



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

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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**



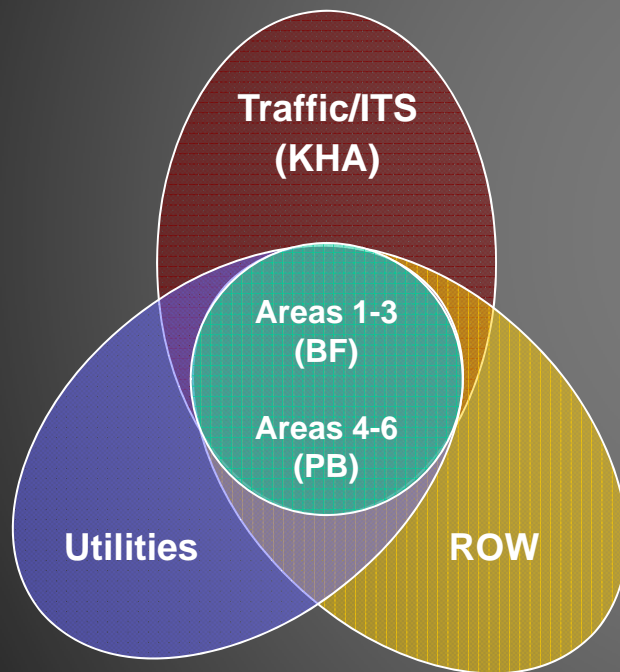
DFW CDA PROGRAM OFFICE



Kimley»Horn

DFW Connector Production and Management Structure

Production Centers



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

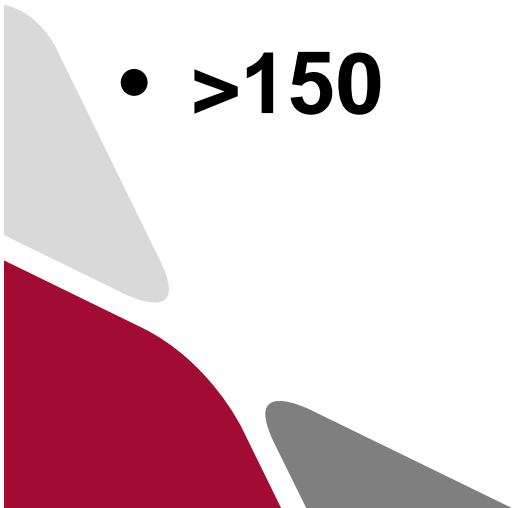
- Illumination (T&P)
- Guide Signs (T&P)
- ITS (T&P)
- Traffic Signals (T&P)
- Signal Timing (T&P)
- Small Signs (P)
- Pavement Markings (P)
- TMC w/ KITS (T)
- TMC Operations (T)
- Tolling Coordination (P)
- Traffic Studies (T&P)
- Post Design Support

T = Temporary
P = Permanent

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

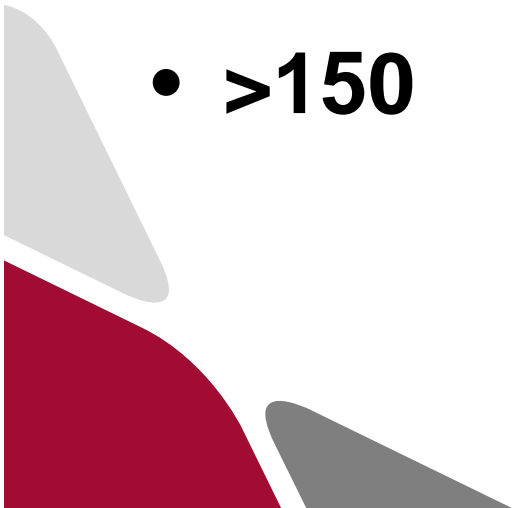
DFWC by the Numbers

- **\$1.02 to >\$1.36**
- **>2100**
- **42**
- **4**
- **136**
- **>150**



DFWC by the Numbers

- **\$1.02 to >\$1.36 billion for construction**
- **>2100**
- **42**
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DFWC by the Numbers

- \$1.02 to >\$1.36 billion for construction
- >2100 unique traffic and ITS plan sheets
- 42
- 4
- 136
- >150

