

Cotton Belt Corridor Study and Eastern Terminus Alternatives

July 1, 2010

Overview – DART owns 54 miles of the Cotton Belt Corridor from Fort Worth to Wylie. The majority of the rail line is used for freight movement by commercial operators. This east-west corridor has been on the regional mobility plan for many years for future commuter rail service. The Fort Worth Transportation Authority (the T) is currently preparing plans to develop the western half of the corridor to provide passenger service from Ft. Worth to D/FW International Airport (D/FW). The North Central Texas Council of Governments (NCTCOG) recently completed a study of the eastern half of the corridor to examine its potential for passenger service from D/FW to a junction with the DART Light Rail Transit (LRT) Red Line in either Plano or Richardson. In a future phase, Cotton Belt passenger service could be extended to Wylie. The NCTCOG Cotton Belt study identifies issues, conceptual alternative alignments and stations, and it estimates ridership and capital development costs for each alternative. This information is currently being used by DART for the preparation of preliminary engineering plans, environmental studies and implementation strategies. A summary of certain key points from the study are discussed below. Of particular concern are alternative locations for the temporary eastern terminus of the Cotton Belt Line.

Cotton Belt Corridor



Rail Technology – While portions of the Cotton Belt Corridor have been abandoned for freight traffic, the majority of the corridor will remain in use for freight movement. Because of this, passenger vehicles used in the corridor must be reviewed by the Federal Railroad Administration (FRA) for their “crash worthiness” should they collide with a freight train. Passenger vehicles meeting the standards are certified as being “FRA compliant.” The T and DART are working together to obtain FRA approval of a self-propelled diesel-electric vehicle that is similar in appearance and performance to a light rail vehicle. The vehicle currently favored is similar to vehicles used by Capital Metro in Austin and the Denton County Transportation Authority (DCTA). The vehicle is slightly larger than DART LRT vehicles. The proposed vehicle can run as a single car or as a two to four car train. NCTCOG calls the vehicle technology “Light-Rail New Technology” (LRNT). DART refers to it as “Regional Rail.”



Light Rail Compatibility - Under existing federal regulations, the proposed LRNT vehicle cannot share tracks with a LRT vehicle because it is too heavy and sturdy. The junction of the Cotton Belt and Red Line will require aligning separate tracks and platforms so passengers can transfer from one mode to the other. Even if federal regulations were changed to permit a LRNT vehicle to share tracks with a LRT vehicle, the grade and curvature of existing DART tracks and the platform design specifications are not compatible with the LRNT car design.

Passenger Capacity and Volumes - Each LRNT car can carry approximately 200 passengers (seated and standing). The current plan is for trains to stop at each station every 20 minutes during weekday peak hours and every 60 minutes during weekday off-peak hours. Weekend headways would range from 60 to 90

minutes. NCTCOG projects approximately 6,000 to 7,000 weekday passenger trips (each direction is a separate trip) by the year 2030 on the Cotton Belt's 22 mile eastern segment (D/FW to the DART Red Line.) By comparison, the DART Red Line from Mockingbird to Parker Road currently averages 14,000 weekday trips.

Transit Oriented Development – The Cotton Belt operating plan and projected ridership are not sufficient to produce successful urban mixed-use development. Assuming alternate station configurations (see below), the Cotton Belt study estimates in the year 2030 the weekday daily ridership at the proposed 12th Street Station to be 450 people. Substituting the Bush Station as the temporary terminus, the Bush Station weekday daily ridership in the year 2030 is estimated to be 810 riders (current Bush ridership on the DART Red Line is 1,087). Less than 5% of the riders are estimated to begin or complete their trip on foot. Hopefully, these numbers underestimate the passenger demand, especially the number of people who walk to and from the stations. But even if the actual traffic were three or four times the estimates, Cotton Belt trips alone would be insufficient to create successful development. What drives successful urban mixed-use development? Most successful urban mixed-use projects have an exceptional location, proximity to employment, good accessibility, proximity to high volume regional arterials and excellent design. Addison Circle, Legacy Town Center, Southlake Town Square and the West Village are just a few examples of successful “transitless” urban mixed-use development. Successful transit-oriented developments share the same location and design characteristics, and a well designed and integrated transit station complements the development and enhances its likelihood of success.

