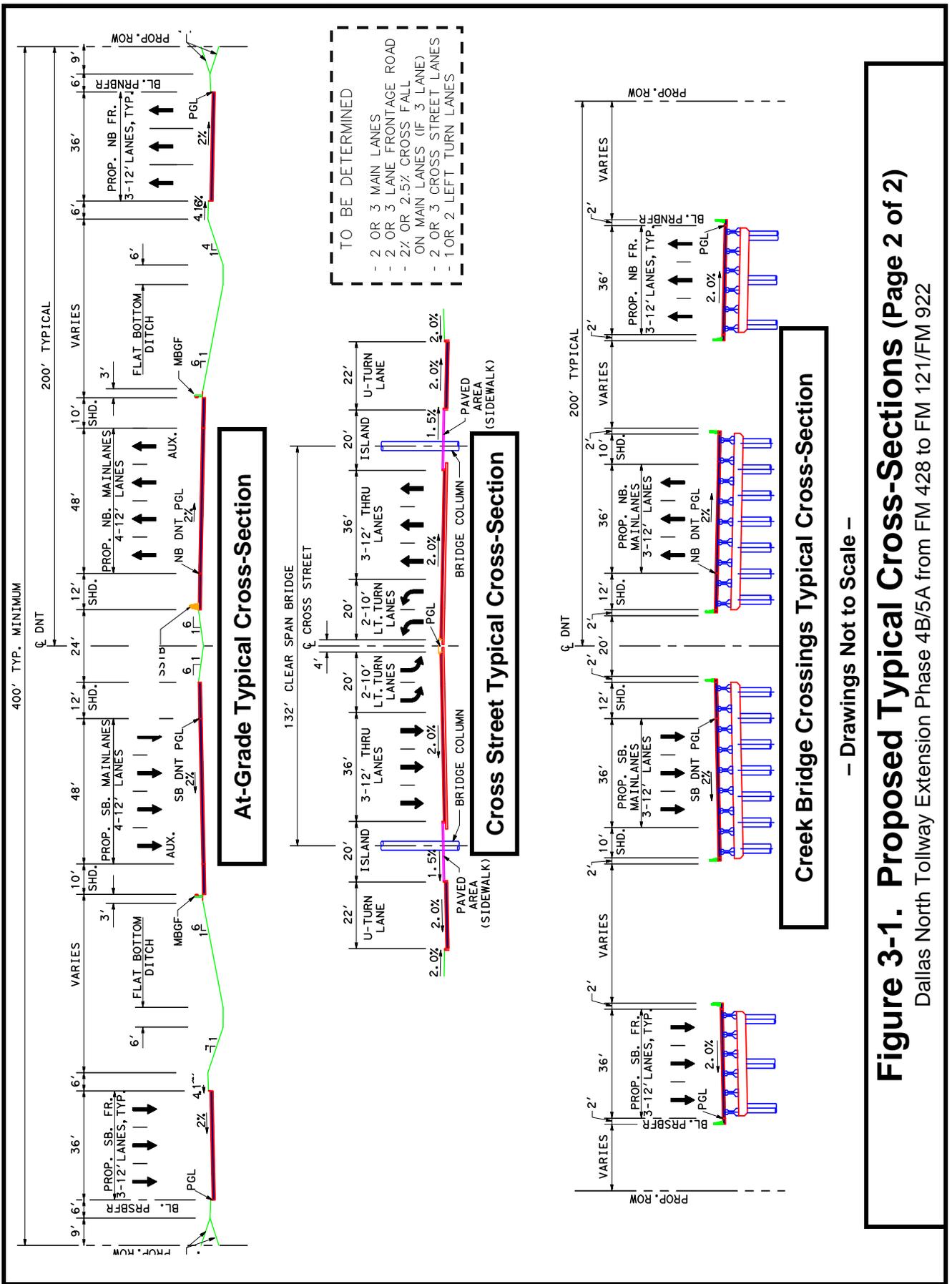


Figure 3-1. Proposed Typical Cross-Sections (Page 2 of 2)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

3.2.3 Utility Relocation

Utilities such as water lines, sewer lines, gas lines, telephone and fiber optic cables, electrical lines and other subterranean and aerial utilities may require adjustments. Other than potential temporary interruptions in service due to minor adjustments, no adverse impacts (i.e., termination of service or long-term interruptions) to utilities are expected to occur from the construction of the proposed project. Schedules for any utility adjustments would be closely coordinated to minimize disruptions and inconvenience to the utility customers.

3.2.4 Toll Collection

The NTTA would utilize an all electronic toll collection (all-ETC) system with video billing for the DNT 4B/5A facility. The all-ETC system would not utilize toll-collection booths. Instead, toll collection will occur electronically, which requires users to either open pre-paid accounts or pay a premium for “video billing.” All-ETC equipment is to be located on gantries spanning the roadway. Gantries are overhead structures that support transponder readers, video enforcement system cameras, illumination devices, automatic vehicle identification antennae, communication gear and other necessary equipment for an all-ETC system. One or two main lane toll gantries, spanning both directions of travel, would be required. Multiple smaller toll gantries will span exit or entrance ramps. The actual toll gantry configuration will be determined at a later stage of design for the proposed DNT 4B/5A facility. Administrative support buildings are not anticipated in this study, although maintenance and sand stockpile facilities may be needed.

3.2.5 Drainage

A preliminary hydraulic analysis was performed for each of the build alternatives. The purpose of this initial analysis was to determine the size of culverts and bridges needed for each alignment. The software program Flowmaster was used to determine a preliminary tailwater depth for each channel crossing. The tailwater was then used in the culvert software program to determine the size of culverts needed for each channel crossing. Those channels that could not be crossed using culverts were then analyzed for bridge capacity. Manning's equation was used to determine the necessary width for each bridge crossing. A Manning's roughness coefficient of 0.025 and a slope of 0.3 percent were assumed for purposes of these calculations. In addition, trapezoidal channels were assumed with side slopes of 3:1 and a base of 10 feet. Once the expected stormwater flow for the 100-year flood event was identified, Manning's equation was

used to determine the bridge width required to carry the 100-year flow. The resulting bridge widths were then rounded up to the nearest 120-foot span.

3.3 DESCRIPTION OF THE ALTERNATIVES

During the stakeholder meetings that occurred between October 2009 and May 2010, three basic alignments were introduced from various governing entities within the study corridor. Each of the three basic alignments introduced by the stakeholders and various government entities served the west, middle and eastern areas of the study area. Out of these stakeholder meetings emerged three build alternatives, which were further developed and evaluated for study, in addition to the consideration of the No-Build Alternative. All or parts of these alternative alignments were assigned colors for ease of reference.

The West alignment designated as the Green (West) Alternative was submitted by the City of Pilot Point in November 2009. The Yellow Alternative, which is the Middle alignment, was submitted by Denton County and City of Pilot Point in October 2009. The Red Alternative was submitted by the City of Gunter and Grayson County in October 2009. The Orange Alternative, which is the East alignment, was submitted by City of Celina and Collin County in October of 2009.

It was necessary to adjust the northern ends of the Yellow Alternative and the Orange Alternative to connect them with the southern end of the Red Alternative, thereby creating the Yellow-Red (Middle) Alternative and the Orange-Red (East) Alternative. As the original Orange Alternative did not match the southern end of the Red Alternative at the Collin/Grayson county line, the Orange Alternative was extended into Grayson County to intersect the Red Alternative at the earliest possible geometrically acceptable location.

From a regional perspective, the Green (West) Alternative would ultimately connect with U.S. 377 south of Tioga, Texas. The Yellow-Red (Middle) and Orange-Red (East) Alternatives would connect to a facility proposed by the GCRMA, currently under study by TxDOT and the GCRMA, which would ultimately connect to U.S. 75 in Denison, Texas. Refinements to these alignments were developed jointly by the study team and the city staffs of Celina, Pilot Point and Gunter. The three build alternatives are shown graphically in **Figures 2-3** and **2-4**. Each of these build alternatives have unique features, which will be described in further detail below.

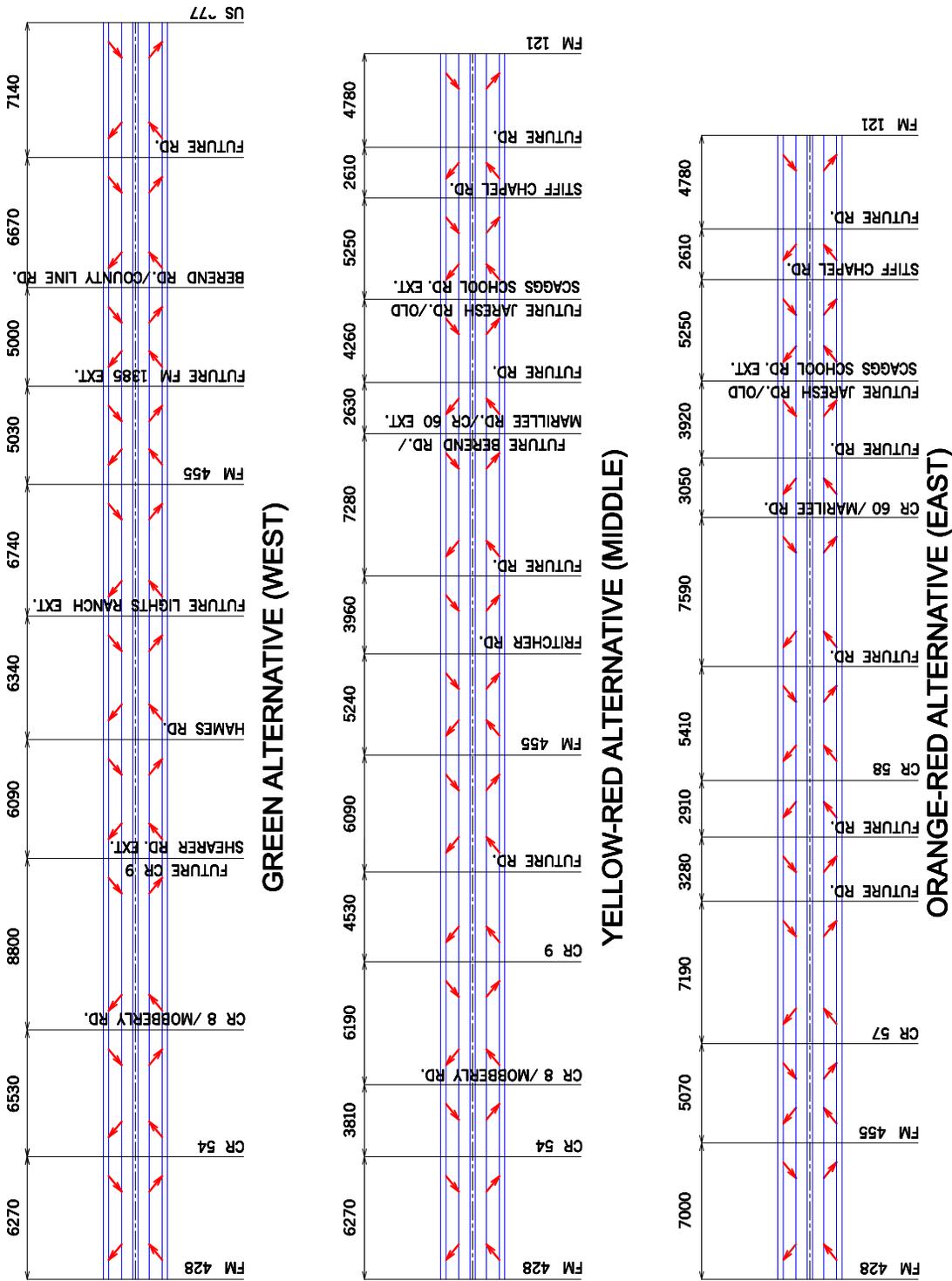
The study team further developed main lane profiles and preliminary drainage designs, which supported the development of bridge lengths and the preliminary sizing of cross drainage culverts. Preliminary ROW acquisition cost estimates were developed for each of the alternatives. The property parcels affected by any of the alternative alignments are shown in the map in **Appendix A-5** and the data obtained from county appraisal districts used for calculating preliminary ROW acquisition cost estimates are provided in **Appendix A-6**. Preliminary cost estimates were then prepared in accordance with NTTA guidelines based on a Level F cost template. This template is based on a cost per mile unit rate derived from historical data from other NTTA projects, and includes the estimated ROW acquisition cost estimates. Data and cost calculations for preliminary total project cost estimates are provided in **Appendix A-7**.

3.3.1 No-Build Alternative

The No-Build Alternative represents the condition in which the proposed Phase 4B and 5A extension of the DNT is not constructed. At present, there are no other planned major north-south transportation improvements north of FM 428 and within five miles east or west of DNT 4A. Consequently, the No-Build Alternative requires other transportation improvements not yet identified in the NCTCOG Mobility 2030 MTP or SDMPPO 2035 MTP to satisfy the need for improved north-south mobility in the area. The No-Build Alternative, which relies on SH 289 as the principal north-south corridor, does not satisfy the need for enhanced north-south mobility to facilitate forecasted population and employment growth.

3.3.2 Green (West) Alternative

The Green (West) Alignment begins at the northern terminus of DNT 4A (FM 428) and proceeds in a northwesterly direction into Denton County where it connects with U.S. 377 north of the City of Pilot Point. Although construction would terminate at U.S. 377, the logical terminus for the Green (West) Alternative is 2.3 miles farther north – at FM 922. The total length of the corridor is approximately 12.2 miles and requires approximately 596 acres of total ROW. The cross street interchanges along this corridor are spaced approximately one mile apart. The alignment contains a total of 10 full diamond and one half-diamond interchanges, of which one is an underpass and the remaining 10 are overpasses. Interchange location and ramping configurations/layouts are shown in **Figures 3-2** and **3-3** and are further discussed in section **3.4**. The Green (West) Alternative crosses 13 streams, the largest being Little Elm Creek, which would require a bridge crossing. All other stream crossings would require box culverts. The



– Drawings Not to Scale –

Figure 3-2. Diamond Ramp Configuration Layouts

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121/FM 922

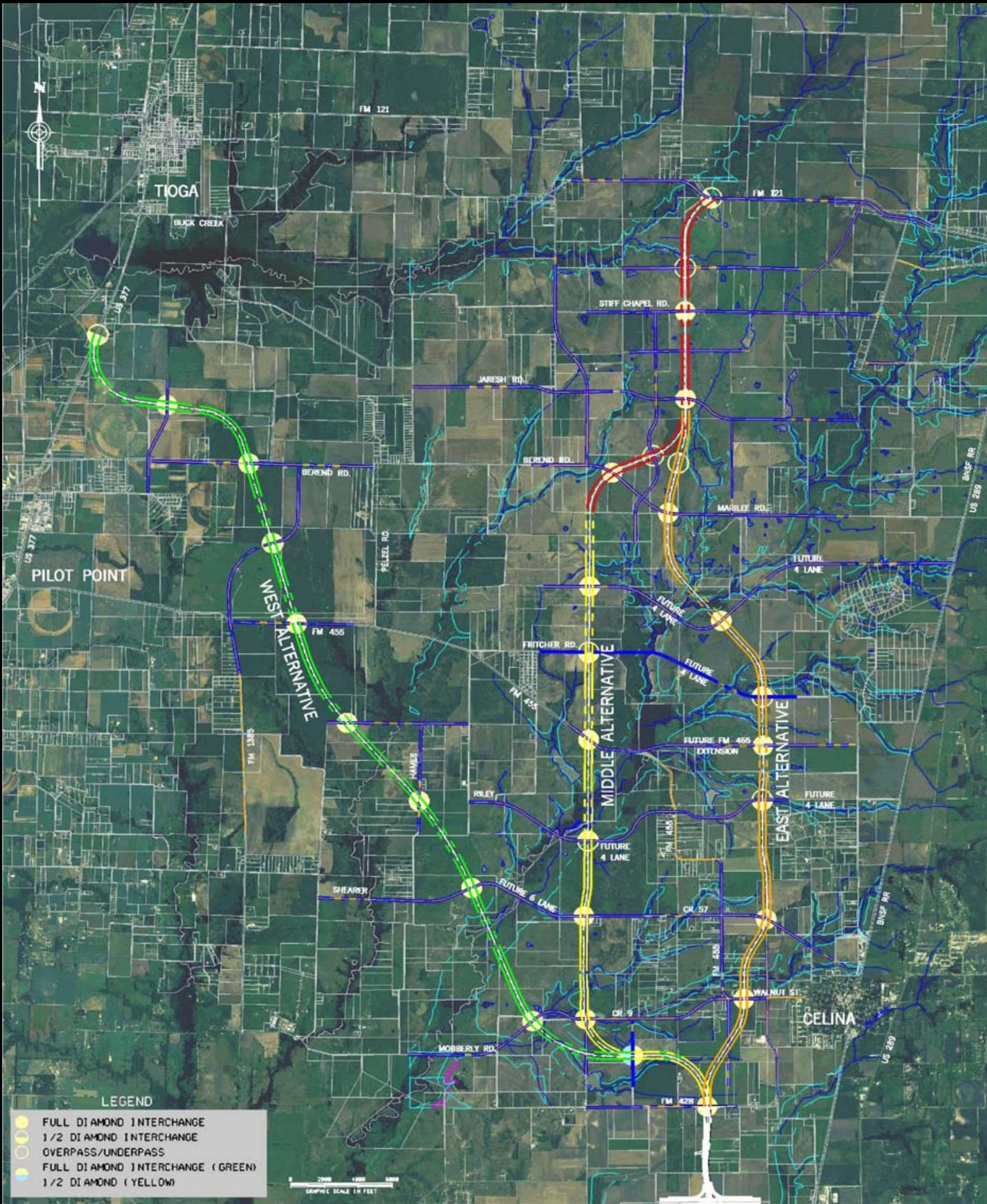


Figure 3-3. ALIGNMENT ALTERNATIVES INTERCHANGE/RAMP LAYOUT

**DALLAS NORTH TOLLWAY EXTENSION
PHASE 4B & 5A**

NORTH TEXAS TOLLWAY AUTHORITY

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
HALFF	NLU	Feb. 23, 2010	1"=100'	256	Country Club	130

route of this alignment was provided by Pilot Point and refined to minimize any impact to residences and businesses along its length. The estimated ROW acquisition cost for this alternative is \$20 million. The overall projected project cost in 2010 current dollars is estimated at \$888 million, which includes construction, ROW and agency costs.

3.3.3 Yellow-Red (Middle) Alternative

The Yellow-Red (Middle) Alignment begins at the northern terminus of DNT 4A (FM 428) and proceeds in a northerly direction along the Denton/Collin County line to its northern terminus at FM 121 in Grayson County. The total length of the corridor is approximately 11.9 miles and requires approximately 577 acres of total ROW. The cross street interchanges along this corridor are spaced approximately one mile apart with allowances for overpasses at intermediate cross streets. The alignment contains a total of eight full-diamond, four half-diamond and two overpass interchanges, of which three are underpasses and the remaining 11 are overpasses. Interchange location and ramping configurations/layouts are shown in **Figures 3-2** and **3-3** and are further discussed in **Section 3.4**. The alignment crosses 11 streams, the largest being Little Elm Creek, which would require a bridge crossing. All other stream or creek crossings would require box culverts. The alignment as originally provided by Denton County and the City of Gunter was refined to minimize any impact to residences and businesses along its length. The estimated ROW acquisition cost for this alternative is \$19 million. The overall projected project cost in 2010 current dollars is estimated at \$864 million, which includes construction, ROW and agency costs.

3.3.4 Orange-Red (East) Alternative

The Orange-Red (East) Alignment begins at the northern terminus of DNT 4A (FM 428) and proceeds in a northerly direction to its northern terminus at FM 121 in Grayson County. The total length of the corridor is approximately 11.0 miles and requires approximately 538 acres of total ROW. The cross street interchanges along this corridor are spaced approximately one mile apart with allowances for overpasses at intermediate cross streets. The alignment contains a total of eight full-diamond, three half-diamond and two overpass interchanges, of which four are underpasses and the remaining nine are overpasses. Interchange location and ramping configurations/layouts are shown in **Figures 3-2** and **3-3** and are further discussed in **Section 3.4**. The alignment crosses 12 streams, the largest being Little Elm Creek, which would be crossed with box culverts as is the case with all other stream crossings. The alignment as originally provided by the City of Celina and Collin County was refined to minimize impacts to

residences and businesses. However, this alternative results in one residential and two agricultural structure displacements. The estimated ROW acquisition cost for this alternative is \$22 million. The overall projected project cost in 2010 current dollars is estimated at \$804 million, which includes construction, ROW and agency costs.

3.4 CROSS STREETS AND RAMP CONFIGURATIONS

The proposed alignment alternatives will have to cross both existing and future roadways as laid out by the various thoroughfare plans in the region. Part of this process is to identify where the potential cross streets are going to be and the best way to serve those thoroughfares. The counties of Grayson, Denton and Collin, along with the cities of Celina, Pilot Point and Gunter, provided input into where these cross streets were to be located and what kind of ramping configuration was needed. With most cross streets being spaced approximately one mile apart, the ramping scheme lent itself to a diamond type configuration.

3.4.1 Cross Streets

As mentioned above, the cross street interchanges were kept at approximately one-mile spacing in accordance with the thoroughfare plans provided by the various governmental agencies involved in the development and refinement of alternatives. Meetings were held with the cities of Celina and Gunter to further refine cross street locations as reflected in **Figure 3-3**. Where there was a cross street that fell between the one mile spacing for interchanges, an overpass was provided to accommodate this cross movement.

3.4.2 Ramp Configuration

Two ramp configurations were selected for consideration at all intersections. The first configuration was a diamond interchange where the on and off ramps at a cross street form a diamond around the interchange. The second configuration was a x-ramp configuration where the on and off ramps on either side of the cross street form an x over the interchange. In this study, the diamond ramp configuration was chosen for cost considerations due to the presence of adequate spacing between cross streets, greater uniformity and alignment with driver expectations. Additionally, such a configuration was requested by the stakeholders. **Figure 3-3** shows the ramping scheme that was employed for this study.

4.0 ENVIRONMENTAL IMPACTS AND REGIONAL COMPATIBILITY

This section discusses the alternatives in light of expected social and economic impacts, environmental impacts and other attributes relevant to project need and purpose. In addition, the compatibility of proposed alternatives with regional transportation plans is discussed. This section concludes with a brief summary of the impacts and compatibility discussions.

Throughout this report, reference to the ROW for an alternative route applies a width of 400 feet (i.e., 200 feet either side of roadway centerline) uniformly throughout the length of the proposed roadway. Impacts to features included within this footprint were determined using GIS mapping. In addition, proximity to some features was noted when occurring within 300 feet from the edge of ROW (i.e., 500 feet either side of the centerline).

4.1 CONSTRAINTS AVOIDED BY ALL ALTERNATIVES

Central in the process of evaluating alternatives was the constraints mapping discussed above in **Section 2.0**, which was used in developing and refining the alternatives to avoid many of the impacts that would otherwise occur. Consequently, any expected adverse impacts have been avoided for a number of the features that were examined. These potential impact features are summarized below to show that they were considered during the alternative planning process. As these features do not assist in differentiating between the alternatives, they are not further discussed in this report.

The following are features relating to potential social and economic impacts, which were avoided by all of the alignment alternatives as well as the No-Build Alternative:

- Petroleum product wells within the ROW;
- Communication towers within the ROW;
- Power transmission lines crossed by the alignment's proposed ROW;
- Railroad lines crossed by the alignment's proposed ROW;
- School properties, golf courses and other public facilities crossed by the ROW;
- Potential hazardous material sites within 300 feet of the proposed ROW (i.e., this would comprise an area within 500 feet of both sides of the roadway centerline).

The following natural or cultural resource features were also avoided by all of the alignment alternatives as well as the No-Build Alternative:

- Flood control lakes constructed with funding from the Natural Resources Conservation Service within the ROW;
- Potential forested wetland areas within the ROW, as identified in USFWS NWI maps;
- Public parks or recreation areas within the proposed alternative's ROW;
- The wildlife management area owned by USACE surrounding Ray Roberts Lake;
- Historic sites listed on the National Register of Historic Places located in or near (i.e., within 300 feet, or area of potential effects) of the ROW;
- Known archeological sites located in or near (i.e., within 300 feet) the proposed ROW for each alternative; and
- Known cemeteries located within or near (i.e., within 300 feet) the proposed ROW for each alternative.

4.2 ENVIRONMENTAL IMPACTS OF EACH ALTERNATIVE

The three build alternative alignments would result in some level of socio-economic impacts as well as impacts to natural resources within the study area, whereas the No-Build Alternative would not be expected to result in any easily-identifiable impacts to the human or natural environments. However, the No-Build Alternative does not address increasing regional mobility needs as urban growth in the study area continues. At a minimum, the demand for mobility will eventually require incremental improvements to existing transportation facilities, likely resulting in greater impacts to the human and natural environments as existing ROW is widened and/or new facilities are required. As the precise location and form of future impacts are not known, the potential impacts of the No-Build Alternative cannot be discussed in detail in this report. However, it is important to acknowledge that any environmental impacts associated with the No-Build Alternative would occur at different locations and with different timing than the build alternatives, but the collective long-term impacts may be as great or greater in magnitude than a build alternative. The discussion that follows reviews the categories of potential impacts that were assessed and the expected impacts for each of the build alternatives.

4.2.1 Land Use Impacts Related to Engineering / Design Features

The impact of any build alternative on existing land use in the study area is minimized to the extent that the road's alignment incorporates the ROW from existing roads. Designing a new roadway along an existing roadway alignment also minimizes disruption to transportation networks and access opportunities already in place. Consequently, the length of existing parallel roads within a build alternative was determined. In addition, the amount of existing road ROW within the ROW for each proposed alternative was determined, as this impacts the amount of ROW needed for a transportation land use.

The three alternatives differ widely with regard to the amount of existing parallel roadway length and ROW acreage included within the proposed ROW for each alternative. The Green (West) Alternative would include only 0.1 mile of parallel roadway within its ROW, and includes a total of 6 acres of existing road ROW. The Orange-Red (East) Alternative is also limited in this regard, with 1.1 miles of existing parallel road length, which represents 11 acres of ROW. The Yellow-Red (Middle) Alternative follows two county roads (i.e., County Road 9 and County Road 10 (County Line Road)) for a substantial length, as compared to the other alternatives, and includes 4.8 miles of existing parallel road length with a corresponding 28 acres of road ROW.

4.2.2 Social and Economic Impacts

A key measure of socio-economic impacts is the number of potential residential displacements expected as a result of implementing each alternative. This concern also applies to commercial enterprises (including agricultural barns) and any other non-business community facilities such as places of worship. Impacts from alternatives to residences and non-residences have been eliminated with the exception of the Orange-Red (East) Alternative, which is expected to displace one residence and an agricultural barn associated with that residence. The Orange-Red (East) Alternative also displaces a second barn or storage building on a different property parcel.

The number of residences, parks, and other noise-sensitive areas in close proximity (i.e., within 300 feet) of each alignment's edge of ROW was determined. This category of impacts does not include any residences already counted as displaced by an alternative, but includes all residences that could potentially be affected by traffic noise from the proposed tollway alternative. In addition to residences, this category considers all areas within Activity Category B under Federal Highway Administration (FHWA) Noise Abatement Criteria, which include the

following: picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.⁹ Applying these criteria, the Green (West) Alternative has one residence within 300 feet of the ROW edge, and there are three residences in proximity to the Yellow–Red (Middle) Alternative. No other buildings or areas considered to be sensitive noise receivers under the FHWA Noise Abatement Criteria occur within 300 feet of the ROW for these two alternatives. The Orange-Red (East) Alternative has the greatest proximity noise impacts of the three build alternatives, which includes ten residences, one park (Celina Park), and one church building within 300 feet of its ROW.

The number of property owners with real property located wholly or partially within the ROW for each build alternative was determined. This factor is considered important for determining the difficulty in obtaining ROW. That is, the greater the number of property owners affected by an alignment, the greater the likelihood that some of the affected property owners may perceive the ROW acquisition process as an adverse impact to them. Whether the impact would be perceived by each property owner as adverse, of course, will vary among property owners, and this category of potential impacts does not reflect any effort to contact the specific property owners to determine their preferences. The evaluation of this category of impacts excludes city, county and state owned road ROW. The Green (West) Alternative and the Yellow–Red (Middle) Alternative would each affect 17 property owners, and the Orange–Red (East) Alternative would affect 34 property owners. The location and ownership of all the property parcels affected by each of the alternatives are shown in **Appendix A-5**.

The number of petroleum product pipelines (i.e., natural gas and/or oil) crossed by each of proposed alignments was determined. The Green (West) Alternative and the Yellow–Red (Middle) Alternative would each cross one pipeline, and the Orange–Red (East) Alternative crosses two pipelines. The crossing of such pipelines is accompanied by a greater level of planning, design, and cost to ensure each crossing is safely accomplished. The level of evaluation in this study examined the larger pipelines that would be crossed by any of the alternatives. It is expected that multiple small service pipelines will be affected by all of the alternatives, but these impacts have not been catalogued in this study.

⁹ TxDOT Environmental Affairs Division, Guidelines for Analysis of Highway Traffic Noise (June 1996).

4.2.3 Impacts to Natural Resources

All of the build alternatives result in impacts to natural resources within the study area. Based on an analysis of available GIS data, estimates of potential impacts to important types of natural resources were made. The discussion below focuses on three groups of resources, which include water-related resources, vegetation that represents high quality habitat for wildlife, and prime farmland soils. Where practicable, the discussion addresses aspects of these features to aid in comparing their significance and expected impacts among the three alternatives. Although all of the alternatives would result in impacts to natural resources, no costs attributable to mitigation are anticipated except for water-related impacts discussed below.

The first indicator of potential impacts to important water-related resources is the number of streams crossed by each alignment alternative. Only major waterways shown on USGS topographic maps were counted, as this is an initial approximation of streams that are likely to fall within the jurisdiction of the USACE under Section 404 of the Clean Water Act. The Yellow–Red (Middle) Alternative crosses ten streams, the Orange–Red (East) Alternative crosses 12 streams, and the Green (West) Alternative crosses 13 streams. In general, cross drainage would be provided by box culverts for these stream crossings. The Green (West) Alternative and Yellow-Red (Middle) Alternative will use a bridge to cross the largest stream in the study area, Little Elm Creek. The Orange-Red (East) Alternative will use box culverts to allow cross drainage of Little Elm Creek. It is expected that all crossings of streams would be authorized by USACE Nationwide Permits.

Many of the stream crossings noted above also require ROW within the associated 100-year floodplains, as determined from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Regulation of construction within floodplains effectively prevents roads from interfering with the hydrology of the watershed or hydraulics of the floodplain, making construction cost impacts the most notable consequence of crossing floodplains. While the information for this factor is reported here, the impact is actually realized primarily in terms of increased project costs rather than viewed as an impact to a natural resource per se. The Orange–Red (East) Alternative has 49.2 acres of ROW located within floodplains. The Yellow–Red (Middle) Alternative has 70.8 acres within floodplains, and the Green (West) Alternative has 77.7 acres.

The study area contains numerous bodies of open water (i.e., lakes or ponds), other than NRCS flood control lakes that will be included within the proposed ROW of the build alternatives. Constructing roads through such water bodies may result in impacts to waters subject to USACE jurisdiction under the Clean Water Act's Section 404 program, loss of habitat, and may incur additional construction costs. The Yellow–Red (Middle) Alternative affects 0.6 acre of open water, the Green (West) Alternative affects 1.8 acres, and the Orange–Red (East) Alternative affects 3.0 acres of water.

Similarly, build alternatives that require filling of wetlands that are adjacent to streams with defined channels in the study area would be subject to Section 404 regulation, as well as affect important wildlife habitat. In the absence of field-verified wetland delineation, it is difficult to identify wetland areas from aerial photographs and other available information sources. The use of NWI maps prepared from interpretation of aerial photographs and limited field investigation provides the best readily available approximation of areas that may be wetlands. The amount of emergent wetlands, as identified on NWI maps, within the ROW for each of the build alternatives is approximated as follows: 0.1 acre for the Yellow–Red (Middle) Alternative; 0.3 acre for the Green (West) Alternative; and 0.5 acre for the Orange–Red (East) Alternative.

Some of the highest quality habitat for wildlife in the study area is within the riparian forests adjacent to most stream channels. Forested areas are readily identifiable from color aerial photography. For purposes of this study, an approximation of riparian forests was made by considering all wooded areas within floodplains as riparian forests. The riparian forested areas thus designated did not include any areas that were separately inventoried as forested wetlands in NWI maps. Based on this approach, the Green (West) Alternative removes approximately 1.9 acres of riparian forest, the Orange–Red (East) Alternative removes 15.2 acres, and the Yellow–Red (Middle) Alternative removes 25.3 acres.

Upland forested areas also provide important habitat for wildlife and were mapped from recent color aerial photographs. The Yellow–Red (Middle) Alternative results in 2.0 acres of impacts to upland forests, and the Green (West) and Orange–Red (East) alternatives each remove 3.8 acres of forests.

The NRCS has designated certain soils as ‘prime farmland’ soils based on each soil type’s ability to produce agricultural crops and forage. According to NRCS soil surveys,¹⁰ prime farmland soils within the study area consist predominantly of Houston Black clay (0 to 3 percent slopes), Burleson clay (0 to 3 percent slopes) and Heiden clay (1 to 5 percent slopes). These three soil types account for approximately 67 percent of the study area. Most of the remaining soils within the study area are either clays or sandy loams (0 to 5 percent slopes). The amount of prime farmland, as identified in county soil surveys, within the proposed ROW is as follows: Orange–Red (East) Alternative, 77.0 acres; Yellow–Red (Middle) Alternative, 107.8 acres; and Green (West) Alternative, 238.4 acres. However, it should be noted that where the above-mentioned soils occur within city limits, they are not considered to be prime farmland under NRCS criteria. If the acreage of soils within city limits that would otherwise be considered prime farmland were added to the acreage figures noted above, the results for each of the alternatives would be as follows: Orange–Red (East) Alternative, 155.7 acres; Yellow–Red (Middle) Alternative, 124.7 acres; and Green (West) Alternative, 255.3 acres. This indicates that the relatively greater amount of Orange-Red (East) alternative ROW within Celina city limits would account for all of the difference between the Orange-Red (East) and the Yellow-Red (Middle) alternatives in terms of this evaluation criterion. Consequently, although this factor is included in the overall evaluation of alternatives, it does not represent a meaningful point of differentiation between the Orange-Red (East) and Yellow-Red (Middle) alternatives.

