DRAFT – Subject to Change – 11/18/2010

Texas Department of Transportation

Grayson County Tollway Project
Evaluation Matrix for Universe of Alternatives

NORTHERN ALTERNATIVE ALIGNMENTS
(Note: The No-Build Condition is also an alternative and will be used to compare to Build alternatives. All build alignments are subject to future refinements.)

See the notes for an explanation of the terms and basis for impacts used in this table. ➔	Units	N1N	N1S	N2	N3	N4	N4W	N5	N6	N7	N8	N9	N10	N11	N12	N13	Notes
ENGINEERING / DESIGN FEATURES																	
Alignment Length	miles	17.8	17.7	17.1	16.0	16.1	17.1	16.9	17.9	20.3	17.3	17.7	16.8	17.4	20.9	15.3	The linear distance between south and north termini (e.g. US 75 at SH 91 to 3000' south of US 82 of the northern segment) along the centerline of the alternative.
Length on Existing Parallel Roads	miles	11.5	11.5	11.2	9.0	9.0	7.8	9.8	15.2	13.3	12.8	11.0	11.4	15.5	4.0	2.2	The linear distance of each alternative located on existing roadways that are also parallel with the alternative.
Length on New Location	miles	6.3	6.2	5.9	7.9	7.1	9.3	7.1	2.7	7.0	4.5	6.7	5.4	1.9	16.9	13.1	The linear distance of each alternative not located on existing roadways (Criteria Note 1 less Criteria Note 2).
Estimated Total ROW Area	acres	730.9	736.7	701.2	693.7	658.8	701.2	633.7	658.2	767.9	632.4	674.8	661.2	658.4	862.4	647.6	The approximate amount of total right of way (ROW) area each alignment will require, calculated using a ROW width of 400 feet throughout the entire length of the alternative (i.e., length as shown in Item 1 above). Note that a ROW width of 300 feet was used for Alternative N6 from US 75 to FM 1417. A ROW width of 300 feet was used for Alternative N11 from US 75 to FM 1417. All north corridor alignments on US 75 used a ROW width of 300 feet, which is approximately the existing US 75 ROW width. The estimated total ROW area does not include extra ROW that may be required at interchanges due to ramping and connections.
Area of Existing Road ROW in Proposed ROW	acres	453.4	447.0	402.2	342.8	346.6	242.2	301.5	505.0	495.3	438.3	401.3	436.6	577.0	166.0	32.7	The total area of all existing road ROW included within the ROW of the alternative. This includes both parallel roads and cross streets.
Estimated Net ROW Area Needed to Acquire	acres	277.5	289.7	299.0	350.9	312.2	459.0	332.2	153.2	272.6	244.1	273.5	224.6	81.4	696.4	614.9	The approximate amount of net ROW area each alignment will require exclusive of the existing road ROW (i.e., Item 3 above minus Item 4).
SAFETY, MOBILITY & CONGESTION RELIEF																	
Provides Alternative Route to US 75	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Does this alternative provide an alternate route to US 75?
Improves Access to North Texas Regional Airport	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Does this alternative improve access to the North Texas Regional Airport?
Provides North Texas Regional Airport Airway/Highway Clearance	Y/N	Y	Y	Y	Y	N	Y	N	Y	Y	N	N	Y	Y	Y	Y	Does this alternative avoid potential airway highway clearance conflicts within the vicinity of the North Texas Regional Airport?
Improves North/South Travel Level of Service	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Does this alternative improve north/south level of service relative to US 75 and/or SH 289? If the alternative provides additional capacity that is parallel to US 75 and/or SH 289 then a "Y" is noted.
Allows Railroad Expansion	Y/N	Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Does this alternative allow railroad expansion by not running parallel to existing tracks?
Existing Railroads Crossed by ROW	#	1	1	2	2	2	2	1	2	1	1	1	1	1	1	1	Number of railroads that are crossed by each alternative
SOCIAL AND ECONOMIC IMPACTS																	
Displaced Residential Structures in ROW	#	4	7	7	5	1	0	26	11	2	1	1	3	1	19	9	The number of potential residential displacements as a result of the implementation of each alternative. Impacts of the alternatives will be refined and reduced, if possible, upon selection of a preferred route and further refinement of that alignment. Residential structures were identified using 2009 aerial photographs.
Displaced Commercial & Non Residential Buildings	#	4	2	0	1	0	0	24	10	0	2	1	0	10	10	19	This is similar to 'Displaced Residential Structures' in the evaluation process used to rate alternatives. This applies to commercial enterprises (including agricultural beneficial and non-business community facilities such as places of worship. Commercial and non-commercial buildings were identified using 2009 aerial photographs.
Displaced Utility Stations	#	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	The number of known utility stations displaced by each alternative. These were identified using the Texas Commission on Environmental Quality (TCEQ) database.
Additional Residences within 500' of ROW	#	23	32	23	24	13	10	53	88	91	87	87	81	78	49	37	The number of additional homes (based on 2009 aerial photographs) that are in close proximity (i.e., within 500 feet) of the alignment's edge of ROW. This distance is expected to include all residences that could potentially be affected by traffic noise from the proposed tollway.
Property Owners within ROW	#	40	51	34	49	44	44	37	82	30	37	32	27	22	68	87	This reflects the total number of property owners (based on the 2009 Grayson County Appraisal District database) within the location of the alternative alignment's proposed ROW, excluding city, county and state owned road ROW.
Pipelines Crossed by ROW	#	22	19	16	15	19	15	17	18	19	17	16	15	15	22	27	The total number of known petroleum product pipelines (natural gas and/or oil based on the 2009 Railroad Commission [RRC] of Texas database) that the proposed alignment would cross.
Petroleum Product Wells in ROW	#	6	6	5	5	6	5	11	5	6	10	10	5	4	8	3	The total number of known petroleum product wells (based on the 2009 Texas Railroad Commission database) within the ROW.
Com. Towers/Trans. Lines in/Crossed by ROW	#	3	3	3	3	3	3	3	3	4	2	3	3	4	3	1	The total number of known communication towers (based on the 2008 Federal Communications Commission database) within the ROW, or power transmission lines crossed by the alignment's proposed ROW.
ENVIRONMENTAL IMPACTS																	
