



# Project Delivery Methods: Case Studies in Transit

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# DART Vision

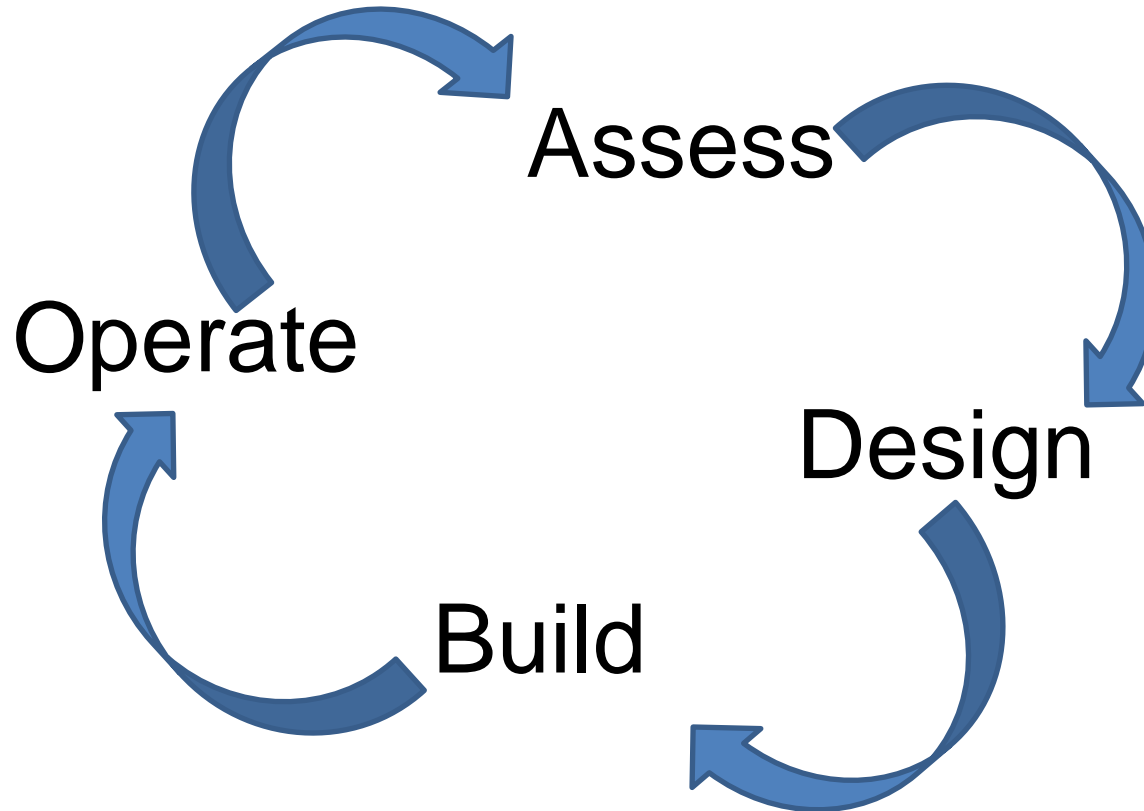
DART: Your preferred choice of transportation for now and in the future...



# DART Program Goals

- Safety and Quality
- Cost Savings
  - Change Management
- Expedited Schedule
- Coordination with Others
  - Third Parties
  - Utilities
- Small and MWBE Firm Participation