4.3 INDIRECT IMPACTS ON ECONOMIC DEVELOPMENT

The foreseeable indirect impacts of constructing the proposed project have been qualitatively considered in terms of regional economic development. Indirect impacts are routinely assessed for build alternatives in environmental studies to identify key impacts that are caused by the proposed action, but which occur later in time and/or are farther removed in distance. Thus, reasonably foreseeable indirect socio-economic impacts may also be caused by all of the build alternatives, in addition to the socio-economic impacts directly attributable to the proposed project that were discussed in the preceding section.

The planned design for the proposed project includes three-lane frontage roads in each direction throughout the project, which would allow direct access to commercial and retail

¹⁰ Soil Survey of Collin County, USDA, 1969; Soil Survey of Denton County, USDA, 1980; Soil Survey of Grayson County, USDA, 1980; Soil Survey of Cooke County, USDA, 1979; updated by soils information from the Web Soil Survey, USDA (December 2009).

businesses. Experience has shown that the ready access these frontage roads create for potential customers generally provides the economic incentive for businesses to locate along frontage roads. Such economic development is enhanced by municipal zoning and other incentives to encourage the array of commercial establishments that often thrive under such circumstances.

The proposed tollway would serve as a catalyst for regional commercial development along and near frontage roads, resulting in substantial economic benefits to affected communities. The operation of new businesses contributes to the local tax base through real estate appreciation, property taxes, and sales taxes. New businesses also require new employees, who would likely reside locally and contribute to general economic prosperity by their purchases. As tax revenues are largely handled at the county level, the extent to which a build alternative promotes economic benefit to the region as a whole is considered a desirable attribute. Under this criterion, the Green (West) Alternative would concentrate the beneficial aspects of economic development almost exclusively within Denton County. The Orange-Red (East) Alternative would likely have favorable indirect economic benefits to Grayson County in its northern portion, and to Collin County in the south. The Yellow-Red (Middle) Alternative would distribute the potential benefits from tollway-related economic development among all three of the affected counties.

4.4 COMPATIBILITY WITH REGIONAL PLANS

A particularly important measure for evaluating all alternatives is their compatibility with regional transportation plans. These developing plans reflect the advanced planning of municipalities and counties to forecast areas of growth and the transportation infrastructure to support that growth. The plans that were considered in making this qualitative evaluation are listed in **Appendix A-2**, and include all thoroughfare plans available for Collin, Denton and Grayson counties, and for the cities of Celina and Gunter. In addition, land use and zoning plans for the cities of Gunter and Pilot Point and Town of Tioga were examined, as well as various municipal utility districts within the study area. No municipal planning documents from Cooke County were available. This section considers each of the proposed alternative alignments in light of the regional transportation plans to assess consistency. The discussion below describes the major proposed regional transportation projects, and examines how each of the DNT 4B/5A alternatives interface with those plans.

Clearly, the greatest amount of past planning for future north-south mobility within the study area has focused on a transportation corridor that envisions connectivity between the DNT and the Sherman – Denison Metropolitan Area, which includes a connection to U.S. 75 north of the City of Denison (see **Figure 2-2**). The emphasis on developing that corridor continues with ongoing studies sponsored by TxDOT and the GCRMA that are independent of the DNT 4B/5A project. In contrast, there has been little formal development of plans for improving the transportation connection from any major existing or planned roadway within the study area through Cooke County to I-35 to the northwest, other than the Trans-Texas Corridor, which is no longer being pursued. The NCTCOG is actively developing the Regional Outer Loop, which would provide east-west mobility within the region (shown in **Figure 2-2**). Although this facility would be located south of the study area, it nevertheless is relevant to the overall future picture of regional mobility inasmuch as it would provide a direct limited access highway connection to I-35E.

The alternatives were evaluated in light of the ongoing regional transportation planning discussed above. The No-Build Alternative results in a scenario where the planned highway improvements in Grayson County need to find a suitable terminus within southern Grayson County, or the northern portions of Collin or Denton counties. This alternative is not compatible with regional plans as it would likely require unplanned changes to SH 289 for its use as a southern connection, or the development of an undetermined alternative connecting facility. As such, the No-Build Alternative would not contribute to needed north-south mobility within the study area.

Next in terms of compatibility with regional plans is the Green (West) Alternative. It is not compatible with the transportation planning outlined for Grayson County, and there is no existing transportation plan that envisions a connection with the DNT at or near the planned northern terminus for this alternative. Traffic studies and substantial additional planning and coordination would be necessary to develop this alternative, as it requires modifications to U.S. 377 to accommodate the interchange with the DNT as well as additional northbound traffic that would be received. Moreover, further development of this alternative would also need to include transportation planning to accomplish the ultimate objective of improving connectivity with U.S. 75 to the east and I-35 to the west.

Most compatible with regional transportation plans are the Yellow–Red (Middle) Alternative and Orange–Red (East) Alternative. Both of these proposed facilities coincide with regional plans to move traffic from the DNT northward toward the Sherman – Denison region, and have been developed in cooperation with TxDOT and the GCRMA to connect with the expected southern terminus of the proposed Grayson County tollway. Although the Orange–Red (East) Alternative offers a slightly shorter solution to accomplishing this connection, both it and the Yellow–Red (Middle) Alternative are considered highly compatible with regional transportation planning to date.

4.5 COMPARISON OF ALTERNATIVES BASED ON TRAFFIC

In June 2010, Wilbur Smith Associates (WSA) completed a conceptual level traffic analysis on the three alternative alignments and concluded that there is no discernable difference between the three alignments from a traffic demand point of view. The relative differences in projected traffic among the three alternatives are small and such differences are within the margin of error for a conceptual level analysis. WSA estimated the potential traffic demand on each alignment alternative using readily available information, recently collected traffic counts along the project corridor and current long-range population and employment forecasts. At a conceptual level of analysis, no alternative-specific demographic reviews and/or modifications were done. WSA's analysis concluded that the roadway capacity warranted by year 2030 is one lane per direction for each alternative as the traffic in 2030 in any of the alternatives is currently projected to fall below 900 vehicles per direction per hour. Typical hourly capacities of a freeway or tollway can range from 2,000 to 2,200 per lane. In addition, WSA's analysis reveals that the western alignment serves a different travel market than the two eastern alignments due to both the orientation of the facility and the ultimate connectivity into Grayson County.

Other findings of the analysis include the following:

- Forecasted 2030 average daily traffic (ADT) main lane volumes near the southern terminus of each of the three DNT Phase 4B/5A alignment alternatives range between 9,000 and 15,000 VPD.
- Forecasted 2030 ADT main lane volumes near the northern terminus of each of the three DNT Phase 4B/5A alignment alternatives are less than 5,000 VPD.
- Given the extent of existing development, available developable land, water bodies, and other land use characteristics along the three alignments, it is expected that each of the three proposed alignments would spawn unique patterns of economic development

which result in differences in long-term traffic demand characteristics between the build alternatives.

4.6 SUMMARY OF IMPACTS, REGIONAL COMPATIBILITY, AND TRAFFIC

This initial review of the build alternatives based on potential environmental impacts reflects the alignments as developed to date, and all build alternatives are subject to future refinements during project development.

The three build alternatives result in some level of socio-economic impacts as well as impacts to natural resources within the study area, whereas the No-Build Alternative would not be expected to result in any readily-identifiable impacts to the human or natural environments. However, the No-Build Alternative would not address regional mobility needs and eventually transportation demands will require piecemeal improvements to existing facilities, which will likely result in impacts to the human and natural environments as existing ROW is widened and/or new facilities are required. The long-term impacts of the No-Build Alternative may actually exceed the impacts that may be realized from any of the build alternatives.

The foregoing discussion of expected impacts to the natural and human environments is summarized in **Table 4-1** for the three build alternatives. As discussed above in **Section 4.1**, although other categories of potential impacts were examined, only the factors that assist in differentiating between the alternatives are shown in the table.

The Yellow-Red (Middle) Alternative would have a substantially smaller impact on land use than the other two build alternatives. The length of two parallel county roads within the proposed ROW for this alternative is at least four times longer than the other alternatives, and the acreage of existing road ROW included within this alternative is at least double the other alternatives.

In terms of socio-economic impacts, the Orange-Red (East) Alternative is expected to result in greater adverse impacts in all categories shown in **Table 4-1**, as compared to the other build alternatives. The socio-economic impacts expected for the Green (West) Alternative and the Yellow-Red (Middle) Alternative would be very minor and essentially the same.

Table 4-1. Expected Impacts of Alignment Alternatives

POTENTIAL IMPACTS	ALIGNMENT ALTERNATIVES				
	Travels northwest to Pilot Point; connects to U.S. 377	Southern portion follows Collin-Denton county line; connects to FM 121	Southern portion is all within Collin County; connects to FM 121		
	Green (West)	Yellow-Red (Middle)	Orange-Red (East)		
ENGINEERING / DESIGN FEATURES RELATING TO LAND USE IMPACTS					
Length on Existing Parallel Roads (miles)	0.1	4.8	1.1		
Area of Existing Road ROW in Prop. ROW (acres)	6	28	11		
SOCIAL AND ECONOMIC IMPACTS					
# of Displaced Residences in ROW	0	0	1		
# of Displaced Commercial & Non-Cmcl. Buildings	0	0	2		
# of Noise-Sensitive Areas within 300 feet of ROW	1	3	12		
# of Property Owners Affected by ROW	17	17	34		
# of Pipelines Crossed by ROW	1	1	2		
ENVIRONMENTAL IMPACTS					
# of Streams Crossed by ROW	13	10	12		
ROW within 100-Year Floodplain (acres)	77.7	70.8	49.2		
Other Open Water in ROW (acres)	1.8	0.6	3.0		
Emergent Wetlands in ROW (acres)	0.3	0.1	0.5		
Riparian Forest in ROW (acres)	1.9	25.3	15.2		
Upland Forest in ROW (acres)	3.8	2.0	3.8		
Prime Farmland in ROW (acres)	238.4	107.8	77.0		
OTHER IMPACTS					
Compatibility with Regional Plans (see legend below) **	-	+	+		
<p>NOTES:</p> <p>* These displacements are agricultural buildings, one of which is located on the same parcel as the displaced residence, noted above.</p>					
** Legend:	Major Negative Effect	Some Negative Effect	No Effect, Neutral	Some Positive Effect	Major Positive Effect
	--	-	O	+	++

The anticipated impacts to natural resources varies among the alternatives, and each build alternative is expected to cause the least adverse impacts to one or more of the resources included in **Table 4-1**. The Yellow-Red (Middle) Alternative has the least impacts to water-related resources in terms of the number of streams crossed, impacts to open water and emergent wetlands and impacts to upland forests. The Orange-Red (East) Alternative has the least amount of ROW that would be located within floodplains. The Green (West) Alternative has the least impacts to riparian forest habitat. In terms of prime farmland outside city limits that would be removed from potential agricultural use, the Orange-Red (East) Alternative has the lowest level of impacts among the build alternatives. For purposes of this discussion, all

resources were regarded as equally important considerations and no relative importance weighting was assigned to the resources evaluated. The significance of differences in impacts between the build alternatives is discussed further in **Section 6.0**.

A qualitative analysis of the indirect impacts of the build alternatives on regional economic development has been made. All build alternatives will very likely be accompanied by commercial development along frontage roads, which would lead to regional economic benefits including new jobs, an increase in community commerce, and increases in land-based tax revenues and sales taxes. The Yellow-Red (Middle) Alternative is the only build alternative that would be located in all three counties of the study area and, therefore, effect the distribution of these economic benefits among the three counties within this region.

As discussed above, the Green (West) Alternative is substantially less compatible with regional transportation plans that have been developed to date. The Orange-Red (East) Alternative and Yellow-Red (West) Alternative are equally and highly compatible with existing regional plans.

A conceptual level traffic analysis concluded that the roadway capacity warranted by year 2030 is one lane per direction for each alternative. The relative differences in projected traffic among the three alternatives are small, indicating there is no discernable difference between the three alignments in terms of traffic demand based on data currently available. The Green (West) Alternative, however, serves a different market than the other two alignments.

5.0 STAKEHOLDER AND PUBLIC INVOLVEMENT

5.1 PROCESS FOR STAKEHOLDER AND PUBLIC INVOLVEMENT

From the outset of the proposed DNT 4B/5A project, the NTTA looked to local government representatives from within the study area as the primary input source in the development of alignment alternatives. Such coordination efforts were accomplished through the creation of the EWG and TWG collaborative stakeholder groups. These work group meetings were structured to allow key stakeholders input during the alternatives design and analysis process. The TWG provided technical input on corridor constraints, thoroughfare plans and additional planning and development that could affect alignments. This information was then presented to the EWG for review and comment. The EWG also acted as a conduit of information to other agency leaders and constituents. Two public meetings were also held to give the general public, including land owners in the study area, the opportunity to provide input on the process of choosing a preferred alignment. Additional details on the stakeholder meetings and public meetings are provided below in **Sections 5.2** and **5.3**, respectively.

The NTTA also facilitates public involvement by providing project details and updates via a Monthly Project Delivery Report (MPDR) prepared for the NTTA Board of Directors and made available to the general public via the NTTA website. The information available in the MPDR¹¹ includes project milestones, next steps, project partners and contact information.

5.2 STAKEHOLDER MEETINGS

As previously discussed throughout the EWG and TWG meetings, the NTTA consistently emphasized the importance of local government participation and input in the development of alignment alternatives. The following 15 entities have jurisdiction within the DNT 4B/5A study area and, therefore, were included as EWG and TWG members:

¹¹ NTTA Monthly Project Delivery Report, updated monthly, <http://www.ntta.org/AboutUs/Projects/>.

- City of Celina
- City of Gunter
- City of Pilot Point
- Town of Tioga
- Collin County
- Cooke County
- Denton County
- Grayson County
- United States Army Corps of Engineers
- North Texas Tollway Authority
- North Central Texas Council of Governments
- Texoma Council of Governments
- Sherman-Denison Metropolitan Planning Organization
- Grayson County Regional Mobility Authority
- Texas Department of Transportation

The EWG and TWG each met four times between October 2009 and May 2010. With the exception of the Town of Tioga, representatives from all of the entities listed above participated in at least one of the eight stakeholder meetings. The stakeholder meetings occurred on the following dates:

- EWG Meetings: October 23, 2009, December 4, 2009, January 29, 2010, May 21, 2010;
- TWG Meetings: October 30, 2009, December 11, 2009, January 22, 2010, May 17, 2010.

Summaries of the representatives who attended these stakeholder meetings and the information that was exchanged are included in **Appendix C-1**.

The development of alignment alternatives within the work group meetings was an iterative process. Active collaboration between work group members, project design engineers and the NTTA resulted in various revisions to alignment alternatives in order to minimize impacts. It was from this collaborative process that the three build alternatives presented in this alternatives assessment were developed and refined.

As detailed in the historical background provided in **Section 3.1**, prior to the above described stakeholder meetings, the cities of Pilot Point, Gunter and Aubrey, as well as Denton and Grayson counties, all adopted resolutions designating the Denton/Collin County line alignment (i.e., the Yellow-Red alternative) for DNT 4B as the preferred route. Although Collin County adopted a similar resolution in 2005, the County rescinded its designation of the Denton/Collin County line as the preferred DNT 4B alignment in 2008. Throughout the stakeholder meeting process, the Yellow-Red (Middle) Alternative has received support as the preferred alignment from the cities of Pilot Point, Gunter and Aubrey, and Denton and Grayson counties. The Orange-Red (East) Alternative is supported as the preferred alignment by the City of Celina and Collin County.

5.3 PUBLIC MEETINGS

5.3.1 Description of Public Meetings

In addition to regular stakeholder meetings, public meetings were held on March 9, 2010 in Pilot Point and March 11, 2010 in Celina. Public meeting notification began in February 2010 and continued throughout the month. Public notices for the meetings were sent to adjacent property owners and local, city and state officials on February 2, 2010. A copy of the public notice is included in **Appendix C-2**. In addition, legal notices were published in the Spanish language newspaper *Al Día* and the following English language newspapers: *The Dallas Morning News*, *Celina Record*, *Pilot Point Post Signal*, *Denton Record Chronicle* and the *Sherman Herald Democrat*. Further, a legal notice was posted on the NTTA website, a news release was distributed to all area media including print and broadcast, postcards were mailed to all property owners within the study area, and a flier announcing the meetings was provided to stakeholder entities for distribution.

The public meetings functioned to present the public with information on the alignment alternatives and gather public comments regarding these alternatives. Both public meetings were open house format, with a rolling PowerPoint presentation providing an overview of the proposed DNT 4B/5A planning process and additional project information. No formal presentation was made in either of the public meetings. A copy of this rolling PowerPoint presentation is included in **Appendix C-3**. NTTA staff, design engineers and project environmental specialists were available to answer questions from the meeting attendees. The following exhibits were on display for public viewing:

- All three proposed build alternatives on an aerial photograph;
- Constraints maps of natural and man-made features, including a constraints map with property owners overlaid;
- An evaluation matrix of the design features and potential impacts associated with each of the three proposed build alternatives;
- A map of drainage areas along the three proposed build alternatives;
- A map of interchange and ramp layouts for the three proposed build alternatives;
- A ramp configuration exhibit for the three proposed build alternatives;
- A map of the parcels within the ROW of the three proposed build alternatives; and

- A regional map depicting the proposed project's spatial relationship to other regionally significant planned projects.

5.3.2 Review of Public Comments Received

During the two public meetings, a court reporter was present to take verbal comments and attendees were given the opportunity to return written comments at the meeting or via mail or email by March 21, 2010. A total of 291 people provided comments by these various delivery means. In some cases individuals chose to submit more than one comment, but all information received from the same person was counted as a single comment. All comments were grouped as positive, neutral or negative for each of the proposed alternatives, including the No-Build Alternative. The comments were then compiled in a spreadsheet that facilitated identifying different types of reasons offered in support or opposition for the proposed alternatives. The results of this review of public comments received are described below by alternative.

No-Build Alternative

A total of two individuals were in favor of the No-Build Alternative.

General reasons given for favoring the No-Build Alternative included the following:

- Construction of any of the build alternatives would be too expensive; and
- An overall dislike for the construction of a tolled facility.

Green (West) Alternative

A total of 44 individuals were in favor of the Green (West) Alternative and 33 people indicated opposition to it. The ratio of people supporting to those opposing this alternative is 1.3 to 1.

General reasons given for favoring the Green (West) Alternative included the following:

- It would provide an additional north-south route that would reduce traffic on I-35;
- It would be easier to improve the north-south route of U.S. 377 compared to I-35 for future travel;
- It would improve access to I-35, northwest Denton County, Oklahoma, and the recreation facilities of Denton County; and
- It would benefit a large number of individuals and provide positive growth and financial benefits.

General reasons given for opposing the Green (West) Alternative included the following:

- It would only benefit Denton County;
- It is too far removed from the large north-south traffic demand in Collin and Grayson counties;
- It would be utilized the least amount of the alternatives due to location;
- There are numerous environmental concerns due to the proximity to Ray Roberts Lake;
- It would not help alleviate traffic because it would not directly connect to I-35; and
- It would cost more to construct than the other build alternatives.

Yellow-Red (Middle) Alternative

A total of 137 individuals were in favor of the Yellow-Red (Middle) Alternative and ten were opposed to it. The ratio of people supporting to those opposing this alternative is 13.7 to 1.

General reasons given for favoring the Yellow-Red (Middle) Alternative included the following:

- It would have economic benefit for Denton, Collin and Grayson counties;
- It would distribute economic benefits between Denton and Collin counties;
- It would involve expansion into Grayson County;
- It would help alleviate traffic on SH 289;
- It would be heavily utilized;
- It would result in a greater economic benefit as north-south traffic would be diverted from I-35; and
- It would result in fewer impacts to residential property.

General reasons given for opposing the Yellow-Red (Middle) Alternative included the following:

- Collin and Grayson counties already have access to a primary north-south route via SH 289;
- There would be extensive floodplain and wetland crossings; and
- It would benefit few landowners.

Orange-Red (East) Alternative

A total of 113 individuals were in favor of the Orange-Red (East) Alternative and 15 were opposed to it.

The ratio of people supporting to those opposing this alternative is 7.5 to 1.

General reasons given for favoring the Orange-Red (East) Alternative included the following:

- It would provide economic benefit for Collin and Grayson counties;
- It would involve expansion into Grayson County and allow for future connectivity to the Sherman/Denison area;
- It would help alleviate traffic on SH 289;
- It would be heavily utilized;
- It would result in the fewest impacts to floodplains;
- It would require the least amount of funds to construct; and
- It would support growth in the City of Celina.

General reasons given for opposing the Orange-Red (East) Alternative included the following:

- Collin and Grayson counties already have access to a primary north-south route via SH 289; and
- The alignment would be too close to the City of Celina, resulting in impacts to residential properties (i.e., too close to residences on Tolleson Drive and to Celina Elementary School).

5.3.3 Comments Regarding Potential ROW Donations

During the public meeting process, several property owners expressed a desire via written comment (i.e., comment card, letter, or email) or verbal comment (made to a court reporter) to donate ROW along their preferred Build Alternative route. Although property owner willingness to donate ROW was not among the array of data sought for developing alternatives in this study, it is noted here as it reflects a type of comment from the public that is uniquely relevant to community sentiment toward particular alternatives. An accounting of these declarations is provided below and includes only those individuals confirmed via county records as owners of property affected by proposed ROW acquisition for the build alternatives.

No confirmed owners of property located within the proposed Green (West) Alternative alignment indicated plans to donate ROW. A total of four confirmed property owners along the Yellow-Red (Middle) Alternative alignment indicated plans to donate ROW, corresponding with the following parcel numbers as shown in **Appendix A-5**: parcels 10, 53–56, 60–69, 71, 75, 77, 79, 80, 82–88, 90, 91 and 98. These ROW donations would account for approximately 322 acres (59 percent) of the estimated net ROW area (approximately 549 acres) needed to be acquired under the Yellow-Red (Middle) Alternative. The 322 acres of ROW donation would

decrease the ROW acquisition cost for the Yellow-Red (Middle) Alternative by approximately \$5.9 million.

Although some of the parcels noted above would also be affected by the ROW for the Orange-Red (East) Alternative, it cannot be assumed that willingness to donate ROW for one alternative equates to willingness to donate to any of the other alternatives. For example, the owner of parcels 77, 79 and 80 indicated in his comment that he would not donate ROW for the Orange-Red (East) Alternative. Other owners who indicated willingness to donate ROW for the Yellow-Red (East) Alternative were silent as to whether they would be willing to donate ROW for parcels also affected by the Orange-Red (East) Alternative. This circumstance applies to the owner of parcel 98, and the owner of parcels 85, 87, 88, 90 and 91. No confirmed owners of property indicated an intent to donate ROW for the Orange-Red (East) Alignment.

5.3.4 Summary of Public Comments

A statistical summary of the public comments received is provided in **Table 5-1**. Based on the comments received, it appears that community feedback is split with regard to those favoring and opposing the Green (West) Alternative. Consequently, community support for this alternative is considered to be neutral. In contrast, positive community support for the Yellow-Red (Middle) and Orange-Red (East) alternatives was clearly demonstrated in comments received from the public meetings. Moreover, there was an apparent greater level of community support demonstrated for the Yellow-Red (Middle) Alternative in terms of total number of people expressing support, the ratio of those favoring to those opposing, and the expressions of intent to donate ROW.

Table 5-1. Summary of Comments from Public Meetings

COMMENT ATTRIBUTES	ALIGNMENT ALTERNATIVES		
	Green (West)	Yellow-Red (Middle)	Orange-Red (East)
# of People Expressing Support for Alternative	44	137	113
# of People Expressing Opposition to Alternative	33	10	15
Ratio of People Supporting to People Opposing Alternative	1.3 to 1	13.7 to 1	7.5 to 1
Acres of ROW for which Property Owners Stated a Willingness to Donate	0	322	0

6.0 EVALUATION OF ALTERNATIVES

This section provides an integrated evaluation of DNT 4B/5A design features, environmental impacts, and public and stakeholder feedback that were discussed individually in **Sections 3.0, 4.0, and 5.0** of this report. This analysis also considers these aspects in light of the need and purpose discussion found in **Section 1.0**.

6.1 SUMMARY OF ATTRIBUTES AND IMPACTS OF ALTERNATIVES

The various attributes and expected impacts associated with the three build alternatives have been summarized in **Table 6-1**. To aid in identifying the alternative features and impacts that favor a particular alternative, items within the table that are regarded as positive indications are highlighted in green.

The differences in projected traffic among the build alternatives was also examined. A conceptual level traffic projection was developed for year 2030 and shows tolled main lane traffic at 15,000 vehicles per day. This traffic projection indicated there is no discernable difference between the alignments in terms of traffic demand based on data currently available.

In addition to the evaluation factors in **Table 6-1**, the indirect impacts of the build alternatives on regional economic development was examined qualitatively. Based on observations of economic development trends accompanying the construction of controlled-access roads with frontage road access, all build alternatives will very likely be accompanied by commercial development along frontage roads. This relationship between the creation of transportation infrastructure and commercial development would yield regional economic benefits including new jobs, an increase in community commerce, and increases in land-based tax revenues and sales taxes. The extent to which each of the build alternatives would distribute development-related economic benefits among the counties within this three-county region are noted in the discussion of each alternative below.

Table 6-1. Evaluation Matrix of Alignment Alternatives

ALIGNMENT ALTERNATIVES¹ (Note: All build alternatives are subject to future refinements.)					
Travels northwest to Pilot Point; connects to U.S. 377					
Southern portion follows Collin-Denton county line; connects to FM 121					
Southern portion is all within Collin County; connects to FM 121					
ALTERNATIVE FEATURES AND POTENTIAL IMPACTS²	Green (West)	Yellow-Red (Middle)	Orange-Red (East)		
ENGINEERING / DESIGN FEATURES (see Sections 3.3 and 4.2.1)					
Alignment Length (miles)	12.3	11.9	11.1		
Length on Existing Parallel Roads (miles)	0.1	4.8	1.1		
Estimated Total ROW Area Needed (acres)	596	577	538		
Area of Existing Road ROW in Prop. ROW (acres)	6	28	11		
Estimated Net ROW Area Needed to Acquire (acres)	590	549	527		
SOCIAL AND ECONOMIC IMPACTS (see Section 4.2.1)					
# of Displaced Residences in ROW	0	0	1		
# of Displaced Commercial & Non-Cmcl. Buildings	0	0	2 ³		
# of Noise-Sensitive Areas within 300 feet of ROW	1	3	12		
# of Property Owners within ROW	17	17	34		
# of Pipelines Crossed by ROW	1	1	2		
ENVIRONMENTAL IMPACTS (see Section 4.2.2)					
# of Streams Crossed by ROW	13	10	12		
ROW within 100-Year Floodplain (acres)	77.7	70.8	49.2		
Other Open Water in ROW (acres)	1.8	0.6	3.0		
Emergent Wetlands in ROW (acres)	0.3	0.1	0.5		
Riparian Forest in ROW (acres)	1.9	25.3	15.2		
Upland Forest in ROW (acres)	3.8	2.0	3.8		
Prime Farmland in ROW (acres)	238.4	107.8	77.0		
PROJECT COSTS (in \$ Millions) (see Section 3.3)					
Estimated Right-of-Way (ROW) Costs (\$Million)	\$20	\$19	\$22		
Estimated Project Cost, Including Construction, ROW and Agency Costs, Year 2010 (\$Million)	\$888	\$864	\$804		
OTHER IMPACTS / ATTRIBUTES (see Sections 4.2.3 and 5.3)					
Compatibility with Regional Plans (see legend below) ⁴	-	+	+		
Public Acceptance (see legend below) ⁴	O	++	+		
<p>Notes:</p> <p>1. All build alternatives are subject to future design refinements, which may affect values shown in this table.</p> <p>2. Table cells shaded green denote features that are most favorable and impacts that are least adverse, as compared to the other build alternatives.</p> <p>3. These displacements are agricultural buildings, one of which is located on the same parcel as the displaced residence, above.</p>					
4. Legend:	Major Negative Effect	Some Negative Effect	No Effect, Neutral	Some Positive Effect	Major Positive Effect
	--	-	O	+	++

6.2 DISCUSSION OF ALTERNATIVES

6.2.1 Evaluation of the Green (West) Alternative

The Green (West) Alternative has not been demonstrated to possess the characteristics that would make it a candidate for further consideration as the preferred alternative.

- **Engineering / Design Features** – This alternative is the longest of the build alternatives, would require the greatest amount of ROW, and includes the least amount of existing roads within the ROW (i.e., would have the greatest amount of land use impacts).
- **Social and Economic Impacts** – This is the only evaluation factor for which the Green (West) Alternative is superior to the Orange-Red (East) Alternative and is nearly equivalent with the Yellow-Red (Middle) Alternative. This alignment generally stays within agricultural fields and avoids urbanized areas. Only one residence is within 300 feet of the edge of the proposed ROW.
- **Environmental Impacts** – Of the three alternatives, the Green (West) Alternative has the least amount of environmental impacts to riparian forests (1.9 acres). However, it has more than double the amount of impacts to prime farmland soils as compared to the Yellow-Red (Middle) Alternative, and triple the level of impacts as compared to the Orange-Red (East) Alternative. The Green (West) Alternative also has the greatest number of stream crossings and acreage within floodplains. As noted above, the crossing of floodplains does not generally reflect damage to a particular natural resource, but may increase road construction costs by requiring the installation of culverts and bridges to avoid impacts to stream hydraulics.
- **Project Costs** – The Green (West) Alternative has the greatest estimated total project costs (\$888 million), which includes a ROW acquisition cost of \$20 million. These higher costs (as compared to the other alternatives) are partially related to the length of the alternative as well as the number of stream/floodplain crossings.
- **Other Impacts / Attributes: Compatibility with Regional Plans** – Although this alternative would improve mobility within the study area, it is not compatible with regional transportation plans. Moreover, further development of this alternative would be clearly inconsistent with the

transportation plans that have been developed for Grayson County and which are proceeding forward based on the expectation that the GCRMA Tollway will connect with the DNT 4B/5A facility at FM 121.

- **Other Impacts / Attributes: Public Acceptance** – Public response to the Green (West) Alternative has been relatively neutral.
- **Stakeholder Support** – Although proposed for study by the City of Pilot Point, there is no county or municipality that has expressed support for this alternative.

In addition, the Green (West) Alternative will restrict indirect economic development benefits to Denton County, except for its southern portion, which is in Collin County.

6.2.2 Evaluation of the Yellow-Red (Middle) Alternative

The Yellow-Red (Middle) Alternative compares well in relative strengths and weaknesses to the Orange-Red (East) Alternative. Therefore, this section evaluates the Yellow-Red (Middle) Alternative and, as needed, provides some comparison to the Orange-Red (East) Alternative.

- **Engineering / Design Features** – The Yellow-Red (Middle) Alternative has a much smaller impact on land use. The alternative has more than four times the length and twice the acreage of existing parallel roads within its proposed ROW. This aspect of the design of the Yellow-Red (Middle) Alternative reduces the amount of change in land use from existing uses to transportation use and takes advantage of access and transportation connections to existing county roads (i.e., County Road 9 and County Road 10 (County Line Road)). The net difference in new transportation ROW to be acquired by the Yellow-Red (Middle) Alternative (taking into account the existing parallel roads) would be 22 acres more than the Orange-Red (East) Alternative.
- **Social and Economic Impacts** – Less ROW would be required with the Yellow-Red (Middle) Alternative. In fact, the number of property owners with real property located wholly or partially within the ROW for the Orange-Red (East) Alternative is double that for the Yellow-Red (Middle) Alternative. In addition, the Yellow-Red (Middle) Alternative would cross one pipeline so there is less cost and greater safety than if the alternative had more than one pipeline..

- **Environmental Impacts** – The Yellow–Red (Middle) Alternative has the lesser amount of expected impacts to water-related resources in terms of the number of streams crossed, impacts to open water and emergent wetlands, and impacts to upland forests, as compared to the Orange-Red (East) Alternative. The Yellow-Red (Middle) Alternative would not be expected to affect the hydraulics of any streams. The Yellow-Red (Middle) Alternative is expected to have slightly less impacts than the Orange-Red (East) Alternative regarding the potential types and amount of impacts to the natural resources examined.

- **Project Costs** – The Level F preliminary cost estimate for the Orange-Red (East) Alternative would be \$60 million less than the Yellow-Red (Middle) Alternative, which represents a 6.9 percent decrease in cost. In light of the inherent uncertainties in the Level F estimate, this difference in cost between these alternatives is considered minor. As outlined in the Level F estimate calculations in **Appendix A-7**, this method builds an initial project cost estimate around a standard cost of \$38 million per tollway mile plus the cost of ROW acquisition. This level of cost estimation does not take into consideration physical/design differences between alternatives, such as terrain and noise walls, as well as potential ROW donations. If such considerations were added to the analysis, it is expected that the cost estimates for the Yellow-Red and Orange-Red alternatives would be nearly identical.

- **Other Impacts / Attributes: Compatibility with Regional Plans** – The Yellow–Red (Middle) Alternative is consistent with regional transportation planning to date.

- **Other Impacts / Attributes: Public Acceptance** – Unequivocal, positive community support was demonstrated for both the Yellow-Red (Middle) and Orange-Red (East) alternatives from comments received from people attending the public meetings. However, there was an apparent greater level of community support demonstrated for the Yellow-Red (Middle) Alternative in terms of total number of people expressing positive support and the ratio of those favoring the Yellow-Red (Middle) Alternative to those opposing it. In addition, some of the property owners affected by the Yellow-Red (Middle) Alternative expressed an intent to donate 59 percent of the ROW needed. No property owners made similar statements regarding the Orange-Red (East) Alternative as part of the public involvement process.

- **Stakeholder Support** – The Yellow-Red (Middle) Alternative received the wider range of support among county and city governments within the region and was endorsed by the cities of Pilot Point, Gunter and Aubrey, as well as Denton and Grayson counties.

Additionally, the Yellow-Red (Middle) Alternative provides indirect economic benefits related to development to all three counties: Collin, Denton and Grayson counties.

6.2.3 Evaluation of the Orange-Red (East) Alternative

This section evaluates the Orange-Red (East) Alternative and provides some comparisons to the Yellow-Red (Middle) Alternative.

- **Engineering / Design Features** – The Orange-Red (East) Alternative is the shorter than the Yellow-Red (Middle) Alignment by 0.8 mile, resulting in the smallest ROW requirement. However, this advantage is outweighed by the Yellow-Red (Middle) Alternative's smaller impact on land use.

