

Memorandum



CITY OF DALLAS

DATE September 19, 2008

TO Members of the Transportation and Environment Committee: Linda Koop, Chair; Sheffie Kadane, Vice-Chair; Jerry R. Allen; Carolyn R. Davis; Vonciel Jones Hill; Angela Hunt; Pauline Medrano; Ron Natinsky

SUBJECT People Mover Connector – Feasibility Study Recommendations

Attached is the briefing entitled, "Dallas Love Field – People Mover Connector – Feasibility Study Recommendations" that will be presented to you on September 22, 2008.

Please contact me if you need additional information.



Ramón F. Míguez, P.E.
Assistant City Manager

Attachment

c: Honorable Mayor and Members of the City Council
Mary K. Suhm, City Manager
Thomas P. Perkins, Jr., City Attorney
Deborah Watkins, City Secretary
Craig Kinton, City Auditor
Judge C. Victor Lander, Judiciary
Ryan S. Evans, First Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
A.C. Gonzalez, Assistant City Manager
David O. Brown, Interim Assistant City Manager
David Cook, Chief Financial Officer
Jeanne Chipperfield, Director, Budget and Management Services
Edward Scott, Director, Controller's Office
Helena Stevens-Thompson, Assistant to the City Manager - Council Office
Dan Weber, Director, Department of Aviation

Dallas Love Field People Mover Connector Feasibility Study Recommendations (Part 1 of 2)

Briefing to the Transportation
and Environment Committee

Department of Aviation
September 22, 2008

Purpose

- Review Part 1:
 - Feasibility Study Findings, Recommendations.
 - Issues with other Capital Improvement Projects.

- Next Steps.
 - Part 2: Financial Analysis and Recommendations

Background

- Historical Overview:
 - DART published a 2005 report addressing service to Love Field from the new Green Line – “Dallas Love Field Transit Service Options Study” (amended in July 2007).
 - Recommended a bus shuttle connection to Airline Terminal.
 - Potential for higher capacity project in future.
 - City of Dallas determined a higher level of service could be achieved through installation of a People Mover Connector, to be financed with Passenger Facility Charge revenue.
 - Consultant contract awarded for People Mover Connector Feasibility Study on June 13, 2007 to Lea+Elliott, Inc.

Feasibility Study Outline



- Feasibility Criteria
- Ridership and Demand
- Transportation Technology Assessment
- Tunneling and Facilities Assessment
- Procurement Approaches
- Planning Level Cost and Schedule Assessment
- Potential Funding Sources and Options
- Project Feasibility

Feasibility Criteria

- Performance Factors –
 - Capacity, Speed, Expandability, Automation

- Level of Service –
 - Frequencies / Wait time, Safety, Reliability

- Quality of Service –
 - Seamless Connections, Appropriate Passenger Amenities, Airport Experience

- Environmental Impacts –
 - Acceptable Noise/Vibration Levels, Visually Acceptable

- Cost Effectiveness –
 - Capital, O&M, Integration of System with Terminal Facilities

Ridership & Demand

- Ridership Requirements & Analysis:
 - Two General Functions to be Served:
 - Air Travelers & Employees utilizing DART Light Rail for regional transportation;
 - Cost of fuel and growing popular concern for reducing “carbon footprint”.
 - Potentially relocated Airport Activity Centers.
 - Increase the Terminal Area capacity to support passenger activities;
 - Relieve Terminal Area traffic congestion (realize associated air quality benefit).
 - Three Groups of Users – Demand:

▪ Commuting Employees	(demand – 418 daily riders)
▪ Air Travelers	(demand – 1,230 daily riders)
▪ <u>Southwest Airlines Employee Shuttle</u>	<u>(demand – 500 daily riders)</u>
▪ Total Demand Potential	2,150 daily riders (785,000/Yr)
 - Sources of Data: NCTCOG; DART; FAA; City of Dallas; Transportation Cooperative Research Program Report 62.