HAZMAT Sites in/within 500 feet of ROW	#	2	2	2	2	2	2	1	2	2	1	1	2	1	1	1	This identifies possible impacts to known potential hazardous material sites within 500 feet of the proposed ROW (i.e., this would comprise an area within 500 feet of both sides of the roadway centerline). The potential hazardous material sites were identified using the Environmental Protection Agency (EPA) Envirofacts database and Texas Council on Environmental Quality (TCEQ) Leaking Petroleum Storage Tank (LPST) database.
Streams Crossed by ROW	#	31	26	26	26	26	31	20	16	30	21	21	20	20	25	26	The number of streams crossed by the alignment. Only major waterways shown on U.S. Geological Survey (USGS) topographic maps were counted, as this is an initial appraisal and for streams that are likely to fall within the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.
ROW within 100 Year Floodplain	acres	29.1	25.7	21.2	21.8	17.2	61.3	4.0	19.1	105.0	20.1	39.4	22.8	35.3	56.6	65.2	The amount of ROW located within 100-year floodplains as based on Federal Emergency Management Agency Flood Insurance Rate Maps. Bridged sections of highway are more costly to construct.
Other Open Water in ROW	acres	3.1	4.8	4.9	5.0	2.5	3.8	5.7	2.9	1.2	3.0	2.6	6.1	1.4	7.1	4.6	The area of indirect open water (i.e., lakes or ponds), other than NRCS lakes, that would be included within proposed ROW.
Wetlands in ROW	acres	3.9	1.0	0.4	3.5	2.5	0.3	0	0	1.1	0	0	0	0	0	1.8	This provides an estimate of impacts on potential emergent wetlands as identified in U.S. Fish and Wildlife Service National Wetland Inventory Maps.
Forest in ROW	acres	30.2	45.4	23.0	16.8	99.9	115.1	3.6	17.2	52.7	8.3	27.3	3.5	1.7	42.5	40.3	An estimate of potential impacts to forested areas within the ROW of each alternative. Forests were identified using the 2009 aerial photography of the study area.
Park or Recreation Area in ROW	acres	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	The amount of known/mapped public parks or recreation areas within the ROW of each alternative. Public parks or recreation areas identified using the 2006 ESRI and 1995 TNRIS GIS data.
Areas of High Probability for Archeological Sites in/within 500 Feet of ROW	acres	707.5	693.7	662.0	959.1	1,130.0	1,237.0	719.3	395.9	1,715.1	1,361.7	1,427.7	1,213.5	1,173.0	542.4	873.9	This identifies the acreage of known or high probability locations of archeological sites located in or near (i.e., within 500 feet) the proposed ROW for each alternative. The areas of high probability archeological sites were identified by PBCMV in their September 2010 Background Study for this project.
Cemeteries in/within 500 feet of ROW	#	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	This identifies the number of known/mapped cemeteries located within or near (i.e., within 500 feet) the proposed ROW for each alternative. The known/mapped cemeteries were identified by using the Texas Historical Commission Atlas, USGS topographic maps, Grayson County's Computer Aided Design and Drafting (CADD) data, and the TXDOT Web Cemetery data for Grayson County.
EQUITY, FINANCE, EFFICIENCY & COSTS																	
Length to be Tolled	miles																
Estimated Construction Costs	$M																Cost estimates at this early stage of development of universe of alternatives are proportional to alignment length. As alternatives are narrowed down, cost estimates for refined alternative will be developed.
Estimated Right-of-Way (ROW) Costs	$M		See Notes														Cost estimates at this early stage of development of universe of alternatives are proportional to alignment length. As alternatives are narrowed down, cost estimates for refined alternative will be developed. When refined, these costs estimates would be based on property values obtained from county appraisal district in 2009/2010, adjusted to reflect ROW acquisition costs, relocation assistance costs, condemnation costs and contingencies. The costs would not reflect any potential donations of ROW. Costs would be in 2010 dollars.
Estimated Total Costs	$M																Cost estimates at this early stage of development of universe of alternatives are proportional to alignment length. As alternatives are narrowed down, cost estimates for refined alternative will be developed. Estimated Total Costs would be the addition of Estimated Construction Costs and the Estimated ROW Costs.
OTHER FEATURES/IMPACTS																	
Compatibility with SDMPO Regional Plan	*	O	O	+	+ –	+	O	O	O	O	O	O	O	O	O	O	This is a measure of the alternatives compatibility with the Sherman Denison Metropolitan Planning Organization (SDMPO) plan for the Grayson County Tollway in Grayson County. If the alternative follows the SDMPO alignment, then "++". If not then "0". If it generally follows the plan's alignment, it was given a score of "+".
Compatibility with Local Thoroughfare Plans	*	O	O	+	+	– +	–	O	O	O	O	O	O	O	O	O	This is a measure of the alternatives compatibility with the local cities and Grayson County's plans for the Grayson County Tollway in Grayson County. If the alternative follows a local city's or Grayson County's thoroughfare plan, then "++", if very near to their thoroughfare plan, then "+", otherwise, "0". If it generally follows the plan's alignment, it was given a score of "+".
Ease of Future Expansion	*	O	O	O	O	O	+	-	- -	-	-	-	- -	- -	+	–	This is a measure of the alternative's future expansion capability. If the alternative is along existing US 75, FM 120, US 82, FM 1417 or SH 289, then the future expansion capability is somewhat restricted or more difficult and "-" is noted; if alternative is on new location, then "+".
Construction Difficulty or Disruption	*	-	-	-	-	-	O	- -	- -	- -	- -	- -	- -	- -	O	O	This is an evaluation of the potential impacts of constructing each alternative on neighboring residential areas, and the traveling public. Construction impacts can be reduced with a well-managed sequence of work. If along existing US 75, FM 120, US 82, FM 1417 or SH 289, then "--"; if on new location, then "-" or "0". The highest rating in this category is "No Effect, Neutral" "0".
Public Acceptance[1]	*	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	This is a measure of the positive and negative feedback will be provided by the public at the November 18, 2010 public meeting.

