WORK ZONE TRAFFIC CONTROL

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Expect More. Experience Better.

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MESQUITE
TEXAS
Real. Texas. Service.

27,148

Work Zone Crashes in 2017

199 fatalities

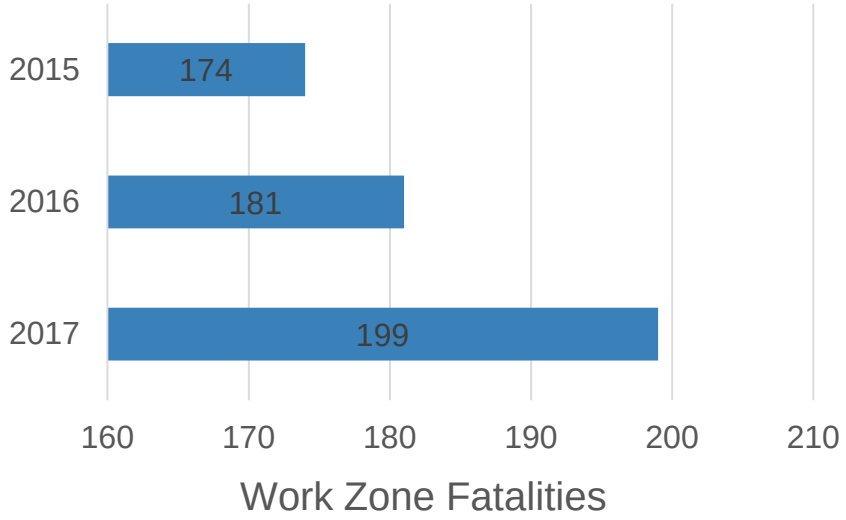
27%

Compared to 2016

Texas Department of Transportation

Why?

SAFETY A CONCERN!



Texas Department of Transportation

Why?

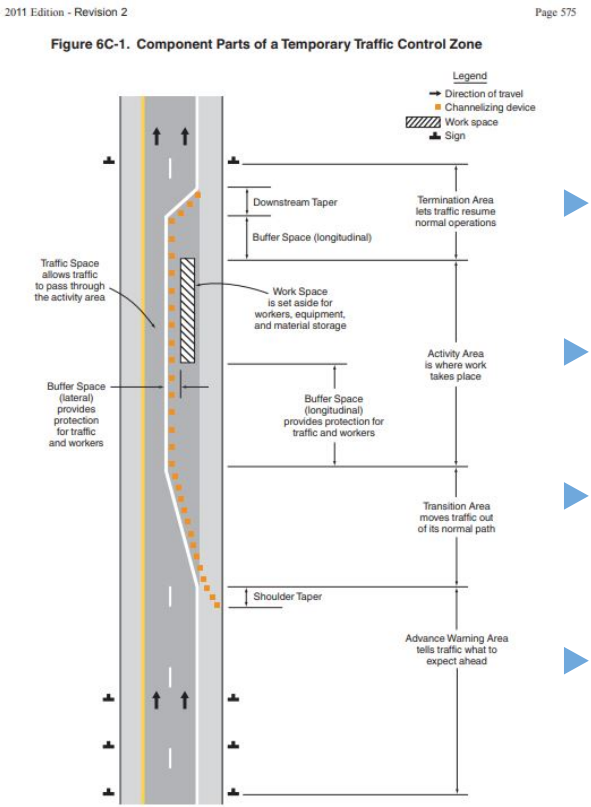
LIABILITY

- Construction Workers, Drivers & Pedestrians
- Defendants may include:
  - Governmental agencies;
  - Corporations; and/or
  - Individuals.
- **Negligence** claims may be supported by evidence and/or argument that:
  - The TCP was inconsistent with MUTCD, AASHTO, or other governing standards;
  - The Work Zone was confusing;
  - The Work Zone did not provide positive guidance;

WORK ZONE COMPONENTS

What goes into it?

Work Zone Components

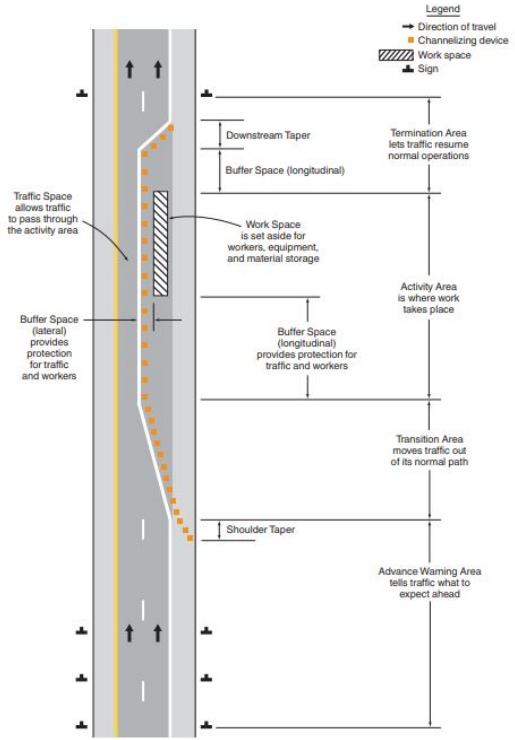


- Termination Area
  Road users Redirected to normal path (TMUTCD, Sec 6C.07)
- Activity Area
- Transition Area
  Road users Redirected from normal path (TMUTCD, Sec 6C.05)
- Advanced Warning Area
  Road users **Informed** (TMUTCD, Sec 6C.04, Table 6c-1)