DFWC by the Numbers

- \$1.02 to >\$1.36 billion for construction
- >2100 unique traffic and ITS plan sheets
- 42 separate traffic and ITS plan packages
- 4
- 136
- >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
- >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**

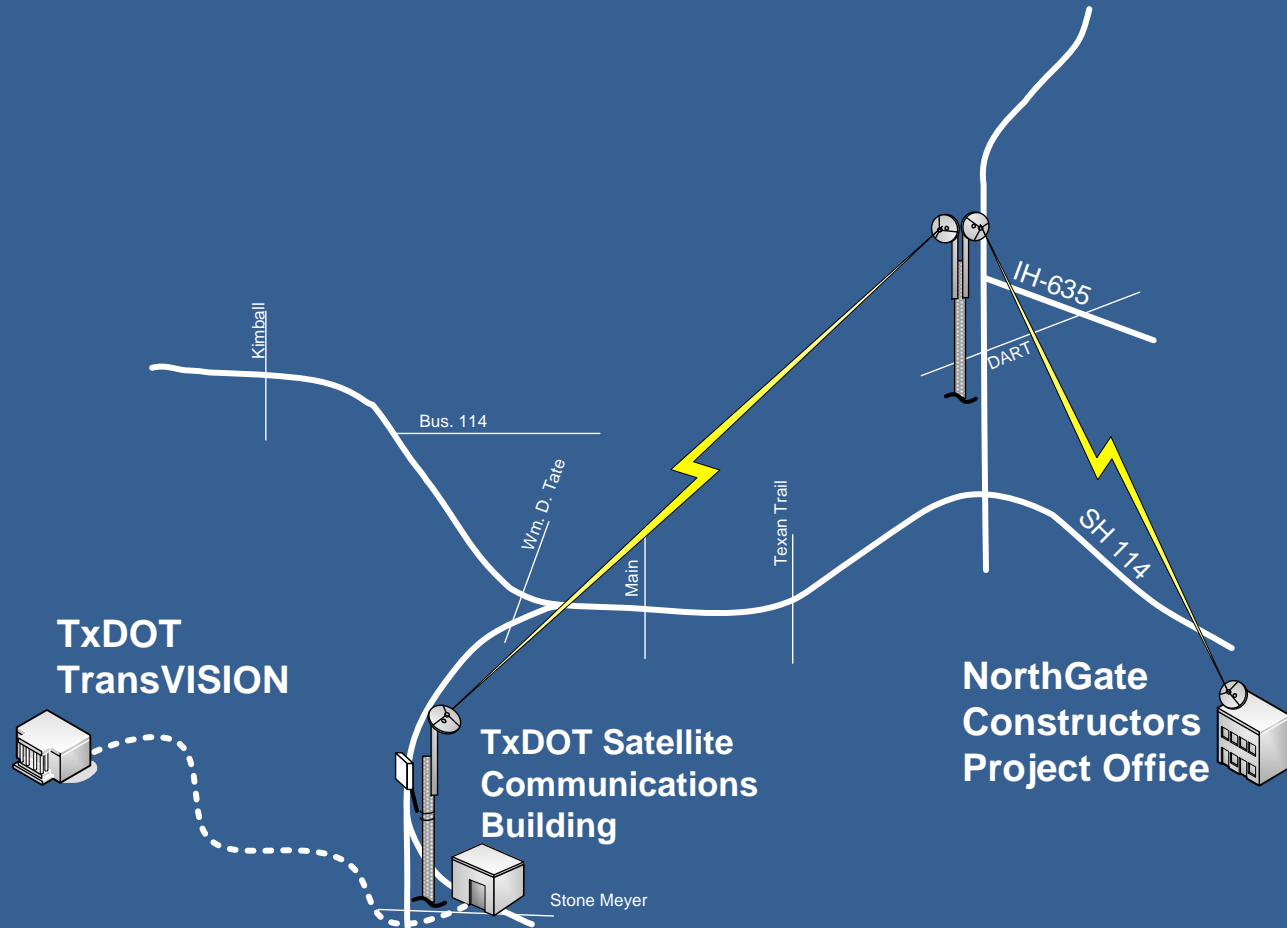
DFWC by the Numbers

- **\$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 forANYTHING

- **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 forANYTHING

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Designing Around Beautiful Decorative Bases



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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!