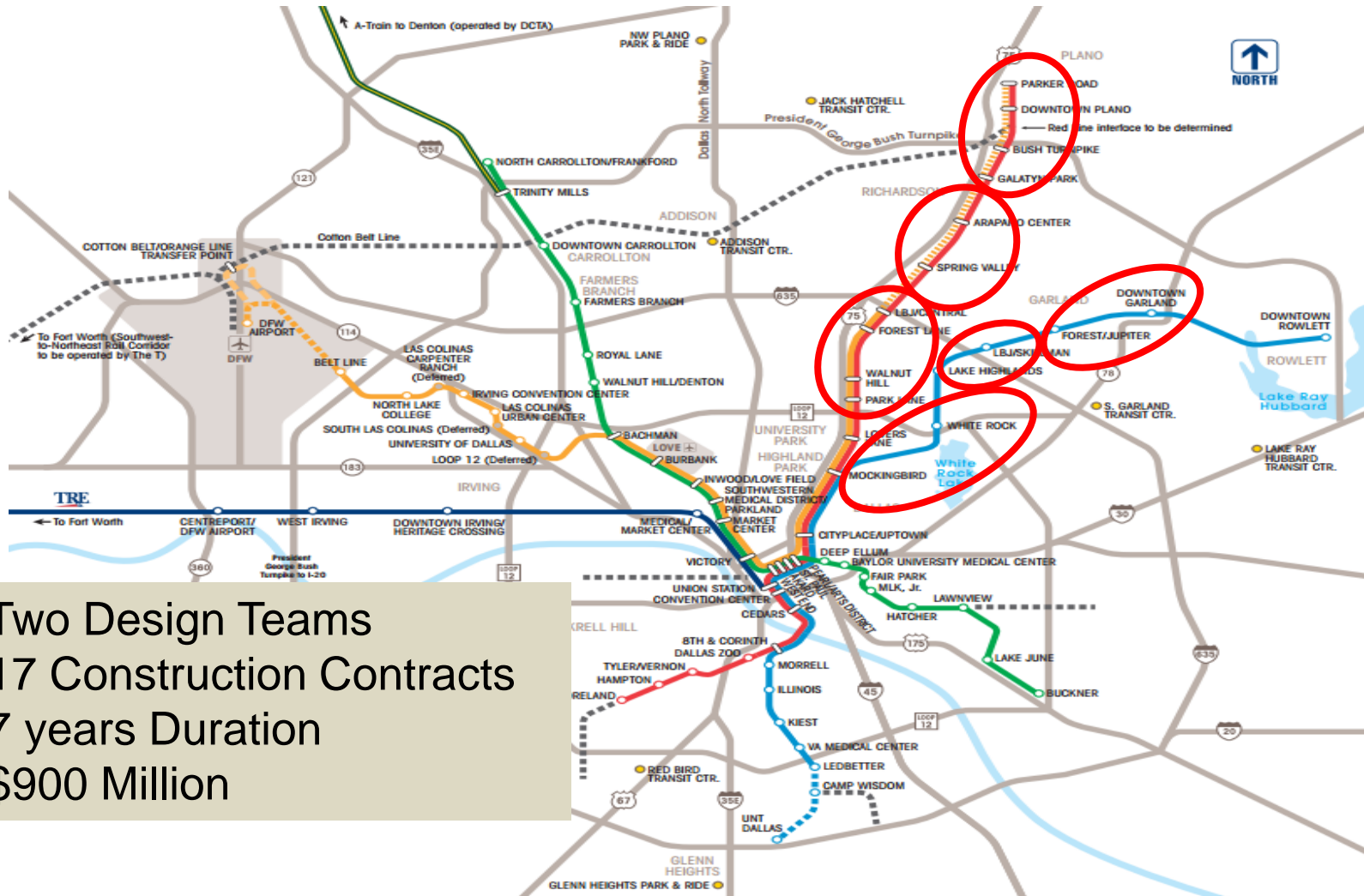
# Project Continuum- Continuous Improvement



- Multiple Design Teams
- 16 Construction Contracts
- 7 Years Duration
- \$860 Million



