



UTILITY ENGINEERING IMPLEMENTATION IN TEXAS: LESSONS LEARNED

Charon Williams, TxDOT Right of Way Division

Anna Pulido, TxDOT San Antonio District



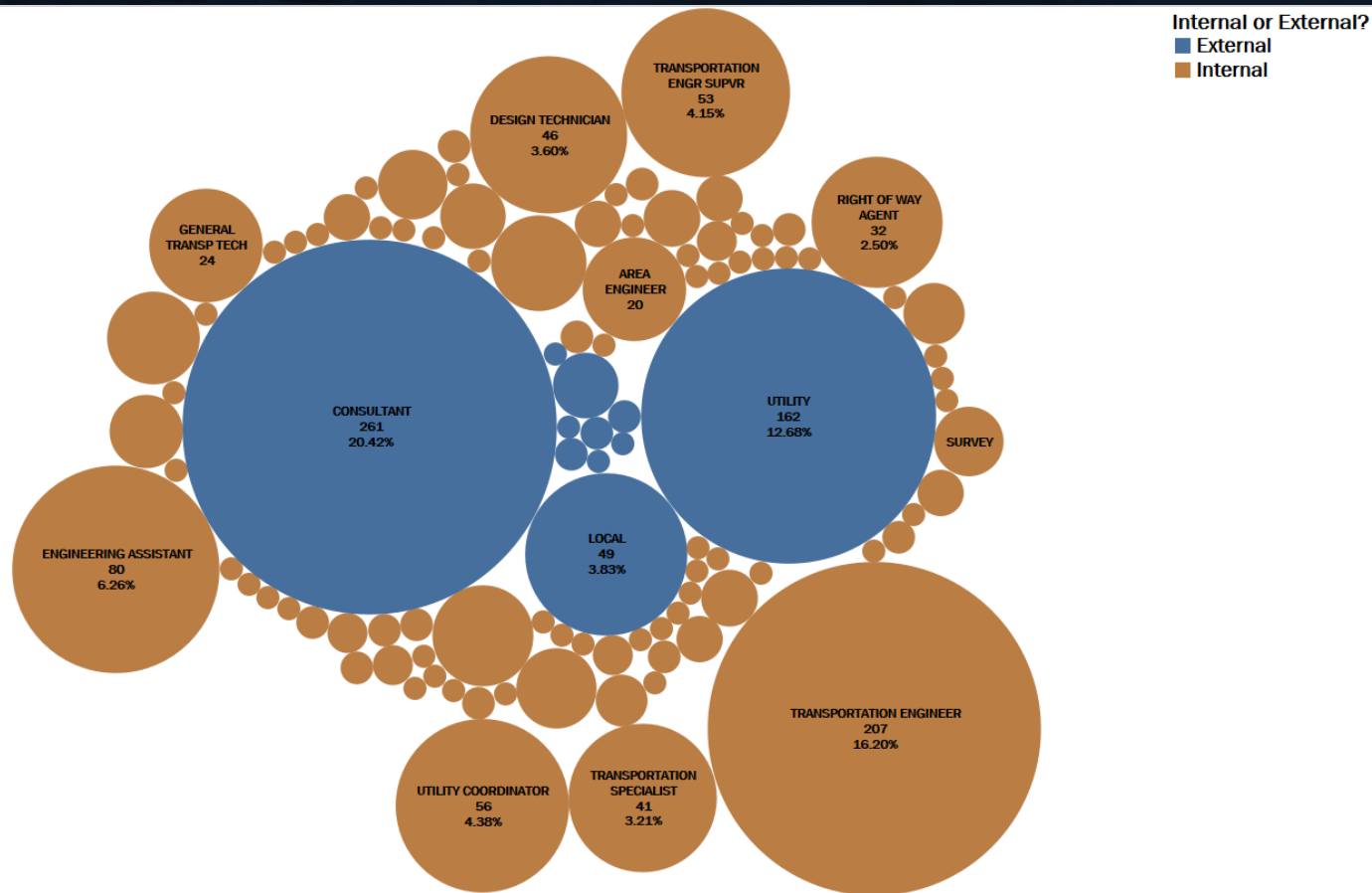
- Two Main Phases:
 - **Phase 1:** One-day Utility Conflict Management (UCM) training course at Metro Districts