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Night Work



Night Work



Night Work



Not a Good Day!



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Size Matters

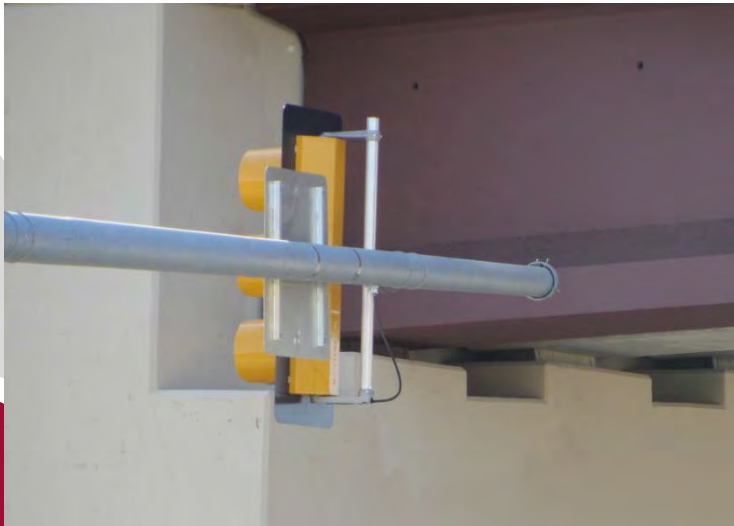
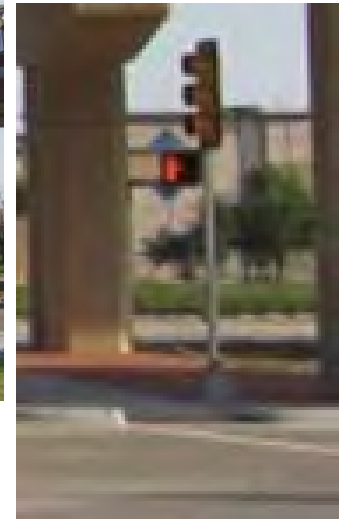


**Beam Trumps
Mast Arm**



Kimley»Horn

The Adjustments



What if we change the retaining wall design?