# Design-Bid-Build

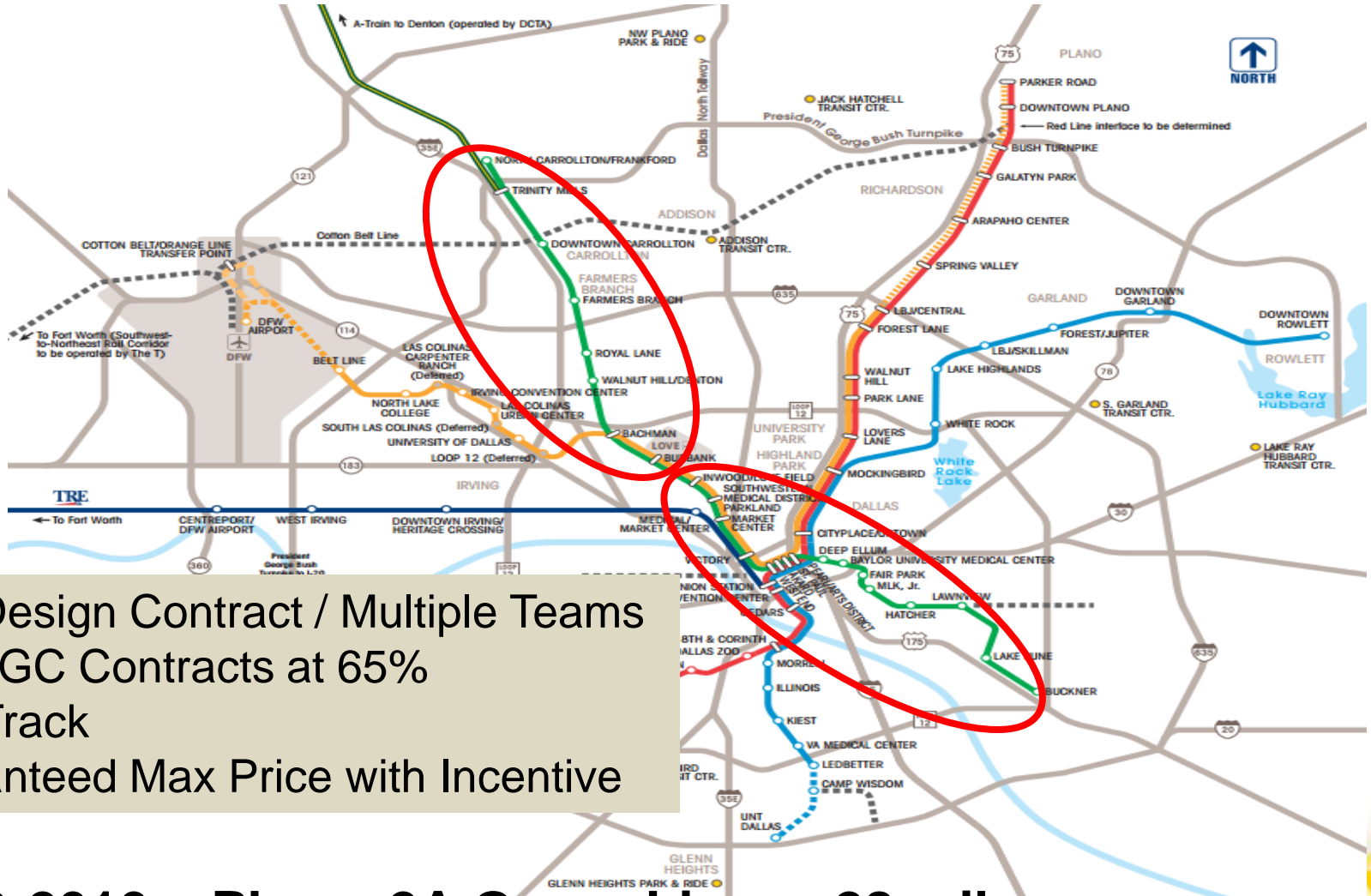


- Two Design Teams
- 17 Construction Contracts
- 7 years Duration
- \$900 Million