- **Social and Economic Impacts** – With regard to socio-economic impacts, the Orange-Red (East) Alternative is expected to result in relatively greater adverse impacts in all categories shown in **Table 6-1**, as compared to the Yellow-Red (Middle) Alternative. The Orange-Red (East) Alternative will result in the displacement of one residence and the agricultural building associated with it, plus an additional agricultural building. The Orange-Red (East) Alternative also has three times the number of residences within close proximity to the toll road, as compared to the Yellow-Red (Middle) Alternative, potentially affected by traffic noise. Moreover, the Orange-Red (East) Alternative traffic noise impacts will likely affect a nearby church and park. Also notable is the number of property owners with real property located wholly or partially within the ROW for the Orange-Red (East) Alternative, which is double that for the Yellow-Red (Middle) Alternative. This factor is considered important in determining the level of difficulty expected in terms of ROW acquisition, particularly as it reflects generally smaller property parcel size along the Orange-Red (East) Alternative. Finally, costs and safety considerations associated with crossing petroleum product pipelines would be greater for the Orange-Red (East) Alternative as it would cross two pipelines, as compared to the single pipeline crossed by the Yellow-Red (Middle) Alternative.

- **Environmental Impacts** – Impacts to riparian forests by the Orange-Red (East) Alternative is ten acres less than for the Yellow-Red (Middle) Alternative. In addition, the Orange-Red

(East) Alternative has a lesser amount of ROW that would be located within floodplains. As neither of these alternatives is expected to affect the flooding potential of any streams, the distinction between the alternatives regarding floodplains has no practical significance. In terms of prime farmland that would be removed from potential agricultural use, the Orange–Red (East) Alternative removes nearly 31 acres less than the Yellow-Red (Middle) Alternative. This difference is also of no practical significance because consideration was not given to the soils which would otherwise have qualified as prime farmland (approximately 80 acres) in the Orange-Red (East) Alternative ROW, except that such soils were located within the city limits of the City of Celina and no longer qualify as prime farmland.

- **Project Costs** – It is expected that the cost estimates for the Yellow-Red (Middle) and Orange-Red (East) alternatives would be nearly imperceptible. For example, steeper terrain for the Orange-Red (East) Alternative would necessitate approximately double the amount of cut retaining walls than the Yellow-Red (Middle) Alternative. The cost difference between the alternatives would also be offset because the Orange-Red (East) Alternative will likely require traffic noise walls where there are existing sensitive noise receivers, and because a greater amount of ROW donations appear likely for the Yellow-Red (Middle) Alternative. These examples underscore the very preliminary nature of the Level F cost estimate, and further suggest that the Yellow-Red (Middle) and Orange-Red (East) alternatives are likely quite comparable in terms of anticipated cost to construct.
- **Other Impacts / Attributes: Compatibility with Regional Plans** – Although the Orange–Red (East) Alternative offers a slightly shorter solution to accomplishing the connection to the planned Grayson County toll road, both it and the Yellow–Red (Middle) Alternative are consistent with regional transportation planning.
- **Other Impacts / Attributes: Public Acceptance** – Just as with the Yellow-Red (Middle) Alignment, the Orange-Red (East) Alternative received positive comments from people attending the public meetings. However, there was an apparent greater level of community support demonstrated for the Yellow-Red (Middle) Alternative in terms of total number of people expressing support and the ratio of those favoring to those opposing.
- **Stakeholder Support** – The Orange-Red (East) Alternative has received support as the preferred alignment by the City of Celina and Collin County.

In addition to the evaluation factors above, the Orange-Red (East) Alternative will provide development-related indirect economic benefits to Collin and Grayson counties.

6.2.4 Evaluation of the No-Build Alternative

The No-Build Alternative does not meet the demonstrated need for mobility within the study area, likely resulting in long-term alternative solutions to enhance mobility. These alternative solutions, when implemented, will result in impacts to the human and natural environment and may exceed those expected for any of the build alternatives. Moreover, there is virtually no support by either local government leaders or the affected communities for this alternative. As a consequence, the No-Build Alternative is not considered viable for purposes of further transportation planning in the study area.

6.2.5 Comparison of the Yellow-Red (Middle) and Orange-Red (East) Alternatives

As this analysis is ultimately a comparison of the relative strengths and weaknesses of suitable alternatives based on the information that has been developed in this study, this section evaluates the Yellow-Red (Middle) and Orange-Red (East) alternatives in tandem.

– **ROW** – Although the Orange-Red (East) Alternative is shorter in distance than the Yellow-Red (Middle) Alternative, the Middle alignment requires the least amount of ROW acquisition and disrupts fewer residents. The alignment would not have an impact on housing. The NTTA would need to acquire an additional 22 acres of land for the Orange-Red (East) Alternative.

– **Land Use** – The Yellow-Red (Middle) Alternative would compliment an existing county road network. County Roads 9 and 10 extend along the Collin and Denton county line. The terrain is relatively flat, and the Yellow-Red (Middle) Alternative would provide a mostly straight path northward. In addition, the alignment reduces the amount of change in land use. The Orange-Red (East) Alternative would require new roadway development; however, it is slightly shorter than the Yellow-Red (Middle) Alternative.

– **Economic Development** – Although the Collin County Commissioners Court rescinded a 2005 resolution endorsing a county-line alignment (Middle alignment), the Middle route was the initial choice by elected officials in Denton and Collin counties. The alignment would provide wider economic development possibilities for more government agencies, compared to the

Orange-Red (East) Alternative, which could provide economic development for Collin and Grayson counties.

– **Public Support** – Based on information gathered through the Public Involvement process, the Yellow-Red (Middle) Alternative garnered the most support, based on the total number of people expressing support and the ratio of those favoring to those opposing.

– **Project Cost** – Based on preliminary numbers, the project cost is approximately the same for both the Middle and East alignments.

6.3 NEXT STEPS IN PROJECT DEVELOPMENT

Based on the information presented in this comprehensive Analysis of Alternatives, the schedule indicates that the NTTA Board of Directors will consider selection of a preferred alternative for the DNT 4B/5A extension by the end of July 2010. Thereafter, a preliminary design schematic and environmental evaluation will be conducted for the preferred alternative. This process is expected to conclude by February 2011, and a Public Hearing will be held in March 2011. After further public comments and stakeholder input are addressed, a final schematic design and environmental evaluation are expected to be submitted for NTTA Board of Directors approval in June 2011.

Appendix A: Supporting Information and Data

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A-4	Tollway Design Criteria	1
A-5	Parcels within ROW Map	1
A-6	ROW Acquisition Cost Estimate	3
A-7	Estimated Total Project Cost	6

8. Dallas North Tollway Corridor

Highway Segments: FT1 1900, FR1 1900, FR1 1910, FT1 1930, FT1 1935

GENERAL DESCRIPTION

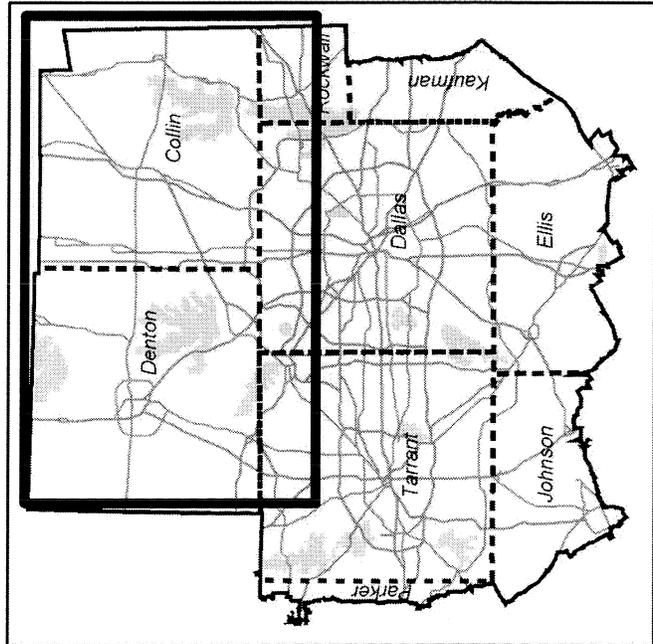
Proposed improvements to the Dallas North Tollway (DNT) corridor include expansion of the current DNT facility between Royal Lane and SH 121, and new construction of the DNT Extension Phase 4 between US 380 and FM 121 near the Collin/Grayson County line. The North Texas Tollway Authority (NTTA) is the responsible agency for projects along the DNT corridor.

Continued strong growth in north Dallas, Addison, and Plano, particularly in terms of employment, warrants the expansion of the DNT to 8 general purpose toll lanes (plus auxiliary lanes) between

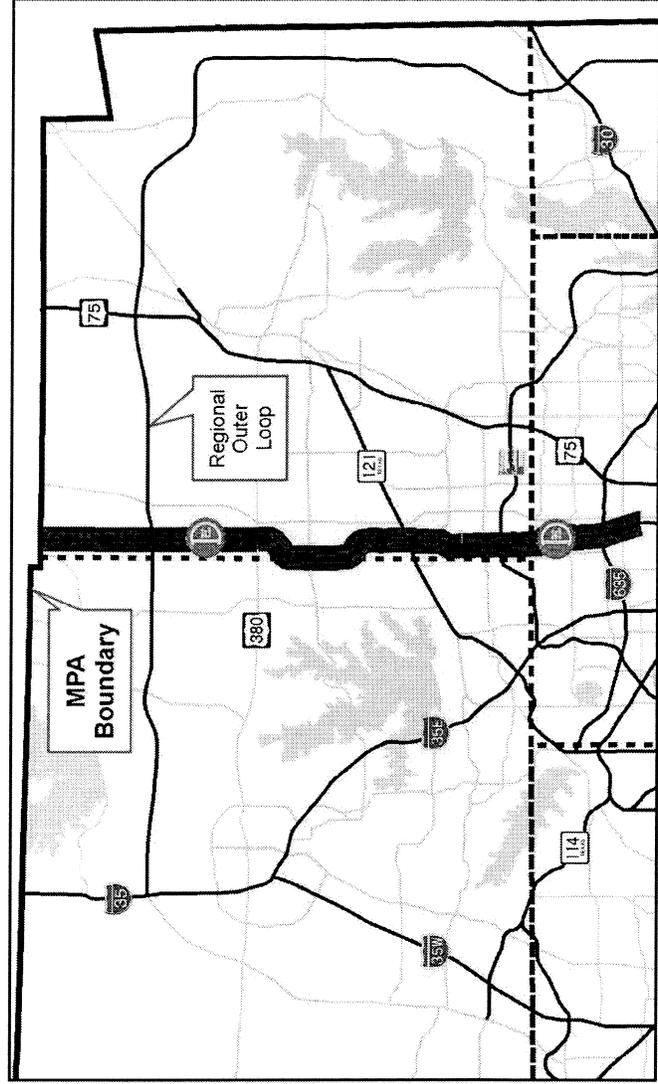
Royal Lane and SH 121. However, right-of-way in this portion of the corridor is severely constrained, in many cases by high-rise office buildings, and feasibility studies are underway to determine cost-effective and low-disruption solutions for adding new capacity. This expansion is anticipated to open by 2019.

Construction of the DNT Extension Phase 3 between SH 121 and US 380 in Frisco is complete.

Overview Map



Detail Map



Corridor 8

DNT Extension Phase 4 will construct 6 general purpose toll lanes (plus auxiliary lanes) and 4 frontage road lanes (plus auxiliary lanes near ramp locations and cross streets) between US 380 and FM 121 through the rapidly-growing cities of Prosper and Celina. Alignment identification is still under study by the NTTA. Construction is planned to proceed in phases with frontage roads between US 380 and FM 428, and tollway main lanes between US 380 and the Outer Loop open to traffic by 2019. Completion of

frontage roads from FM 428 to FM 121 and tollway main lanes from the Outer Loop to FM 121 is expected by 2025. Coordination is currently underway with the newly-formed Grayson County Regional Mobility Authority (GCRMA) to determine if the DNT could link to a proposed north-south toll road alternative for SH 289 (Preston Road) that would terminate at US 82 between Gainesville and Sherman.

Estimated Total Project Cost: **\$857.6 million**

RECOMMENDED IMPROVEMENTS

Dallas North Tollway Corridor			
Highway Segments	Limits	Project Description	Cost
FT1 1900 FR1 1900 FT1 1910 FR1 1910	FM 121 to US 380	6 general purpose toll lanes + auxiliary lanes. 6 frontage road lanes (plus auxiliary lanes near ramp locations and cross streets).	\$310 million
FT1 1920 FR1 1920 FT1 1925 FR1 1925	US 380 to SH 121	6 general purpose toll lanes + auxiliary lanes. 6 frontage roads lanes (plus auxiliary lanes near ramp locations and cross streets).	\$336.6 million
FT1 1930	SH 121 to Parker Road	Expand existing facility to 8 general purpose toll lanes + auxiliary lanes.	\$211 million
FT1 1935	Parker Road to Royal Lane	South of Legacy Drive – 8 general purpose toll lanes + auxiliary lanes.	

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Plano, Texas 75026-0729
Phone: (214) 461-2000

Supporting Documents:

Mobility 2025: The Metropolitan Transportation Plan, 2004 Update, NCTCOG, January 2004.

Mobility 2025: The Metropolitan Transportation Plan, Amended April 2005, NCTCOG, April 2005.

Mobility 2030: The Metropolitan Transportation Plan for the Dallas-Fort Worth Area, NCTCOG, January 2007.

**Mobility 2030 - 2009 Amendment
Corridor Fact Sheets Summary**

Fact Sheet ID	Location	Limits	Highway Segment ID	Lane Summary		Operational Between*	Responsible Agency	YOE Total Project Cost
				Existing	Proposed (2030)			
Dallas-Fort Worth Regional Outer Loop System								
1	IH 35	FM 3002 to Regional Outer Loop (FM 156) Regional Outer Loop (FM 156) to Loop 288	FT1 1100, FR1 1100 FT1 1105, FR1 1105, HM1 8320	4	8	2026 - 2030	TxDOT Dallas (CDA)	\$140,056,000
				4	8 + 4 (HOV-M/C)	2026 - 2030		\$266,326,000
2	IH 35W	Loop 288 to IH 35E/IH 35W IH 35/IH 35E to Loop 288	FT1 1110, FR1 1110 FT1 1112, FR1 1112, HM1 8325, HM1 8330 FT1 1115, FR1 1115, HM1 8300 FT1 1115, FR1 1115, HM1 8300	4	10 + 4 (HOV-M/C)	2026 - 2030	TxDOT Dallas (CDA)	\$645,800,000
				4	6 + 2 (HOV-M/C)	2026 - 2030		\$625,945,000
3	Loop 9	Loop 288 to SH 114 SH 114 to Eagle Parkway Eagle Parkway to SH 170	FT1 1117, FR1 1117, HM1 8300 FT1 1120, FR1 1120, HM1 8300 FT1 1122, FR1 1122 FT1 1130, FR1 1130, HM1 8100, HM1 8300	4	6 + 4 (HOV-M/C)	2026 - 2030	TxDOT Fort Worth (CDA)	\$187,758,000
				4	6 + 4 (HOV-M/C)	2026 - 2030		\$124,684,000
4	Outer Loop (Eastern Subregion)	US 287/Regional Outer Loop to IH 20/SH 190 US 175 to IH 30	FT1 2400, FR1 2400, FT1 2430, FR1 2430, FT1 2440, FR1 2440, FT1 2450, FR1 2450	0	6 (TOLL)	2026 - 2030	TxDOT - Dallas (CDA)	\$5,756,213,000
				0	6 (TOLL)	2026 - 2030		\$1,448,262,000
5	Outer Loop (Western Subregion)	IH 30 to US 380 US 380 to US 75 US 75 to Dallas North Tollway Dallas North Tollway to IH 35	FT1 2465, FR1 2465, IN1 25001 FT1 2470, FR1 2470, FT1 2475, FR1 2475, FT1 2480, FR1 2480 FT1 2485, FR1 2485, FT1 2490, FR1 2490, FT1 2495, FR1 2495 FT1 2500, FR1 2500 FT1 2505, FR1 2505, FT1 2510, FR1 2510, FT1 2515, FR1 2515	0	6 (TOLL)	2026 - 2030	TxDOT Dallas (CDA)	\$1,263,676,000
				0	6 (TOLL)	2026 - 2030		\$1,909,422,000
6	SH 170	SH 199/Regional Outer Loop to US 81/US 287 US 377 to SH 121/FM 917 SH 121/FM 917 to IH 35W/FM 917	FT1 1800, FR1 1800, IN1 18001 FT1 1805, FR1 1805 FT1 1807, FR1 1807 FT1 1810, FR1 1810 FT1 1820, FR1 1820, FT1 1830, FR1 1830, FT1 1840, FR1 1840	0	6 (TOLL)	2026 - 2030	TxDOT Fort Worth (CDA)	\$849,486,000
				0	6 (TOLL)	2026 - 2030		\$1,323,944,000
7	SH 360	IH 35W/FM 917 to US 287/Loop 9 SH 199/Regional Outer Loop to US 81/US 287 US 81/US 287 to IH 35W Regional Outer Loop/Loop 9 to US 67	FT1 2165, FR1 2165 FT1 2170, FR1 2170, IN1 21701 FT1 2670, FR1 2670 FT1 2675	0	6 (TOLL)	2020 - 2025	NITTA	\$922,442,000
				0	6 (TOLL)	2020 - 2025		\$935,374,000
8	Dallas North Tollway	US 67 to FM 2258 FM 121 to US 380 US 380 to SH 121 SH 121 to Parker Road Parker Road to Royal Lane	FT1 1900, FR1 1900, FT1 1910, FR1 1910 FT1 1920, FR1 1920, FT1 1925, FR1 1925 FT1 1930 FT1 1935	0	6 (TOLL)	2020 - 2025	TxDOT Dallas (CDA)	\$305,000,000
				6 (TOLL)	6 (TOLL)	2020 - 2025		\$689,056,000
8	Dallas North Tollway	US 380 to SH 121 SH 121 to Parker Road Parker Road to Royal Lane	FT1 1900, FR1 1900, FT1 1910, FR1 1910 FT1 1920, FR1 1920, FT1 1925, FR1 1925 FT1 1930 FT1 1935	0	6 (TOLL)	2020 - 2025	NITTA	\$310,000,000
				6 (TOLL)	6 (TOLL)	2007		\$336,598,000
				6 (TOLL)	8 (TOLL)	2010 - 2019		\$211,000,000

*Some facilities are staged and may have improvements completed prior to date listed. See Corridor Fact Sheets for more detail.
 FT - Freeway/Tollway; FR - Frontage; ART - Arterial; (HOV-M/C) - Concurrent Managed Lanes; (HOV-M/R) - Reversible Managed Lanes; (HOV-M/CD) - Managed Collector Distributor Lanes; (CDA) - Comprehensive Development Agreement

Constraints Map GIS Data Sources
Dallas North Tollway Extension Phase 4B/5A

Natural Features		
Spatial Data	Source(s)	Year
Aerial Photography (color)	– USDA: National Agricultural Imagery Program (NAIP) – Landiscor: complete coverage for Collin and Denton Counties; partial coverage for Cooke and Grayson Counties	2008 2007
Floodplains (100-year)	– Texas Geographic Society’s Texas Hazard Mitigation Package website: digitized FEMA one percent flood risk maps	2008
Golf Courses	– ESRI data and online directories for golf courses	2009
Parks and Recreation Areas	– Federal: National Transportation Atlas; US Forest Service – State: Texas General Land Office GIS database – City/County: TNRIS StratMap and contact with county offices	2008 2008 2009
Prime Farmland Soils	– Natural Resources Conservation Service (NRCS) Web Soil Survey	2009
Streams and Water Bodies	– Texas Natural Resources Information System (TNRIS)	2008
NRCS-Financed Reservoirs	– NRCS website for flood control reservoir program	2009
Threatened/Endangered Species Observations	– Texas Parks and Wildlife Department (TPWD): Natural Diversity Database (NDD)	2009
Topography	– TNRIS: USGS digital topographic maps	1961-74
Wetland Features	– USFWS: National Wetlands Inventory (NWI) maps	1992
Wildlife Management Areas	– TPWD: Natural Diversity Database (NDD)	2009

Man Made Features: Cultural Resources		
Spatial Data	Source(s)	Year
Archeological Sites	– Texas Archeological Research Laboratory (TARL) database	2009
Cemeteries	– Texas Historical Commission (THC) online atlas – County GIS data: Collin and Denton Counties	2008 2008
Historic Markers	– Texas Historical Commission (THC) online atlas	2008
NRHP Listed Properties	– Texas Historical Commission (THC) online atlas	2008

Man Made Features: Transportation and Transmission Facilities		
Spatial Data	Source(s)	Year
Airports and Airstrips	– National Transportation Atlas and aerial photograph interpretation	2008
Railroads	– Railroad Commission of Texas	2008
Roads	– TNRIS Transportation StratMap	2008
Communications Towers	– Federal Communications Commission (FCC) licensing database for cell, radio, microwave, and other communications facilities	2008
High Voltage Power Transmission Lines	– Digitized from aerial photography (NAIP 2008 and Landiscor 2007)	2008
Natural Gas Pipelines	– Railroad Commission of Texas	2008

Other Man-Made Features and Facilities		
Spatial Data	Source(s)	Year
Buildings	– Digitized from Landiscor 2007 and NAIP 2008 aerial photography	2008
City Limits and ETJ	– TNRIS StratMap and contact with county offices	2009
County Boundaries	– TNRIS StratMap	2008
Hazardous Materials Sites	– GeoSearch (search of multiple public hazardous materials sources) – TCEQ GIS database (municipal solid waste landfills)	2009 2007
Property Parcels and Ownership	– Collin County Appraisal District	2010
Property Parcels and Ownership	– Cooke County Appraisal District	2009
Property Parcels and Ownership	– Denton County Appraisal District	2010
Property Parcels and Ownership	– Grayson County Appraisal District	2009
Public Facilities and Land	– county appraisal districts and NCTCOG	
Schools	– Texas Education Agency GIS database and contact with counties	2008
USACE Land Boundaries	– U.S. Army Corps of Engineers statewide digital boundary shapefile	2009
Wells—All Types	– Railroad Commission of Texas: well types - oil/gas, injection, water	2009

Constraints Map GIS Data Sources
Dallas North Tollway Extension Phase 4B/5A

Local Government Plans and Utility Districts		
Spatial Data	Source(s)	Year
Collin Co. Thoroughfare Plan	– Collin County	2007
Celina Thoroughfare Plan	– City of Celina	2001
Denton Co. Thoroughfare Plan	– Denton County	2008
Denton Co. Freshwater Districts	– Denton County	2009
Pilot Point Zoning	– City of Pilot Point	2003
Grayson Co. Thoroughfare Plan	– Grayson County	2006
Preliminary Grayson County Tollway Plan	– Sherman – Denison Metropolitan Planning Organization	2009
Gunter Thoroughfare Plan	– City of Gunter	
Gunter Existing Land Use	– City of Gunter	2005
Gunter Future Land Use	– City of Gunter	2006
Tioga Existing Land Use	– Town of Tioga	2000
Tioga Future Land Use	– Town of Tioga	2000
Regional Outer Loop	– North Central Texas Council of Governments (NCTCOG)	
Statewide Utility Districts: Sewer	– Texas Commission on Environmental Quality (TCEQ)	2009
Statewide Utility Districts: Water	– Texas Commission on Environmental Quality (TCEQ)	2009

Dallas North Tollway Timeline

Date	Event
1964	Texas Turnpike Authority (TTA) receives reports confirming the feasibility of the Dallas North Tollway (DNT) project and authorizes condemnation proceedings for the acquisition of the Cotton Belt Railway right of way.
1966	Construction begins on the DNT corridor project.
February 11, 1968	The first section of the DNT corridor project opens to traffic from IH 35 to Mockingbird Lane.
June 30, 1968	The final section of the DNT corridor project opens to traffic extending to the terminus at IH 635. The full corridor extends from the Central Business District (Downtown) to the Lyndon B. Johnson Freeway (IH 635).
1978	Traffic volume and toll revenue records set: on average 66,212 vehicle trips per day.
1983	Construction begins on tollway extension Phase 1, from Royal Lane to Farm-to-Market (FM) 544 (Park Boulevard), a distance of approximately 9.7 miles.
1987	City of Frisco begins acquiring right of way (ROW) for the Phase 3 extension, from State Highway (SH) 121 to United States (U.S.) 380.
December 15, 1987	DNT extension Phase 1 opens to traffic.
1987	Amtech offers to install at no cost a \$5 million electronic toll collection system. The new system will allow motorists to pass through the plazas without stopping.
July 1989	TollTag operations begin on the DNT.
December 13, 1990	TTA Board awards first of three contracts for the construction of the DNT extension Phase 2 project.
1991	Construction begins on DNT extension Phase 2, extending the DNT to SH 121.
April 20, 1991	TTA Board votes to begin preliminary studies on DNT extension Phase 3 to Frisco.

September 1993	City of Frisco, Collin County and Texas Turnpike Authority enter into an agreement for construction of service roads north of SH 121.
September 1994	DNT extension Phase 2 opens to traffic.
1997	Approximately 350,000 toll transactions are recorded each day on the DNT.
September 1997	Legislation creating the North Texas Tollway Authority (SB 370) becomes effective.
March 1998	NTTA remits \$4,700,000 to Collin County to meet obligations of existing agreement.
April 1998	Supplemental Agreement #1 – between City of Frisco, Collin County and North Texas Tollway Authority to design and construct service roads and extensions.
1999	Revenue feasibility report issued by Wilbur Smith Associates (WSA) indicates that the DNT extension Phase 3 is feasible.
July 31, 2000	NTTA completes Collin County DNT Corridor Study and Grayson County DNT Corridor Study.
2001-2002	Meetings between Collin County, the NTTA, Town of Prosper and City of Celina are held to discuss surveying, preliminary ROW work and the establishment of an alignment north of U.S. 380.
December 2001	City/County let for construction contract extending service road to U.S. 380
January 2002	Revised and restated agreement among City of Frisco, Collin County and NTTA approved by all parties: NTTA to construct SH 121 Interchange City/County to provide right of way
January 2002	Groundbreaking is held for DNT interchange at SH 121.
June 25, 2002	Collin County Commissioners Court approves hiring of an engineering firm for initial surveying necessary to establish the center line of the proposed DNT extension north of U.S. 380.
2003	Final design for DNT extension Phase 3 begins.
October 2003	TollTag interoperability is implemented with Dallas-Fort Worth International Airport. Later agreements would come. An interlocal agreement (ILA) is signed by the NTTA, Collin County and the Town of Prosper for DNT Phase 4A.

October 21, 2003	Collin County, the Town of Prosper, and the NTTA enter into an interlocal agreement regarding Phase 4A between U.S. 380 and FM 428.
April 2004	The DNT extension at SH 121 opens to traffic. This project extends from near Legacy Drive to 1,300 feet south of Gaylord Parkway, a distance of approximately 1.6 miles.
August 26, 2004	Meeting of affected property owners between U.S. 380 and FM 428 is held in the Celina High School cafeteria. Discussions were also held regarding the alignment north of FM 428.
2005	Construction begins on DNT extension Phase 3.
January 10, 2005	Collin County Commissioners Court adopts a resolution designating an alignment along the Denton/Collin county line in Phase 4B as the preferred DNT alignment.
January 18, 2005	Denton County Commissioners Court adopts a resolution designating an alignment along the Denton/Collin county line in Phase 4B as the preferred DNT alignment.
May 2006	Construction begins on the south end capital improvement project. Total project cost is expected to be \$50 million.
January 2007	ZipCash is introduced at the Wycliff Toll Plaza.
June 2007	Collin County awards a contract to construct a two-lane road from U.S. 380 to FM 428 just west of the Town of Prosper and the City of Celina. This road is expected to be the future DNT northbound service road.
July 2007	NTTA's Board of Directors approves a work authorization for a corridor manager position for the DNT extension Phase 4. The corridor manager ensures that all necessary development tasks, from environmental clearances to detailed design development and construction, are identified and executed.
September 28, 2007	DNT extension Phase 3 opens to traffic. This project extends from 1,300 feet south of Gaylord Parkway to US 380 in Collin County, a distance of approximately 9.2 miles.
November 2007	NTTA initiates planning and environmental contracts for DNT Extension Phases 4A, 4B and 5A.
January 14, 2008	Pilot Point City Council adopts a resolution designating an alignment along the Denton/Collin county line in Phase 4B as the preferred DNT alignment.

January 24, 2008	A DNT extension Phase 4A public meeting is held in Prosper with more than 100 people attending.
January-June 2008	Five technical stakeholder meetings are conducted for Phase 4A (January, February, March, April and June).
2008	Coordination and information-sharing meetings are held with Grayson County and Grayson County Regional Mobility Authority regarding Phase 5 (May, September, and November).
May 11, 2008	Gunter City Council adopts a resolution designating an alignment along the Denton/Collin county line in Phase 4B as the preferred DNT alignment.
May 20, 2008	Aubrey City Council adopts a resolution designating an alignment along the Denton/Collin county line in Phase 4B as the preferred DNT alignment.
May 20, 2008	Collin County rescinds its resolution supporting the Denton/Collin county line alignment for Phase 4B.
July 2008	Work begins on new entrance and exit ramps at Oak Lawn Avenue.
July 24, 2008	A public hearing for Phase 4A is held in Prosper. Schematic and environmental assessment information is presented.
September 17, 2008	The NTTA Board of Directors approves the DNT extension Phase 4A schematic and environmental assessment.
October 14, 2008	The Collin County two-lane road from U.S. 380 to FM 428 opens to traffic. This road is expected to be the future DNT northbound service road.
November 20, 2008	New Oak Lawn Avenue entrance and exit ramps open to traffic.
January 12, 2009	Collin County adopts a resolution designating DNT Phase 4B as a Collin County Toll Road Authority project.
March 16, 2009	The NTTA Board approves an expansion of the DNT Phase 4B/5A study area to the west and the north. The expansion captures more of Denton and Grayson counties, adds Cooke County and will enable the NTTA to preserve the long-term viability of the DNT corridor.
August 16, 2009	The DNT Phase 3 landscaping project is complete.
April 27, 2009	The Board approves moving construction activities for the DNT all-electronic toll collection conversion to late 2010.

	Grayson County Commissioners Court adopts a resolution supporting the Denton/Collin county line alignment as a preferred alignment for DNT 4B.
October 23, 2009	The initial meeting of the DNT 4B/5A Executive Work Group (EWG) meeting is conducted at Prestonwood Baptist Church – North Campus offices in Prosper, Texas.
October 30, 2009	The initial meeting of the DNT 4B/5A Technical Work Group (TWG) meeting is conducted at Prestonwood Baptist Church – North Campus offices in Prosper, Texas.
December 4, 2009	Second DNT 4B/5A EWG meeting is conducted and alternative alignments are reviewed.
December 11, 2009	Second DNT 4B/5A TWG meeting is conducted and alternative alignments are reviewed.
January 22, 2010	Third DNT 4B/5A TWG meeting is conducted, alternative alignments are refined and additional evaluation information is presented.
January 29, 2010	Third DNT 4B/5A EWG meeting is conducted, alternative alignments are refined and additional evaluation information is presented.
February 3, 2010	A Memorandum of Understanding including terms to be incorporated into existing DNT 4A interlocal agreements is given to the City of Prosper for review and approval.
March 9, 2010	DNT 4B/5A Public Meeting is held in the PointBank Community Room in Pilot Point, Texas with approximately 300 attendees.
March 11, 2010	DNT 4B/5A Public Meeting is held in the Celina Middle School Cafeteria in Celina, Texas with approximately 400 attendees.
March 21, 2010	The DNT 4B/5A public comment period ends.
March 22, 2010	Collin County Toll Road Authority Board of Directors votes to conduct public hearings for DNT 4B.