Emergency Signal Pole Replacement

Signal in a barrel

...and where ever one fits



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Expect the Unexpected



Expect the Unexpected



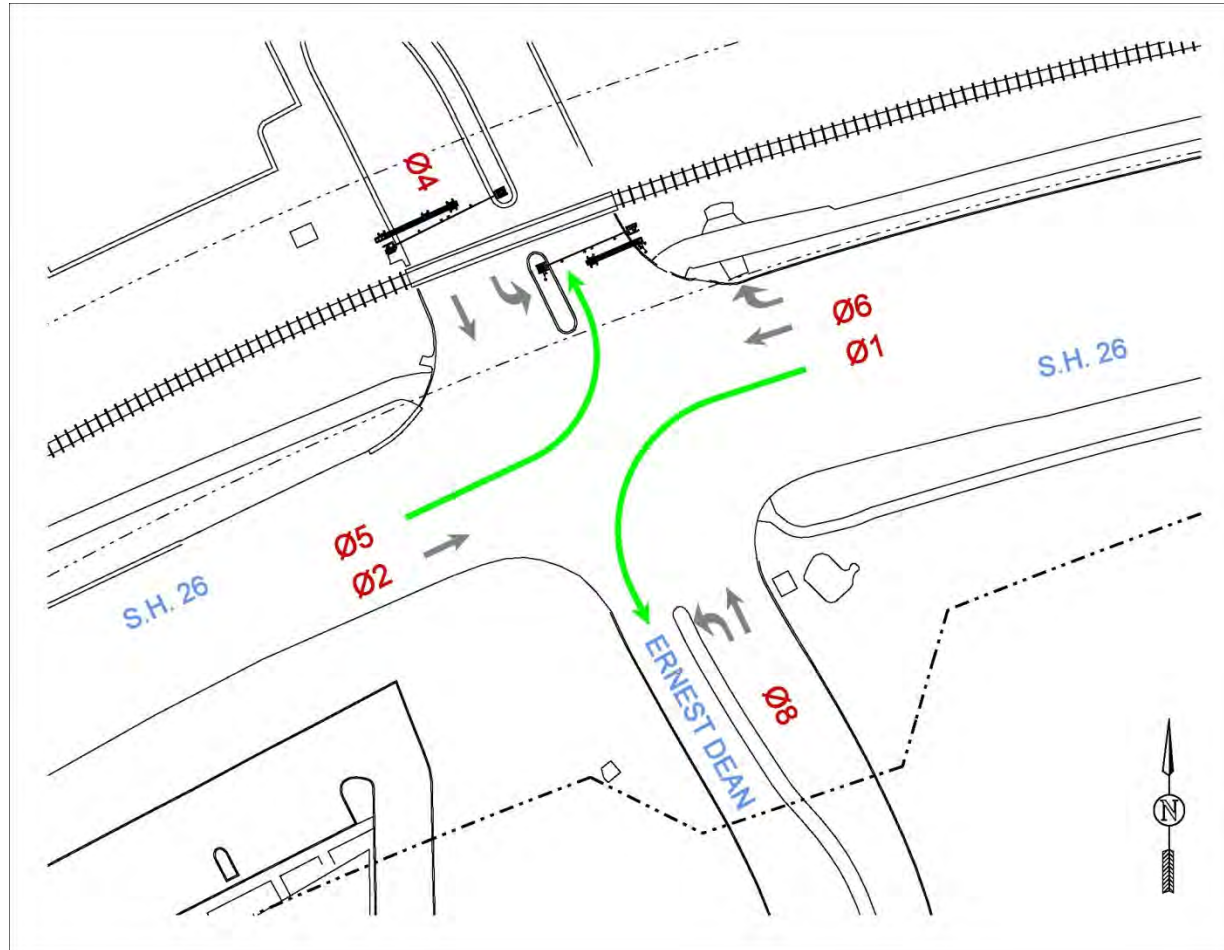