Transit Ridership

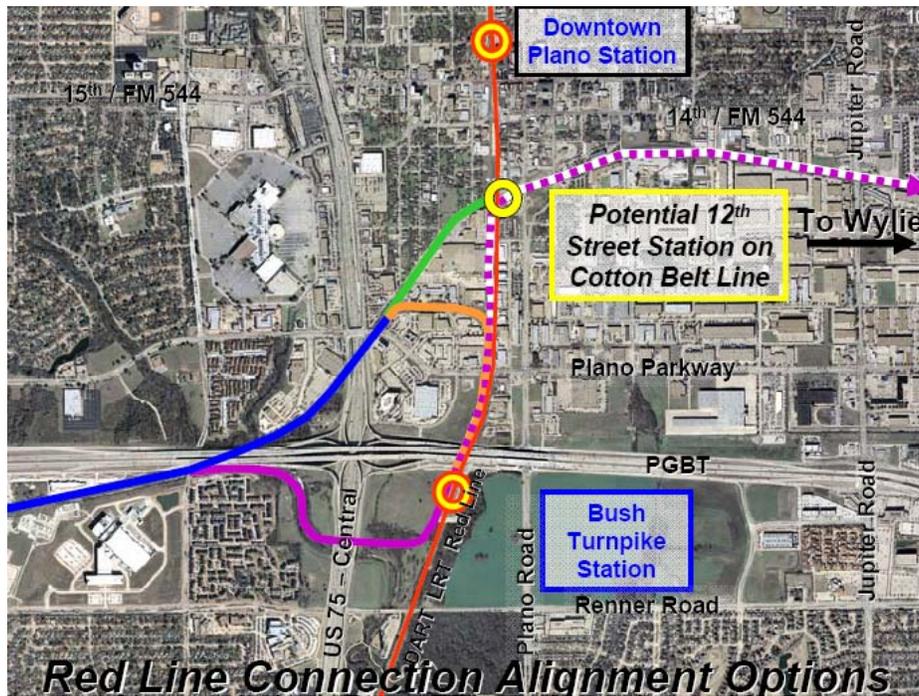
| DART 2009 | | Cotton Belt 2030 Alternative Estimates | | |
|----------------|---------------|--|---------------|---------------|
| Station | Passengers | Station | Passengers #5 | Passengers #6 |
| Lovers Lane | 1,151 | DFW A/B | 790 | 800 |
| Park Lane | 1,923 | Airport North | 610 | 620 |
| Walnut Hill | 1,125 | North Lake | 350 | 350 |
| Forest Lane | 1,503 | Carrollton | 1,400 | 1,610 |
| LBJ/Central | 888 | Addison | 760 | 720 |
| Spring Valley | 1,095 | Knoll Trail | X | X |
| Arapaho Center | 1,124 | Preston Road | 540 | 480 |
| Galatyn Park | 398 | Renner Village | X | 710 |
| Bush Turnpike | 1,087 | UTD/Synergy | 360 | 230 |
| Downtown Plano | 652 | Bush | 810 | X |
| Parker Road | <u>2,969</u> | 12 th Street | X | <u>450</u> |
| Total | 13,915 | | 5,600 | 5,800 |

Development Cost – The NCTCOG study attempts to estimate the cost of various alternatives for developing the Cotton Belt from D/FW to its temporary eastern terminus. Each alternative adds and removes stations, and with the exception of two alternatives that include an extension to McKinney, all the alternatives range from \$800 to \$900 million. All of the estimates were based on typical costs and multipliers. No actual engineering studies were conducted of station locations, grade crossings or other site factors that will significantly affect costs. DART is currently preparing a preliminary engineering design to further understand alternatives and their costs.