*** Legend:**

Major Negative Effect	Some Negative Effect	No Effect, Neutral	Some Positive Effect	Major Positive Effect
- -	-	O	+	+ +

TBD – To Be Determined
[1] This would be completed after input received from the first Public Meeting.

Explanatory Notes for Evaluation Matrix for Universe of Alternatives

1. In the course of final design of alternatives, procedures to avoid, minimize or mitigate negative impacts may resolve potential impacts to environmental or cultural resources.

2. Reference in the evaluation matrix to the right-of-way (ROW) for an alternative route applies a width of 400 feet (i.e., 200 feet either side of roadway centerline) throughout the length of the proposed roadway. In addition, impacts for some features have been noted when occurring within 500 feet from the edge of ROW (i.e., 700 feet either side of the centerline).

3. In those instances where none of the alternative routes are expected to result in impacts to a specific study area feature listed in the evaluation matrix, that feature will be deleted from the matrix because the such feature does not provide a basis for differentiating between alternative routes. The deleted features will nevertheless be placed in the table below to document that they were considered during the alternative planning process. All will be compared to the no-build alternative.

Study Area Features with No Expected Impacts or Same Responses for All of the Alternatives	
Features	**Notes**
• Improves Connection to SH 289	Does this alternative provide a connection to SH 289?
• Provides Access to Major Cross Streets	Does this alternative provide access to major cross streets such as FM 121, FM 902, and SH 56?
• Improves Access for Emergency Service & Transit	Does this alternative improve access for emergency services (e.g., hospitals and police/fire stations) and transit?
• Schools, Golf Courses, Other Public Facilities	The total number of known school properties (based on the 2008 Texas Education Agency Geographic Information System (GIS) database and information from Grayson County), golf courses (based on the ESRI GIS database and online directories), and other public facilities (based on the Grayson County Appraisal District and North Central Texas Council of Governments) crossed by the alignment's proposed ROW.
• NRCS-Financed Lakes in ROW	The area affected by flood control lakes constructed by the Natural Resources Conservation Service (NRCS).
• USACE Wildlife Management Area in ROW	The amount of area within the wildlife management area surrounding Lake Texoma that would be within proposed ROW. This property is owned by the USACE.
• Historic Sites in/within 500 feet of ROW	This identifies the number of listed historic sites located in or near (i.e., within 500 feet, or area of potential effects) of the proposed ROW for each alternative.