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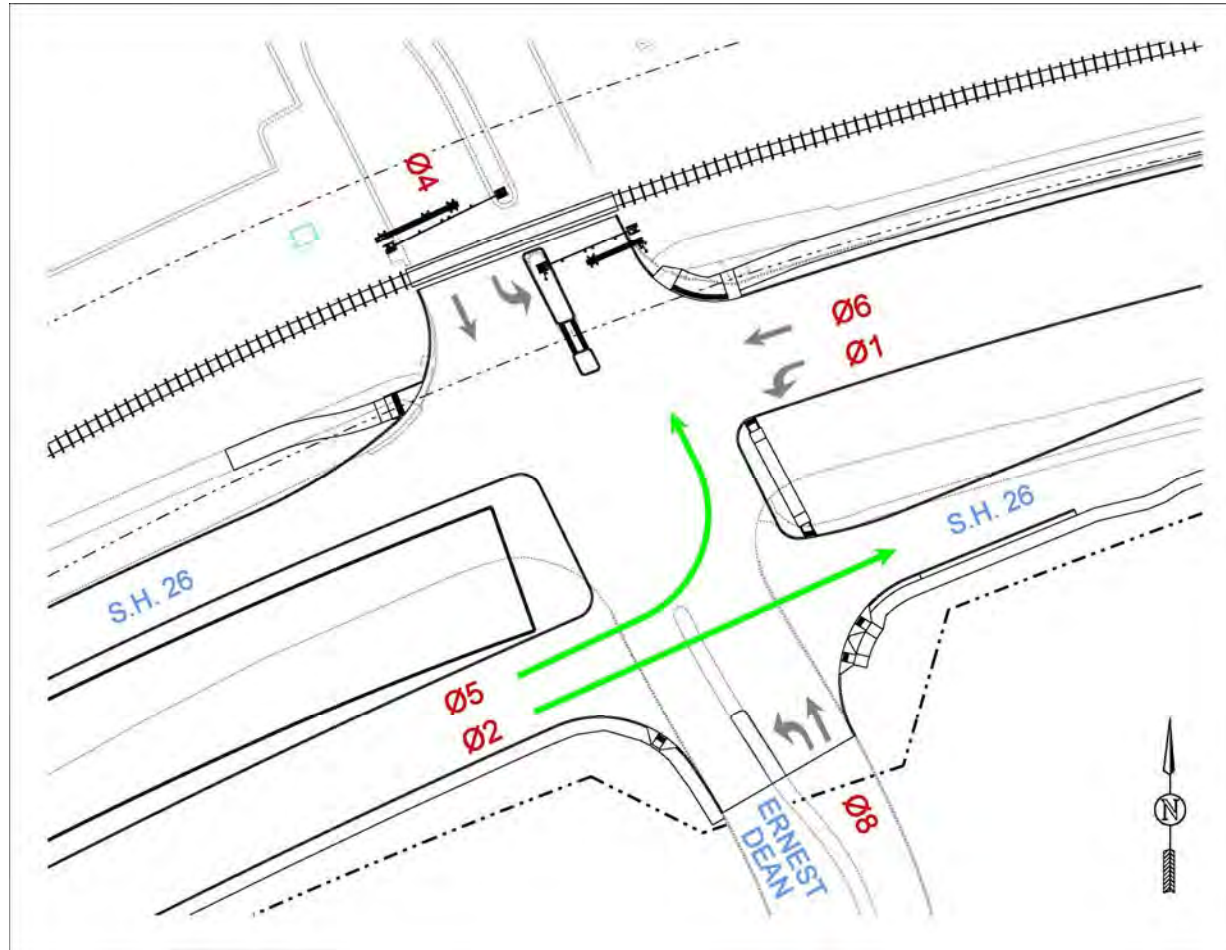
**Let's wait to turn on the new signal
....again. Someone left us a pile of
dirt this time.**