Transportation Technologies Studied

- Moving Walks
 - Conventional
 - Accelerated
- Bus
 - Conventional Bus
 - Bus Rapid Transit
 - Guided Bus
- Streetcars
 - Modern
 - Historic
- Automated People Mover
 - Self-propelled APM
 - Cable-propelled APM
 - Monorail
 - Maglev (Low Speed)
- Personal Rapid Transit
- Other Technologies

Automated People Mover Technologies

- Self-propelled
 - Center guided



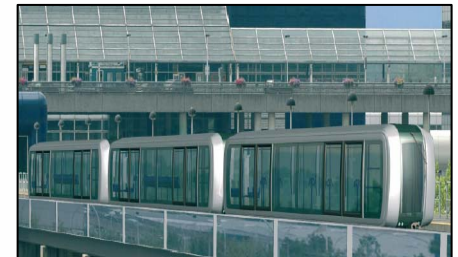
Bombardier CX-100,
Houston George Bush Intercontinental
Airport, Texas



Schwager Davis UniTrak
Clarian Health Center,
Indianapolis, Indiana



Bombardier Innovia,
Dallas/Fort Worth International
Airport, Texas



Siemens AirVal
(currently in development)

Automated People Mover Technologies

- Self-propelled
 - Side-guided



IHI Niigata,
Osaka Kansai
International Airport,
Japan



Mitsubishi Crystal Mover,
Singapore Changi
International Airport,
Singapore

Automated People Mover Technologies

- Cable-propelled



DCC Doppelmayr Cable Liner Shuttle,
Mexico City International Airport,
Mexico



Poma-Otis Skymetro
Zurich International Airport,
Switzerland
(now the Leitner-Poma
MiniMetro)

Automated People Mover Technologies

- MagLev
 - Travel along rails using electromagnets which create magnetic levitation.



Chubu HSST 100L
maglev vehicle, Aichi,
Japan

Tunneling Methods Assessment

- Tunneling cost and applicability are affected by several factors:
 - Local geologic conditions (clay, sand, shale, water table);
 - locations adjacent to existing structures and utilities sensitive to ground movements;
 - Tunnels will pass under airport runways, taxiways and ramps.

- The following 3 pages review the available methods.

- Method, or combination of methods used, will be determined by the procurement process.

Tunneling Methods Assessment

- **Tunnel Boring Machines**
 - Can be used in difficult ground conditions, such as water-bearing sands and clays



Tunneling Methods Assessment

- **Sequential Excavation Method (SEM)**
 - Suitable for soft ground conditions and low overburden.



Tunneling Methods Assessment

- **Cut-and-Cover Construction**
 - More disruptive than tunneling due to need for utility relocations and traffic routing.