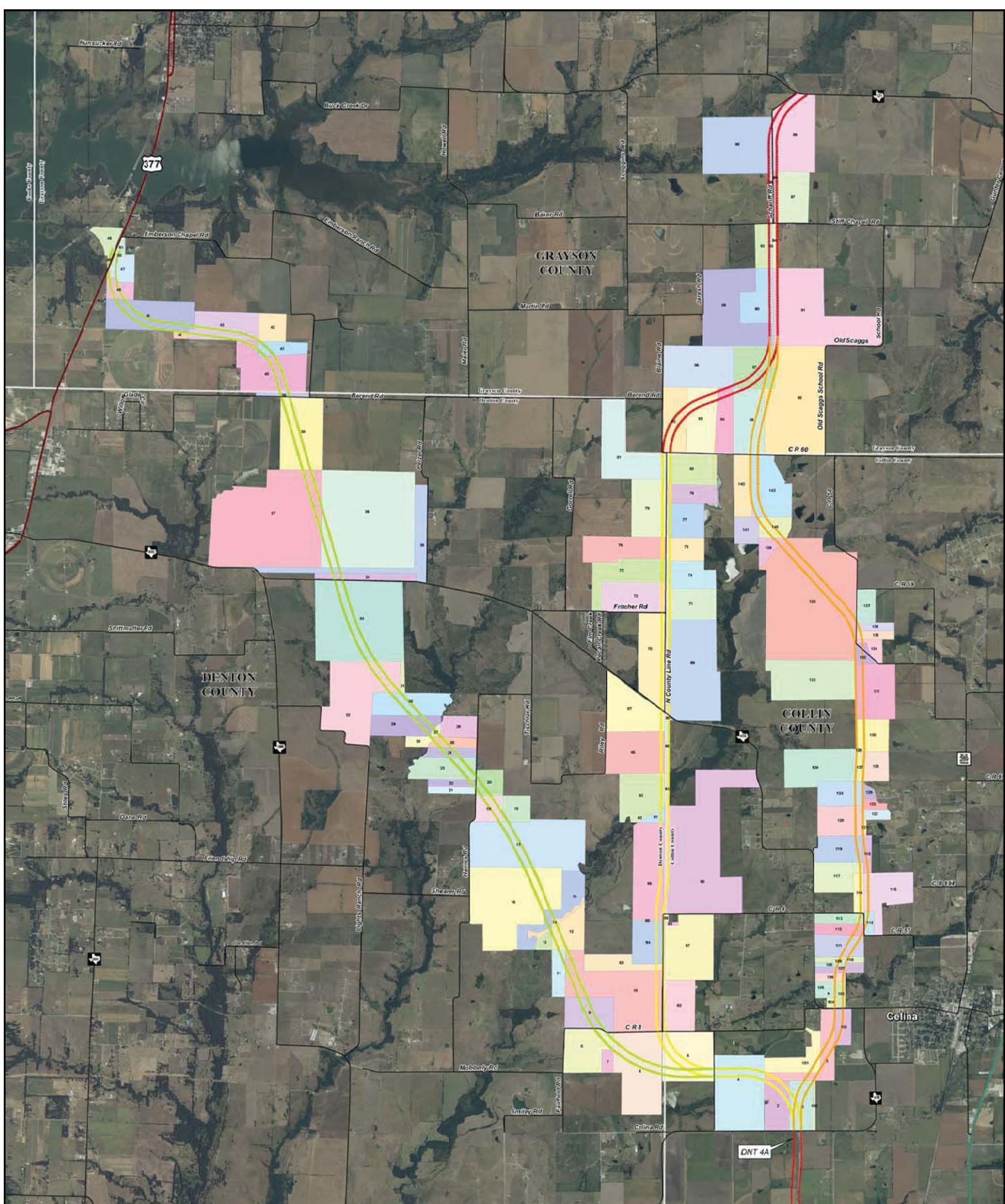
**DALLAS NORTH TOLLWAY EXTENSION PHASE 4B/5A
TOLLWAY DESIGN CRITERIA
NORTH TEXAS TOLLWAY AUTHORITY / TXDOT DESIGN CRITERIA**

ITEM	MAINLANES		RAMPS / DIRECT CONNECTORS		FRONTAGE ROADS		CROSS STREETS		DESIGN CRITERIA LOCATION
	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	
Roadway Classification	Urban Freeway or Tollway		Urban Freeway or Tollway		Urban Arterial		See City Thoroughfare Plans		Section 2-1
Design Speed	70 mph		50 mph Desirable		45 mph Desirable		45 mph Desirable		Section 3-6 & Table 3-19
HORIZONTAL ALIGNMENT									
Control Location	Roadway Centerline		outside lane edge line		outside lane edge line		centerline		Table 2-1
Stopping Sight Distance	30	425	250 @ 35mph	425 @ 50mph	200 @ 30mph	350 @ 45 mph	300 @ 30 mph	440 @ 45 mph	Table 2-1
Superelevation Rate	0.40% max	0.6%	0.62% relative grade	0.50% relative grade	0.62% relative grade	0.50% relative grade	No Superelevation		Table 2-5
Superelevation Runoff	0.40% relative grade		0.50% relative grade		0.50% relative grade		Normal Slope 2.00% towards ROW		Table 2-3
VERTICAL ALIGNMENT									
PSL / Axis of Rotation	Inside Lane Edge of Pavement		outside lane edge line		outside lane edge line		outside lane edge line		Table 2-9, Page 2-34
Longitudinal Gradient	0.50%	3.00% max	0.50%	4.00% max	0.35% min, 6.00% max	0.35% min, 6.00% max	0.35% min, 6.00% max		Table 2-9, Page 2-34
Longitudinal Gradient @ Toll Gantries	0.50%	1.00% max	0.50%	1.00% max	N/A		N/A		NTA Preference
K value for Crest Curves, min.	247	84 @ 50 mph	29 @ 35 mph	84 @ 50 mph	19 @ 30 mph	61 @ 45 mph	61 @ 45 mph		Figure 2-9
K value for Sag Curves, min.	181	96 @ 50 mph	49 @ 35 mph	96 @ 50 mph	37 @ 30 mph	79 @ 45 mph	79 @ 45 mph		Figure 2-11
Grade change without a vertical curve	0.50% max		0.50% max		1.00% max		1.00% max		Section 2-5, Page 2-42
Vertical Clearance:									
Over Roadways	16.5'		16.5'		16.5'		16.5'		Table 3-1
CROSS SECTION ELEMENTS									
Width of Travel Lanes	12'		14'		12'		11'		Table 3-1 & 3-18
Number of mainlanes at ground level	3 each side - 4 future each side		N/A		N/A		N/A		NTA Preference
Shoulder Widths:									
Inside	12'		N/A		N/A		N/A		Table 3-18
Outside	10'		8'		N/A		N/A		Table 3-18
Offset to face of curb	2.00%		2.50%		N/A		1 ft min, 2 ft desirable		Table 3-1
Cross slope (lane and shoulder)	2.00%		2.50%		2.00%		2.00%		Section 2-6, Page 2-43
Medians:									
Type	Depressed, divided		N/A		N/A		N/A		TXDOT/NTA Preference
Width	4 ft (6 lanes)		24 ft (8 lanes)		N/A		N/A		Section 3-6, Page 3-69, Pages 3-45
Traffic Safety Protection	C/TB on one side - side to be determined		N/A		N/A		N/A		NTA Preference
Mandellian Curb:									
Inside	N/A		N/A		yes		yes		Table 2-11
Outside	N/A		N/A		yes		yes		Table 2-11
Clear Zone Width:	30'		16'		1.5 min, 3.0' desirable		1.5 min, 3.0' desirable		Table 2-11
Side Slopes:									
Within Clear Zone	6:1 max		4:1 max		6:1 max		6:1 max		Section 2-6, Page 2-44
Outside Clear Zones	4:1 max		4:1 max		4:1 max		4:1 max		Section 2-6, Page 2-44
Through guard rail	1:1 max		1:1 max		1:1 max		1:1 max		Section 2-6, Page 2-44
Shoulder Slope	4:1 max		4:1 max		4:1 max		4:1 max		Section 2-6, Page 2-44
Shoulder Width	N/A		N/A		5 ft min, 6' desirable		5 ft min, 6' desirable		Page 2-7
Concrete Pavement Thickness	To Be Determined		To Be Determined		15 min, 20' desirable		15 min, 20' desirable		Table 3-7
Concrete Pavement Thickness	To Be Determined		To Be Determined		To Be Determined		To Be Determined		Table 3-7
INTERSECTIONS									
Corner Radii:									
Major Cross Streets	N/A		N/A		50' desirable		50' desirable		Section 7-7
Minor Cross Streets	N/A		N/A		30' desirable		30' desirable		Section 7-7
Driveways	N/A		N/A		20' desirable		20' desirable		Section 7-7
DESIGN VEHICLES									
Structural Design	HL-93		HL-93		HL-93		HL-93		Figure 7-4, Page 7-16
Horizontal Geometry	N/A		N/A		WB-162		WB-162		Figure 7-4, Page 7-16
HYDRAULIC DESIGN FREQUENCY									
Inlet and Drainage Pipe	10 year		10 year		5 year		5 year		Section 5-3, Page 5-10
Inlet for Depressed Roadways	50 year		50 year		25 year		25 year		Section 5-3, Page 5-10
Culvert Design	50 year		50 year		50 year		50 year		Section 5-3, Page 5-10
Bridge Design	50 year		50 year		50 year		50 year		Section 5-3, Page 5-10
Flood Check Frequency	100 year		100 year		100 year		100 year		Section 5-3, Page 5-10
HYDROLOGIC METHOD									
Drainage Area < 200 ac	Rational Method		Rational Method		Rational Method		Rational Method		Figure 5-3, Page 5-16
Drainage Area > 200 ac	NRCS Unit Hydrograph, Regression Equations		NRCS Unit Hydrograph, Regression Equations		NRCS Unit Hydrograph, Regression Equations		NRCS Unit Hydrograph, Regression Equations		Figure 5-3, Page 5-16
CULVERTS									
Headwater Control Location	bottom of paving section		bottom of paving section		bottom of paving section		bottom of paving section		Section 8-2, Page 8-9
Outlet Velocity	2 f/s		2 f/s		2 f/s		2 f/s		Section 8-2, Page 8-9
STORM DRAINAGE									
Max allowable Flooding Width	24"		24"		24"		24"		Section 10-2, Page 10-16
Pipe Size	24"		24"		24"		24"		Section 10-6, Page 10-41
Pipe Velocity	2.0 f/s		2.0 f/s		2.0 f/s		2.0 f/s		Section 10-6, Page 10-41
Pipe Material	Reinforced Concrete Pipe		Reinforced Concrete Pipe		Reinforced Concrete Pipe		Reinforced Concrete Pipe		TXDOT/NTA

See City Standards for other criteria

LEGEND: RDM = TXDOT On-Line Roadway Design Manual (March 2009); HDM = TXDOT On-Line Hydraulic Design Manual (March 2009); BDM = Bridge Design Manual (December 2001)

Revised: September 21, 2009



Legend

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PARCELS WITHIN ROW
DNT Extension Phase 4B/5A

Scale: 1,500 3,000 Feet

NTTA
 NORTH TEXAS TOLLWAY AUTHORITY

Appendix 1-1 Page 87 of 130

Appendix A-5

DNT 4B/5A ROW ACQUISITION COST ESTIMATE (14 JAN 2010)																	
LotID	Parcel ID	Owner Name	County	Lot Area	Total Value	Alternative	ROW Area	Rem-s	GREEN ALT	YELLOW-RED ALT	ORANGE-RED ALT	ROW ac.	R-5ac.	TOTAL	Displ?	COST	
100	R-6988-000-0020-1	OLD CELINA LTD	COLLIN	7.29	\$137,600	ORANGE-RED	0.00	7.29				0.00		0.00		\$0	
101	R-6124-000-0150-1	OLD CELINA LTD	COLLIN	75.09	\$1,459,846	ORANGE-RED	6.29	0.26				6.29		6.29		\$122,379	
102	R-6124-000-0090-1	OLD CELINA LTD	COLLIN	38.80	\$770,900	ORANGE-RED	12.90	0.00				12.90		12.90		\$256,381	
103	R-6124-000-0130-1	CELINA 428 LP	COLLIN	18.33	\$473,272	ORANGE-RED	12.50	0.01				12.50	0.01	12.51	YES	\$473,272	
104	R-8554-001-0010-1	GRACE BAPTIST FELLOWSHIP INC	COLLIN	5.23	\$343,571	ORANGE-RED	0.01	5.24				0.01		0.01		\$560	
105	R-6124-000-0030-1	ZORN ROBERT E	COLLIN	20.50	\$395,629	ORANGE-RED	0.05	20.45				0.05		0.05		\$1,023	
106	R-6124-000-0010-1	JOHNSON MARK S	COLLIN	16.76	\$624,774	ORANGE-RED	4.12	11.01				4.12	1.63	5.74		\$214,170	
107	R-6124-000-0040-1	KIRAN MATTHEW D	COLLIN	25.00	\$447,800	ORANGE-RED	3.32	8.77				3.32		3.32		\$59,841	
108	R-6124-000-0330-1	KIRAN MATTHEW D	COLLIN	7.61	\$448,413	ORANGE-RED	1.86	0.00				1.86		1.86		\$109,370	
109	R-6125-000-0060-1	KIRAN MATTHEW D	COLLIN	2.42	\$48,666	ORANGE-RED	1.15	1.28				1.15		1.15		\$23,023	
110	R-6125-000-0060-1	KIRAN MATTHEW D	COLLIN	15.58	\$352,200	ORANGE-RED	1.89	7.88				1.89		1.89		\$42,665	
111	R-6125-000-0040-1	RAYBURN JOHN W INC ET AL	COLLIN	69.41	\$1,274,088	ORANGE-RED	11.99	11.77				11.99		11.99		\$220,037	
112	R-6125-000-0010-1	LEE CANMADAY KIM	COLLIN	36.22	\$679,778	ORANGE-RED	5.60	0.36				5.60	0.36	5.96		\$111,804	
113	R-6125-000-0030-1	KING SUZANNE CANNADAY	COLLIN	31.46	\$727,708	ORANGE-RED	2.57	28.88				2.57		2.57		\$59,441	
114	R-6872-000-0040-1	GLENDENNING REX & SHERISE	COLLIN	14.46	\$261,531	ORANGE-RED	2.57	11.88				2.57		2.57		\$46,568	
115	R-6877-000-0060-1	G BAR 7 LTD	COLLIN	122.53	\$7,461,200	ORANGE-RED	11.18	111.35				11.18		11.18		\$133,526	
116	R-6125-000-0020-1	YOUNG GAYLA	COLLIN	25.43	\$450,300	ORANGE-RED	7.84	17.59				7.84		7.84		\$138,811	
117	R-6125-000-0010-1	TIA PROPERTIES II	COLLIN	83.15	\$1,507,543	ORANGE-RED	2.04	81.12				2.04		2.04		\$36,922	
118	R-6877-000-0010-1	BARKER DOUGLAS JAY	COLLIN	20.31	\$322,250	ORANGE-RED	6.55	13.76				6.55		6.55		\$103,869	
119	R-7064-000-0010-1	HUDDESTON CHARLES RAY & JANET H CALVERT &	COLLIN	80.87	\$1,320,000	ORANGE-RED	9.68	71.20				9.68		9.68		\$157,925	
120	R-6569-000-0010-1	GANU SHAUN	COLLIN	86.44	\$1,401,790	ORANGE-RED	13.77	72.67				13.77		13.77		\$223,376	
121	R-6357-000-0170-1	GANU SHAUN	COLLIN	3.59	\$58,500	ORANGE-RED	0.33	3.25				0.33	3.26	3.59		\$58,500	
122	R-6357-000-0370-1	BARNES DUANE A ET AL	COLLIN	17.58	\$560,207	ORANGE-RED	0.11	17.47				0.11		0.11		\$1,042	
123	R-6594-000-0350-1	JEANSONNE GERALD E & SUZANNE M	COLLIN	14.60	\$573,817	ORANGE-RED	0.03	14.57				0.03		0.03		\$165,535	
124	R-6594-000-0020-1	GANU SHAUN	COLLIN	72.24	\$1,003,500	ORANGE-RED	11.91	0.01				11.91	0.01	11.92		\$146	
125	R-6357-000-0510-1	HOWETH DARYL	COLLIN	10.03	\$100,000	ORANGE-RED	0.01	10.01				0.01		0.01		\$146	
126	R-6356-002-0010-1	OWNSBY 1880 FARMS LTD	COLLIN	162.76	\$2,945,520	ORANGE-RED	1.80	160.95				1.90		1.90		\$34,442	
127	R-6654-000-0010-1	OWNSBY 1880 FARMS LTD	COLLIN	10.20	\$138,750	ORANGE-RED	10.16	0.04				9.46	0.08	9.54		\$129,817	
128	R-6654-000-0020-1	MOORE W DOUGLAS	COLLIN	50.01	\$644,148	ORANGE-RED	2.39	47.62				2.39		2.39		\$42,026	
129	R-7072-000-0030-1	OWNSBY 1880 FARMS LTD	COLLIN	0.60	\$26,250	ORANGE-RED	0.58	0.02				0.04		0.04		\$1,730	
130	R-7072-000-0020-1	MOORE W DOUGLAS	COLLIN	66.39	\$1,105,660	ORANGE-RED	15.07	0.54				16.97		16.97		\$282,599	
131	R-6140-002-0020-1	LMR HOLDINGS LTD	COLLIN	139.17	\$1,676,520	ORANGE-RED	26.22	0.79				26.96		26.96		\$324,921	
132	R-6192-000-0010-1	DYNAVEST JOINT VENTURE	COLLIN	218.38	\$1,087,700	ORANGE-RED	0.42	217.96				0.07	4.05	4.12		\$20,540	
133	R-6140-002-0030-1	CARVAL RAMON L	COLLIN	18.52	\$289,110	ORANGE-RED	8.81	6.69				0.11		0.11		\$1,792	
134	R-6140-002-0020-1	HUGHES KALEIGH J	COLLIN	21.47	\$520,560	ORANGE-RED	1.39	20.07				12.09	3.90	15.99		\$387,849	
135	R-6140-002-0030-1	SAFI SHAH & LAULIMA	COLLIN	20.89	\$414,140	ORANGE-RED	2.59	18.31				5.46	2.91	8.37		\$165,883	
136	R-6140-002-0010-1	CHALAK ABDOLREZA	COLLIN	19.69	\$315,000	ORANGE-RED	1.12	18.57				4.04	0.06	4.10		\$65,528	
137	R-6140-002-0010-1	DALLAS CELINA LAND PARTNERS LLC	COLLIN	40.02	\$913,068	ORANGE-RED	0.01	40.01				0.55		0.55		\$21,596	
138	R-6131-000-0010-1	DYNAVEST JOINT VENTURE	COLLIN	664.27	\$3,213,965	ORANGE-RED	56.49	480.15				52.14		52.14		\$252,266	
139	R-6131-000-0010-1	CLARK THOMAS E & JANIE M	COLLIN	28.20	\$154,750	ORANGE-RED	3.88	0.23				3.88		3.88		\$21,313	
140	R-6876-000-0010-1	CLARK THOMAS E & JANIE M	COLLIN	42.80	\$242,200	ORANGE-RED	13.01	7.77				13.01		13.01		\$73,605	
141	R-6024-000-0030-1	CLARK THOMAS E & JANIE M	COLLIN	42.27	\$197,500	ORANGE-RED	0.17	42.11				0.17		0.17		\$771	
142	R-6011-000-0020-1	CLARK THOMAS E & JANIE M	COLLIN	72.70	\$340,900	ORANGE-RED	4.70	68.00				4.70		4.70		\$22,031	
143	R-6011-000-0010-1	CLARK THOMAS E & JANIE M	COLLIN	133.85	\$605,000	ORANGE-RED	26.02	2.00				587.43	9.49	596.92		\$117,615	
									0	\$6,583,674	0	549.06	16.79	565.86	0	\$6,076,357	
									0	\$6,938,942	1	547.80	20.81	547.80	1	\$6,938,942	
RELOCATION ASSISTANCE (\$20,000 per property with displaced residence; for moving, incidentals, and supplements);									0	0	0	0	0	0	0	0	0
EMINENT DOMAIN PROCESS EXPENSES (\$25,000 per property owner affected -- not per parcel);									0	0	0	0	0	0	0	0	
ADJUSTMENT FOR CONTINGENCIES (200% added to basic ROW cost per all market value changes, economic damages, and safety factor);									17	\$425,000	17	17	17	17	17	\$425,000	
TOTAL ESTIMATED COST OF ROW ACQUISITION:									\$20,176,021	\$218,654,071							

TOTAL PROJECT COST
Green (Pilot Point) Alignment
From FM 428 to US 377, 12.24 Miles/6 Main Lanes, 2 Lane Frontage Roads
PLANNING/ORDER OF MAGNITUDE ESTIMATE OF PROBABLE COSTS OF
CONSTRUCTION
LEVEL "F" PLANNING PHASE ESTIMATE

Version _____
 Created By: Nelson Underwood
 Date: 1/18/2010
 Checked by: MGC
 Date: 1/18/2010

Official Estimate Date: 1/18/2010
 Mid-point of Anticipated Construction: 1/1/2018
 Anticipated Construction Duration: 48 months

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL COST
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1.0 NEW TOLLED FACILITY

1.01	6 Mainlanes Toll Facility (Paving, Structures, Ramps, Earthwork, Drainage, Striping, and Signage)	12.24	Miles	\$ 38,000,000	\$ 465,040,200
1.02	Frontage Roads (2 Lanes Each Side) (Paving, Structures, Earthwork, Drainage, Striping, and Signage)	12.24	Miles	\$ 4,000,000	\$ 48,951,600
1.03	ETC Mainlane Gantry	2.00	Each	\$ 2,000,000	\$ 4,000,000
1.04	ETC Ramp Gantry	20.00	Each	\$ 300,000	\$ 6,000,000
1.05	Electronic Tolling Equipment	32.00	Lane	\$ 80,000	\$ 2,560,000
1.06	Landscape	12.24	Mile	\$ 500,000	\$ 6,118,950
1.07	Maintenance Facilities	0.00	Each	\$ -	\$ -
1.08	Sand Stockpile	0.00	Each	\$ -	\$ -
SUBTOTAL CONSTRUCTION					\$ 532,670,750

2.0 ITS COSTS

2.01	CCTV	26.00	Each	\$ 30,000	\$ 780,000
2.02	Digital Messaging Sign	4.00	Each	\$ 250,000	\$ 1,000,000
2.03	Fiber Optic (2 Operational Conduits) (Including 1 Fiber Hut)	12.24	Mile	\$ 300,000.00	\$ 3,671,370
SUBTOTAL ITS					\$ 5,451,370

3.0 R.O.W. (Estimate provided by R.A.T. Team)

3	Land and Displacement(Acquisitions, relocations, demolition, fees)				\$ 20,000,000
3	Utility Relocations - Franchise and Municipal (assume \$100,000 per mile)				\$ 1,223,790
SUBTOTAL R.O.W.					\$ 21,223,790

Green (Pilot Point) Alignment (continued)

4.0 SOFT COST

	Subtotal Construction Cost	\$ 532,670,750
4	Administrative	
	NTTA Personnel (0.5%)	\$ 2,663,354
	GEC / PMO (2.5%)	\$ 13,316,769
	Corridor Management (1.25%)	\$ 6,658,384
	Design Management (0.5%)	\$ 2,663,354
	Legal Consulting Fees (0.5%)	\$ 2,663,354
4	Planning	
	Feasibility Studies & Advanced Planning (0.75%)	\$ 3,995,031
	EIS/EA Schematic (.75%)	\$ 3,995,031
4	Design	
	PS&E (7.25%) (DSE, geotechnical, pavement, landscaping, MSE wall design)	\$ 38,618,629
	Surveying (.25%)	\$ 1,331,677
4	R.O.W. Acquisition Consultant (1.5%) (RAT Team, asbestos insp. & abatement)	\$ 7,990,061
4	Construction Support	
	Construction Management (6.25%)	\$ 33,291,922
	Materials Testing & Environmental Compliance (1.25%)	\$ 6,658,384
4	Reimbursements - Optional	\$ -
4	Special Services Consultant	\$ -
4	Unique Features (historic sites, wetlands) - Optional	\$ -
SUBTOTAL SOFT COST		\$ 123,845,949

TOTAL PROJECT COST SUMMARY

Subtotal Project Cost (unescalated)	\$ 683,191,859
Project Contingency (30%)	\$ 204,957,558
TOTAL PROJECT COST (CURRENT COST)	\$ 888,149,417
ESCALATED TOTAL PROJECT COST TO MID-POINT OF CONSTRUCTION	\$ 1,215,493,804
SAY	\$ 1,215,494,000

REPORTING COST DISTRIBUTION

Professional Services	\$ 49,754,025
Planning	\$ 14,215,436
Design	\$ 71,077,178
Other	\$ -
Plazas	\$ 17,189,227
ITS	\$ 9,698,749
Right-of-Way and Utilities	\$ 51,975,524
Construction Management	\$ 71,077,178
Construction/Installation	\$ 711,807,475
Construction Contingency	\$ 218,699,011
Maintenance Facilities	\$ -
TOTAL PROJECT COST	\$ 1,215,493,804
SAY	\$ 1,215,494,000

Notes:

- 1) The unit cost to construct this facility is based on the latest estimated per mile construction cost of PGBT-EE.
- 2) The PGBT-EE per mile cost of mainlanes is \$38,000,000 and the frontage road unit cost is estimated at \$4,000,000 per mile in 2009
- 3) The estimated construction costs of the Mainlane and Ramp Gantries are based on the 2008 NTTA average bids in 2009 dollars.
- 4) The per mile estimated cost is based on the assumption that no major physical features (i.e. lakes, landfills, environmentally sensitiv
- 5) Soundwall costs are not included in this cost estimate.
- 6) Conceptual horizontal alignment is developed. No vertical alignments are developed. No actual quantities can be developed.
- 7) Approximate right-of-way needs can be estimated.
- 8) Contingencies are applied to the total project cost.

TOTAL PROJECT COST
Yellow-Red (County Line) Alignment
From FM 428 to FM 121, 11.91 Miles/6 Main Lanes, 2 Lane Frontage Roads
PLANNING/ORDER OF MAGNITUDE ESTIMATE OF PROBABLE COSTS OF
CONSTRUCTION
LEVEL "F" PLANNING PHASE ESTIMATE

Version _____

Created By: Nelson Underwood
 Date: 1/18/2010
 Checked by: MGC
 Date: 1/18/2010

Official Estimate Date: 1/18/2010
 Mid-point of Anticipated Construction: 1/1/2018
 Anticipated Construction Duration: 48 months

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL COST
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1.0 NEW TOLLED FACILITY

1.01	6 Mainlanes Toll Facility (Paving, Structures, Ramps, Earthwork, Drainage, Striping, and Signage)	11.91	Miles	\$ 38,000,000	\$ 452,648,400
1.02	Frontage Roads (2 Lanes Each Side) (Paving, Structures, Earthwork, Drainage, Striping, and Signage)	11.91	Miles	\$ 4,000,000	\$ 47,647,200
1.03	ETC Mainlane Gantry	2.00	Each	\$ 2,000,000	\$ 4,000,000
1.04	ETC Ramp Gantry	19.00	Each	\$ 300,000	\$ 5,700,000
1.05	Electronic Tolling Equipment	31.00	Lane	\$ 80,000	\$ 2,480,000
1.06	Landscape	11.91	Mile	\$ 500,000	\$ 5,955,900
1.07	Maintenance Facilities	0.00	Each	\$ -	\$ -
1.08	Sand Stockpile	0.00	Each	\$ -	\$ -
SUBTOTAL CONSTRUCTION					\$ 518,431,500

2.0 ITS COSTS

2.01	CCTV	24.00	Each	\$ 30,000	\$ 720,000
2.02	Digital Messaging Sign	4.00	Each	\$ 250,000	\$ 1,000,000
2.03	Fiber Optic (2 Operational Conduits) (Including 1 Fiber Hut)	11.91	Mile	\$ 300,000.00	\$ 3,573,540
SUBTOTAL ITS					\$ 5,293,540

3.0 R.O.W. (Estimate provided by R.A.T. Team)

3	Land and Displacement(Acquisitions, relocations, demolition, fees)				\$ 19,000,000
3	Utility Relocations - Franchise and Municipal (assume \$100,000 per mile)				\$ 1,191,180
SUBTOTAL R.O.W.					\$ 20,191,180

Yellow-Red (County Line) Alignment (continued)

4.0 SOFT COST

	Subtotal Construction Cost	\$ 518,431,500
4	Administrative	
	NTTA Personnel (0.5%)	\$ 2,592,158
	GEC / PMO (2.5%)	\$ 12,960,788
	Corridor Management (1.25%)	\$ 6,480,394
	Design Management (0.5%)	\$ 2,592,158
	Legal Consulting Fees (0.5%)	\$ 2,592,158
4	Planning	
	Feasibility Studies & Advanced Planning (0.75%)	\$ 3,888,236
	EIS/EA Schematic (.75%)	\$ 3,888,236
4	Design	
	PS&E (7.25%) (DSE, geotechnical, pavement, landscaping, MSE wall design)	\$ 37,586,284
	Surveying (.25%)	\$ 1,296,079
4	R.O.W. Acquisition Consultant (1.5%) (RAT Team, asbestos insp. & abatement)	\$ 7,776,473
4	Construction Support	
	Construction Management (6.25%)	\$ 32,401,969
	Materials Testing & Environmental Compliance (1.25%)	\$ 6,480,394
4	Reimbursements - Optional	\$ -
4	Special Services Consultant	\$ -
4	Unique Features (historic sites, wetlands) - Optional	\$ -
SUBTOTAL SOFT COST		\$ 120,535,324

TOTAL PROJECT COST SUMMARY

Subtotal Project Cost (unescalated)	\$ 664,451,544
Project Contingency (30%)	\$ 199,335,463
TOTAL PROJECT COST (CURRENT COST)	\$ 863,787,007
ESCALATED TOTAL PROJECT COST TO MID-POINT OF CONSTRUCTION	\$ 1,182,178,898
SAY	\$ 1,182,179,000

REPORTING COST DISTRIBUTION

Professional Services	\$ 48,425,105
Planning	\$ 13,835,744
Design	\$ 69,178,722
Other	\$ -
Plazas	\$ 16,669,548
ITS	\$ 9,418,160
Right-of-Way and Utilities	\$ 49,759,488
Construction Management	\$ 69,178,722
Construction/Installation	\$ 692,855,803
Construction Contingency	\$ 212,857,605
Maintenance Facilities	\$ -
TOTAL PROJECT COST	\$ 1,182,178,898
SAY	\$ 1,182,179,000

Notes:

- 1) The unit cost to construct this facility is based on the latest estimated per mile construction cost of PGBT-EE.
- 2) The PGBT-EE per mile cost of mainlanes is \$38,000,000 and the frontage road unit cost is estimated at \$4,000,000 per mile in 2009
- 3) The estimated construction costs of the Mainlane and Ramp Gantries are based on the 2008 NTTA average bids in 2009 dollars.
- 4) The per mile estimated cost is based on the assumption that no major physical features (i.e. lakes, landfills, environmentally sensitiv
- 5) Soundwall costs are not included in this cost estimate.
- 6) Conceptual horizontal alignment is developed. No vertical alignments are developed. No actual quantities can be developed.
- 7) Approximate right-of-way needs can be estimated.
- 8) Contingencies are applied to the total project cost.

TOTAL PROJECT COST
Orange-Red (Celina) Alignment
From FM 428 to Fm 121, 11.12 Miles/6 Main Lanes, 2 Lane Frontage Roads
PLANNING/ORDER OF MAGNITUDE ESTIMATE OF PROBABLE COSTS OF
CONSTRUCTION
LEVEL "F" PLANNING PHASE ESTIMATE

Version _____

Created By: Nelson Underwood
 Date: 1/18/2010
 Checked by: MGC
 Date: 1/18/2010

Official Estimate Date: 1/18/2010
 Mid-point of Anticipated Construction: 1/1/2018
 Anticipated Construction Duration: 48 months

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL COST
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1.0 NEW TOLLED FACILITY

1.01	6 Mainlanes Toll Facility (Paving, Structures, Ramps, Earthwork, Drainage, Striping, and Signage)	11.00	Miles	\$ 38,000,000	\$ 417,817,600
1.02	Frontage Roads (2 Lanes Each Side) (Paving, Structures, Earthwork, Drainage, Striping, and Signage)	11.00	Miles	\$ 4,000,000	\$ 43,980,800
1.03	ETC Mainlane Gantry	2.00	Each	\$ 2,000,000	\$ 4,000,000
1.04	ETC Ramp Gantry	18.00	Each	\$ 300,000	\$ 5,400,000
1.05	Electronic Tolling Equipment	30.00	Lane	\$ 80,000	\$ 2,400,000
1.06	Landscape	11.00	Mile	\$ 500,000	\$ 5,497,600
1.07	Maintenance Facilities	0.00	Each	\$ -	\$ -
1.08	Sand Stockpile	0.00	Each	\$ -	\$ -
SUBTOTAL CONSTRUCTION					\$ 479,096,000

2.0 ITS COSTS

2.01	CCTV	22.00	Each	\$ 30,000	\$ 660,000
2.02	Digital Messaging Sign	4.00	Each	\$ 250,000	\$ 1,000,000
2.03	Fiber Optic (2 Operational Conduits) (Including 1 Fiber Hut)	11.00	Mile	\$ 300,000.00	\$ 3,298,560
SUBTOTAL ITS					\$ 4,958,560

3.0 R.O.W. (Estimate provided by R.A.T. Team)

3	Land and Displacement(Acquisitions, relocations, demolition, fees)				\$ 22,000,000
3	Utility Relocations - Franchise and Municipal (assume \$100,000 per mile)				\$ 1,099,520
SUBTOTAL R.O.W.					\$ 23,099,520

Orange-Red (Celina) Alignment (continued)

4.0 SOFT COST

	Subtotal Construction Cost	\$ 479,096,000
4	Administrative	
	NTTA Personnel (0.5%)	\$ 2,395,480
	GEC / PMO (2.5%)	\$ 11,977,400
	Corridor Management (1.25%)	\$ 5,988,700
	Design Management (0.5%)	\$ 2,395,480
	Legal Consulting Fees (0.5%)	\$ 2,395,480
4	Planning	
	Feasibility Studies & Advanced Planning (0.75%)	\$ 3,593,220
	EIS/EA Schematic (.75%)	\$ 3,593,220
4	Design	
	PS&E (7.25%) (DSE, geotechnical, pavement, landscaping, MSE wall design)	\$ 34,734,460
	Surveying (.25%)	\$ 1,197,740
4	R.O.W. Acquisition Consultant (1.5%) (RAT Team, asbestos insp. & abatement)	\$ 7,186,440
4	Construction Support	
	Construction Management (6.25%)	\$ 29,943,500
	Materials Testing & Environmental Compliance (1.25%)	\$ 5,988,700
4	Reimbursements - Optional	\$ -
4	Special Services Consultant	\$ -
4	Unique Features (historic sites, wetlands) - Optional	\$ -
SUBTOTAL SOFT COST		\$ 111,389,820

TOTAL PROJECT COST SUMMARY

Subtotal Project Cost (unescalated)	\$ 618,543,900
Project Contingency (30%)	\$ 185,563,170
TOTAL PROJECT COST (CURRENT COST)	\$ 804,107,070
ESCALATED TOTAL PROJECT COST TO MID-POINT OF CONSTRUCTION	\$ 1,100,476,049
	SAY \$ 1,100,477,000

REPORTING COST DISTRIBUTION

Professional Services	\$ 44,749,884
Planning	\$ 12,785,681
Design	\$ 63,928,406
Other	\$ -
Plazas	\$ 16,149,115
ITS	\$ 8,821,971
Right-of-Way and Utilities	\$ 53,882,956
Construction Management	\$ 63,928,406
Construction/Installation	\$ 639,526,843
Construction Contingency	\$ 196,702,787
Maintenance Facilities	\$ -
TOTAL PROJECT COST	\$ 1,100,476,049
	SAY \$ 1,100,477,000

Notes:

- 1) The unit cost to construct this facility is based on the latest estimated per mile construction cost of PGBT-EE.
- 2) The PGBT-EE per mile cost of mainlanes is \$38,000,000 and the frontage road unit cost is estimated at \$4,000,000 per mile in 2009
- 3) The estimated construction costs of the Mainlane and Ramp Gantries are based on the 2008 NTTA average bids in 2009 dollars.
- 4) The per mile estimated cost is based on the assumption that no major physical features (i.e. lakes, landfills, environmentally sensitiv
- 5) Soundwall costs are not included in this cost estimate.
- 6) Conceptual horizontal alignment is developed. No vertical alignments are developed. No actual quantities can be developed.
- 7) Approximate right-of-way needs can be estimated.
- 8) Contingencies are applied to the total project cost.

Appendix B: Project Constraints Maps

Table of Contents

Appendix #	Description	Number of Pages
B-1	Constraints Map: Natural Features [18" x 24"; Scale 1" : 4,000']	1
B-2	Constraints Map: Man-Made Features [18" x 24"; Scale 1" : 4,000']	1

NOTE: These folded maps were included in the original Conceptual Alternatives Analysis Report but have been deleted from the Environmental Evaluation as they are reproduced as 11"x17" maps in Exhibits 1-6 and 1-7.

Appendix C: Stakeholder and Public Involvement Materials

Table of Contents

Appendix #	Description	Number of Pages
C-1	Summaries of Stakeholder Meetings <ul style="list-style-type: none"> • October 23, 2009 EWG (pages 1-4) • October 30, 2009 TWG (pages 5-9) • December 4, 2009 EWG (pages 10-12) • December 11, 2009 TWG (pages 13-15) • January 22, 2010 TWG (pages 16-18) • January 29, 2010 EWG (pages 19-21) • May 17, 2010 TWG (pages 22-24) • May 21, 2010 EWG (pages 25-27) 	27
C-2	Public Meeting Notice	1
C-3	Public Meeting Slides	5

Phase 4B & 5A Dallas North Tollway Extension

Meeting Summary

Date:

October 23, 2009 (10:07 a.m. - 10:38 a.m.)