Long Term Expansion Plans – The NCTCOG study does not assess the long-term plan to extend rail service to southeast Collin County. Job growth in Plano's Research/Technology District and residential development in Murphy, Wylie and Sachse are increasing the need for transit service. While DART owns the Cotton Belt corridor to Wylie, station locations have not been determined. Unless they are purchased soon, the best sites may not be available when the line is extended.

Temporary Eastern Terminus Locations - The NCTCOG Cotton Belt study identifies two locations for the temporary eastern terminus – the existing Bush Station and the new proposed 12th Street Station. Both stations could serve as a transfer between the DART Red Line and the Cotton Belt. DART has begun preliminary engineering design and environmental studies that will be used to determine the final station locations, rail design elements and cost estimates. The Plano City Council has passed a resolution that supports the Cotton Belt Study and commits available resources to obtain and reserve land if the proposed 12th Street Station is chosen. The City of Richardson passed a similar resolution supporting the Bush Station. Both the Bush and the 12th Street Station have advantages and disadvantages that must be considered by DART in evaluating and finally deciding which location is chosen. The following discussion will identify and explain the advantages and disadvantages for each station location:

Temporary Eastern Terminus Options



12 Street Station - The proposed 12th Street Station would be located along the existing Cotton Belt alignment immediately east of its intersection with the DART Red Line at the southwest corner of 12th Street and Avenue K. No additional right-of-way would be required for the rail line or the station platform. The station would require two vertically separated platforms. The Cotton Belt Platform (green below) would be located at ground level on the south side of 12th Street before its intersection with Avenue K. The DART LRT Redline Platform (red below) would be located on a reconstructed overpass crossing 12th Street. The two platforms would be connected by stairs and elevator or escalator. Reconstruction of the existing overpass is likely needed to provide a long flat section for the passenger platform and to carry the additional weight of the platform. More study is needed to determine how the construction would be conducted. It may be possible to bypass the existing overpass or rely on a single track during phased construction of the new structure. It is also possible that DART Red Line service to the Downtown Plano and Parker Road Stations would need to be temporarily suspended. Approximately three to four acres would be needed on the north side of 12th Street for 300 to 400 parking spaces. The Plano City Council has approved a resolution supporting the 12th Street Station and committing to acquire or protect land needed for parking.