 - **Phase 2:**
 - UCM training at all Districts
 - UCM implementation at Metro District projects

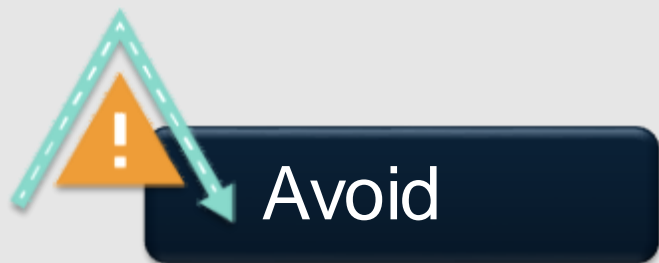
One-Day Course: Identifying and Managing Utility Conflicts

Fiscal Year		Participants	TxDOT Participants	Non-TxDOT Participants
FY 2016	Total	224	136	88
	Average	45	27	18
	Percentage		61%	39%
FY 2017	Total	836	505	331
	Average	35	21	14
	Percentage		60%	40%
FY 2018	Total	411	267	144
	Average	34	22	12
	Percentage		65%	35%
Overall	Total	1471	908	563
	Average	36	22	14
	Percentage		62%	38%

One-Day UCM Training Course – Participants by Title



Utility Conflict Management Emphasis



One-Day Course: Lessons Learned

- Positive comments from participants taking the class
 - Increased awareness of project delivery process
 - Emphasis on early utility coordination and identification of conflicts
 - More project managers and designers should take the class
- Many practices regarding utility data documentation and conflict management
 - Almost 20 sample projects reviewed and used for the afternoon exercise
 - Utility investigation timing, scope, quality, and completeness
 - Mapping and documentation on project files
 - Information conveyed to contractors (both highway and utility)
- UCM process is a good model moving forward
 - Standardization is critical

UCM Implementation Monitoring – Selected Projects

District	Project	Description
Austin	FM 971, SH 95 to SH 130 in Travis County	Widening lanes, shoulders, nine bridge culverts
Dallas	SH 352 from Kearney St to US 80 in Dallas County	Widening lanes
Fort Worth	Old: FM 156 in North Tarrant County (3.78 mi) New: US 377 in Hood and Johnson Counties (2.50 mi)	Four-lane urban minor arterial, curb and gutter Four-lane divided highway with bridge over railroad
Houston	SH 36 in Fort Bend County (8.06 mi)	Hurricane Evacuation Route - widen to 4 lane divided highway
San Antonio	US 281 north of Stone Oak in Bexar County (4.15 mi)	Six-lane expressway with frontage roads



SAN ANTONIO DISTRICT PILOT PROJECT

US 281 – Segment 2



US 281 Segment 2- 0.8 miles North of Stone Oak to County Line

- Scope: Two general purpose lanes and one HOV lane in each direction along with necessary transition and auxiliary lanes
- Let Date: July 2018 (moved up from December 2018)
- Estimated Construction Start Date: January 2019
- ROW/Utilities:
 - 54 parcels acquired (within a year timeframe)
 - Ongoing utility coordination with SAWS water & sewer, CPS gas, CPS overhead electric, AT&T, Spectrum, GVTC, and Level 3/CenturyLink
 - Joint bid utilities include SAWS water, SAWS sewer and CPS gas
 - Estimated Non-joint Bid Utility Clearance Date: December 2019
- Estimated Construction Completion Date: Fall/Winter 2022