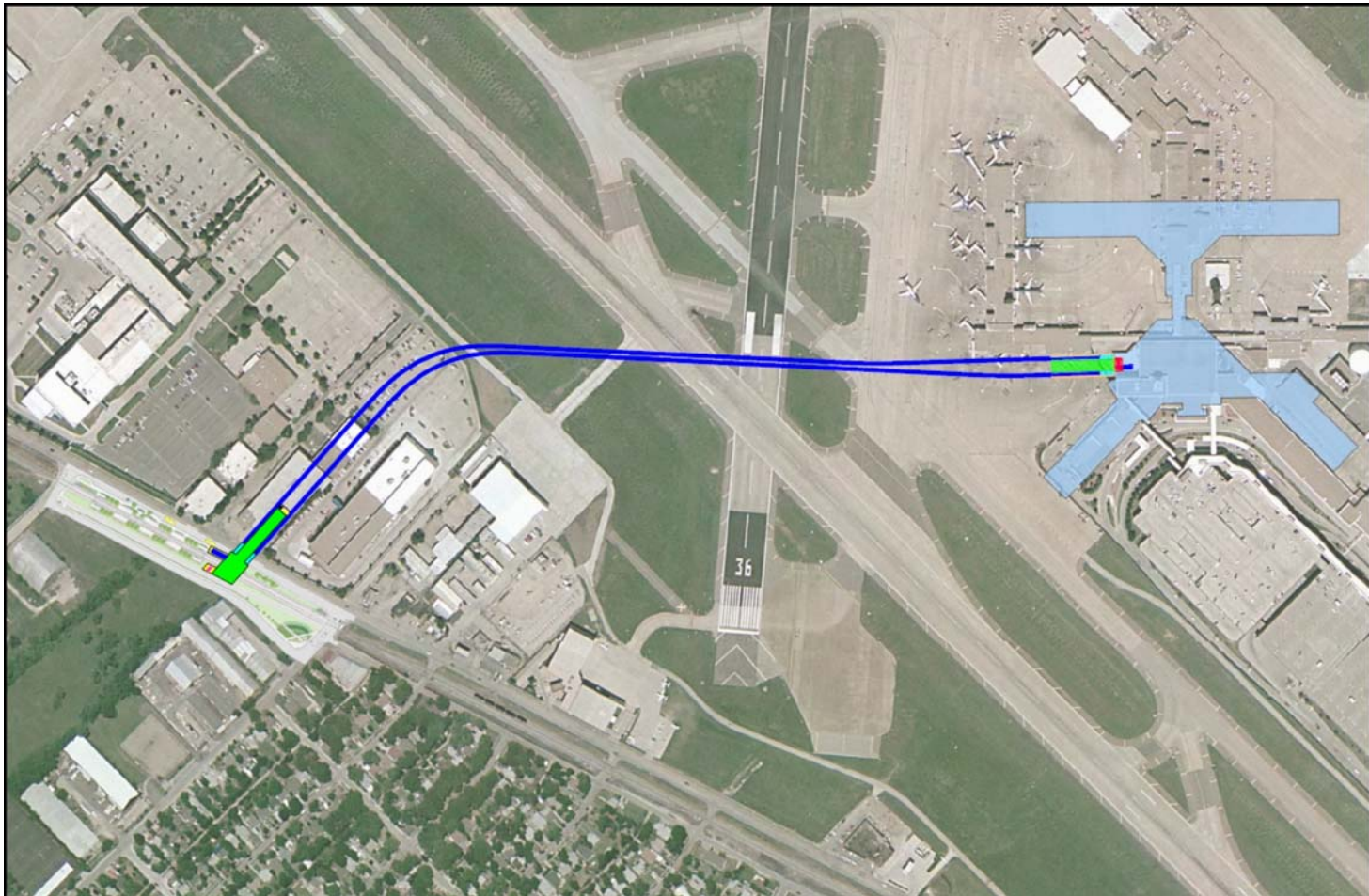
Station Location & System Alignment

- Station Location *Determines* System Alignment.
 - Station Location Objectives:
 - Seamless Traveler Connection
 - Visibility – Traveler Orientation & Wayfinding
 - Cost to Develop Site
 - System Alignment Objectives:
 - Shortest Length (Cost of Tunneling *and* System)
 - Simplest Alignment (Curves add Cost & Operating Complexity)