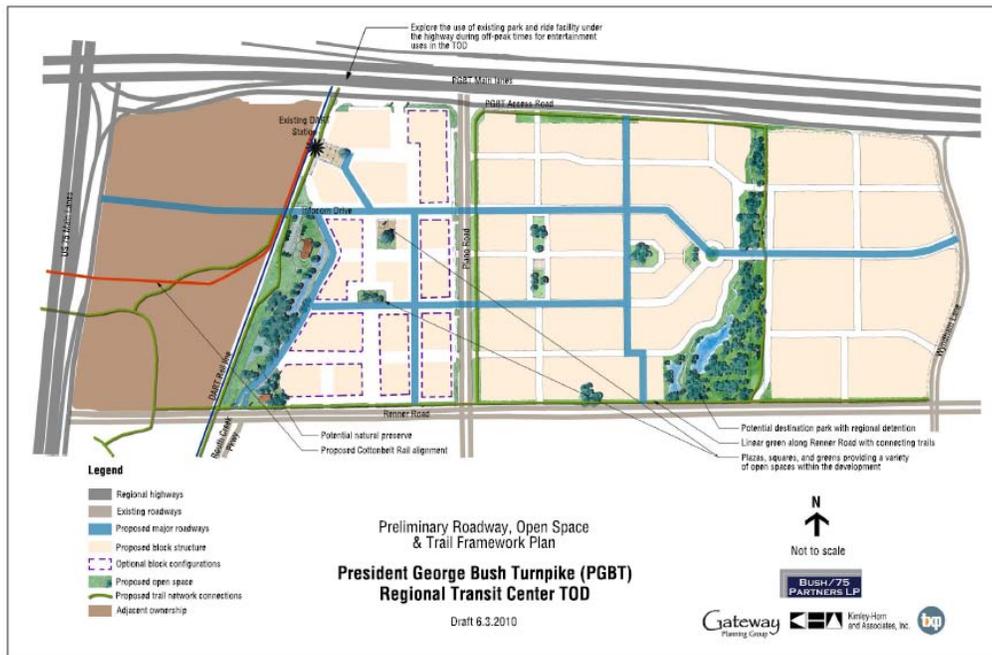
12th Street Station



The 12th Street Station could further encourage redevelopment of property located south of 14th Street. Property owners and developers (the Sheas, Holt-Lunsford Company) have already made major investments in the area. A 12th Street Station would benefit the Douglass neighborhood by improving access to employment and services. Another benefit of the station is providing overnight storage of trains at the end of the line. DART could easily store trains east of the 12th Street Station and Avenue K within the Cotton Belt right-of-way it owns. This would allow beginning daily service without costly and inefficient dead-heading of trains.

Bush Station – The City of Richardson proposes using the Bush Station as the temporary eastern terminus to the Cotton Belt Line. Despite being located at the high volume intersection of US 75 and the President George Bush Turnpike, the existing Bush Station service the DART Red Line, the Bush Station only ranks 8th in ridership of the 11 LRT stations north of the Mockingbird Station. This may be primarily because the station is surrounded by open fields and there are only a few jobs and no housing within walking distance. Richardson is working with area property owners to plan and develop a large scale mixed-use urban center connected to the transit center. However, the larger problem may be station parking and accessibility. The primary ridership shed served by this station lies to the north. Because of the design of the US 75/Bush interchange, it is hard for south and eastbound traffic on these facilities to access the station. In addition, DART parking for the Bush Station is located under the interchange between two service roads. Presuming the proposed development is successful, increased traffic on the service roads will make it even more difficult for commuters to walk between the platform and parking lot.

Cotton Belt Southern Connection to the Bush Station



Cotton Belt US 75 Crossing - A critical factor in determining the best interim eastern terminus of the Cotton Belt Line is tied to the line's future crossing of US 75. Today, the Cotton Belt crosses US 75 immediately south of Plano Parkway.

- Reconstructed Crossing** - TxDOT is currently preparing plans to reconstruct the existing Cotton Belt crossing over US 75 as a part of a larger set of improvements to US 75/Bush interchange. TxDOT is coordinating the design with DART. TxDOT will construct the abutments and footings to support additional tracks for passenger service. DART will be responsible for adding the spans and tracks as needed. This crossing must be rebuilt for existing and future freight service. TXDOT's work will make it cheaper and quicker for DART to modify the crossing for transit service than to build a new crossing over US 75. This crossing is within the existing DART Cotton Belt right-of-way and the alignment leads directly to the proposed 12th Street Station.
- New Crossing** - Richardson is proposing a new additional crossing over US 75 to access the Bush Station. This alternative veers the rail line south from the existing alignment beginning east of where the existing rail line crosses Alma Road. The new elevated crossing would abut Spring Creek, apartments, transmission lines and planned open space trail improvements in Richardson. The elevated crossing would need to clear US 75 and its service roads. The crossing would likely need to be supported by a column in the center of US 75. The column would require

redesign of the HOV lanes and possibly the main lanes in both directions. After the new crossing returns to grade on the east side of US 75, the rail line will turn north to parallel the DART Red Line. A new Cotton Belt platform would be constructed next to the DART platform. The complications and constraints associated with the new crossing may significantly increase total project cost and delay the project to obtain approvals from TXDOT and numerous federal agencies.