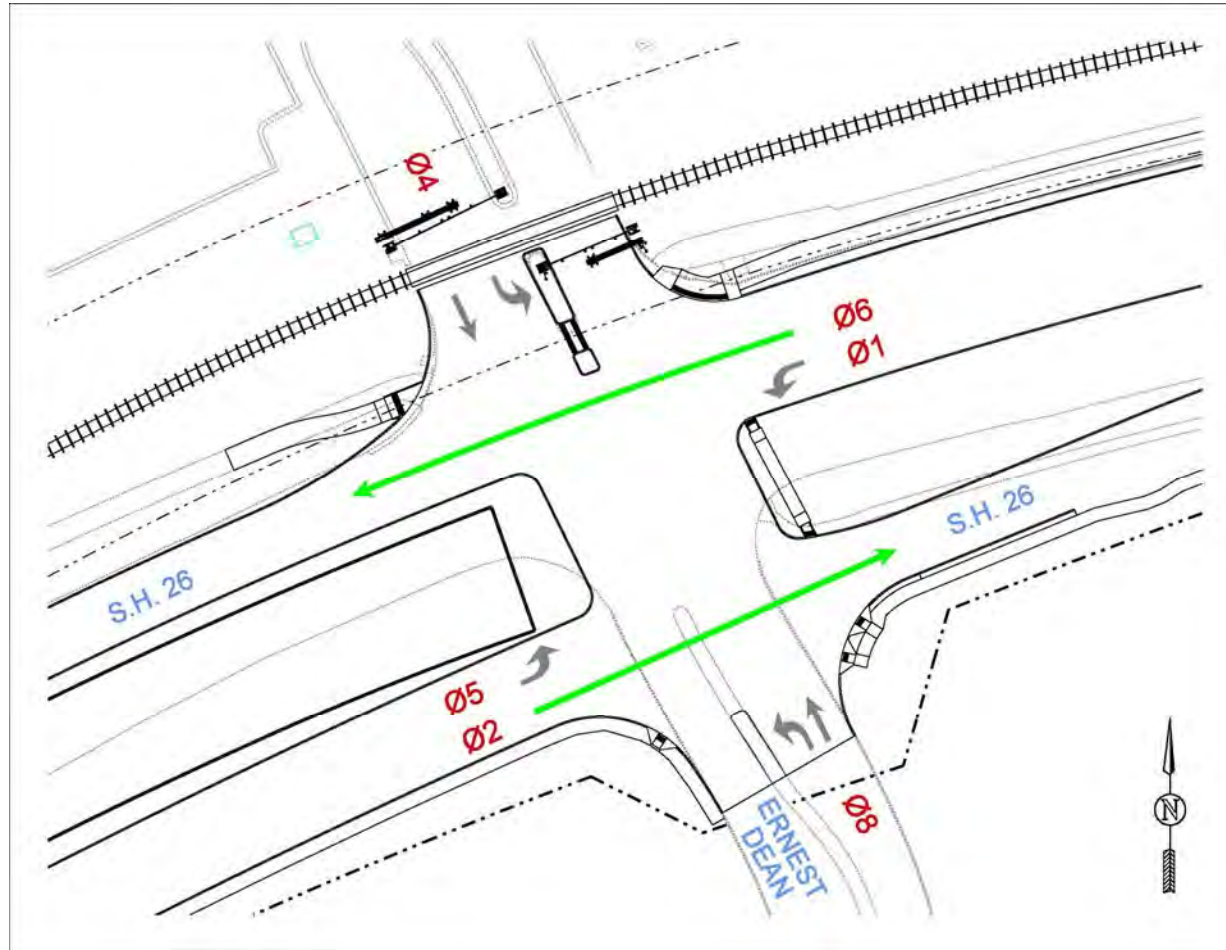
Ernest Dean – Existing Operations



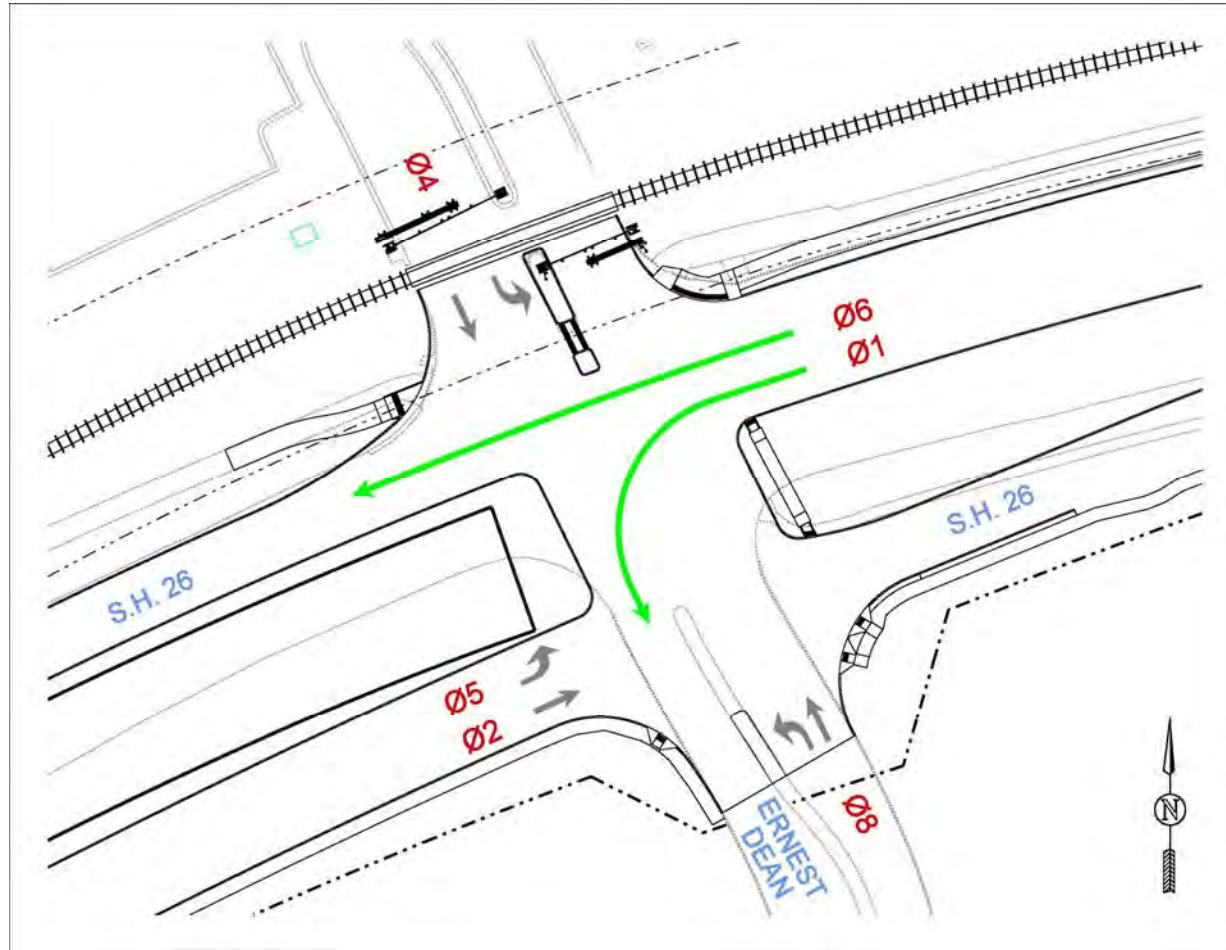
Ernest Dean – Proposed Operations



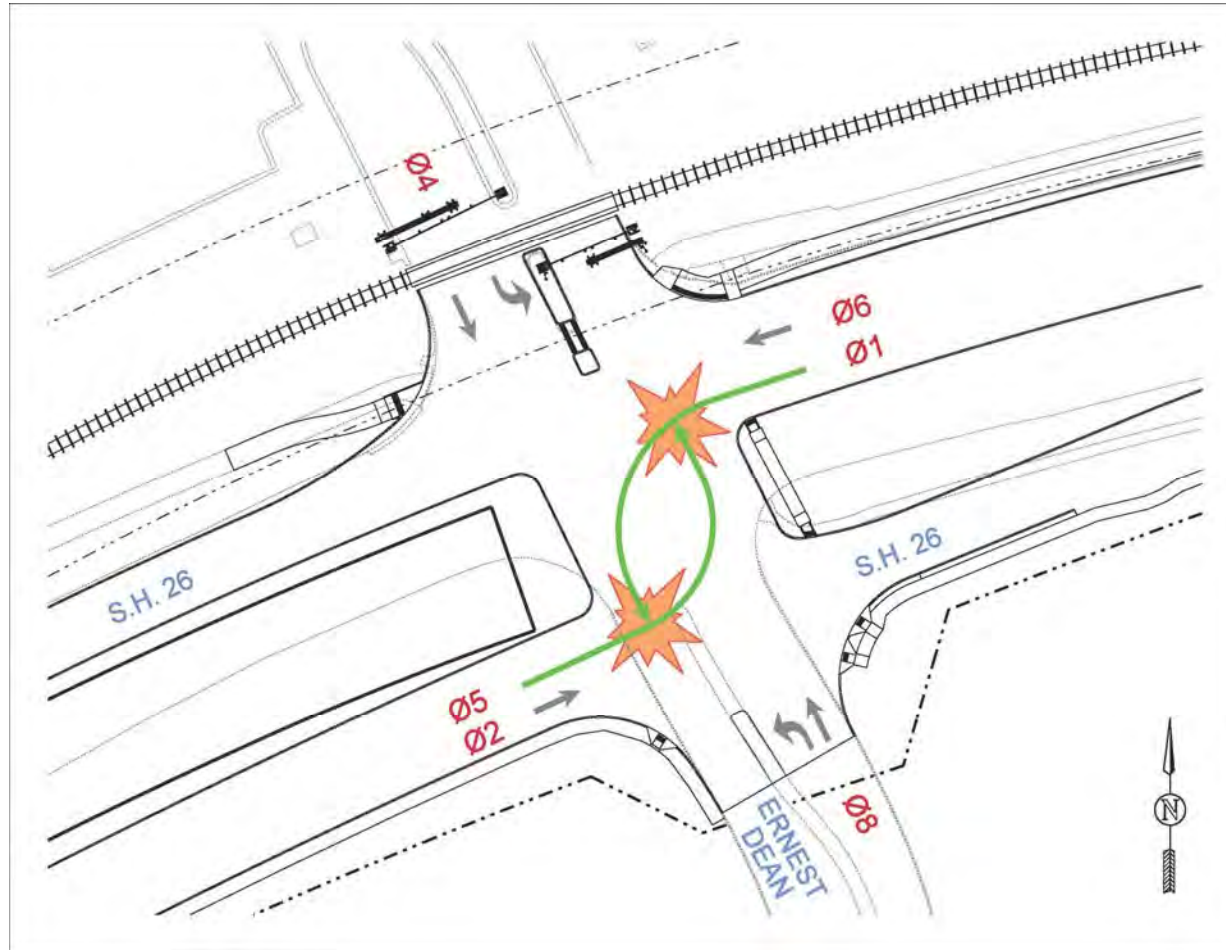
Ernest Dean – Proposed Operations