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Notes By:

Shannon McCord

Subject:

DNT Extension Phase 4B/5A - Executive Work Group Meeting

Attendees:

(see attached list)

Presentation and comments:

- **Welcome and Introductions**

The meeting began at 10:07 a.m. with NTTA Board Chairman Paul Wageman welcoming the attendees and introducing Allen Clemson, Gerry Carrigan, Lori Shelton and James Griffin from the NTTA. He emphasized the importance of the project and reminded everyone of the importance of their input and participation in the process. The Chairman introduced Tom Diamond from HNTB as the 4B/5A corridor manager.

- **Presentation:**

At Tom's request, all attendees took turns introducing themselves. Tom began the presentation with an overview of the executive work group structure and purpose. He also outlined the purpose of the technical work group which meets the week following each executive work group meeting. The first technical work group meeting is scheduled for Friday, October 30, 2009. Tom continued his presentation which included an overview of the project study area, public involvement plans and project timeline. He stated that we are in the "develop and evaluate conceptual alternatives" phase of the timeline. He then introduced Matt Craig to discuss the alternatives comparison process which includes evaluations of mobility benefits, cost effectiveness and environmental issues among others.

Matt began by discussing the process of analyzing the alternatives; he noted the basic design features and typical sections. He also explained the two constraint maps, both environmental and manmade. He then offered a copy of each of the constraints maps to each entity present, requesting that they review the maps and return any changes or additional information through their technical representative via the technical work group meeting on October 30.

- **Group Discussion:**

Tom then opened the floor for discussion and introduction of any alignment alternatives as requested in the meeting invitation. Denton County Commissioner Hugh Coleman recommended a common alignment along the Denton/Collin county line following the path previously supported, via resolution, by many of the participating entities, including Denton and Grayson Counties, and the cities of Pilot Point, Aubrey and Gunter. Commissioner Coleman provided the corridor team with a map of this alignment for

consideration. Collin County Commissioner Joe Jaynes stated that he will support the alignment with the “path of least resistance”. Tom informed the group that the current project scope allows for consideration of as many as six alignment alternatives. Input from the work groups will influence the evolution of the alignment alternatives.

Mark Miller of the City of Gunter stated that the city’s alignment recommendation was included on their thoroughfare plan, which he would provide to the corridor team after the meeting. City of Celina Mayor Jim Lewis mentioned another alignment option east of the county line. He agreed to have city staff bring a map of the alignment to the technical work group meeting.

Michael Morris from the North Central Texas Council of Governments requested further explanation of the study area’s northern and southern limits. Corridor team members explained that the southern limit is Farm-to-Market (FM) 428, and the northern limit is north of FM 121, in order to explore connecting to an appropriate logical terminus in the general area around FM 121. Michael then asked Susan Thomas from the Texoma Council of Governments if there was anything north of FM 121 that would influence this study area. Jerdy Gary of the Grayson County Regional Mobility Authority (GCRMA) said that TxDOT is going to do a route study for the GCRMA to analyze alignments in the northern area. He said they have a preliminary alignment through Grayson County and will provide a copy after the meeting. Chairman Wageman added that the NTTA has had several productive meetings with GCRMA and asked that the GCRMA information be reflected in the alignment alternatives.

The corridor team reminded all attendees that the technical work group meeting would be held at 10 a.m. on Friday, October 30, 2009 at the same location. Tom added that the next executive work group meeting would be held at 10 a.m. on December 4, 2009 at the same location, and reaffirmed that anyone with questions could contact him or Matt Craig. Tom asked Shannon McCord to create an e-mail distribution list to provide the work groups with updates and information throughout the process.

Gerry reiterated the importance of the work group to the process and expressed his appreciation for the participation of all stakeholder entities. Chairman Wageman closed the meeting stating his excitement about the DNT Extension 4B/5A project and desire to do what is necessary to ensure the forward progression of the project.

Project updates can be reviewed on the NTTA website at: www.ntta.org, click on NTTA Project Updates- DNT Extension Phase 4 and 5.

Next Steps:

- Entities mark-up constraints maps and return to technical work group meeting on October 30, 2009.
- Corridor management team to create an email distribution list to keep work group members informed of process.

Phase 4A & 5B

Dallas North Tollway Extension

Sign-In Sheet - Friday, October 23, 2009, 10:00 a.m.

Name (Please Print)	Organization (Please Print)	Email (Please Print)
JERDY GARY	GCRMA	Jerdy@sbcglobal.net
ELLIS PLUMSTEAD	GCRMA	EllisPlumstead@hotmail.com
RICH JAYNES	HALFF	rjaynes@halff.com
HANSON UNDERWOOD	HALFF	HUNDERWOOD@HALFF.COM
Matt Craig	Halff	MCRAIG@HALFF.COM
JAMES W. GRIFFIN	NTTA	Jgriffin@NTTA.org
CENAO CARRIGAN	NTTA	gcarrigan@ntta.org
LOUI SHELTON	NTTA	lselton@ntta.org
Joe Jaynes	Collin Co	JJAYNES@COLLINCOUNTYTX.GOV
Aller Clemson	NTTA	aclemson@NTTA.org
MATT SHAHEEN	COLLIN COUNTY <i>LEFT MEETING AT 10:15AM</i>	MSHAHEEN@COLLINCOUNTYTX.GOV
Mark Miller	City of Gunter	mayor@ci.gunter.tx.us
MICHAEL MONNIS	NCTCOB	mmonnis@NCTCOB-ON
Bill Bilyeu	Collin County	bbilyeu@collincountypx.org
Ryan Smith	Town of Prosper	james.r.smith@wellstar.org
Janet Groff	City of Pilot Point	janetgroff456@myblue12.net
MIKE LAVO	TOWN OF PROSPER	MIKE-LAVO@PROSPERTX.GOV
Steve Key	Cook County Commissioner	commissionerkey@ntina.net
ROY BREWER, DESIGNEE	GRAYSON COUNTY COMMISSIONER	roy@brewerdevelopments.com

Appendix C-1, Page 3

Phase 4B & 5A Dallas North Tollway Extension

Meeting Summary

Date:

October 30, 2009 (10:12 a.m. - 11:30 a.m.)

Subject:

DNT Extension Phase 4B/5A - Technical Work Group Meeting

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Attendees:

(see attached list)

Notes By:

Shannon McCord

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:12 a.m. with the DNT Extension, Phase 4B/5A corridor manager Tom Diamond welcoming the attendees. He requested that they each introduce themselves and who they represent.

- Presentation:

Tom began the presentation with an overview of the technical work group structure and purpose, followed by an overview of the project study area. He also outlined the stakeholder and public involvement initiatives for the project emphasizing the importance of public involvement to the success of the project. He reviewed the roles and responsibilities of the two different work groups, Executive Work Group (EWG) and Technical Work Group (TWG). Tom concluded his portion of the presentation by outlining the project schedule, explaining that the current phase as the "develop and evaluate conceptual alternatives phase", and noting the proposed public meeting and public hearing opportunities within the schedule.

Matt Craig then led the presentation explaining the process of analyzing the alternatives; including comparing mobility benefits, cost effectiveness and environmental issues. He made note of the basic design features and typical sections such as a constant 400-foot wide right of way and 70 mile per hour design speed. He reviewed known environmental and manmade constraints, reminding everyone that maps were provided to representative of each entity at the October 23 EWG meeting with the request that they provide mark-ups of additions or corrections of content. Copies of the constraint maps were distributed to the entities that had not yet received them. All participants were asked to submit mark-ups to Matt C. by November 13.

Matt then presented a map that showed all alignment alternatives submitted at the October 23 EWG meeting by the various entities. The alignments represented were from the City of Gunter, Denton County and Grayson County. He requested any entity with additional alignments for consideration submit them to him by November 13. He concluded by reviewing the alternative evaluation matrix. The presentation portion concluded with Tom reminding attendees of the next round of work group meetings scheduled for December 4 (EWG) and December 11 (TWG) – both at 10 a.m. at the same location.

Group Discussion:

Tom transitioned into the interactive portion of the meeting by requesting the attendees gather around the tables with the maps to discuss the study area and any missing constraints. Matt requested attendees provide any local information about unregistered landfills, proposed land purchases for expansion of school districts or cities, small cemeteries or other constraints that are difficult to locate. This information is important for conducting the analysis of the alternatives. Deputy Corridor Manager Mike Hutchison suggested that utility lines both above and below ground are often difficult to locate. Tom added that the same is true of gas lines. The team asked the entities to send any additional information regarding any of the items mentioned to Matt by November 13; his email was provided to all attendees.

Lee Allison, representing the Town of Aubrey, questioned their involvement since the constraint maps did not extend into Aubrey. Matt asked that Aubrey provide any information from Aubrey's Master Plan or Thoroughfare Plan that extends north beyond the city limits far enough to be in the project's study area. Jeff Neal with the North Central Texas Council of Governments (NCTCOG) suggested that Aubrey may have greater interest in the work NCTCOG is currently performing for a new Outer Loop that will pass east-west near Aubrey.

JC Hughes, Pilot Point City Manager, noted areas near the county line that are currently being considered for development by City of Gunter. Matt C. responded that he had already received information on two Municipal Utility Districts that had been annexed into the City of Gunter. Matt Robinson representing the City of Gunter said the City passed a resolution on an alignment trying to get dedicated right of way up to Farm-to-Market (FM) 121. Matt C. used the PowerPoint presentation map to explain that the blue roadway was from the Gunter Thoroughfare Plan submitted last week.

Tom asked if someone from Grayson County could provide an update on their alignment studies. Mike Shahan from the Grayson County Regional Mobility Authority (GCRMA) said TxDOT would select a consultant by February 2010 to do environmental and route studies. Tom added that the TxDOT study area could provide connectivity from the end of the NTTA study area further to the north, ultimately connecting to U.S. 75.

Tom emphasized the importance of knowing what each entity is doing to eliminate gaps or overlaps in the study process. Bob Wood of the Sherman Denison Metropolitan Planning Organization is collaborating with Collin and Denton Counties to make sure they are studying the appropriate area.

Jason Gray of the City of Celina submitted a sketch of an easterly alignment for consideration. Matt C. said the team would plot the sketch on the maps and coordinate with Jason to make sure that the alignment is correct. Tom asked Celina for more detailed alignment information that would show associated property lines. Keith Billick, with Celina, said there was CAD information on the alignment. Matt C. requested the additional CAD information to compare with the sketch provided by Jason.

The United States Army Corps of Engineers (USACE) representatives highly recommended that alignments stay clear from federal properties (including Lake Ray Roberts) because this would federalize the project. Impacts to federal lands would require an Environmental Assessment (EA), meeting federal requirements, and could significantly extend the project study schedule. Tom

asked for the location of the federal property lines. Eric said that most of the federal lands and flowage easements are adjacent to the main body and arms of Lake Ray Roberts, as shown on the constraint maps. Eric stated that he would do further research to confirm the extent of flowage easements in the study area. He defined flowage easements as privately owned land that the government has acquired certain perpetual rights for the use of flood control.

Project updates can be reviewed on the NTTA website at: www.ntta.org, click on NTTA Project Updates- DNT Extension Phase 4 and 5.

Next Steps:

- EWG meeting scheduled for 10 a.m. on December 4, 2009.
- TWG meeting scheduled for 10 a.m. on December 11, 2009.
- E-mail meeting notes from EWG and TWG meetings to all team members.

Phase 4A & 5B

Dallas North Tollway Extension

Sign-In Sheet

Friday, October 30, 2009 at 10:00 a.m.

(Please Print)

Name	Organization	Email
Shannon McCord	HNTB	slmccord@hntb.com
Robert Wood	D. Sherman Davis MPO	rwood@sdmpo.org
James W. GRIFFIN	NTTA	jgriffin@ntta.org
MONTE RATER	TXDOT	mrater@dot.state.tx.us
Matt Robinson	OT&R City of Gunter	mrobinson@txlandresources.com
Jason Gray	CITY OF CELINA	jgray@celina-tx.gov
JEFF NEAL	NCTCOG	jneal@nctcog.org
Joseph Johnson	City of Celina	jjohnson@celina-tx.gov
J. C. Huarez	CITY OF PILOT POINT	jahuarez@cityofpilotpoint.org
Mike Hutchison	HNTB	mhutchison@hntb.com
Matt Craig	HALFF	MCRAIG@HALFF.COM
ROB JORDAN	USACE	Robert.S.Jordan@usace.army.mil
Eric Peterson	USACE	Eric.C.Peterson@usace.army.mil
Kevin Price	City of Gunter	kprice203@hotmail.com
John Polstor	Durban Camp	johnp@itsinc-tx.com
Lee Allison	CITY OF AUBRAY	lee.allison@ee-gyp.com
Tim Lackey	City of Pilot Pt	tlackey@hrseengineers.com
Keith Billick	City of Celina	kbillick@celina-tx.gov
Lori Shelton	NTTA	lshelton@NTTA.ORG
Tracy Homfeld	Collin County	thomfeld@co.collin.tx.us

Phase 4B & 5A Dallas North Tollway Extension

Meeting Summary

Date:

December 4, 2009 (10:09 a.m. - 10:48 a.m.)

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Summary Notes By:

Leigh Hornsby

Subject:

DNT Extension Phase 4B/5A - Executive Work Group Meeting

Attendees:

(see attached list)

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:09 a.m. with DNT Corridor Manager Tom Diamond welcoming the attendees. He reminded participants that October's Executive Work Group (EWG) and Technical Work Group (TWG) meeting summaries were distributed via email prior to this meeting and are also available in hardcopy at the meeting.

- Presentation and Group Discussion

Mr. Tom Diamond provided an overview of the progress to date and the planning and environmental schedule. As part of the timeline, Chairman Paul Wageman asked if the corridor management team planned additional public meetings prior to a Board decision. Collin County Judge Keith Self recommended that two public meetings be held prior to a locally preferred alignment decision by the Board. Chairman Wageman agreed. As a result, the corridor management team will plan two public meetings in March 2010 in Denton and Collin counties. Judge Self also recommended a venue of the U.S. 380 Building in Prosper, near the Prestonwood North building.

Design Project Manager Matt Craig discussed the alternative analysis process. Mr. Craig described the basis for design, describing the anticipated lane width.

Mr. Craig reviewed the five alignment alternatives submitted for consideration. Submissions were made from the City of Celina, Denton County, City of Gunter, Grayson County and the City of Pilot Point. Judge Self stated that he would like the Collin County preferred alignment be listed since the Commissioners Court unanimously selected one. This reference was made regarding the City of Celina proposed alignment.

Judge Self asked about the difference in the City of Gunter (red) and Grayson County (blue) alternative alignments. Mr. Roy Brewer, representing Grayson County Commissioner Jackie Crisp, stated that the City of Gunter's proposed alignment was the original preferred alignment by Grayson County. Mr. Craig stated that it was his understanding that the Grayson County Metropolitan Planning Organization (MPO) provided the blue alternative but that he would research the matter with the Grayson County MPO.

Dallas North Tollway Extension

Mr. Craig stated that he would like to review and adjust the alignment alternatives to minimize impacts and meet design criteria. He will provide additional information to the technical work group on the proposed alignment adjustments. Collin County Commissioner Matt Shaheen asked that a copy of the map with the proposed alternative alignments be emailed to the executive work group members after the adjustments have been made.

Mr. Craig presented an animated view of the proposed alignments and noted various environmental constraints along the alignments. There was general discussion on long term connectivity to Interstate Highway (IH) 35 and U.S. 75, and a potential alignment configuration to provide this connectivity. It was noted that the connectivity to U.S. 75 is being addressed by the Grayson County Regional Mobility Authority (RMA) Toll Road Study being performed by TxDOT. Judge Self asked Chairman Wageman if there is an agreement with the Grayson County RMA. Chairman Wageman stated that there has been good communication but no formal agreement. Mr. Brewer stated that he would like to see an expanded map to better show other major roadways (IH 35, U.S. 75) to the north.

Mr. Craig stated that an evaluation matrix will be used with the technical work group to assess the alignment alternatives. Mr. Craig discussed briefly the local city and county thoroughfare plans which locate where cross-streets are identified for the proposed alignment alternatives. He stated that a minimum one-mile interchange spacing will be used which provides room for an on ramp and an off ramp. Overall, the 11 to 12 miles of length for the DNT extension, there could be 11 or 12 on and off ramp pairs. He illustrated how the spacing would look for the proposed alignment alternatives.

Judge Self asked that the Collin County preferred alignment be shown on the alignment map to be shown to the technical work group. NTTA Assistant Executive Director Gerry Carrigan asked if the group would like to meet again in January, and Chairman Wageman stated that it would be beneficial.

Next Steps:

The technical work group meeting will be held on December 11, 2009. Both work groups need to provide final constraint and alignment information to the corridor team by December 17, 2009. Preparation is under way for two public meetings in March 2010, one in Denton County and one in Collin County.

Public Meeting invitation letters will be sent to all property owners on and adjacent to the proposed alignments informing them of the public meetings and notifying them that their property may be affected by one or more of the alignment alternatives. In addition, post cards will be mailed to property owners within the study area but not directly affected by the alignments. This is in addition to newspaper legal ads. Work group members will be asked to share information about the public meetings with their constituents, as well.

Phase 4B & 5A Dallas North Tollway Extension

Sign-In Sheet

Friday, December 4, 2009 at 10:00 a.m.

(Please Print)

Name	Organization	Email
JCHUAHOS	City of Pilot Point	jchuahos@cityofpilotpoint.org
GERRY GARRIGAN	NTTA	gcarrigan@ntta.org
Lori Shelton	NTTA	lshelton@ntta.org
James W. Griffin	NTTA	jgriffin@ntta.org
Hugh Coleman	Denton County	hugh.coleman@dentoncounty.com
JASON GRAY	CEUNA	jgray@ceuna-tx.gov
Jim Lewis	Celina	jlewis@flash.net
Keith Self	Collin County	keith.self@collincountytx.gov
Susan Thomas	TEXOMA COG	stthomas@texoma.cog.tx.us
D. Doughty	Pilot Point TX	david-doughty@ML.com
Roy BREWER (JACKIE CRISP, COMM.)	GRAYSON COUNTY	roy@brewerdevelopments.com
MATT SHAHEEN	COLLIN COUNTY	MSHAHEEN@collincountytx.gov



Phase 4B & 5A

Dallas North Tollway Extension

Meeting Summary

Date:

December 11, 2009 (10:09 a.m. - 10:40 a.m.)

Subject:

DNT Extension Phase 4B/5A - Technical Work Group Meeting

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Attendees:

(see attached list)

Summary Notes By:

Leigh Hornsby

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:09 a.m. with Dallas North Tollway (DNT) Corridor Manager Tom Diamond welcoming Technical Work Group (TWG) attendees and requesting that each person in the room make personal introductions. He reminded attendees about the previous work group meeting summaries that were emailed to participants and stated that hard copies were available at the back of the room.

- Presentation

Mr. Diamond provided an overview of the December 4th Executive Work Group (EWG) meeting and summarized comments and decisions made at that meeting. These included holding a second public meeting to cover the Denton County area, adding Collin County as submitting/supporting the orange alignment, removing Grayson County label from blue alignment, and developing a large scale map that addresses ultimate connectivity.

Design Project Manager Matt Craig stated that an alternative analysis report will be provided to the NTTA Board of Directors as part of the locally preferred alignment determination. The report will include information about the alignment alternatives including ramp locations, a discussion of toll collection facility locations and constraints information. The report will also include comments from the two public meetings scheduled for March 2010.

Mr. Craig reviewed DNT 4B/5A Project design standards including 70 mph design speed, all-electronic tolling and a 400-foot right of way. Mr. Craig presented each of the alignment alternatives received from the stakeholder work groups. The City of Gunter's alignment information was represented on the map by a red line. A blue line represented the alignment submitted by the Sherman-Denison Metropolitan Planning Organization. The alignment provided by Denton County was represented by a yellow line. The Celina and Collin County alignment alternative was indicated by an orange line. The final proposed alignment presented was from Pilot Point and represented by a green line. Mr. Craig asked that following the meeting the groups take a closer look at the map and plots to make certain everyone is comfortable with the described alternatives.

Mr. Craig provided a regional view map to illustrate potential connectivity between the proposed alignments and existing regional roadways. He then walked attendees through an aerial view of the alternatives that superimposed the alignments onto a constraints map.

Mr. Craig provided an overview of the evaluation matrix. Some of the areas included in the matrix are design features, socioeconomic and environmental impacts, as well as costs and additional impacts. Each alternative is between 11 and approximately 12 miles in length. Social and economic impacts include impacts to properties and man made features. Environmental impacts include natural features. Mr. Craig said he would bring back the finalized alignment alternatives to the TWG's January meeting.

Mr. Craig stated that the team has obtained the thoroughfare plans from each of the entities that proposed alignment alternatives. He proceeded to show the preliminary cross-street interchanges based on information from the thoroughfare plans. Mr. Craig stated that any additional information may be added to the map following the meeting.

The presentation portion ended at 10:40 a.m.

- **Group Discussion**

Mr. Diamond suggested the attendees review the alignment changes – in a break out group format. In addition, he stated that the alignments need to be finalized before any copies are provided to requestors to help prevent confusion.

Pilot Point City Manager J.C. Hughes stated that Pilot Point's preferred route remains the Denton County yellow line alignment even though they submitted an alternative (green) alignment. The alternative was submitted to ensure all potential alternatives were vetted through the process.

Regarding the evaluation matrix, Collin County Engineer Ruben Delgado asked if bridges and related items would be incorporated into cost estimates. Mr. Craig confirmed that the team is currently working through that process and that information would be reflected in the evaluation. Mr. Delgado asked if the size of parcels (and remainders) would be considered. Mr. Craig stated that this would be considered in the cost of right-of-way acquisition. Celina City Manager Jason Gray stated that the number of owners may also impact the right-of-way cost.

Next Steps:

Mr. Diamond requested additional information from the work groups to help clarify the alignments be provided by December 17, 2009. He stated that the next TWG meeting is scheduled for January 22, 2010, preceding the EWG scheduled for January 29, 2010.

Phase 4B & 5A

Dallas North Tollway Extension

Sign-In Sheet

Friday, December 11, 2009 at 10:00 a.m.

(Please Print)

Name	Organization	Email
Wally Johnson	SHERMAN-DENISON MPO	wjohnson@sdmpo.org
Bob Wood	" "	rwood@sdmpo.org
NOEL PARAMANANTHAM	TXDOT - PARIS	nparama@dot.state.tx.us
MIKE SHAHAN	GC RMA	SHAHANM@CO.GRAYSON.TX.US
JC HUGHES	PILOT POINT	JCHUGHES@CITYOFPILOTPPOINT.ORG
Matt Robinson	GTR Representing City of Guntersville	MROBINSON@TXLANRESOURCES.COM
Kevin Price	City of Guntersville	kprice203@hotmail.com
James W. GRIFFIN	NTTA	jgriffin@ntta.org
Lori Shelton	NTTA	Lshelton@NTTA.ORG
JEFF NEAL	NCTCOG	jneal@nctcog.org
Tim Lackey	NRS/PILOT POINT	tlackey@nrseengineers.com
Kathy Billick	City of Celina	kbillick@celina-tx.gov
Joseph Johnson	Celina	jjohnson@celina-tx.gov
JASON GRAY	CELINA	JGRAY@CELINA-TX.GOV
Ruben Delgado	Collin County	rdelgado@co.collin.tx.us
Benny Heard	TXDOT Collin Co	bheard@dot.state.tx.us
Tom Diamond	PMO	tdiamond@hntb.com
Mike Hutchison	PMO	mhutchison@ntta.com
Matt Craig	Halff	mcraig@halff.com
Nelson Underwood	Halff	nunderwood@halff.com

Rich Jaynes
Leigh Hecasby

Halff
PMO
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Phase 4B & 5A

Dallas North Tollway Extension

Meeting Summary

Date:

January 22, 2010 (10:05 a.m. - 11:15 a.m.)

Subject:

DNT Extension Phase 4B/5A - Technical Work Group Meeting

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Attendees:

(see attached list)

Notes By:

Leigh Hornsby

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:05 a.m. with DNT Corridor Manager Tom Diamond providing a brief history of past work group meetings and stating that an executive work group meeting is scheduled for January 29, 2010. Public meetings will be held on March 9 and 11 in Denton and Collin counties. He asked that attendees pick up handouts and previous meeting summaries, located at the door.

- Presentation:

Mr. Diamond provided an update of where the corridor team is in the route planning process. He explained that the team is working toward the identification of a staff recommended Locally Preferred Alternative (LPA) alignment and that recommendation will be taken to the NTTA Board of Directors for approval in July 2010. A critical input to this recommendation will be public input from the meetings in March 2010. Afterwards, the team will develop a detailed schematic, as well as an environmental evaluation document for the LPA. That information will be taken to a public hearing. The schematic is scheduled to be finished and approved in 2011.

Design Project Manager Matthew Craig provided attendees with a draft copy of the evaluation matrix for the alternative analysis. He explained the various items included in the matrix, such as costs, social and economic impacts, as well as environmental impacts. Mr. Craig explained that the corridor management team must document any identified environmental impact to the project. He then presented results of the environmental impacts section of the matrix. Although there are no existing HAZMAT constraints, there are streams in each of the alignments, as well as right of ways within the 100-year floodplain. Also evaluated were open waters, wetlands, wildlife, forests and parks and recreation areas. From the previous meeting, one park impact in the Celina area has since been mitigated by a modification in the alignment.

The categories of design and social economic impacts include length of road, existing roads impacted, number of potentially displaced residences, as well as commercial and non-commercial buildings. Also included are the relocation of residents and the number of residents within 300 feet of an alignment right of way. NTTA Consultant Jim Griffin stated that the right-of-way information for some of the alternatives reflects much larger tracks indicating fewer property owners impacted. Mr. Craig stated the public meetings in March will allow the corridor management team to learn more from potentially affected property owners.

Mr. Craig then addressed right-of-way impacts. He further explained the estimated net right-of-way costs listed in the matrix, is the total right-of-way required minus existing road right-of-way within the corridor. Mr. Craig stated that the cost estimates include the purchase of orphaned or remainder property that is less than five acres in size. Total right-of-way cost is based on county appraisal district values and indexed up for real market value, acquisition and relocation cost.

Mr. Craig explained that the current cost projections are only at a Level F per the NTTA cost estimating template. Mr. Diamond added that Level F is a conceptual estimate based primarily on length of roadway. Preliminary analysis shows less than 10 percent difference in cost between alignment alternatives.

Mr. Craig explained the cross street ramping and interchange plan and explained how the city and county thoroughfare plans were included in the interchange location development. Attendees were asked to review the ramping interchange/ramp layout diagram and respond with any comments by January 29, 2010.

Mr. Diamond reminded the group that letters to specific property owners directly affected by an alignment would be sent soon. Other property owners within the study area would receive postcards notifying them of the public meetings. The public meetings are scheduled for March 9 and 11 in Denton and Collin counties.

Group Discussion:

The group further discussed the effects of right of way and project costs. Mr. Robert Wood with the Sherman-Denison Metropolitan Planning Organization asked if revenue for each alignment would be a factor. Mr. Craig responded that a traffic and revenue analysis had not yet been conducted and will be done for the LPA. Additional discussion included escalation and inflation factors that effect project costs at this stage. Project updates can be reviewed on the NTTA website at: www.ntta.org, click on NTTA Project Updates- DNT Extension Phase 4 and 5.

Next Steps:

Mr. Diamond stated that the January 29th Executive Work Group meeting is the deadline to provide any final comments to the alignments. The corridor management team will continue to conduct the alternatives analysis.

The public meetings in March will be an open house format so participants' questions may be asked and answered on an individual basis.

The meeting ended at 11:15 a.m.

Distributed Materials:

December meeting summaries

Draft Evaluation Matrix of Conceptual Alternatives

Alignment Alternatives handout

Preliminary Draft Alternatives and Constraints Map

Draft Alignment Alternatives Interchange/Ramp Layout **Appendix C-1, Page 17**

Alignment Alternatives Diamond Ramp Configuration

Phase 4B & 5A

Dallas North Tollway Extension

Sign-In Sheet

Friday, January 22, 2010 at 10:00 a.m.

(Please Print)

Name	Organization	Email
NOEL PARAMANANTHAM	TX DOT	nparama@dot.state.tx.us
Bob Wood	SD MPO	rwood@sdmpo.org
MIKE SHAHAN	G.C. RMA	SHAHANM@CO.GRAYSON.TX.US
LORI Shelton	NTTA	LShelton@NTTA.ORG
James W. GRIFFIN	NTTA	jgriffin@ntta.org
ROY BREWER	GRAYSON County	roy@browerdevelopments.com
JASON GRAY	CELINA	JGRAY@CELINA-TX.GOV
Ruben E. Delgado	Collin County	rdelgado@collinco.tx.gov
Keith Billick	Celina	kbillick@celina-tx.gov
Joseph Johnson	Celina	jjohnson@celina-tx.gov
Leigh Hornsby	Pmo / HNTB	
Mike Hutchison	Pmo / HNTB	
Tom Diamond	Pmo / HNTB	
Matt Craig	HAIFF	
Nelson Underwood	HAIFF	

Phase 4B & 5A

Dallas North Tollway Extension

Meeting Summary

Date:

January 29, 2010 (10:00 a.m. - 10:40 a.m.)

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Notes By:

Leigh Hornsby

Subject:

DNT Extension Phase 4B/5A - Executive Work Group Meeting

Attendees:

(see attached list)

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:10 a.m. with NTTA Chairman Paul Wageman welcoming the attendees. He then turned the presentation over to Corridor Manager Tom Diamond. Mr. Diamond reviewed the agenda, which included the progress to date, study process and schedule, as well as new information regarding the alignment alternatives and next major steps in the planning process.

- Presentation:

Mr. Diamond stated that two public meetings would be held in March to obtain input on the alternative alignments. The next major step after the public meetings is to work with NTTA staff and stakeholders to develop a Locally Preferred Alternative (LPA) recommendation for NTTA Board of Directors consideration in July 2010. Upon Board approval of the LPA and approval to proceed forward, a detailed schematic and environmental evaluation document will be prepared with continued stakeholder and public involvement.

Mr. Diamond welcomed Design Project Manager Matt Craig, who provided the remaining part of the presentation. Mr. Craig presented the alignment alternatives and explained the differences between the green, yellow and orange alignments, presented by Pilot Point, Denton County and Collin County/City of Celina, respectively. Mr. Craig showed how the alignments would work with various regionally identified proposed roadways, including the proposed Grayson County Tollway. He also discussed the work and coordination that was done with the Technical Work Group regarding ramp and cross street location refinements since the December meeting.

The alignments will be compared equally through an alternatives analysis. Evaluation measures include engineering design, socio-economic impacts, environmental impacts, project development cost, compatibility with local and regional planning, as well as public input from the upcoming public meetings in March. Mr. Craig reviewed the evaluation matrix and explained in more detail the evaluation measures.

Mr. Diamond concluded the presentation by providing information regarding the public input process by stating the dates, times and locations of the public meetings, which are March 9 and 11 from 6-7:30 p.m. in Denton and Collin counties, respectively.

The meetings will utilize an open house format with numerous displays consisting of alignment, right of way (ROW) and interchange maps. Attendees will have an opportunity to provide written and verbal comments. This will be followed by a 10-day written-comment period.

The corridor team will provide a corridor update presentation to the NTTA System Projects and Operations Committee in February 2010.

- **Group Discussion:**

Collin County Judge Keith Self asked if costs would be available prior to the public meetings. Mr. Craig stated that the corridor management team is working towards identifying costs associated with the project alignments. Chairman Wageman stated that the estimating process should be discussed, along with any revenue information available. (Note: Revenue information will not be available prior to the public meetings.) NTTA Assistant Executive Director of Project Delivery Gerry Carrigan added that the NTTA is aiming towards cost identification and stated that comparative ranges would be available at the public meeting. Pilot Point City Manager J.C. Hughes stated that any ROW donations already obtained or in the process of being secured would not be presented by the NTTA at the public meeting. Mr. Craig confirmed Mr. Hughes' comments and added that the public meetings would be an appropriate time for landowners to provide additional information including willingness to donate needed ROW.

Chairman Wageman asked if there would be aggressive outreach prior to the public meetings. Mr. Hughes stated that Pilot Point would communicate information in the city's water bills. Mr. Carrigan stated that a significant amount of outreach has been initiated by the NTTA. Grayson County RMA Chairman Jerdy Gary asked if the northern areas such as Tioga and Grayson County would receive the information. Mr. Diamond stated Tioga is in the study area and would receive notification. Mr. Hughes offered his assistance in disseminating information. In addition, multiple newspapers were identified that should receive legal notices, including newspapers in Celina, Grayson County, the 380 News and Denton County Record.

Next Steps:

- Two public meetings are scheduled for March 2010.
 - March 9, 2010, 6 p.m. - 7:30 p.m., PointBank Community Room, Pilot Point
 - March 11, 2010, 6 p.m. - 7:30 p.m., Celina Middle School Cafeteria, Celina
- The corridor management team will finalize the alignment analysis including public input, and work with NTTA staff and stakeholder in developing a Locally Preferred Alternative (LPA) recommendation for approval by NTTA Board in July 2010.

The meeting ended at 10:40 a.m.

Distributed Materials:

December meeting summaries

Alignment Alternatives and Schedule handout

Preliminary Draft Alternatives Constraints Map Draft

Alignment Alternatives Interchange/Ramp Layout

Alignment Alternatives Diamond Ramp Configuration

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Phase 4B & 5A

Dallas North Tollway Extension

Sign-In Sheet

Friday, January 29, 2010 at 10:00 a.m.

(Please Print)

Name	Organization	Email
Bill Hubbard	GRAYSON Co. RMA	w.hubbard@stirrupit.com
Mark Miller	Gunter	mayor@ci.guntortx.us
Janet Groff	City of Pilot Point	JanetGroff@CityofPilotPoint.org
JC HUGHES		JCHUGHES@CITYOFPILOTPOINT.ORG
Jerdy GARY	GRAYSON Co. RMA	Jerdy@sbok.net
Lori Shelton	NTTA	LShelton@NTTA.ORG
Keith Self	Collin County	Keith.self@collincountytx.gov
James W. GRIFFIN	NTTA	jrgriffin@ntta.org
GERALD CARRIGAN	NTTA	gcarrigan@ntta
Math Robinson	Rep. City of Gunter	MRobinson@TELANDRESOURCES.COM
Jim Lewis	City of Celina	jlewis@flash.net
Tom Diamond	NTTA-PMO-HNTB	tdiamond@hntb.com
Keith Billick	City of Celina	kbillick@celina-tx.gov
H. Coleman	Denton County	hcoleman@dentoncong.gov
Paul Wagman	NTTA Board	
Math Craig	Corridor Mgmt Team	
Nelson Underwood	"	
Tom Diamond	"	
Mike Hutchison	"	
Leigh Horsby	"	

Phase 4B & 5A

Dallas North Tollway Extension

Meeting Summary

Date:

May 17, 2010 (10:05 a.m. - 10:30 a.m.)