**2001-2002 – Phase 1 Opens – 23 miles**



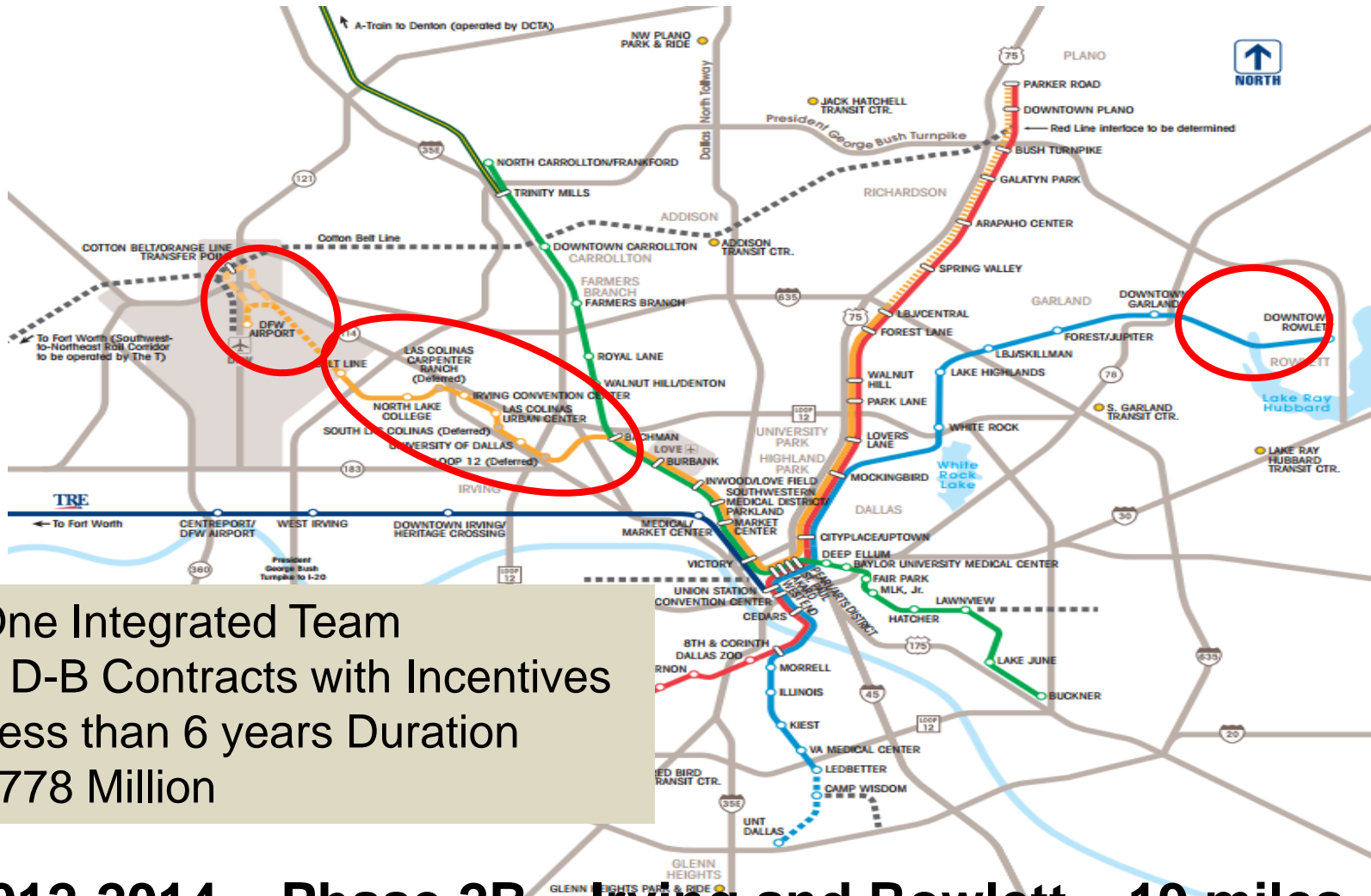
# Design-CM/GC



- One Design Contract / Multiple Teams
- 2 CM/GC Contracts at 65%
- Fast Track
- Guaranteed Max Price with Incentive