**Let Date:
July 2018**

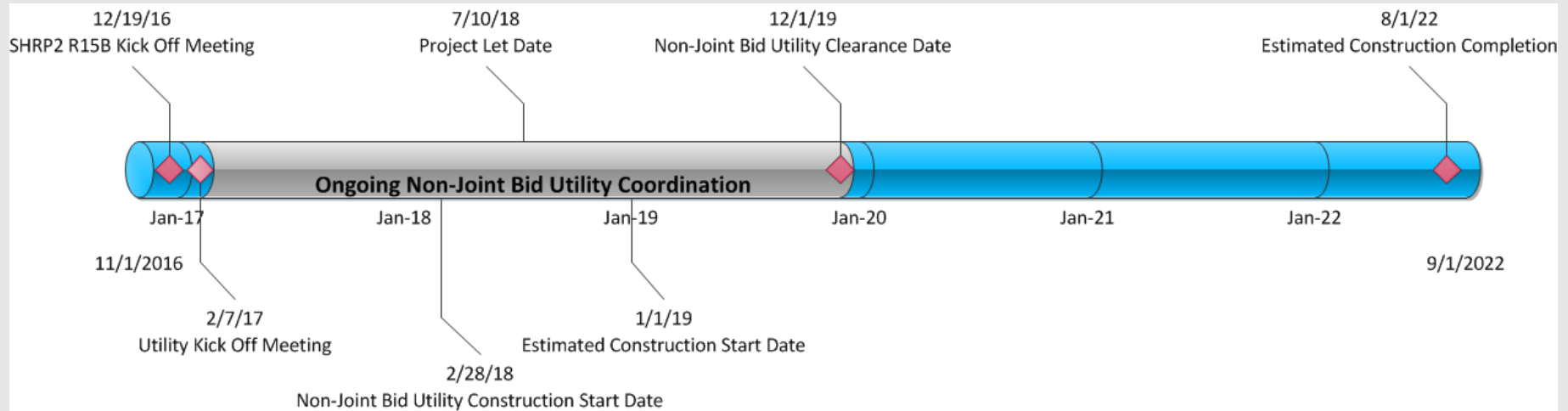


NOTE: Highlighted areas are not drawn to scale

Construction Cost: \$179M

US 281 Segment 2- 0.8 miles North of Stone Oak to County Line

Project Timeline



US 281 Segment 2- 0.8 miles North of Stone Oak to County Line

- Environmental Challenges:
 - Pending Environmental Clearance
 - Overhead electric work was included in TxDOT Biological Opinion
- ROW Acquisition Challenges:
 - Property Owners not wanting to vacate
- Vegetation Clearing: 100% Complete
 - Close coordination with our ROW team
- Overhead electric power pole relocation:
 - Approximately 400 poles will be relocated
 - Construction started on 2/28/18
 - Estimated Completion (including existing pole removal): 12/2019
 - Telecoms attached to poles: Level 3/Centurylink, Spectrum, AT&T, and GVTC

US 281 Segment 2- 0.8 miles North of Stone Oak to County Line



Avoid, Minimize, Accommodate (AMA) Approach

- **Avoid:**
 - Lowered the profile of highway (SBFR) 5 feet to avoid transmission line adjustment
 - Cost Savings: ~\$3M (Utility Cost)
 - Time Savings: ~2 years of design and construction time (would not have met letting date)



Avoid, Minimize, Accommodate (AMA) Approach

- **Avoid/Minimize:**
 - Shifted frontage road about 5 feet closer to the main lanes
 - Avoided ~1 mile of transmission 24” water line from being adjusted; only manholes to be adjusted within sidewalk
 - Cost Savings: ~\$1.6M (Utility Cost)
 - Time Savings: ~3 months of construction time (joint bid) and ~1 month in reduced design timeline



Avoid, Minimize, Accommodate (AMA) Approach

- **Accommodate:**
 - Assigned utility relocation corridors
 - Vegetation Clearing for Overhead Utilities
 - Utility Cost Savings: \$1.8M
 - Allowed TxDOT control of schedule

US 281 Segment 2- 0.8 miles North of Stone Oak to County Line



US 281 Segment 2- 0.8 miles North of Stone Oak to County Line



Utility Conflict Management Benefits

- Redesigning around Utilities pays off!
 - Utility Cost Savings within the last 2 years:
 - ~\$4.6M on US281 Phase 2
 - ~\$2.4M on other projects districtwide
 - Time Savings (design and construction):
 - ~2.5 years on US281 Phase 2
 - ~1.5 years on other projects districtwide
 - Building Relationships: Priceless!



