On The Fly
Real-Time Traffic Control
A Reality with Design-Build
(DFW Connector)

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Kimley®Horn
Presentation Overview

• Project background
• What is “real-time engineering”?
• What could possibly go wrong?
DFW CONNECTOR ALTERNATIVES

- **Configuration 3**
- **May 15, 2009 Negotiated Scope**
- **Configuration 2 Deferred Construction**
DFW Connector Production and Management Structure

Production Centers

- Traffic/ITS (KHA)
- Areas 1-3 (BF)
- Areas 4-6 (PB)
- Utilities
- ROW

Task Force Leads

- Traffic/ITS (KHA)
- Structures (PB)
- Walls (PB)
- Drainage (PB)
- Roadway (PB)
- Schedule (PB)
- Geotech (PB)
- Paving (PB)
- MOT (PB)
- Environmental (PB)
- PI (NGC)
- Quality (NGC)
- ROW (NGC)
- Survey (NGC)
- Aesthetics (NGC)
- Utility (NGC)

KHA Team Role

- Illumination (T&P)
- Guide Signs (T&P)
- ITS (T&P)
- Traffic Signals (T&P)
- Signal Timing (T&P)
- Small Signs (P)
- Pavement Markings (P)
- TMC w/ KITS (T)
- TMC Operations (T)
- Tolling Coordination (P)
- Traffic Studies (T&P)
- Post Design Support

PB = Parsons Brinkerhoff
BF = Bridgefarmer
KHA = Kimley-Horn
NGC = NorthGate Constructors
PI = Public Information
MOT = Maintenance of Traffic
TMC = Traffic Management Center

T = Temporary
P = Permanent

NorthGate Constructors
Kimley-Horn and Associates, Inc.
DFWC by the Numbers

- $1.02 to >$1.36
- >2100
- 42
- 4
- 136
- >150
DFWC by the Numbers

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DFWC by the Numbers

• $1.02 to >$1.36 billion for construction
• >2100 unique traffic and ITS plan sheets
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DFWC by the Numbers

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- 42 separate traffic and ITS plan packages
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DFWC by the Numbers

• $1.02 to >$1.36 billion for construction
• >2100 unique traffic and ITS plan sheets
• 42 separate plans packages
• 4 different styles of traffic signal poles
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DFWC by the Numbers

- $1.02 to >$1.36 billion for construction
- >2100 unique traffic and ITS plan sheets
- 42 separate plans packages
- 4 different styles of traffic signal poles
- 136 post-design CDs, FDCs, NDCs, NCRs, and RFIs
- >150
DFWC by the Numbers

- $1.02 to >$1.36 billion for construction
- >2100 unique traffic and ITS plan sheets
- 42 separate plans packages
- 4 different styles of traffic signal poles
- 136 post-design CDs, FDCs, NDCs, NCRs, and RFIs
- >150 times we were called out on traffic signal timing issues
Real-Time Engineering

• Time between design and final construction
• Goal is to keep traffic moving safely with minimal impact on the construction schedule
• Monitoring existing conditions
TMC and Interim Communications
Temporary ITS HighMast (2)
Real-Time Engineering

- Time between design and final construction
- Goal is to keep traffic moving safely with minimal impact on construction schedules
- Monitoring existing conditions
- Being prepared for .......... ANYTHING!
Being Prepared for ........ANYTHING

- Construction schedule modifications (a.k.a., you’ve got to be *&^%# kidding me)
- Design “oops”
- Unexpected field conditions
- Working at night
- Plan changes in other Disciplines
- Construction “oops”
- Communication lapses
- Outside culprits and the phone call
Light Speed Construction
Let’s Not Get Ahead of Ourselves
Say What?
Being Prepared for .......ANYTHING

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Designing Around Beautiful Decorative Bases
Being Prepared for …….ANYTHING

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Utility Conflict and Field Changes Result in Accessibility Issues
Yesterday would have been a better day to install louvers!
They wish they had taken this old mast arm down then too!
Being Prepared for ........ANYTHING

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Night Work
Night Work
Night Work
Not a Good Day!
Being Prepared for anyTHING

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Size Matters

Beam Trumps Mast Arm
The Adjustments
What if we change the retaining wall design?
Emergency Signal Pole Replacement

Signal in a barrel

...and where ever one fits
Being Prepared for ........ANYTHING

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Expect the Unexpected
Expect the Unexpected
Being Prepared for ……ANYTHING

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Let’s wait to turn on the new signal ....again. Someone left us a pile of dirt this time.
Ernest Dean – Existing Operations
Ernest Dean – Proposed Operations
Ernest Dean – Proposed Operations
Ernest Dean – Proposed Operations
Ernest Dean – Existing Operations with New Road Configuration
Being Prepared for …… ANYTHING

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The Phone Call

“Your traffic signals aren’t working correctly and the approaches are backed up in all directions. Come out here and take care of this!!”

– Where?
– When?
– What did you change this time?
– How long will this change last?
Why are there long back-ups?
Some of the Culprits

- Clock drift
- Accidents
- Lane reductions
- The outside culprit
Traffic backing up on Frontage Road and Ramps

• Provided with information of 3 approach lanes

• Maybe not aware that there was only one lane feeding the approach
Sometimes the problem is the diamond is moving too much traffic

Unaware that critical movements were feeding a single lane
Some of the Culprits

- Clock drift
- Accidents
- Lane reductions
- The outside culprit
Mystery Solved