## 2009-2010 – Phase 2A Green Line – 28 miles

# Design-Build

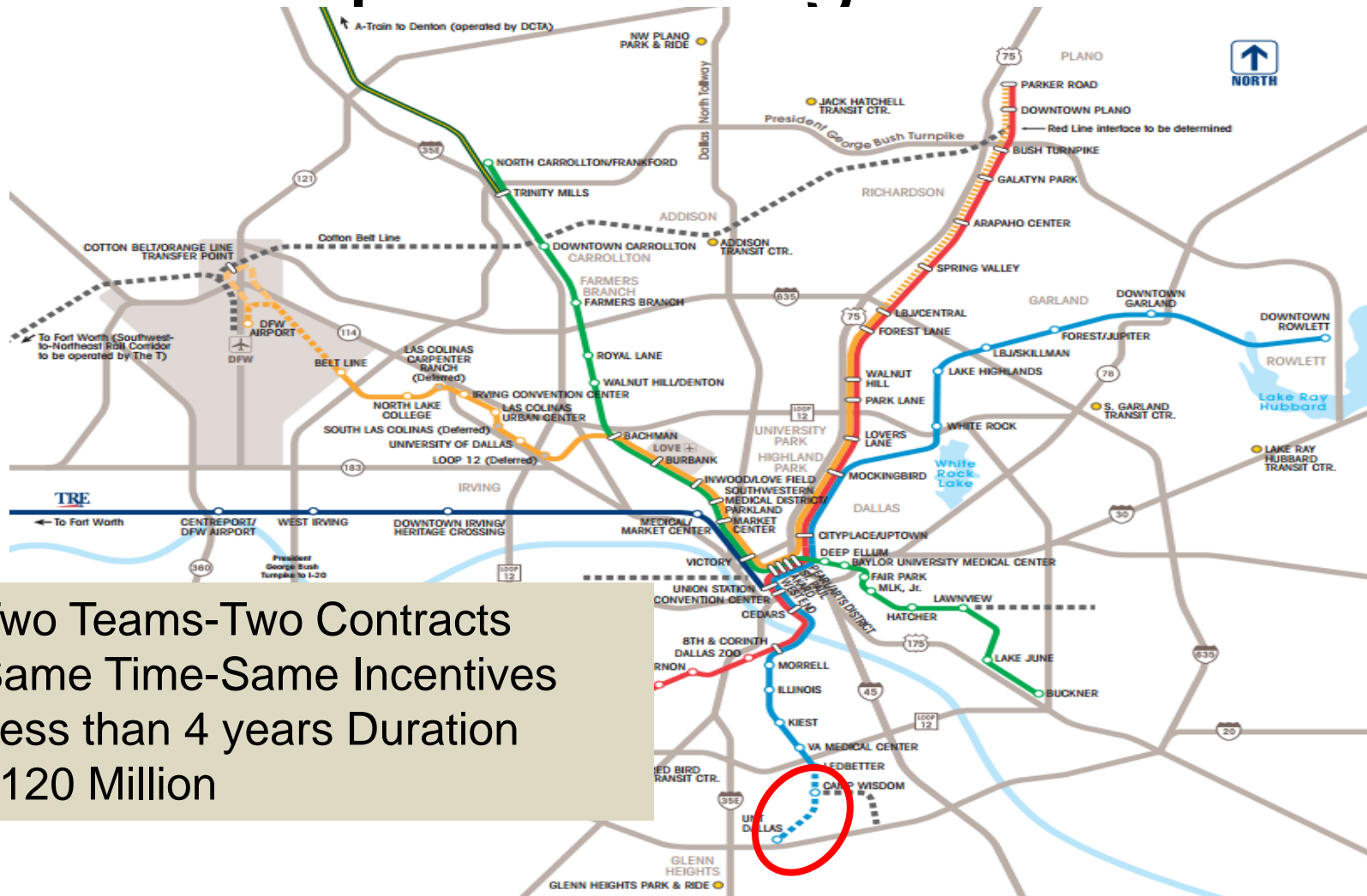


- One Integrated Team
- 3 D-B Contracts with Incentives
- Less than 6 years Duration
- \$778 Million

**2012-2014 – Phase 2B – Irving and Rowlett – 19 miles**



# Design-CM/GC with Cooperation Agreement



- Two Teams-Two Contracts
- Same Time-Same Incentives
- Less than 4 years Duration
- \$120 Million

**2016 *Anticipated*– Phase 3 – 3 miles – 93 total Miles**

# Key Lessons

- Design-Bid-Build
  - Design Control
  - Lower Cost – Competition
  - Opportunity/Participation
  - No Single Point Accountable
  - Low Bid/More Changes
  - Longer Duration
- Design – CM/GC
  - Expedited Schedule
  - Cost Savings
  - Fewer Changes
  - No Single Point Accountable
  - Getting to an Agreed Price
  - More Time and Energy
- Design/Build
  - Expedited Schedule
  - Fewer Changes
  - Fewer Management Duties
  - Less Design Control
  - Less Opportunity
  - Only the Big Boys



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[www.DART.org](http://www.DART.org)

# Goals for Phase 2

## Green Line, Orange Line, and Rowlett Expansion to Blue Line

- Improve Cost and Time to Deliver
  - Efficient Delivery System
  - Reduce Number of Contracts
  - Fewer Changes
- Phase 2A – Green Line
  - Provide Design Opportunities

# Goals for Phase 2B

- Use D-B to Move Quickly
  - Expedited Program Schedule
  - Incentives
    - Performance
    - Completion
- Simplify for Owner
  - Responsibility to Coordinate
  - Accountability for Cost



# Goals for Phase 3

- Design Flexibility
- Increase Opportunity for Participation
- Mitigate Risk
- Incentive for Design and Construction
- Cooperative Agreement
  - Salt Lake City

# Managing Change

## Irving C-1&2 Orange Line to Irving Summary of Changes by Basis Code

Change Basis	# Changes	% Total Volume	Value of Changes	% Total Cost
Administrative	28	21.7%	\$2,725,862	19.2%
Owner Requested	54	41.9%	\$2,915,774	23.1%
Site Condition	14	10.9%	\$342,293	2.4%
Third Party	33	25.6%	\$767,502	55.4%
<b>TOTALS</b>	<b>129</b>	<b>100.0%</b>	<b>\$6,751,429</b>	<b>100.0%</b>

# Managing Change

## Blue Line Design-Build LRT Expansion Summary of Changes by Basis Code

Change Basis	# Changes	% Total Volume	Value of Changes	% Total Cost
Administrative	28	40.0%	(\$794,559)	43.6%
Contractor Requested	1	1.4%	(\$3,000)	0.0%
Design Improvement	1	1.4%	\$24,479	0.4%
Owner Requested	21	30.0%	\$312,619	5.5%
Site Condition	5	7.1%	\$634,322	9.5%
Third Party	14	20.0%	\$2,739,327	41.0%
<b>TOTALS</b>	<b>70</b>	<b>100.0%</b>	<b>\$2,913,189</b>	<b>100.0%</b>