Ernest Dean – Proposed Operations



Ernest Dean – Existing Operations with New Road Configuration



Being Prepared forANYTHING

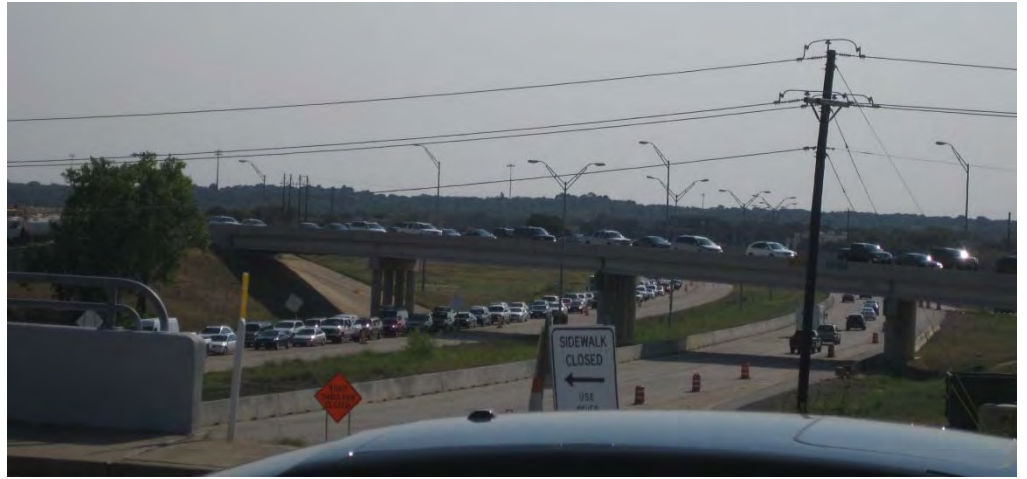
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The Phone Call