Recommended Alignment

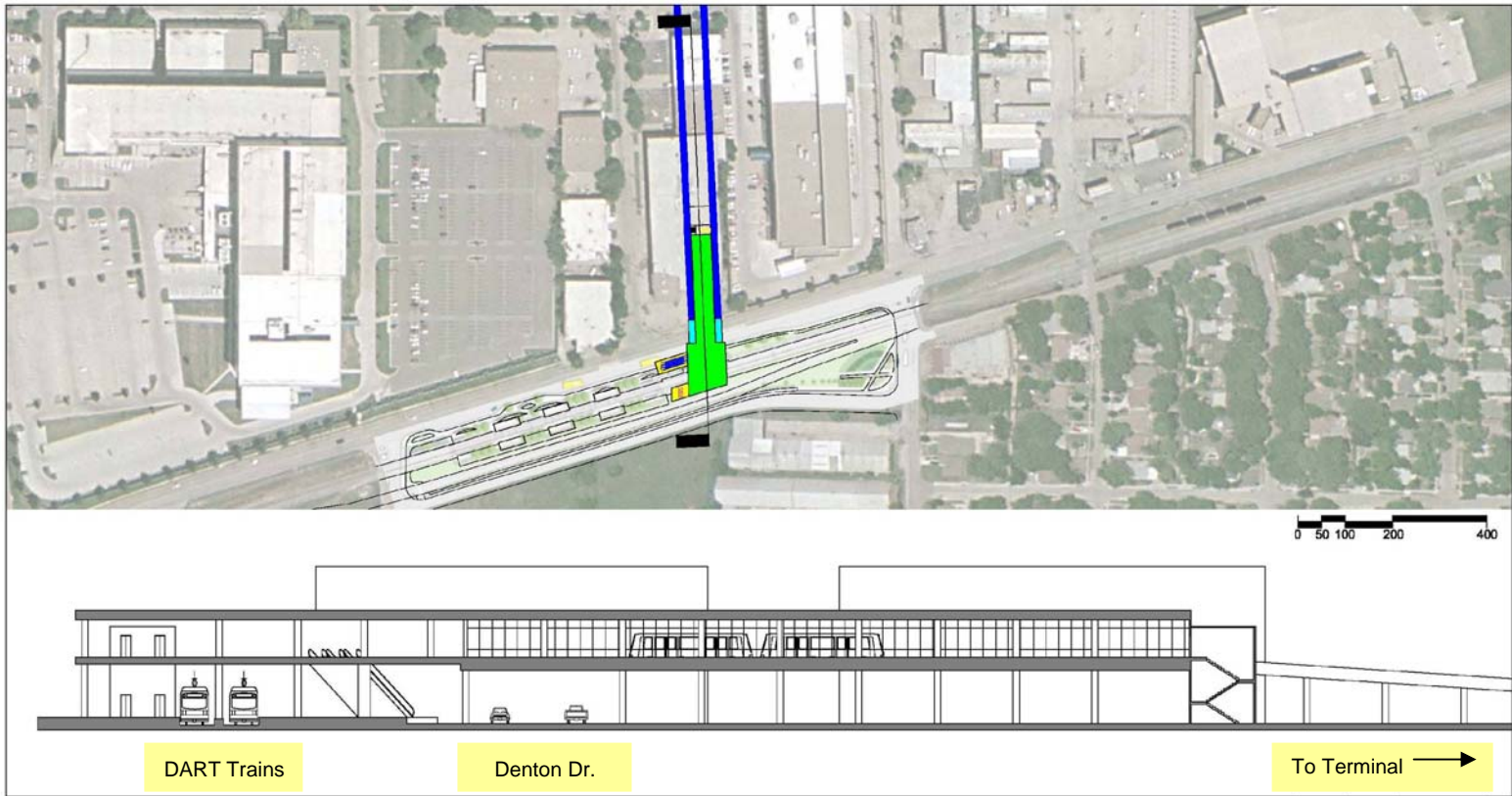
System Length – 3,400 ft

System Performance – one curve



Recommended Station Concept at DART Station

Elevated, Bridging Denton Rd.



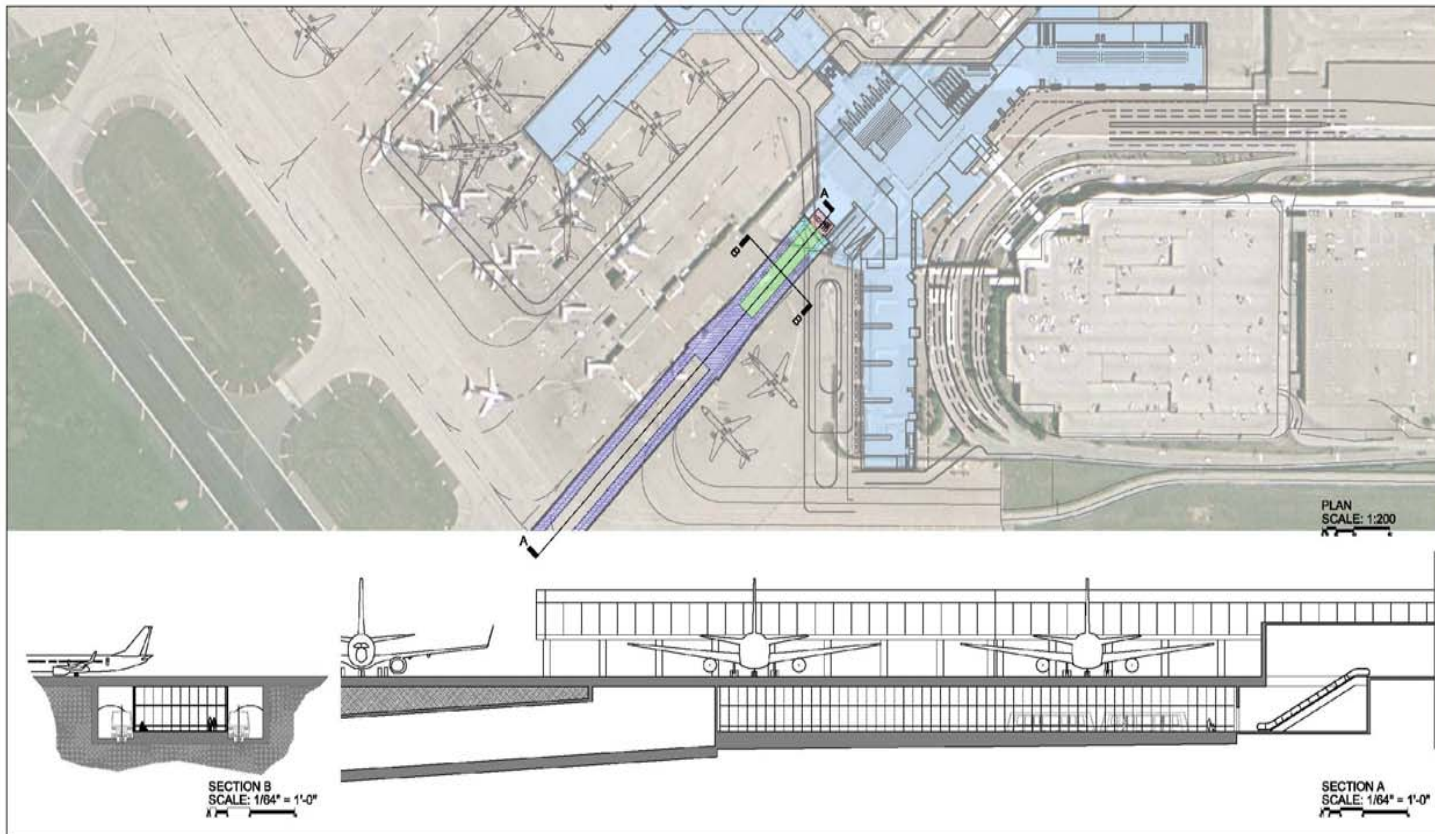
DART - LOVE FIELD STATION CONCEPT 2C
DLFSO2C