Utility Conflict Management Benefits



Utility Portfolio Program Update – Business Process Improvements

Challenges

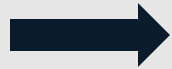
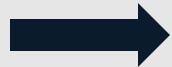
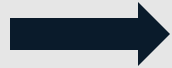
Utility Coordination and SUE was occurring too late in the project cycle (30% or 60% PS&E)

Some Utility Owners would not begin their design until ROW was acquired due to fear of canceling project

Utility Owners would not begin their design until all conflicts were identified to avoid redesign

Utilities relied on TxDOT contractor to clear ROW

Major utility relocation could take several years to be completed



Business Process Improvements

Including Utility Coordination and SUE in Schematic Contracts

TxDOT will reimburse utility if projects are “shelved” or cancelled through Master Utility Agreement

1) Some districts design includes underground features (drainage, walls, etc.) within the 30% PS&E plans to identify conflict early

2) TxDOT will reimburse utility for major design changes through Master Utility Agreement

TxDOT will clear ROW in advance of construction project using ROW division contract or bidding

TxDOT designers and project managers will do their best to avoid, minimize, then accommodate utilities

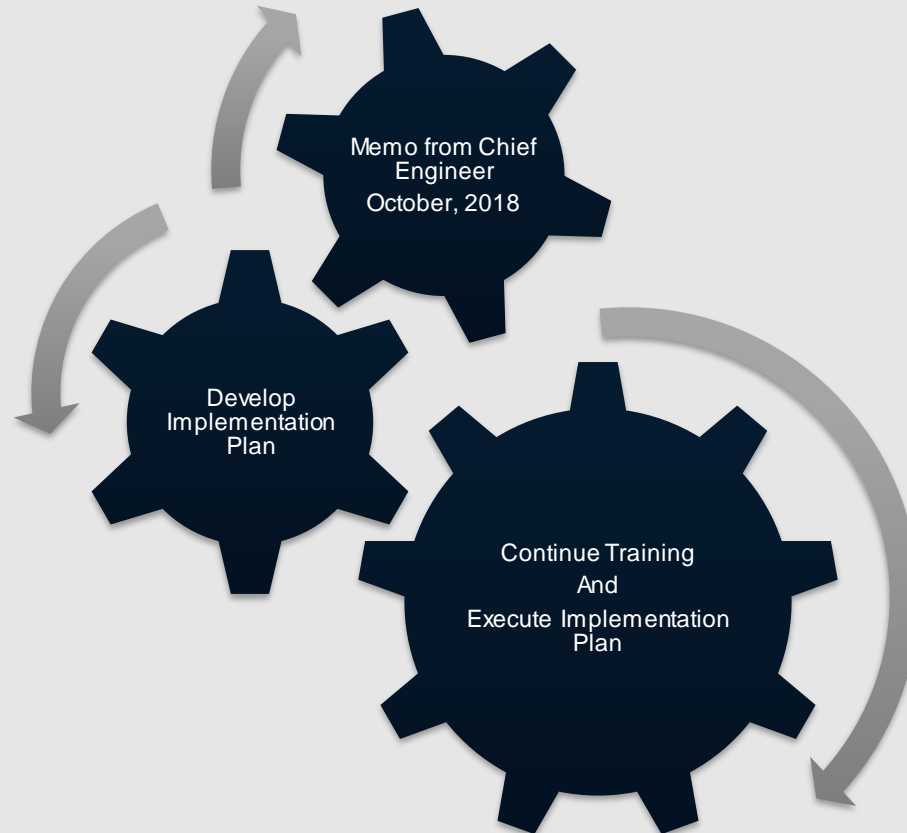
Utility Conflict Management Benefits – Results of Pilot

Efforts currently being tracked have indicated an estimated savings of more than \$9 million, and as many as 38 months in time savings across 4 projects*

District in Pilot / # of Utility Conflicts	Estimated Savings Identified (\$M)	Identified Time Savings
Dallas District (2)	\$0.5	15 months
Fort Worth District (8)	\$1.8	38 months
Houston District (2)	\$2.9	-
San Antonio District (2)	\$4.6	24 months

*Pilot is still in effect through FY '19. It is anticipated that savings will be multiplied as this process is implemented statewide.

Utility Conflict Management – Statewide Implementation



- **CHARON WILLIAMS**

UTILITY PORTFOLIO DIRECTOR, TXDOT

P: (512) 416-2135 E: Charon.Williams@txdot.gov

- **ANNA PULIDO**

UTILITY MANAGER, SAN ANTONIO DISTRICT, TXDOT

P: (210) 615-5989 E: Anna.Pulido@txdot.gov