Subject:

DNT Extension Phase 4B/5A - Technical Work Group Meeting

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Attendees:

(see attached list)

Notes By:

Leigh Hornsby

Presentation and comments:

- **Welcome and Introductions**

The meeting began at 10:05 a.m. with Dallas North Tollway (DNT) Extension Phase 4B/5A Corridor Manager Tom Diamond welcoming the attendees and providing a brief history of past work group meetings, as well as the public meetings held in March. In addition, he stated that an Executive Work Group meeting is scheduled for May 21, 2010 at the same location. It was noted that representation from the City of Prosper and Denton County was not present.

- **Presentation and Discussion:**

Mr. Diamond provided a snapshot of where the DNT Extension corridor team stands in the planning and environmental evaluation process. He explained that the team is working through the alternative analysis report. He then briefed the group on the public meetings held in Denton and Collin counties. About 300 people attended the Denton County meeting and about 400 people attended the Collin County meeting. Both meetings utilized open house formats. Mr. Diamond stated that it was intentional to hold open house formats so everyone was exposed to the same project information regardless of when they arrived. There was a rolling PowerPoint of the project history and alignment alternatives information. There was also extensive discussion between the Corridor Team and participants on an individual basis in which their questions were addressed and they were encouraged to provide comments.

Public meeting attendees had opportunities to provide verbal comments to a court reporter. Attendees also had the opportunity to provide written comments by completing comment cards or by submitting email or standard mailings. The comment period started on February 4, 2010, with the first posting of the legal notice, and continued through March 21, 2010. The DNT corridor team received 90 e-mailed comments and an additional 50 comments cards were received through the mail. In summary, 291 people submitted 320 comments. Multiple comments from the same person were counted only once.

Three alignments were to be considered, as well as a no-build option. For the west alignment, 44 people supported it and 33 opposed it. For the middle alignment, 137 people supported it, while 10 opposed it. As for the east alignment, 113 supported it and 15 opposed it.

Mr. Diamond listed the general reasons the commenters gave for their support or opposition of the alignments. Since comments from the public were their opinions. Mr. Diamond reiterated that the corridor team is not supporting or endorsing any of the comments. Some examples of comments received were presented.

Next Steps:

Mr. Diamond stated that the corridor team is currently working with NTTA staff to draft and review the alternatives analysis report. An alignment recommendation by staff will go before the NTTA Board of Directors at the July meeting. The NTTA will be asked to make two decisions – approve the staff recommended alignment and whether or not the Authority wants to proceed with the environmental evaluation and preliminary schematic design work for the staff recommended Alignment.

- **Questions and Answers:**

NTTA Project Delivery Project Manager Lori Shelton asked if the public provided opposing comments because an alignment might affect their property. As a result, she wanted to know if the public supported other alignments for that reason. In some circumstances, the corridor management team did not know if they supported another alignment or not because their comment did not note this reason specifically.

Collin County Engineer Ruben Delgado asked if Grayson County was still working on alignment studies. The Texas Department of Transportation's (TxDOT) Fannin and Grayson counties' Assistant Area Engineer Noel Paramanatham confirmed that TxDOT is moving forward. Mr. Delgado also commented that the evaluation matrix has remained the same. North Central Texas Council of Government's (NCTCOG) Jeff Neal stated that TxDOT is trying to identify traffic that will be moving through Interstate (I) 35 as part of the modeling effort for I-35. He hopes that NCTCOG will soon be able to provide information regarding a modeling of all of Grayson County. He indicated the yellow- red (middle) alignment will be assumed when conducting this modeling.

Sherman-Denison Metropolitan Planning Organization Transportation Director Bob Wood stated that I-35 will be its own "monster" (significant traffic generator) and U.S. 75 (traffic volumes) will only get bigger. Mr. Wood said that he is excited about TxDOT's work regarding the modeling update they are performing for Grayson County. Mr. Neal stated that he hopes that modeling information will be available in June 2010.

Distributed Materials:

Agenda

Summaries of the January Executive and Technical Work Groups

Phase 4B & 5A

Dallas North Tollway Extension

Sign-In Sheet

Monday, May 17, 2010 at 10:00 a.m.

(Please Print)

Name	Organization	Email
Lori Shelton	NTTA	
Bob Wood	SDMPD	
Keith Billede	City of Celina	
Ruben Delgado	Collin County	
Joseph Johnson	City of Celina	
JEFF NEAL	NCTCOG	
NOEL PARAMAN ANTHAM	TXDOT - PARLS	
Leigh Horasby	HNTB / PMO	
Tom Diamond	"	
Mike Hutchison	"	
Rich Jaynes	HAIFF	
Nelson Underwood	"	
Matt Craig	"	



Phase 4B & 5A Dallas North Tollway Extension

Meeting Summary

Date:

May 21, 2010 (10:05 a.m. - 10:20 a.m.)

Subject:

DNT Extension Phase 4B/5A - Executive Work Group Meeting

Location:

Prestonwood Baptist Church North Campus - Offices
1180 Prosper Trail, Prosper, TX

Attendees:

(see attached list)

Notes By:

Leigh Hornsby

Presentation and comments:

- Welcome and Introductions

The meeting began at 10:05 a.m. with Dallas North Tollway (DNT) Extension Phase 4B/5A Corridor Manager Tom Diamond welcoming the attendees and providing a brief history of past work group meetings, as well as the public meetings held in March 2010.

- Presentation and Discussion:

Mr. Diamond provided a snapshot of where the DNT Extension corridor team stands in the planning and environmental evaluation process. He explained that the team is working through the alternative analysis report. He then briefed the group on the public meetings held in Denton and Collin counties. About 300 people attended the Denton County meeting and about 400 people attended the Collin County meeting. Both meetings utilized open house formats. Mr. Diamond stated that it was intentional to hold open house formats so everyone was exposed to the same project information regardless of when they arrived. There was a rolling PowerPoint of the project history and alignment alternatives information. There was also extensive discussion between the corridor team and participants on an individual basis in which their questions were addressed and they were encouraged to provide comments.

Mr. Diamond reminded the work group that attendees had opportunities to provide verbal comments to a court reporter. Public meeting attendees also had the opportunity to provide written comments by completing comment cards or by submitting email or standard mailings. The comment period started on February 4, 2010, with the first posting of the legal notice, and continued through March 21, 2010. The DNT corridor team received 90 e-mailed comments and an additional 50 comments cards were received through the mail. In summary, 291 people submitted 320 comments. Multiple comments from the same person were counted only once.

Three alignments were to be considered, as well as a no-build option. For the west alignment, 44 people supported it and 33 opposed it. For the middle alignment, 137 people supported it, while 10 opposed it. As for the east alignment, 113 supported it and 15 opposed it.

Mr. Diamond listed the general reasons the commenter's gave for their support or opposition of the alignments. Since comments from the public were their opinions. Mr. Diamond reiterated that the corridor team is not supporting or endorsing any of the comments. Some examples of comments received were presented.

Next Steps:

Mr. Diamond stated that the corridor team is currently working with NTTA staff to draft and review the alternatives analysis report. An alignment recommendation by staff will go before the NTTA Board of Directors at the July meeting. The NTTA will be asked to make two decisions – approve the staff recommended alignment and whether or not the Authority wants to proceed with the environmental evaluation and preliminary schematic design work for the staff recommended alignment.

- **Questions and Answers:**

Mr. Diamond asked attendees to view the actual comments/opinions in the additional handout provided and then opened the floor to questions.

Collin County Commissioner Matt Shaheen asked when the NTTA will develop a recommendation on an alignment. NTTA Assistant Executive Director of Project Delivery Gerry Carrigan stated that it will be developed just before the July System Projects and Operations Committee (SPOC), which is a committee of the NTTA Board of Directors. Mr. Carrigan also said that the NTTA is trying to get some additional traffic and revenue studies for the east and middle alignments. He said that the western alignment is not as competitive, and therefore no traffic and revenue studies will be explored.

Commissioner Shaheen asked if the traffic information will be available to the Executive Work Group meeting participants before the (committee) meetings. Mr. Carrigan stated that a section of the report will be discussed at the July SPOC meeting. However, he stated that he will check to see if it can be available prior to the board meeting.

Mr. Diamond concluded the meeting and opened the floor to individual questions and answers. The meeting ended at 10:20.

Distributed Materials:

Agenda

Summaries of the January Executive and Technical Work Groups

Public comment database

Phase 4B & 5A

Dallas North Tollway Extension

Sign-In Sheet

Friday, May 21, 2010 at 10:00 a.m.

(Please Print)

Name	Organization	Email
MATT SHARREN	COLLIN COUNTY	MSHARREN@COLLINCOUNTY.GOV
Mary Horn	Denton Co.	
Lori Shelton	NTTA	
GENNY CARRIGAN	NTTA	gcarrigan@ntta.org
Bill Hubbard	GRAYSON CO RMA	w.hubbardjr@StirrupH.com
Mark Miller	City of Gunters	mmayor@ci.gunters.tx.us
STEVE ROLLINS	DENTON COUNTY	STEVE.ROLLINS@Dentoncounty.com
JASON GRAM	CITY OF CELINA	JGRAM@CELINA-TX.GOV
Keith Self	Collin County	
Matt Robinson	Gunters	MRobinson@TXLAWRESOURCES.COM
Jim Lewis	City of Celina	jlew@flash.net
JAMES McEARLEY	NTTA	cc49@AIRMAIL.NET
Tom Adams	Pilot Point	tadams@cityofpilotpoint.org
Tom Diamond	HNTB	
Mike Hutchison	HNTB	
Nelson Underwood	Half Associates	
Rich Jaynes	Half Associates	
Math Craig	Half Associates	
Leigh Hornsby	HNTB	

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February 9, 2010

**NOTICE OF PUBLIC MEETINGS
Dallas North Tollway Extension, Phase 4B/5A**

The North Texas Tollway Authority (NTTA) will conduct two Public Meetings to discuss the design for the extension of the Dallas North Tollway (DNT) in Collin, Denton and Grayson counties from Farm to Market 428 north to approximately FM 121, referred to as the Dallas North Tollway Extension, Phase 4B/5A. The first public meeting will be held from 6 p.m. until 7:30 p.m. on Tuesday, March 9, 2010 at the PointBank Community Room (200 S. Hwy. 377, Pilot Point, Texas, 76258) in Pilot Point. The second public meeting will be held from 6 p.m. until 7:30 p.m. on Thursday, March 11, 2010, at the Celina Middle School Cafeteria (710 E. Pecan Street, Celina, Texas, 75009).

The purpose of these public meetings is to provide information regarding the development of the proposed DNT alignment alternatives and to receive input/comments from the public. Maps, drawings and other information about the project will be on display, which will show the alignment alternatives and preliminary design information. The study team will be available at the displays to assist in orientation and interpretation of the drawings and other materials.

Attendees will have the opportunity to provide the study team with comments and suggestions by providing verbal comments to be documented by a court reporter or submitting written comments. Such comments will assist project personnel with the design decisions associated with this study. All interested citizens are invited to attend these public meetings.

Any interested citizen may present verbal or written comments either at the public meeting or provide written comments by March 21, 2010. Comments may be submitted via e-mail to dnt45@ntta.org or mailed to Attn: Corridor Manager, Re: DNT 4B/5A Project, NTTA, P.O. Box 260729, Plano, Texas, 75026.

Persons interested in attending the meeting who have special communication or accommodation needs are encouraged to call 972-628-3111. Requests should be made at least 72 hours prior to the public meetings. Every reasonable effort will be made to accommodate those needs.

Appendix C-2

DNT Phase 4B/5A Public Meeting

March 9 & 11, 2010




**DNT Extension Phase 4B/5A:
Planning & Environmental Evaluation Process**

Public Meeting

March 9 & 11, 2010

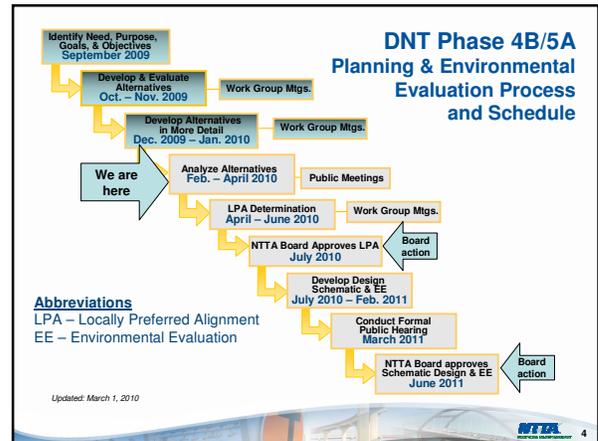
Orientation Outline

- Project goals
- Study process and schedule
- Alternative analysis
 - Step 1: Propose alternatives
 - Step 2: Evaluate alternatives
 - Step 3: Receive public comment
- Next steps
- For more information



Project Goals

- Improve mobility in four-county area
- Meet 2030 traffic demand
- Improve safety on existing roadways
- Minimize negative environmental & socio-economic effects
- Achieve affordable and cost-effective transportation solutions

Alternatives Analysis

- A multi-step process of evaluating alternative alignments to determine a preferred alignment for a road project
- Step 1 – Propose alternative alignments
- Step 2 – Evaluate alternative alignments
- Step 3 – Receive public comment
- Step 4 – Select Locally Preferred Alternative based on results of evaluation



Step 1 – Propose Alternative Alignments

- Step 1 began in October 2009 with local government representatives from within the study area meeting in work groups.
- Executive Work Group – consisting primarily of local elected officials
- Technical Work Group – consisting primarily of technical staff from governmental entities



DNT Phase 4B/5A Public Meeting March 9 & 11, 2010

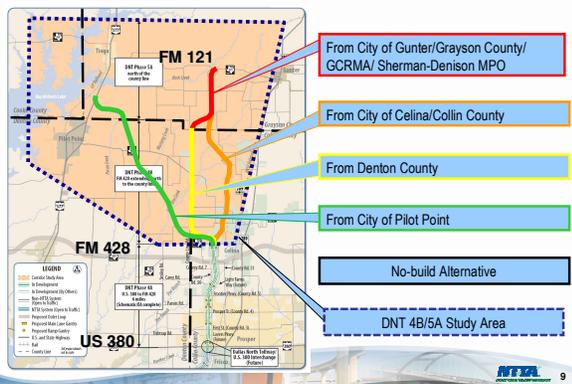
Step 1 – Propose Alternative Alignments Work Group Roles & Responsibilities

- Assist in alternative development & evaluations
- Review project progress & findings
- Coordinate project progress & findings
- Disseminate study information

Step 1 – Propose Alignment Alternatives Work Group Members

- City of Celina
- City of Gunter
- City of Pilot Point
- City of Tioga
- Collin County
- Cooke County
- Denton County
- Grayson County
- Grayson County Regional Mobility Authority
- North Central Texas Council of Governments
- NTTA
- Sherman-Denison Metropolitan Planning Organization
- Texas Department of Transportation
- Texoma Council of Governments

Step 1 - Alignment Alternatives Proposed



Step 2 – Evaluate Alternatives

- Evaluation measures
 - Environmental impacts
 - Socio-economic impacts
 - Compatibility with local and regional planning
 - Engineering design
 - Project development cost
 - Public input

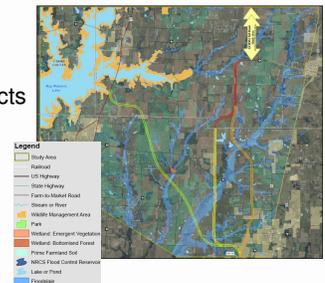
Step 2 – Evaluate Alternatives Environmental Impacts

- Impacts to the natural environment including: wetlands, floodplain, streams, forests, parks, farmland, etc.

	Green (west)	Yellow/Red (middle)	Orange/Red (east)
# of Streams crossed	13	10	12
ROW w/in 100 yr. Floodplain (acres)	77.7	70.8	49.2
Other open water in ROW (acres)	1.8	0.6	3
Wetlands in ROW (acres)	0.3	0.1	0.5
Forest in ROW (acres)	5.7	27.3	19
Prime Farmland in ROW (acres)	238.4	107.8	77

Step 2 – Evaluate Alternatives Environmental Impacts

- You can view the environmental impacts at the evaluation measures displays located around the room.



DNT Phase 4B/5A Public Meeting March 9 & 11, 2010

Step 2 – Evaluate Alternatives Socio-economic Impacts

- Impacts to the man-made environment including: residences, commercial buildings, property acquisition, land use, environmental justice

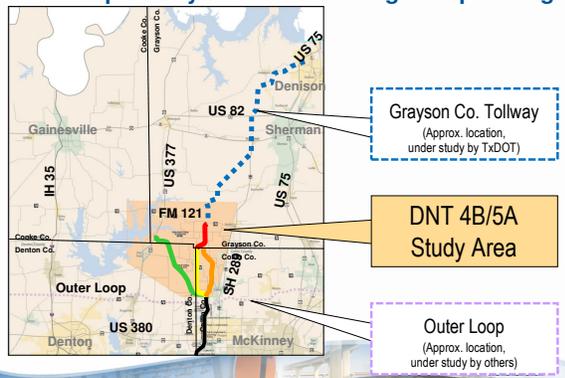
	Green (west)	Yellow/Red (middle)	Orange/Red (east)
# Displaced Residences	0	0	1
# Displaced Comm. or Non-Comm. Buildings	0	0	1
# Additional Residences within 300 ft. of ROW	1	3	10
# of Property owners for parcels in ROW	17	17	34
Total ROW Area Needed (acres)	596	577	538

Step 2 – Evaluate Alternatives Socio-economic Impacts

- You can view the socio-economic impacts at the evaluation measures displays located around the room.



Step 2 – Evaluate Alternatives Compatibility with local and regional planning



Step 2 – Evaluate Alternatives Engineering Design



- 70 mph main lane design speed
- All-electronic toll collection
- Potential staged construction

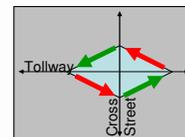
Step 2 – Evaluate Alternatives Engineering Design

- Conceptual ramps & cross streets
 - Interchange types/locations identified
 - Compatible with city thoroughfare plans
 - Ramp configuration coordinated with city staff



Step 2 – Evaluate Alternatives Ramps - Diamond Configuration

- The NTTA generally uses a diamond configuration for on and off ramps



- See table displays for more information about ramping configuration

DNT Phase 4B/5A Public Meeting March 9 & 11, 2010

Step 2 – Evaluate Alternatives Project Development Cost (see display)

- Estimates are conceptual in year 2010 dollars, and do not include inflation

	Green (west)	Yellow/Red (middle)	Orange/Red (east)
Estimated Project Cost, including construction, ROW, and agency costs, Year 2010 (\$M)	\$890	\$865	\$805

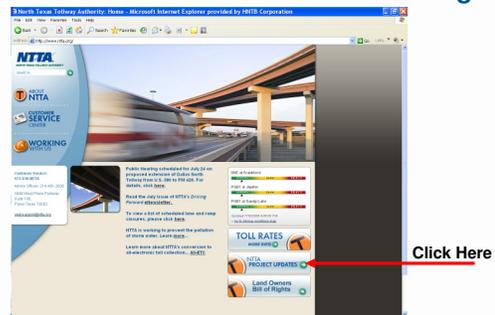
Step 3 - Public Comment

- Members of the public are encouraged to provide feedback via the comment process regarding alignment alternatives.
- 2 ways to comment
 - Verbally – at court reporter station tonight
 - Written – complete a comment card, mail or e-mail comments to NTTA by March 21, 2010
 - DNT45@ntta.org
 - Corridor Manager
 - Re: DNT 4B/5A Project
 - P.O. Box 260729
 - Plano, TX 75026

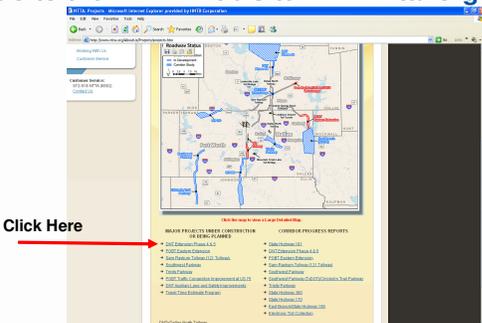
Next Steps

- Staff evaluates public meeting comments
- Staff finalizes Alternative Alignment Analysis
- NTTA Board selects Locally Preferred Alternative
- Staff develops Preliminary Design Schematic and Environmental Evaluation on Locally Preferred Alternative

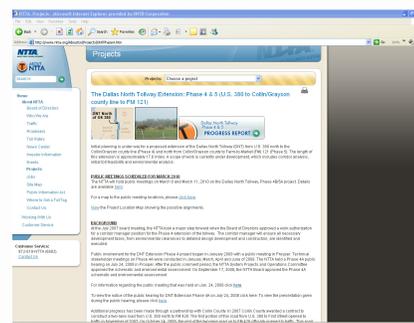
For More Information Go to the NTTA Web site: www.ntta.org



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Appendix 1-2

Traffic Analysis for Highway Design

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

North Texas Tollway Authority

Description of Location	Average Daily Traffic*		Dir Dist %	Base Year		ATHWLD	Percent Tandem Axels in ATHWLD	Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 5 Year Period (2025-2030)		
	2025	2030		K Factor	Percent Trucks ADT			Flexible Pavement	Rigid pavement	
DNT EXT. PHASE 4B-5A Section 1										
From FM 428 To FM 455	12,600	21,200	64-36	9.1	10.3	7.1				
Collin County										
Data for Use in Air & Noise Analysis										
Vehicle Class			Base Year							
	% of ADT		% of DHV							
	89.7		92.9							
Light Duty	6.4		5.0							
Medium Duty	3.9		2.1							
Heavy Duty										
Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 40 Year Period (2025-2065)										
Description of Location	Average Daily Traffic*		Dir Dist %	Base Year		ATHWLD	Percent Tandem Axels in ATHWLD	Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 40 Year Period (2025-2065)		
	2025	2065		K Factor	Percent Trucks ADT			Flexible Pavement	Rigid pavement	

*Note: ADT volume on main lanes only
September 30, 2010

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

North Texas Tollway Authority										Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 5 Year Period (2025-2030)										
Description of Location	Average Daily Traffic*		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axels in ATHWLD	Flexible Pavement		Rigid pavement									
	2025	2030			ADT	DHV			S	N	S	N								
	Data for Use in Air & Noise Analysis																			
Vehicle Class	Base Year		Base Year		Base Year		Base Year		Base Year		Base Year									
	% of ADT		% of DHV		% of DHV		% of DHV		% of DHV		% of DHV									
	2025	2065	2025	2065	2025	2065	2025	2065	2025	2065	2025	2065								
DNT EXT. PHASE 4B-5A Section 2																				
From FM 455 To CR 60													5,000	9,600	69-31	10.3	11.9	9.2		
Collin County																				
DNT EXT. PHASE 4B-5A Section 2																				
From FM 455 To CR 60													5,000	19,200	69-31	10.3	11.9	9.2		
Collin County																				

*Note: ADT volume on main lanes only
September 30, 2010

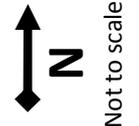
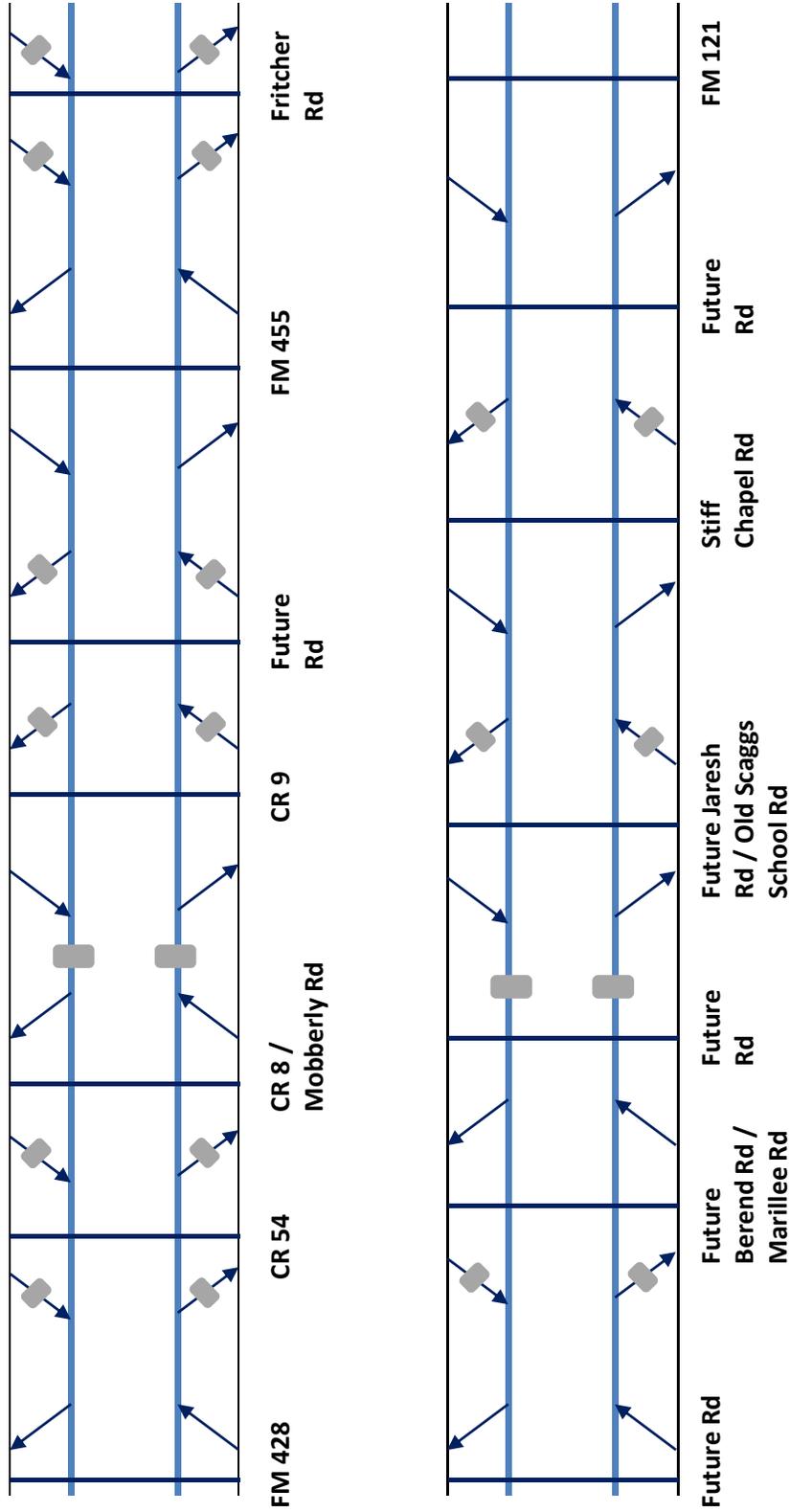
TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

North Texas Tollway Authority

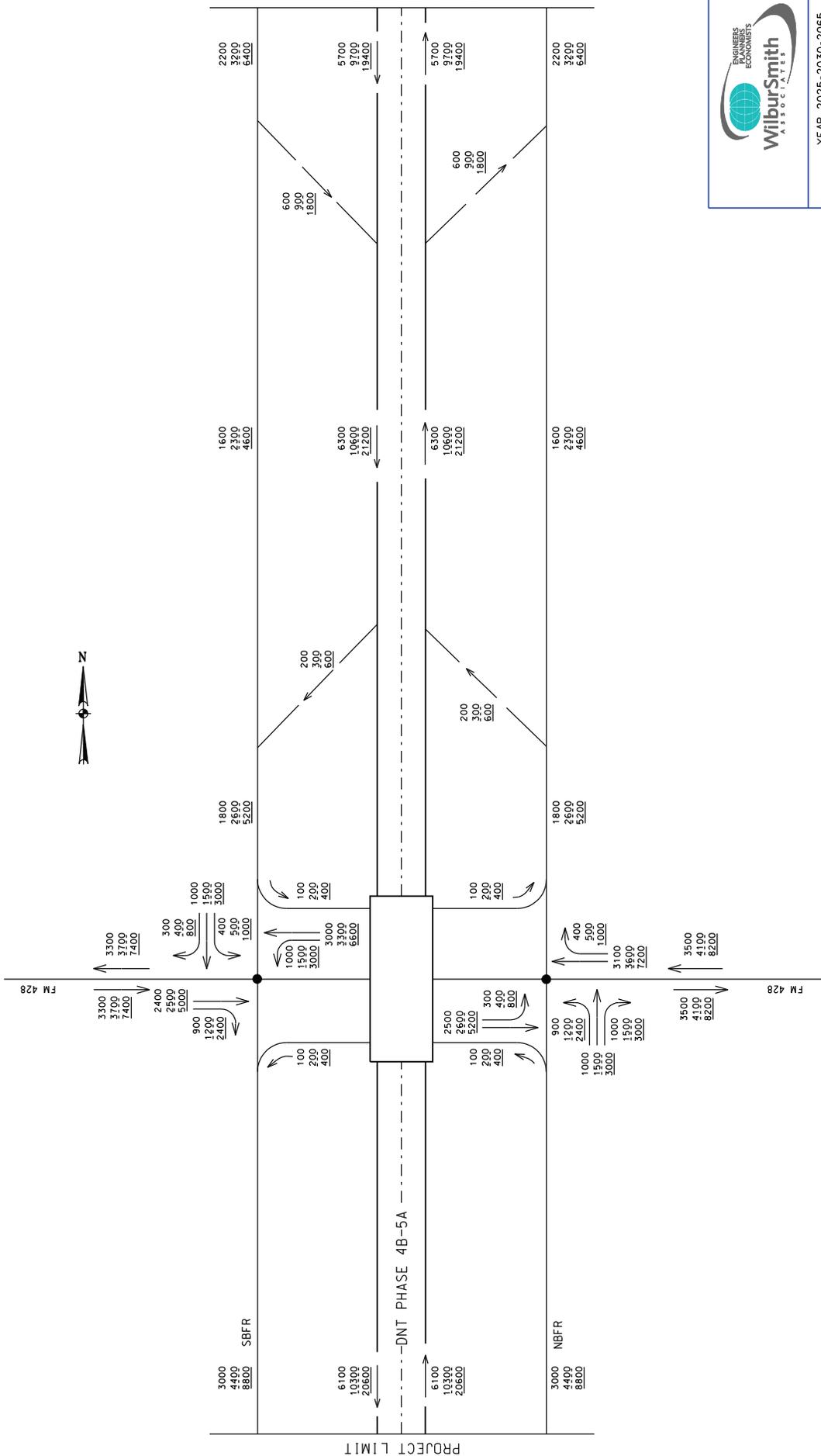
Description of Location	Average Daily Traffic*		Dir Dist %	Base Year		ATHWLD	Percent Tandem Axels in ATHWLD	Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 5 Year Period (2025-2030)		
	2025	2030		K Factor	Percent Trucks ADT			DHV	Flexible Pavement	S
DNT EXT. PHASE 4B-5A Section 3										
From CR 60 to FM 121	2,400	5,400	69-31	11.5	12.5	10.0				
Grayson County										
Data for Use in Air & Noise Analysis										
Vehicle Class	% of ADT		Base Year							
			% of DHV							
Light Duty	87.5		90.0							
Medium Duty	7.9		7.5							
Heavy Duty	4.6		2.5							
Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 40 Year Period (2025-2065)										
Description of Location	Average Daily Traffic*		Dir Dist %	Base Year		ATHWLD	Percent Tandem Axels in ATHWLD	Total Number of Equivalent 18K Single Axle Load Applications One Direction Expected for a 40 Year Period (2025-2065)		
	2025	2065		K Factor	Percent Trucks ADT			DHV	Flexible Pavement	S
DNT EXT. PHASE 4B-5A Section 3										
From CR 60 to FM 121	2,400	10,800	69-31	11.5	12.5	10.0				
Grayson County										

*Note: ADT volume on main lanes only
September 30, 2010

DNT 4B/5A Toll Gantries



Note: The toll gantry locations shown above are preliminary and will be updated based on further analysis.



YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

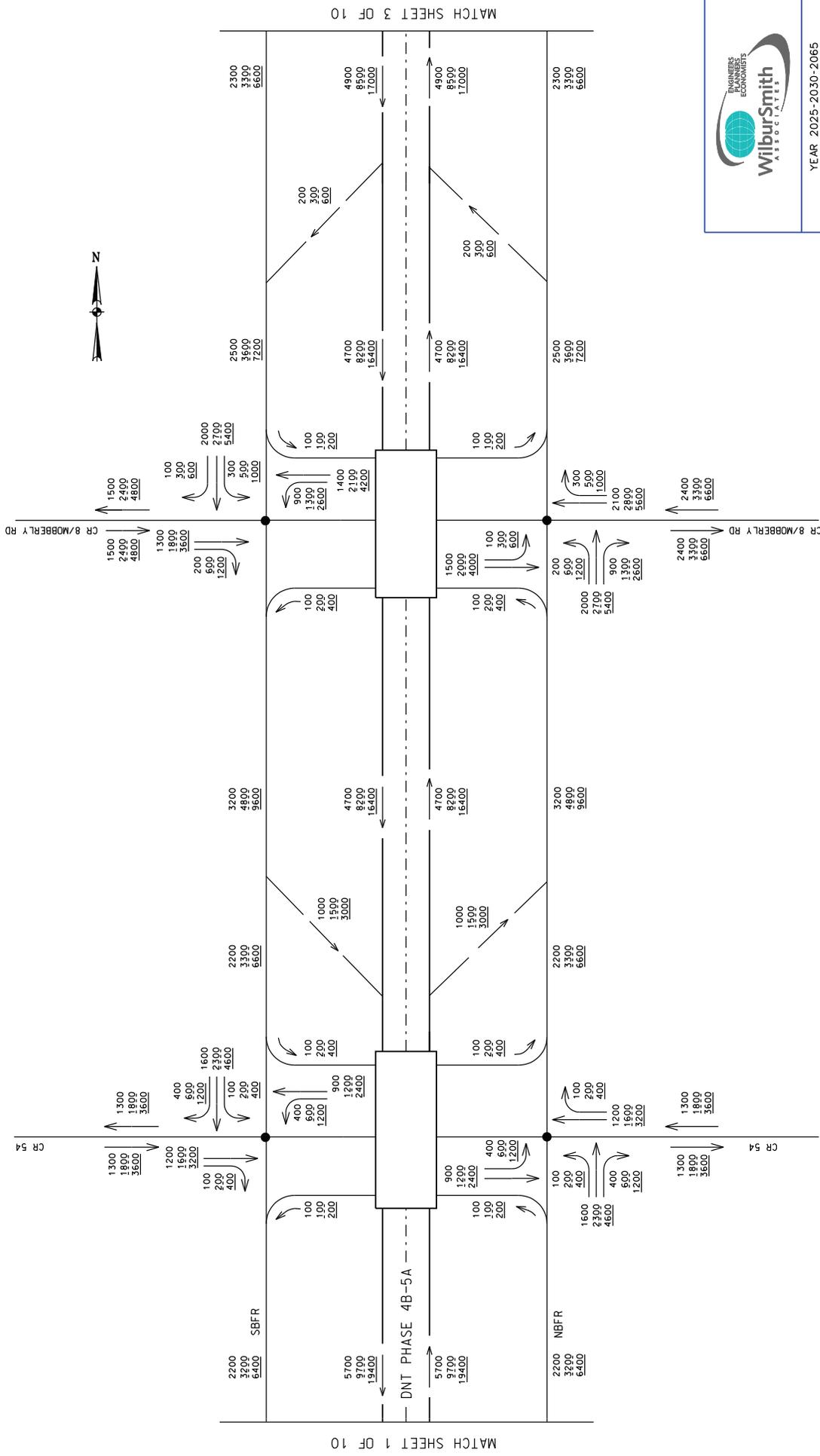
SHEET 1 OF 10

D R A F T

NOTES
1) Configuration and volumes are based on the latest schematics available to date
2) Not to scale
3) Cross streets are not shown at actual angle to roadway

LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

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ASSOCIATES
BUSINESS ECONOMISTS

YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

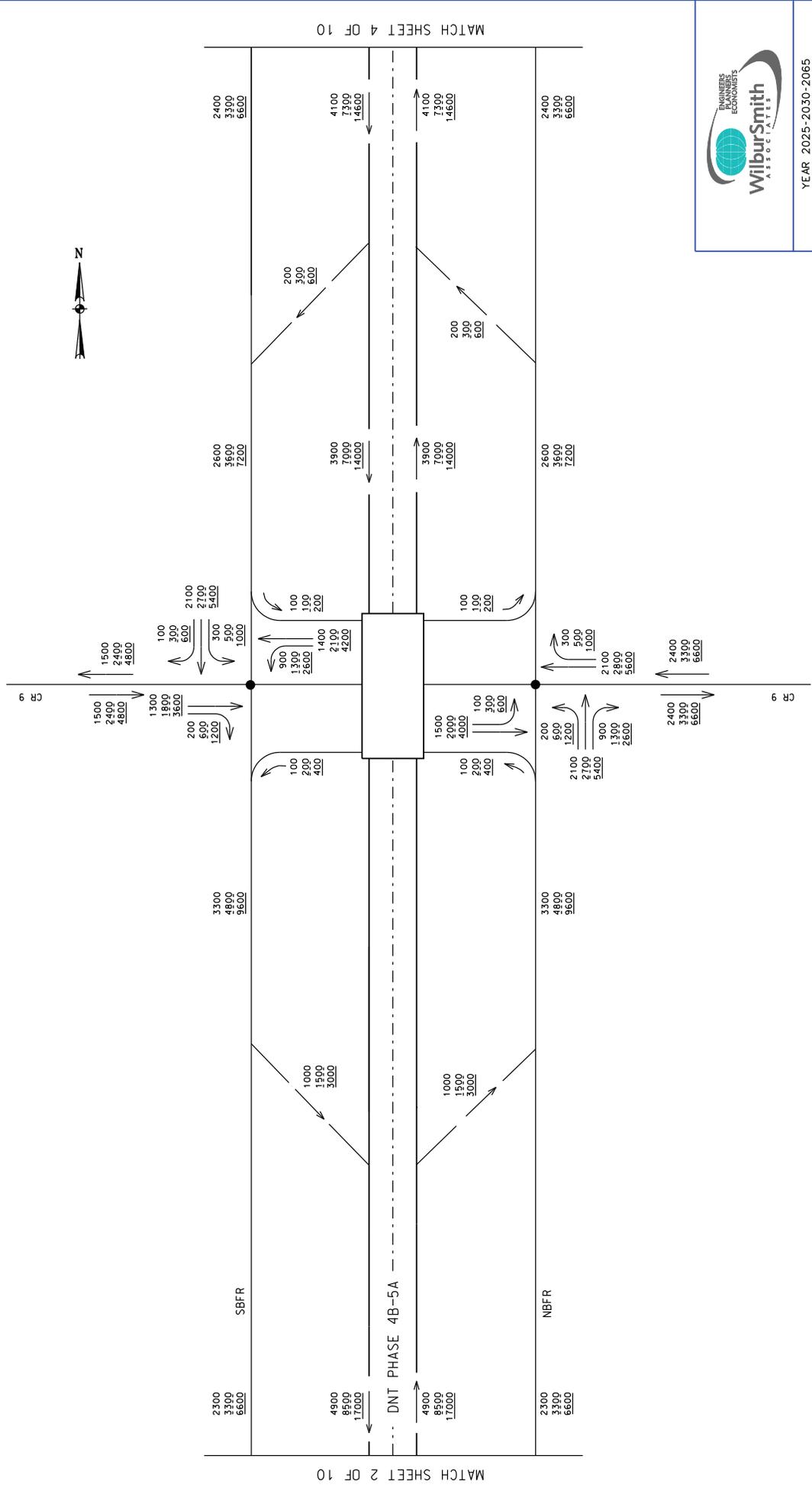
DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

SHEET 2 OF 10

D R A F T

LEGEND
1000 - 2025 ADT
1000 - 2030 ADT
1000 - 2065 ADT

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MATCH SHEET 4 OF 10

MATCH SHEET 2 OF 10

YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

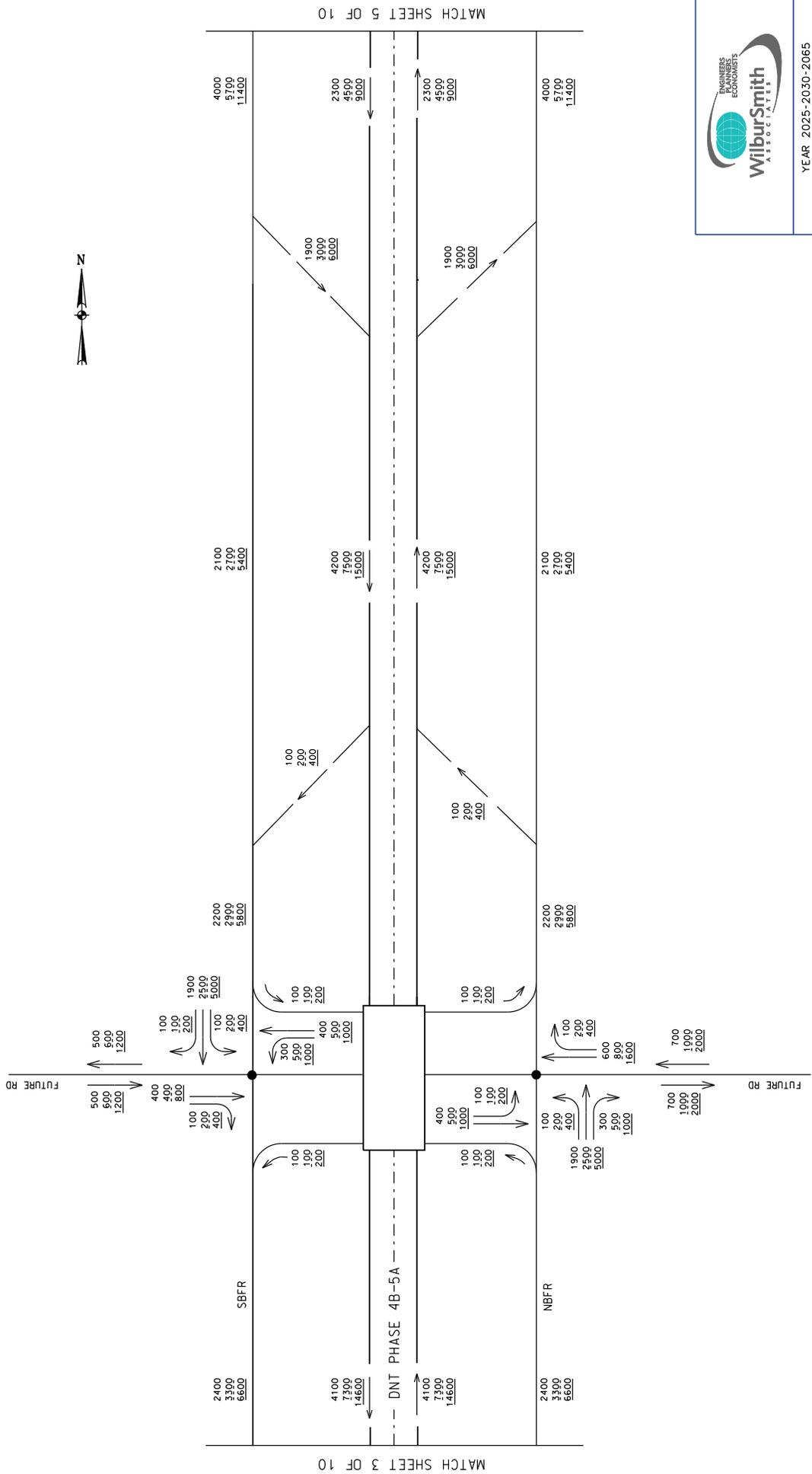
D R A F T

LEGEND
1000 - 2025 ADT
1000 - 2030 ADT
1000 - 2065 ADT

- NOTES
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SHEET 3 OF 10



LEGEND	
1000	- 2025 ADT
1000	- 2030 ADT
1000	- 2065 ADT

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D R A F T

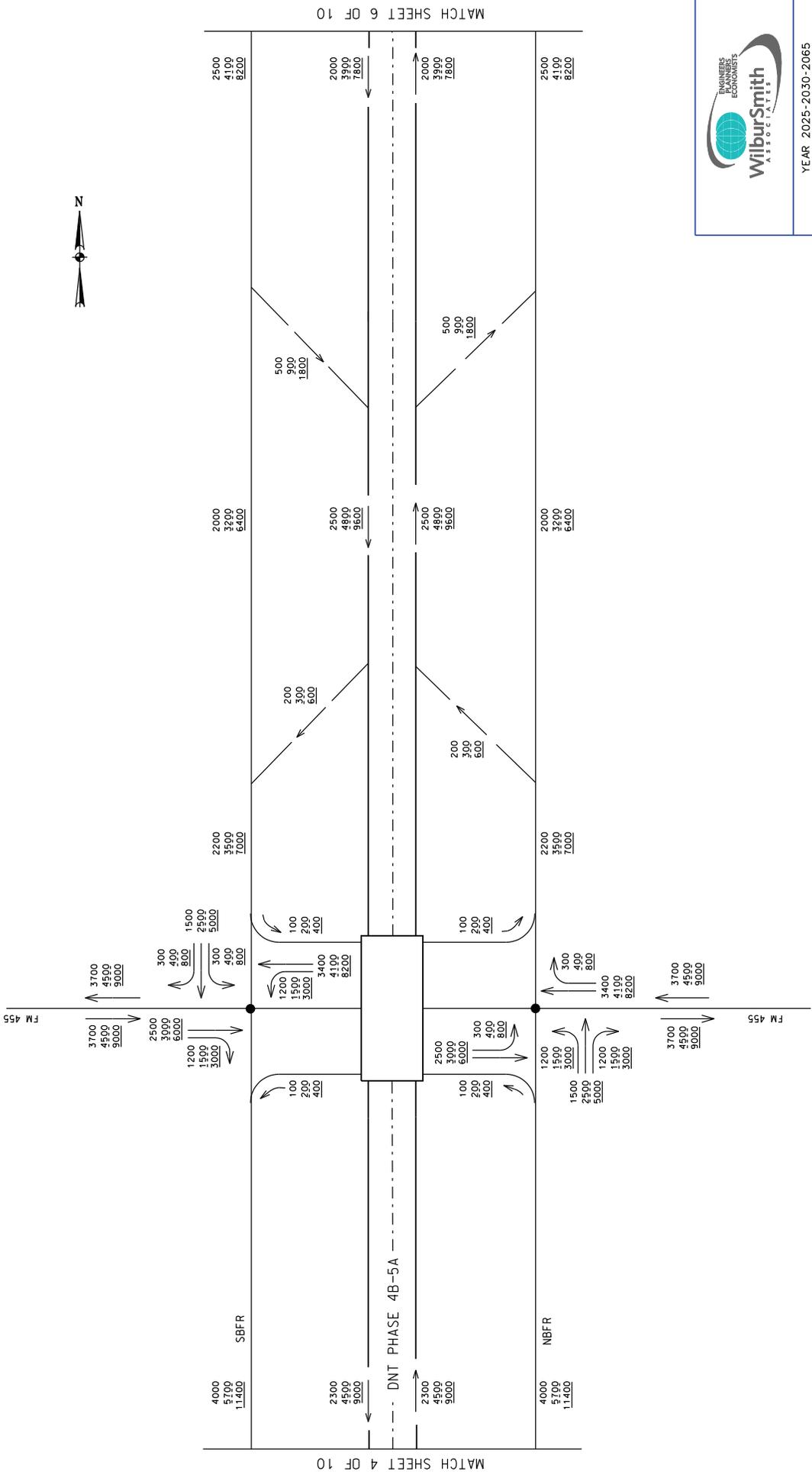


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 ECONOMISTS

YEAR 2025-2030-2065
 ANTICIPATED ADT VOLUMES AND
 TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
 PHASE 4B-5A
 From FM 428 To FM 121

SHEET 4 OF 10



YEAR 2025-2030-2065
 ANTICIPATED ADT VOLUMES AND
 TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
 PHASE 4B-5A
 From FM 428 To FM 121

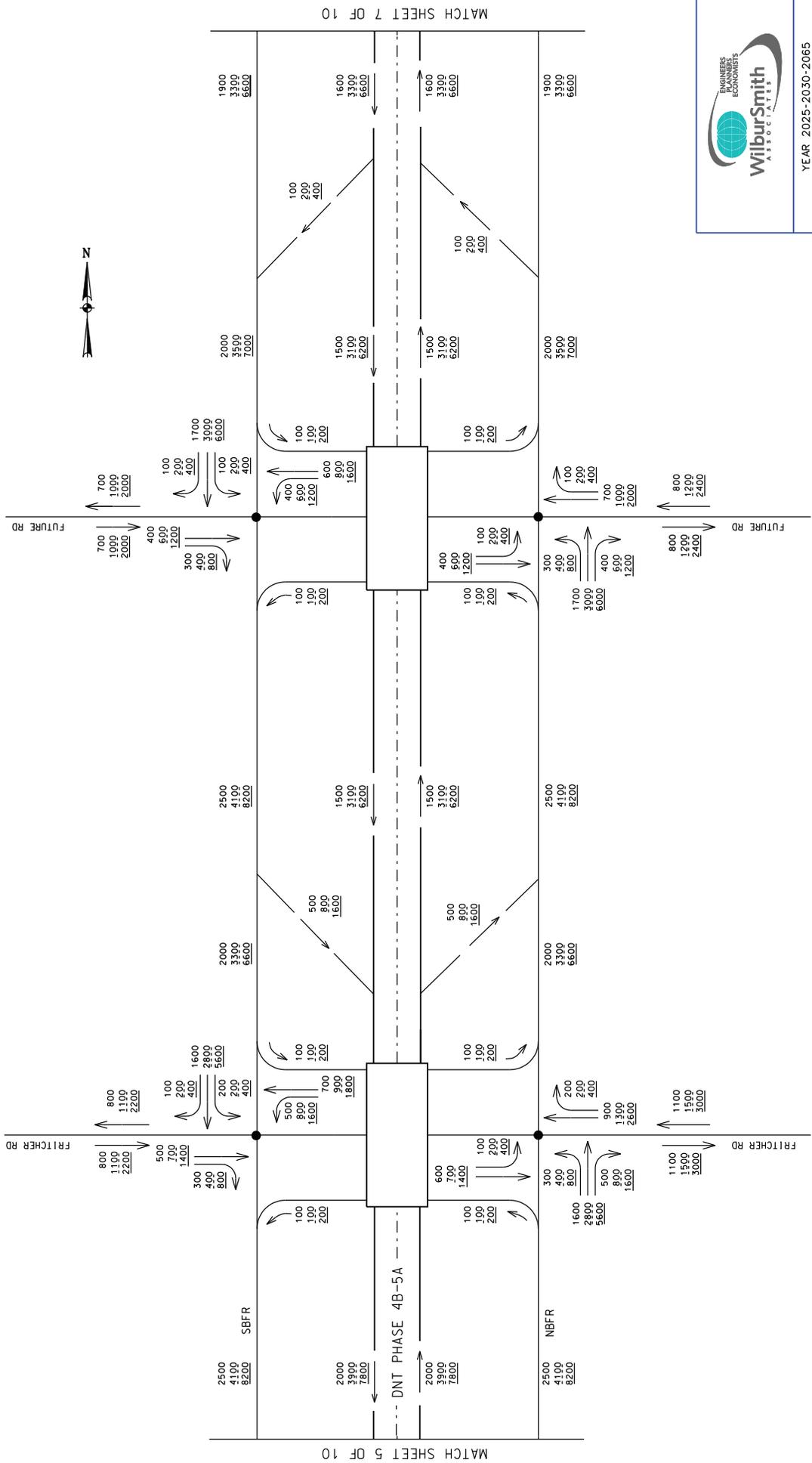
SHEET 5 OF 10

D R A F T

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LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

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LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

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 ENGINEERS
 ARCHITECTS

YEAR 2025-2030-2065
 ANTICIPATED ADT VOLUMES AND
 TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
 PHASE 4B-5A
 From FM 428 To FM 121

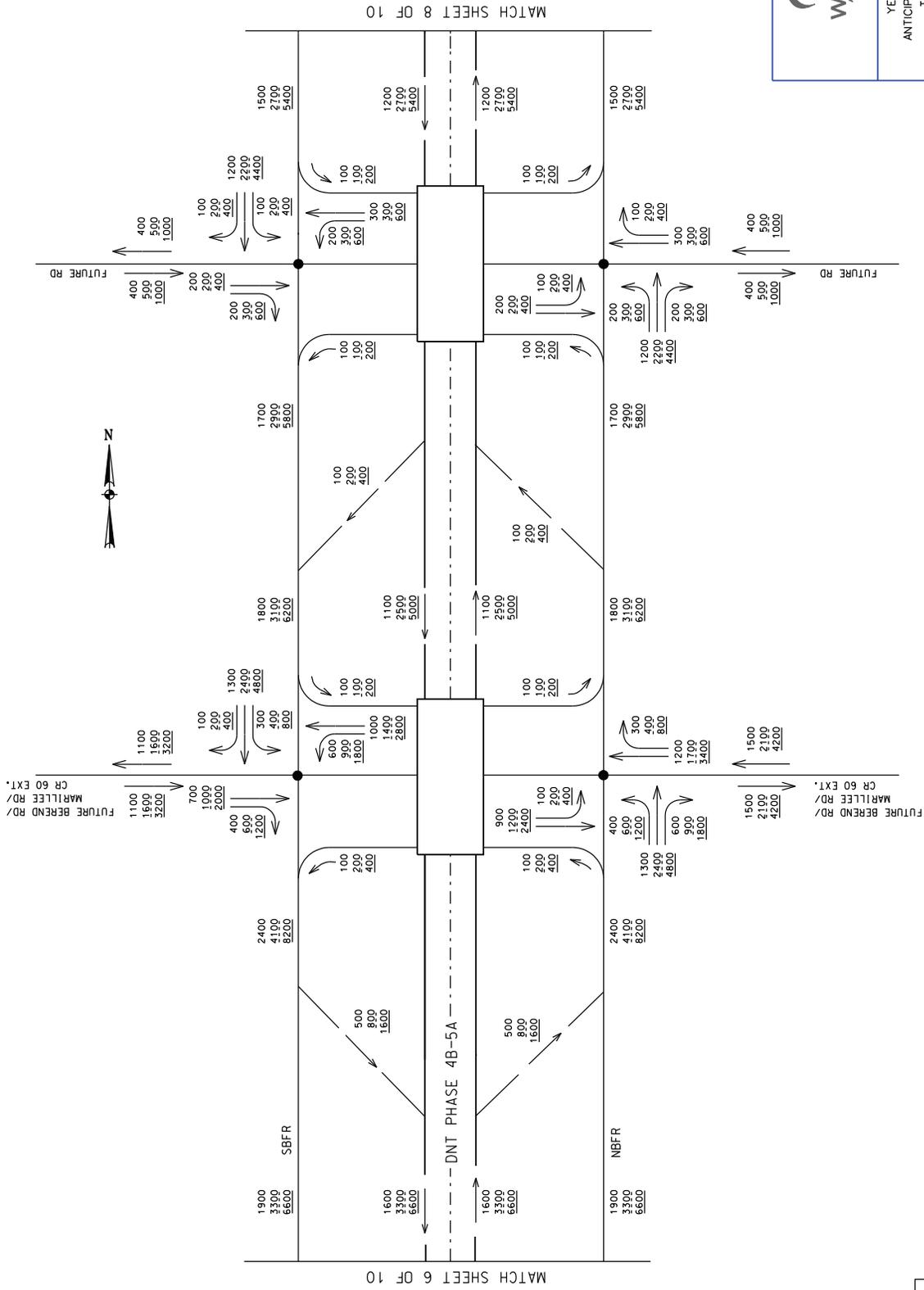
SHEET 6 OF 10



YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121
SHEET 7 OF 10

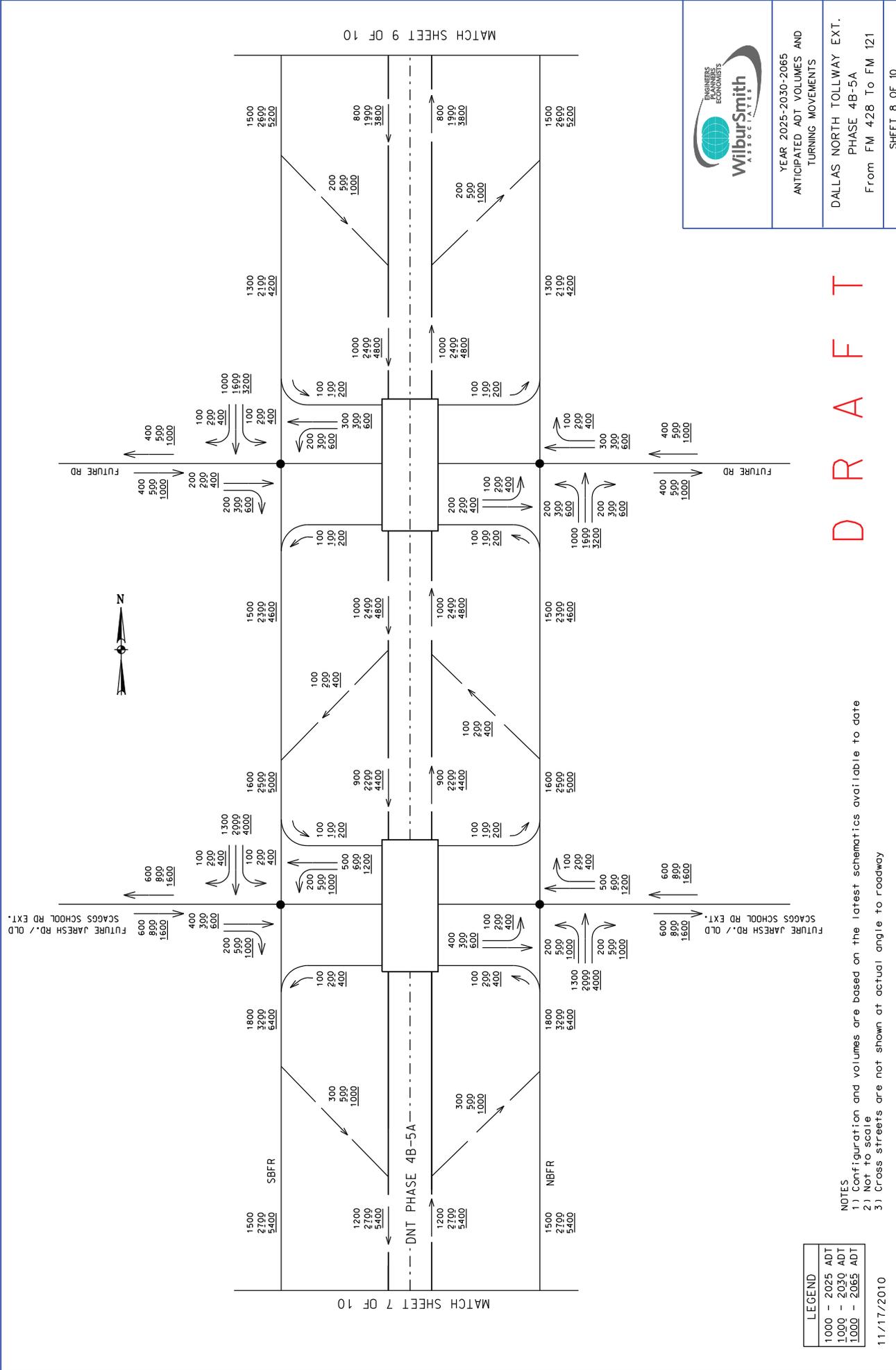
D R A F T



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LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

11/17/2010



LEGEND
1000 - 2025 ADT
1000 - 2030 ADT
1000 - 2065 ADT

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PLLC
BUSINESS
ECONOMISTS

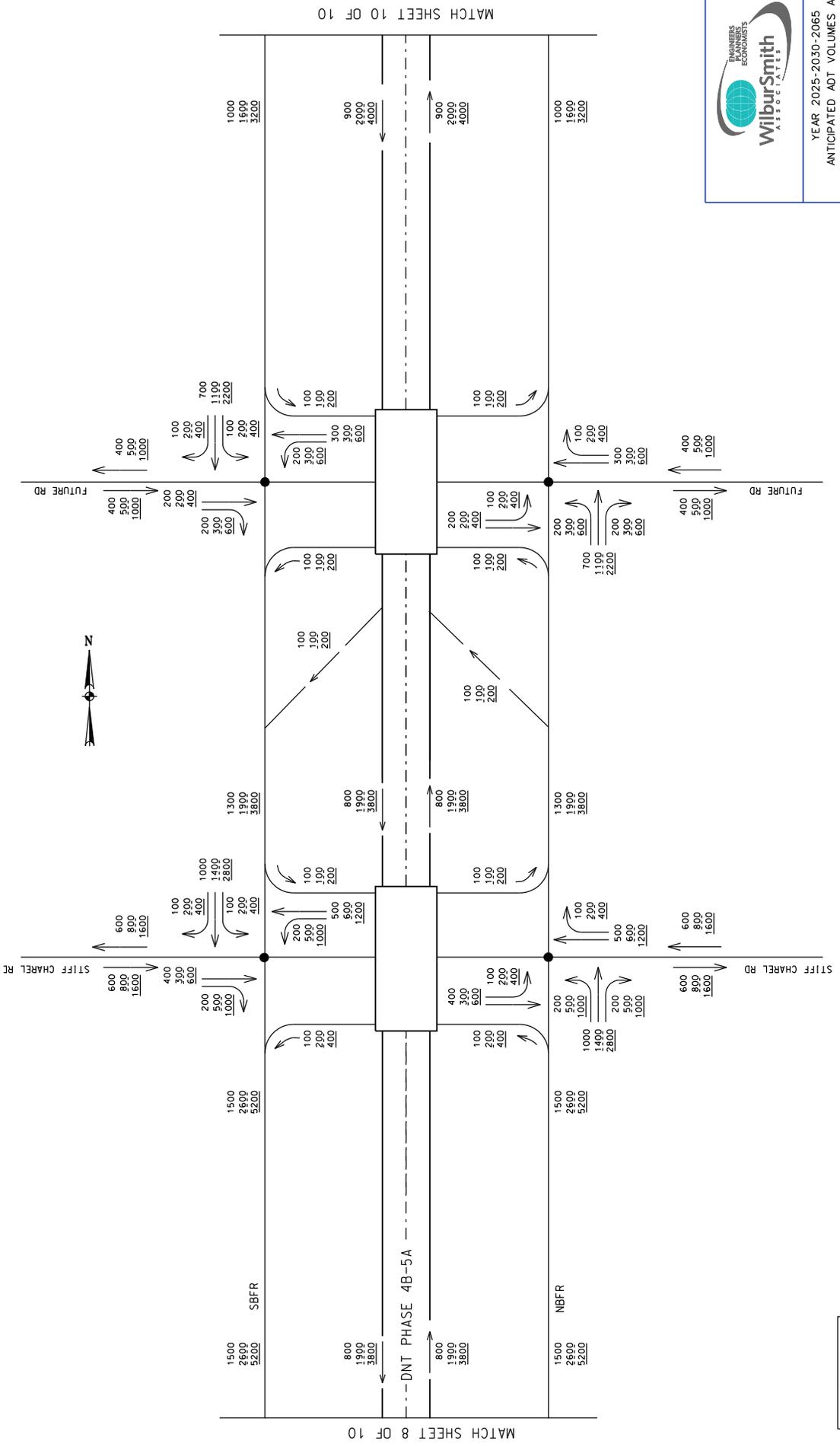
YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

D R A F T

MATCH SHEET 9 OF 10

MATCH SHEET 7 OF 10



MATCH SHEET 10 OF 10

MATCH SHEET 8 OF 10



YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

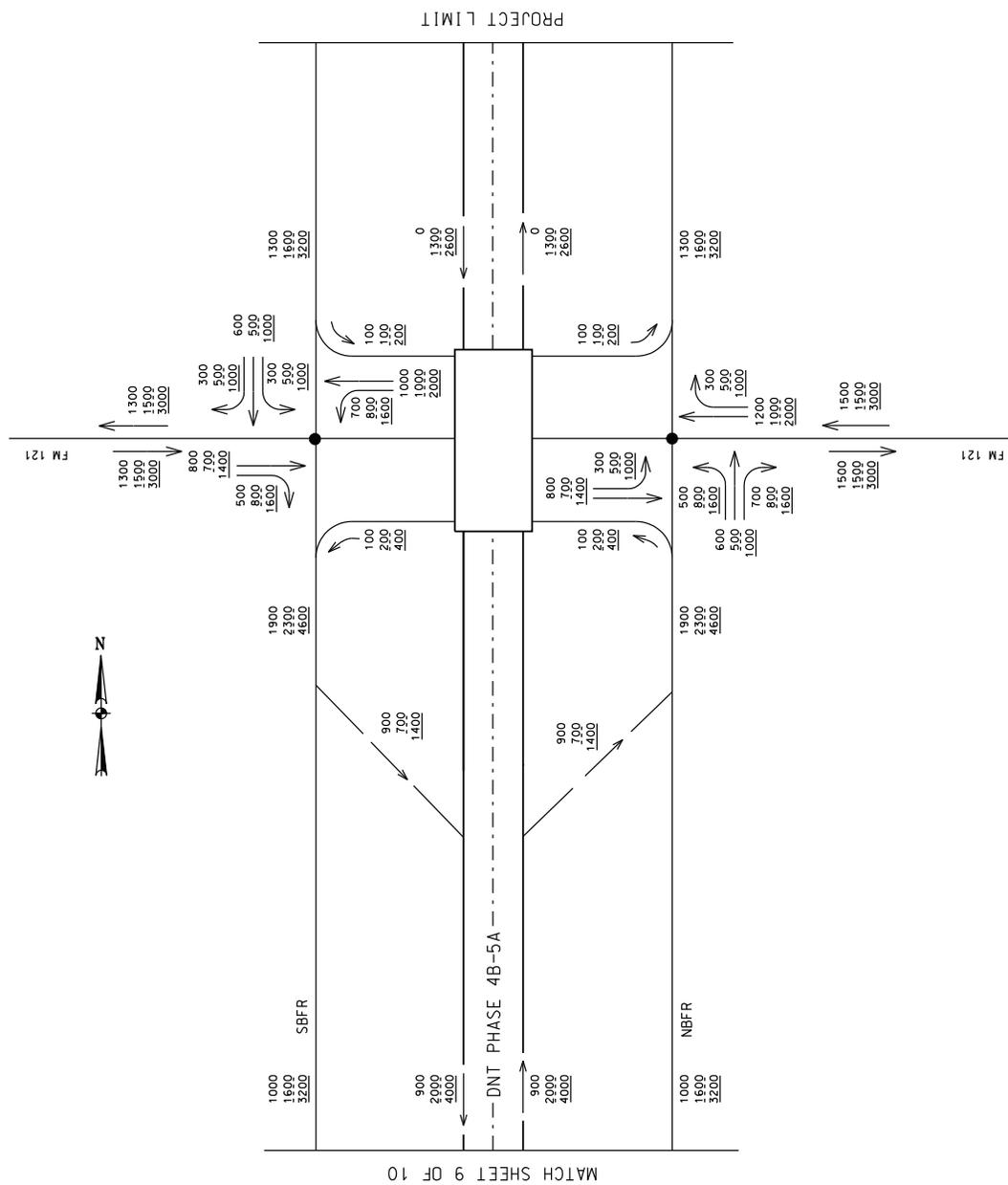
SHEET 9 OF 10

DRAFT

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LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