- Legend
- APM Station
 - Tunnels

Recommended Station Concept at Terminal Building

Enter near Center of Lobby

Can be Constructed During LFMP



Procurement Approach

- Two Separate Procurement Processes:
 - APM System Supplier:
 - *Performance Based Process* to increase competition.
 - Few Competitors within each Technology Type
 - Therefore, Create Competition among the Various APM Technologies
 - Facilities & Tunnel Contractor(s):
 - Conventional Procurement Methods (Design-Bid-Build, Design-Build, Construction Management At-Risk)
- This approach used at 24 airport projects, including DFW Skylink

Planning Level Cost and Schedule Assessment



- Planning Level Cost:
 - Based on Consultant Team's past experience with similar projects and current construction industry cost trends.
 - Includes assessment of:
 - Facilities & Tunnel Construction, System Acquisition costs;
 - Soft costs
 - design, construction administration, construction management, geotechnical testing, LEED certification requirements, art program, commissioning, contingencies;
 - Escalation rate – 8%
 - Construction inflation, demand for materials, foreign exchange rates.

Planning Level Cost and Schedule Assessment (Cont'd)

- Planning Level Cost Estimate (Capital):
 - 2008 dollars \$270,000,000
 - 2010 dollars \$330,000,000

- 5-Year Operating & Maintenance Cost Estimate
 - APM System \$20,000,000
 - Facilities \$ 4,120,000
 - Total 5-yr budget \$24,120,000 (average \$4,824,000 annually)

- Project Schedule:
 - Overall duration – 72 months

Potential Funding Sources

- 2010 Capital Cost \$330 M
 - DART allocated funds \$ 20 M
 - RTC: TX Mobility Fund \$ 40 M
 - RTC: Congestion Mitigation \$ 20 M
 - Remaining Capital Cost \$ 250 M

- Passenger Facility Charge (PFC) Revenue:
 - At \$4.50 beginning 2010, PFC revenue potential thru 2028 = \$562 M

Project Feasibility

- The determination of Project Feasibility is *based* on the following conditions:
 - Recommended system technology – Automated People Mover (APM);
 - Recommended system alignment – elevated station at DART end, and underground station entering Terminal in lobby area;
 - Recommended procurement process – performance based for APM system, and conventional procurement for Facilities & Tunnel construction.
 - Capital cost - \$330,000,000 (2010)
 - Funding Sources and Potential:

■ DART	\$ 20,000,000
■ Regional Transportation Commission	\$ 60,000,000
■ Passenger Facility Charge (2010-2028)	<u>\$562,000,000</u>
■ Total Potential	<u>\$642,000,000</u>

Project Feasibility (Cont'd)

- The Study concludes that this set of conditions will achieve the Feasibility Criteria set out in Page 5 of:
 - Performance;
 - Level of Service;
 - Quality of Service;
 - Environmental Impacts;
 - Cost Effectiveness.

- Additional Benefits of the People Mover Connector:
 - Will provide direct rail connection between DFW and Love Field

 - Fuel costs and environmental concern have resulted in record DART LTR use.
 - Will translate into greater ridership than estimated in Study

 - New opportunities to relocate Terminal-area passenger services to relieve Terminal-area traffic congestion.
 - For example, 138,000 annual shuttle bus trips in 2007
 - Relocation of services will enable re-designation of Airport land for aeronautical use.

Issues With Other Capital Improvement Projects

- This Study concludes that the People Mover Connector is feasible and sufficient funding is available to finance it.

- Other capital projects are planned or underway, which compete for funding:
 - Love Field Modernization Program;
 - Rolling Capital Improvement Program;
 - Future Cedar Springs / Mockingbird Rd Intersection Improvements.

- A financial strategy will be developed to determine the most efficient way to fund *all* capital improvements without compromising *any* of them.

Next Steps

- Part 2:
 - Financial Analysis and Recommendations to the Transportation and Environment Committee – Oct 13