- **Northern Alternate Crossing** - Richardson has also proposed an alternate northern alignment to access the Bush Station. This alternative calls for the Cotton Belt Line to cross US 75 using the reconstructed railroad bridge described above. However, after crossing Plano Parkway at US 75 the track would veer east and cross Avenue F at a sharp angle and then curve south to parallel the DART Red Line. A new additional elevated crossing of Plano Parkway would be needed; however, the distance to Plano Parkway may be too short to build an overpass with acceptable vertical clearance. If that is true, the Cotton Belt will need to cross Plano Parkway at grade. With or without an elevated crossing over Plano Parkway, additional right-of-way may be required. After crossing Plano Parkway, the line would continue south at grade under the Bush Turnpike and across the Bush service roads ending at a platform adjacent to the existing DART LRT station. The Avenue F crossing and the possible at grade crossing of Plano Parkway raise concerns about car and truck traffic that should be studied further.

Future Eastern Extension – The regional transportation plan calls for the future eastern extension of the Cotton Belt Line to Wylie and perhaps beyond. The proposed 12th Street Station maintains the existing rail alignment and creates no barrier or additional cost for future extension. The proposed Bush Cotton Belt Station moves the tracks away from the existing alignment resulting in additional future cost to extend the line to the east. Reconnecting to the existing Cotton Belt alignment requires building a new track parallel to the Red Line from the Bush Station 4,300 feet to 12th Street. A second elevated crossing over Plano Parkway would be needed. It appears that the DART right-of-way on the north side of Plano Parkway may not be wide enough to accommodate a second grade separated crossing. If true, a portion of a retail center would have to be purchased and demolished. The elevated rail line would need to return to grade before reaching 10th Street to avoid closing that street. The rail line would curve east at 12th Street to connect to the existing Cotton Belt alignment. Platforms can only be constructed on straight and level sections of the line. The curve in the line needed to reconnect to the existing freight track likely eliminates the possibility of a 12th Street station.

Cost - The NCTCOG study estimates the cost of the 12th Street Station option to be \$46,000,000 more than the Bush station option, primarily because of the need for reconstructing the 12th Street overpass. We believe the NCTCOG study did

not fully account for the cost of the new US 75 crossing proposed by Richardson. We also believe the study omitted the substantial cost of connecting the Bush Station to the existing eastern Cotton Belt Corridor to provide service to eastern Plano, Murphy and Wylie. The NCTCOG study also did not address the need for over-night train storage which can be inexpensively provided at the 12th Street Station.

Why Not Both? – It is unlikely that both stations would be placed on the plan for the Cotton Belt. Both stations would be serving the same ridership and adding a second station would increase construction cost and trip time. As stated earlier, the rail line curvature required to connect the Bush Station to the existing eastern alignment would likely eliminate the 12th Street Station. If the Bush Station were built as a temporary terminus, it is possible that the design constraints and cost of reconnecting to the existing Cotton Belt alignment would be a significant barrier to extending the line further east.

Conclusion – The 12th Street Station would be the only Cotton Belt Station located in Plano. With direct access and exposure to Avenue K, the 12th Street Station would be easily accessible to residents in eastern Plano and employment centers along US 75, Avenue K and Plano Parkway. The Bush Station is difficult for many potential passengers to access and users are forced to walk across the Bush eastbound service road to reach the rail platform. The 12th Street Station does not require an expensive second rail crossing of US 75, nor would it require modification of the existing HOV lanes. Further, the 12th Street Station is the logical temporary eastern terminus consistent with the goal of extending service to Wylie without having to build an expensive connection from the Bush station to the existing Cotton Belt alignment. Both station alternatives will stimulate development. Downtown Plano has already demonstrated how transit-oriented development works to create sustainable urban mixed-use development. The 12th Street Station will ensure continued reinvestment in the southern portion of downtown and the Avenue K corridor by improving mobility and replacing blight and underutilized properties with jobs and housing.