“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**



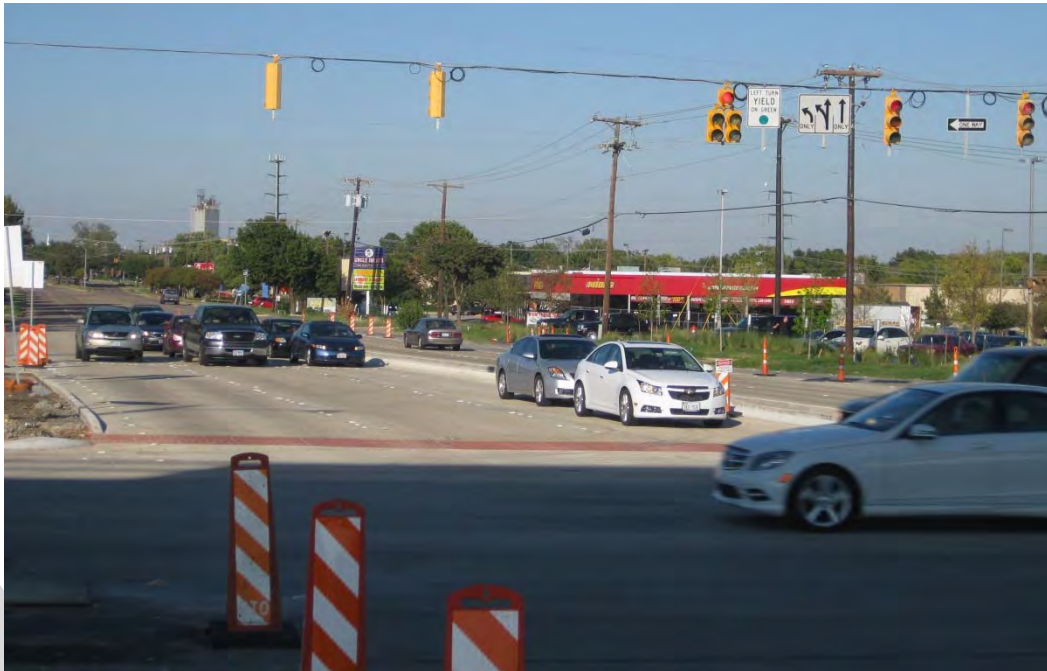
Traffic backing up on Frontage Road and Ramps

- 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