11/17/2010



LEGEND	
1000 - 2025 ADT	
1000 - 2030 ADT	
1000 - 2065 ADT	

NOTES

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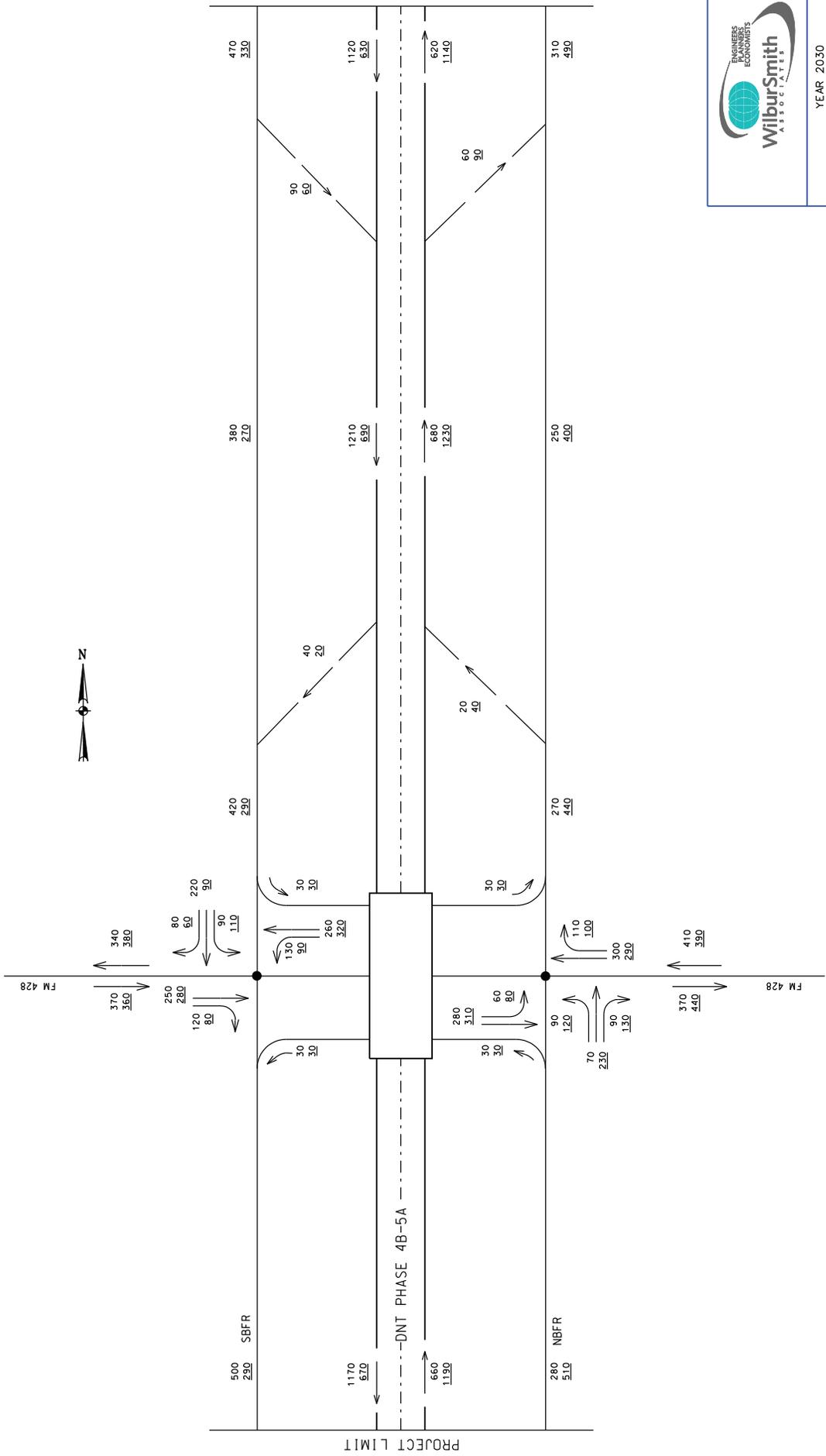
D R A F T



YEAR 2025-2030-2065
ANTICIPATED ADT VOLUMES AND
TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

SHEET 10 OF 10



MATCH SHEET 2 OF 10



YEAR 2030
ANTICIPATED PEAK HOURLY VOLUMES
AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

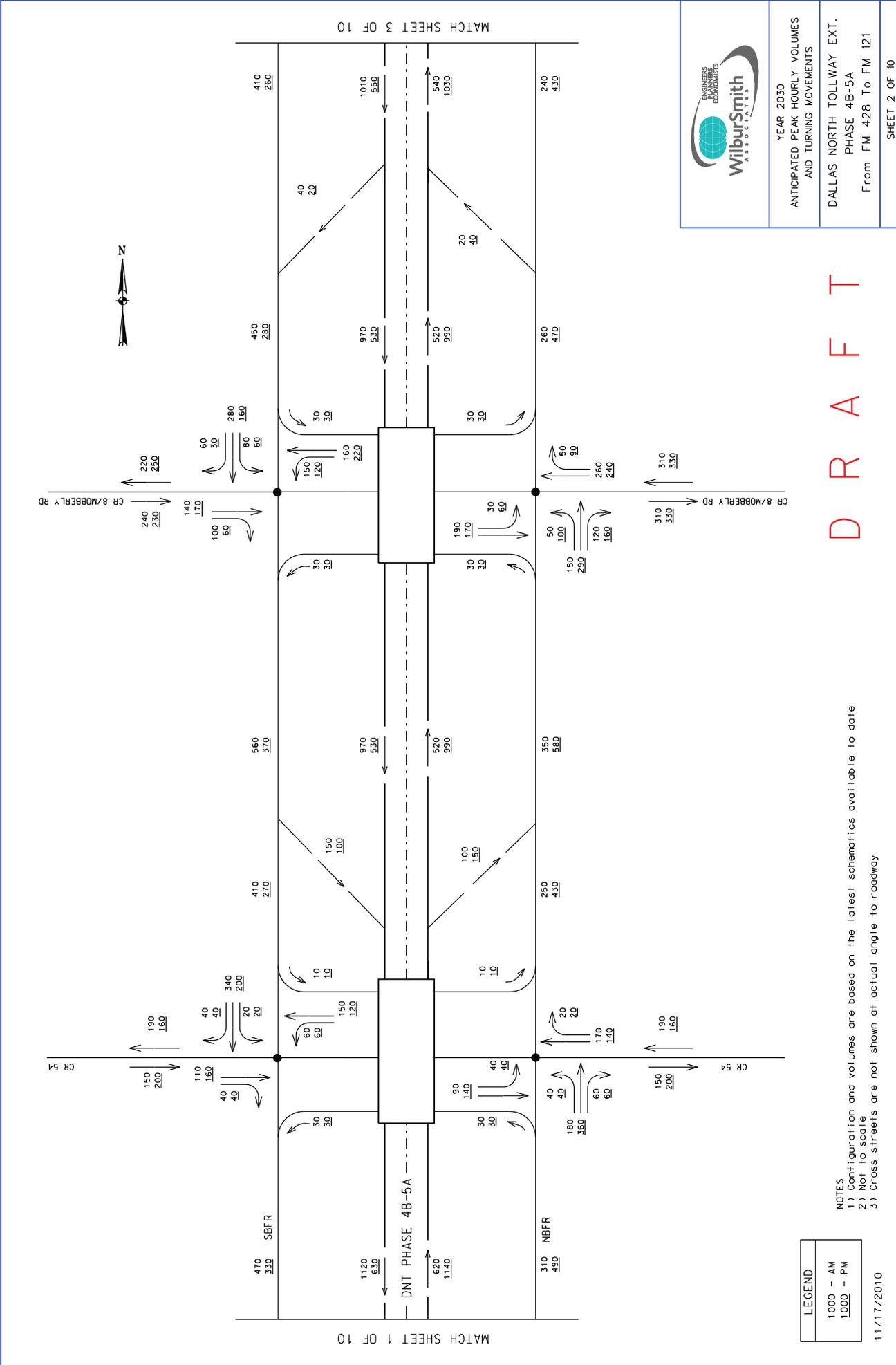
SHEET 1 OF 10

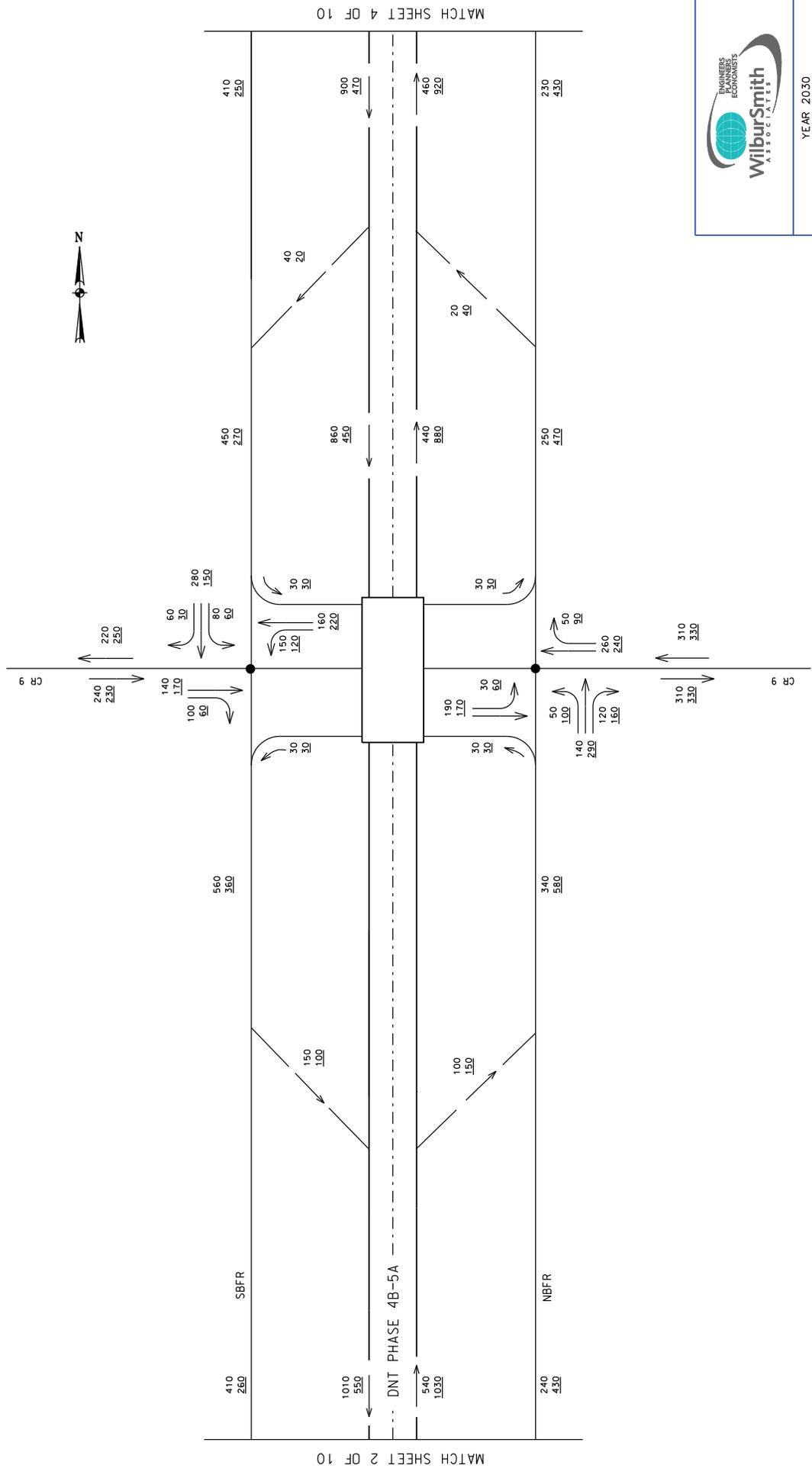
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LEGEND	
1000	- AM
1000	- PM

11/17/2010






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BUSINESS ENGINEERS ECONOMISTS

YEAR 2030
ANTICIPATED PEAK HOURLY VOLUMES
AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

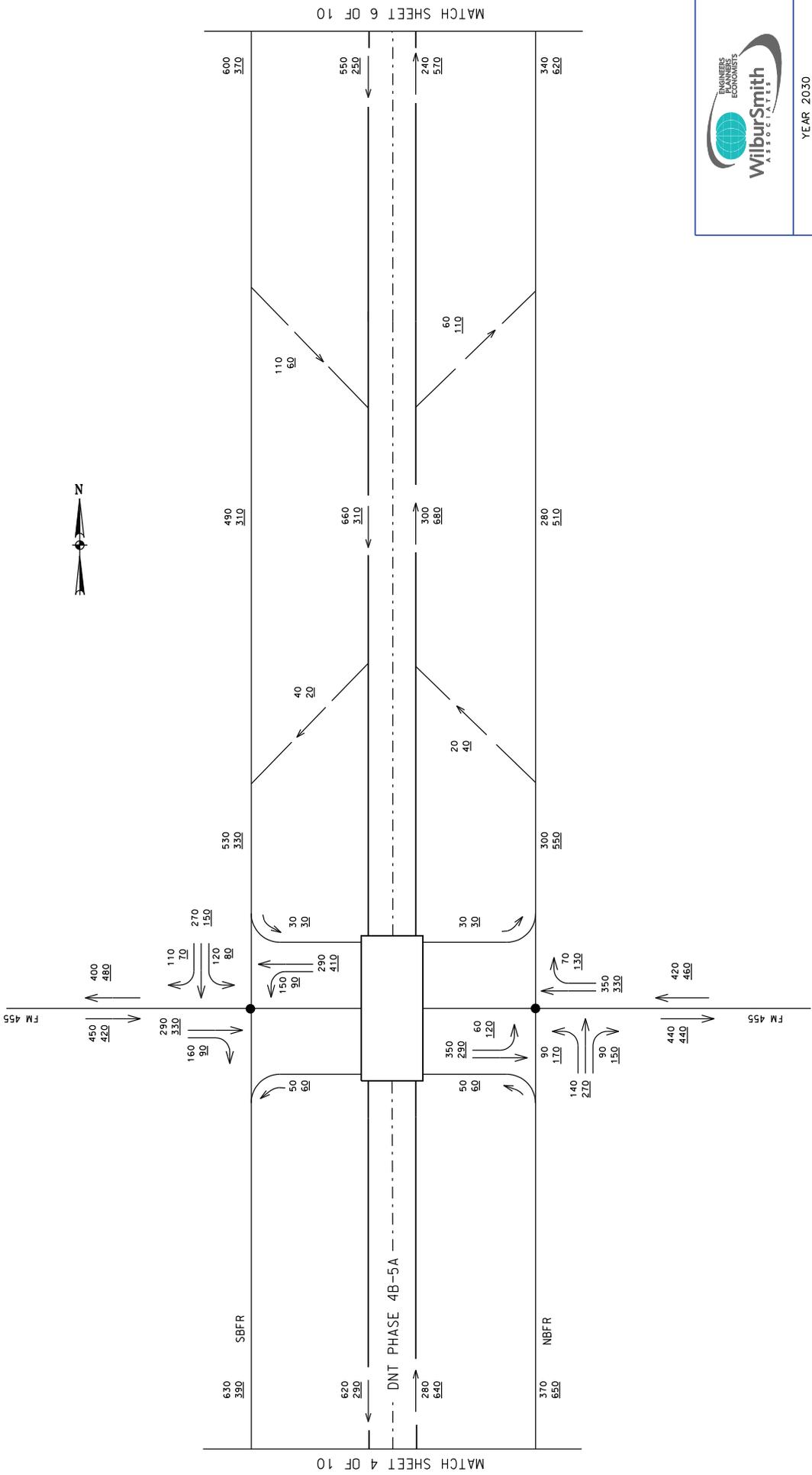
SHEET 3 OF 10

D R A F T

LEGEND	
1000	- AM
1000	- PM

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11/17/2010



MATCH SHEET 6 OF 10

MATCH SHEET 4 OF 10



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YEAR 2030
ANTICIPATED PEAK HOURLY VOLUMES
AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

SHEET 5 OF 10

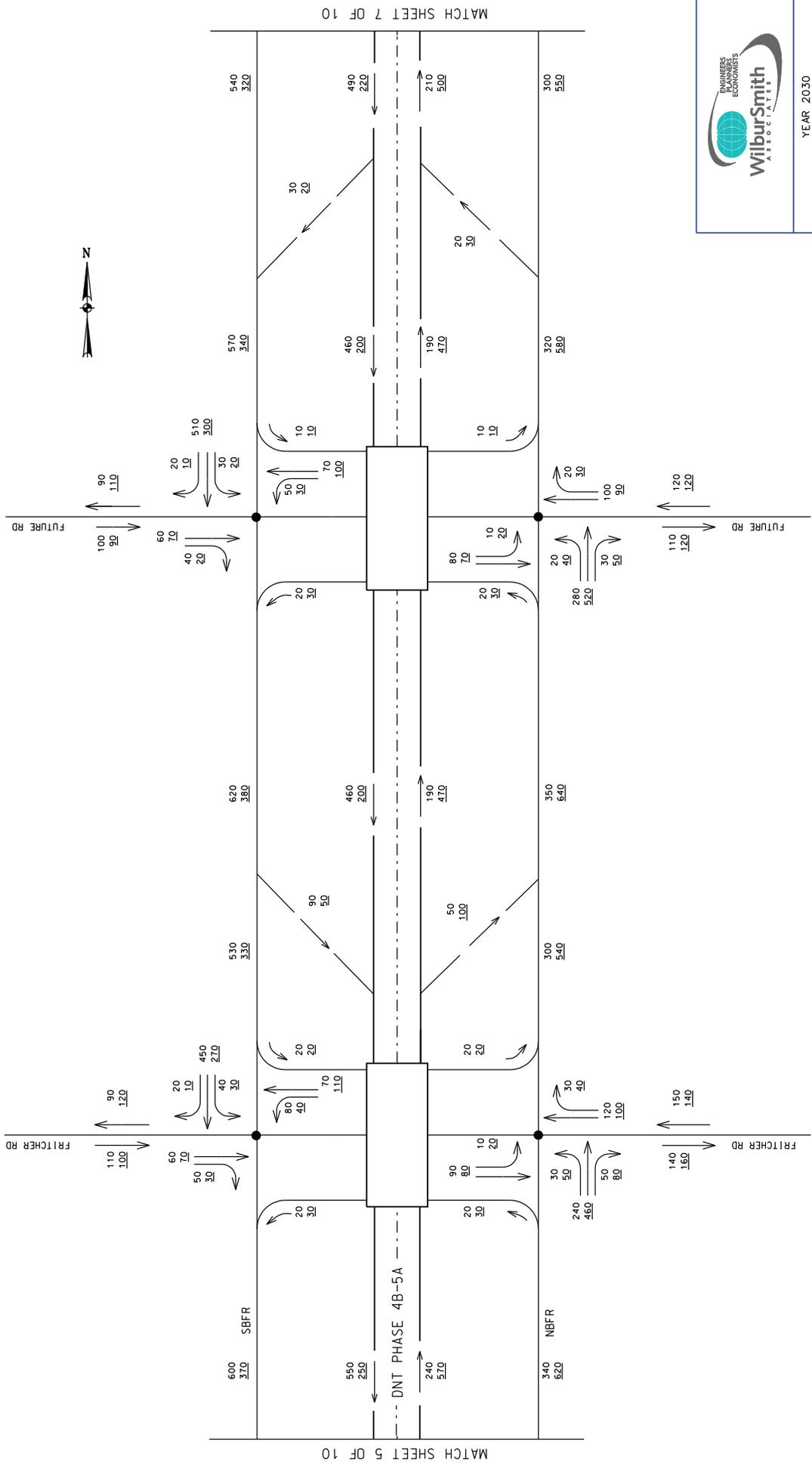
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LEGEND

1000	- AM
1000	- PM

NOTES
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11/17/2010



YEAR 2030
 ANTICIPATED PEAK HOURLY VOLUMES
 AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
 PHASE 4B-5A
 From FM 428 To FM 121

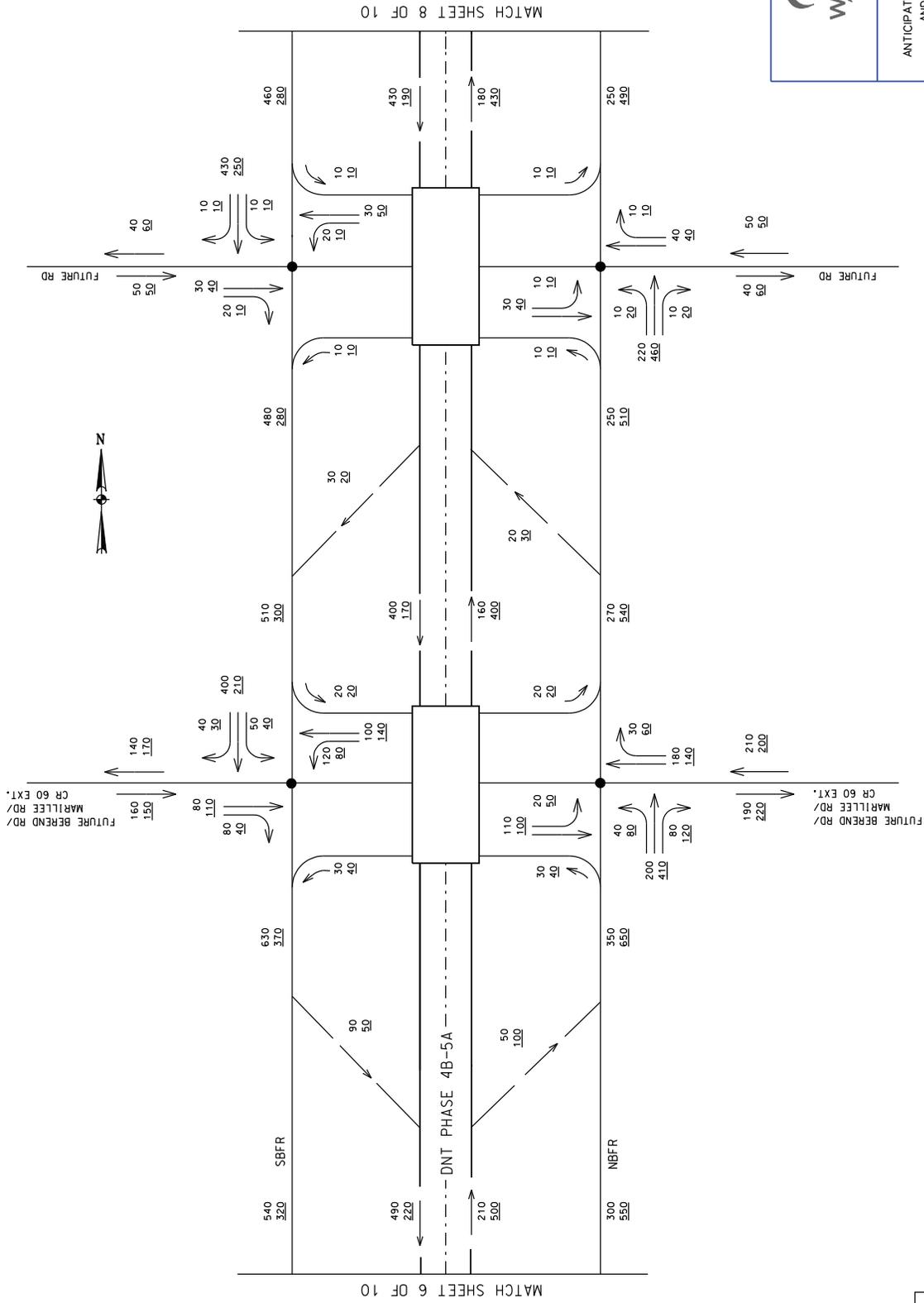
SHEET 6 OF 10

D R A F T

LEGEND	
1000	- AM
1000	- PM

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11/17/2010



D R A F T



YEAR 2030
ANTICIPATED PEAK HOURLY VOLUMES
AND TURNING MOVEMENTS

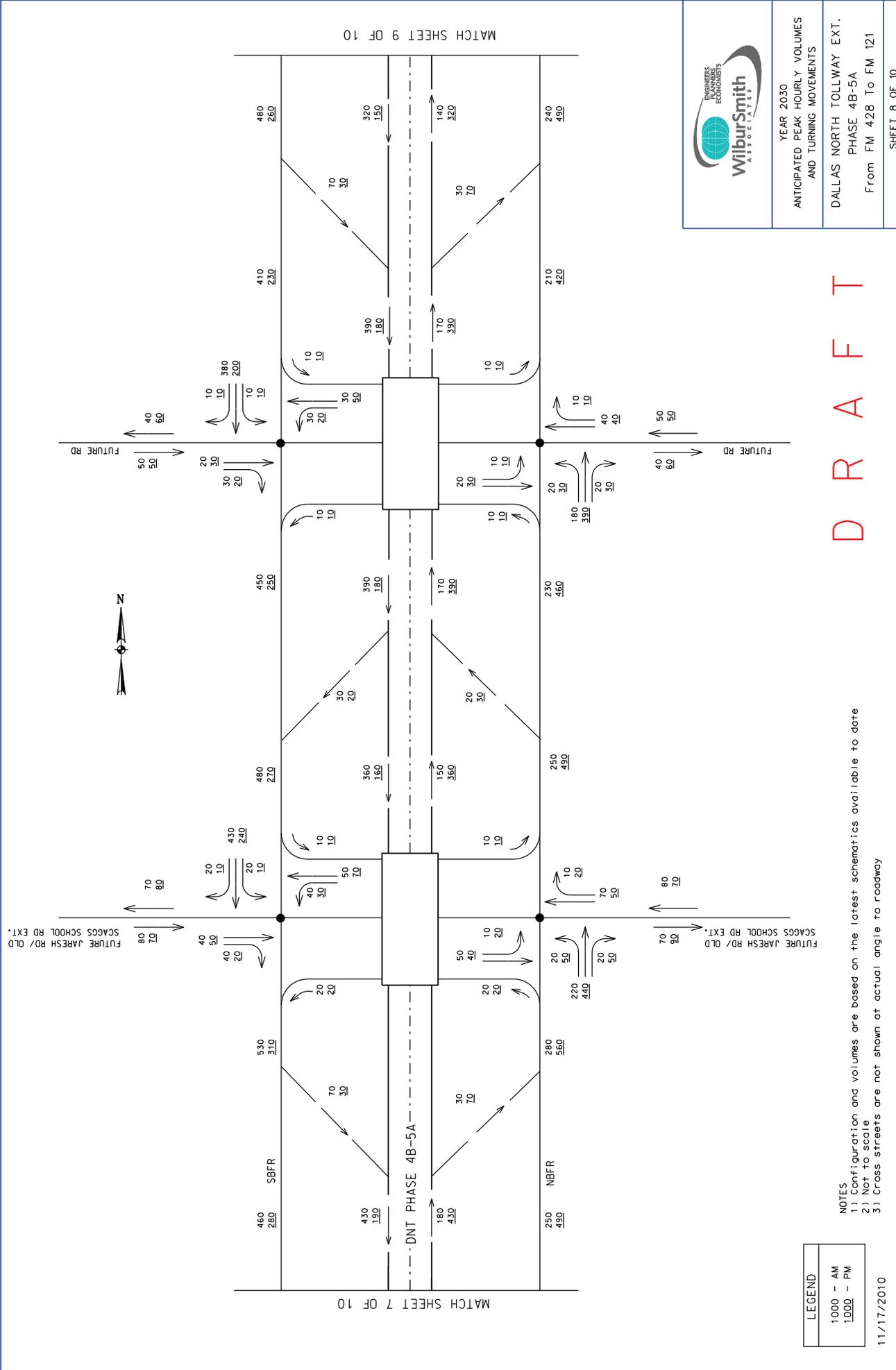
DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

SHEET 7 OF 10

LEGEND	
1000	- AM
1000	- PM

11/17/2010

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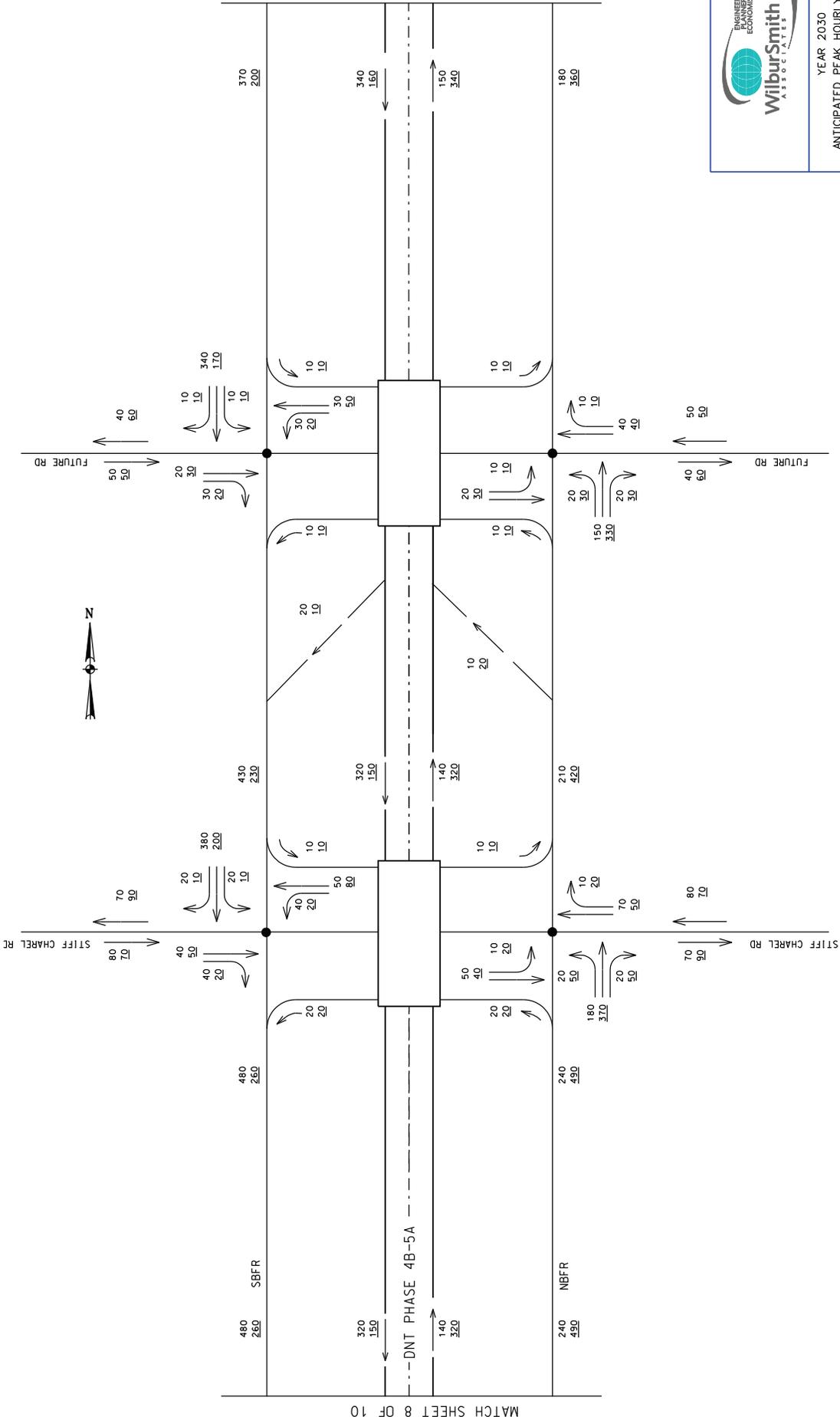
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ANTICIPATED PEAK HOURLY VOLUMES
AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
From FM 428 To FM 121

SHEET 8 OF 10

D R A F T



LEGEND	
1000	- AM
1000	- PM

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11/17/2010



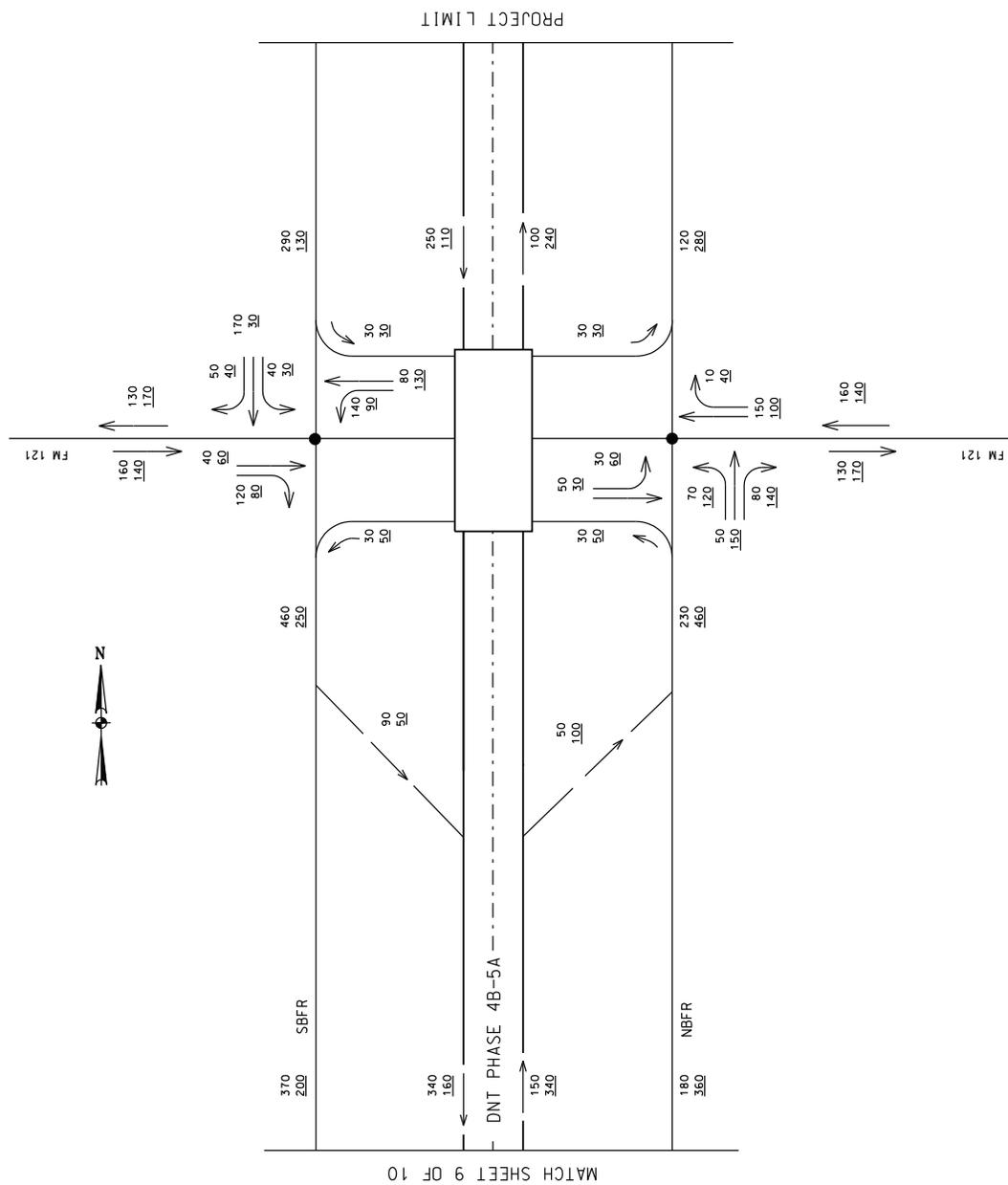
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YEAR 2030
 ANTICIPATED PEAK HOURLY VOLUMES
 AND TURNING MOVEMENTS

DALLAS NORTH TOLLWAY EXT.
 PHASE 4B-5A
 From FM 428 To FM 121

SHEET 9 OF 10

D R A F T



LEGEND	
1000	- AM
1000	- PM

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D R A F T



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ANTICIPATED PEAK HOURLY VOLUMES
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DALLAS NORTH TOLLWAY EXT.
PHASE 4B-5A
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SHEET 10 OF 10