Source: TMUTCD

Work Zone Components

Figure 6C-1. Component Parts of a Temporary Traffic Control Zone



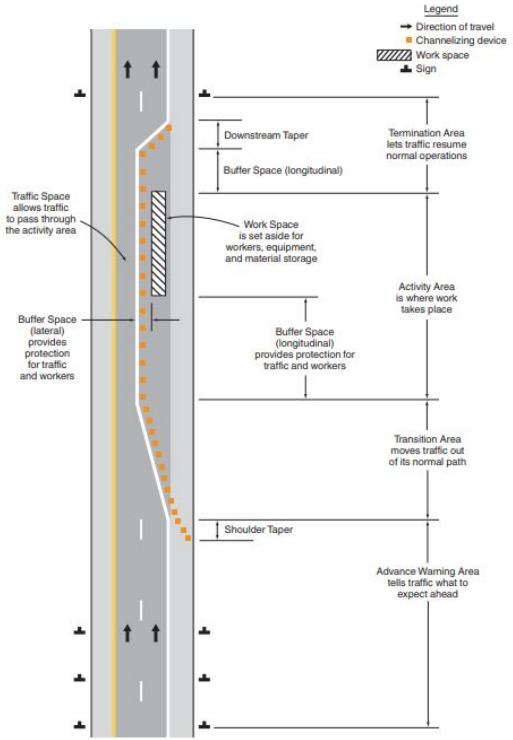
Source: TMUTCD

- Advanced Warning Area

  Road users **Informed** (TMUTCD, Sec 6C.04, Table 6c-1)

Work Zone Components

Figure 6C-1. Component Parts of a Temporary Traffic Control Zone



- Transition Area

  Road users Redirected from normal path (TMUTCD, Sec 6C.05)

Source: TMUTCD

Work Zone Components

Transition Area

Source: TMUTCD

Work Zone Components

Transition Area

Source: TMUTCD

Table 6C-3. Taper Length Criteria for Temporary Traffic Control Zones

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Merging Taper Lengths and Spacing of Channelizing Devices

		* Minimum Desirable Taper Lengths			Suggested maximum Spacing of Channelizing Devices	
Posted Speed	Formula	10' Offset	11' Offset	12' Offset	On a taper	On a tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

* Taper lenghts have been rounded off.

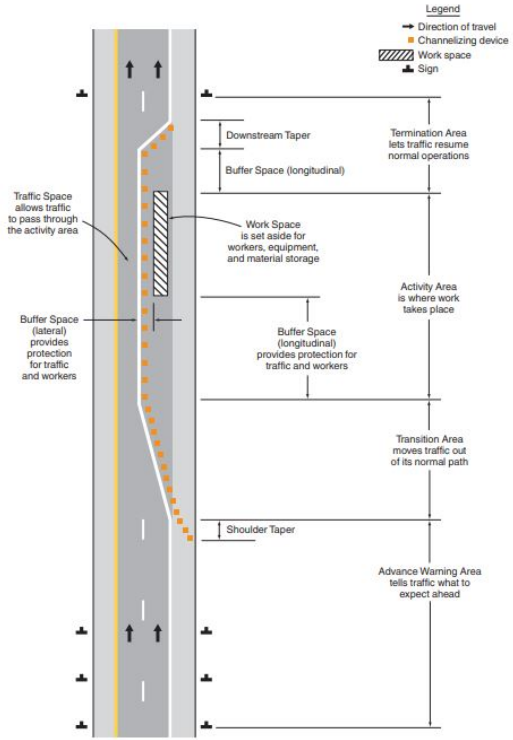
L = Length of Taper (Feet) W = Width of Offset (Feet) S = Posted Speed (MPH)

Work Zone Components

Termination Area

Source: TMUTCD

Figure 6C-1. Component Parts of a Temporary Traffic Control Zone



Termination Area

Road users Redirected to normal path (TMUTCD, Sec 6C.07)

WORK ZONE DESIGN SCENARIOS

How do we design it?

Traffic Control Design Options

- **Traffic Control Narrative**

  General phasing/detour requirements

  Contractor responsible for submitting detailed plans prior to construction

- **Traffic Control Plan**

  Detailed plans depicting all phases of construction

  Prepared by consultant as part of design scope

  Contractor submits plans only if they want to deviate from approved plans

Traffic Control Narrative

TRAFFIC CONTROL NOTES

1. THESE NOTES PERTAIN TO TRAFFIC CONTROL MEASURE ALONG TIMBERLAKE DRIVE ONLY. REFER TO SHEEET C7.02 FOR REQUIREMENTS WITHIN TXDOT RIGHT-OF-WAY.
2. THE CONTRACTOR SHALL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, UPRR, TXDOT, AASHTO, CITY OF ARLINGTON DESIGN CRITERIA MANUAL, AND THE TRAFFIC CONTROL NARRATIVE INCLUDED IN THE PLANS.
3. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR CITY REVIEW AND APPROVAL SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.
4. MINIMUM REQUIREMENTS FOR TRAFFIC CONTROL SHALL INCLUDE:
   - A. MAINTAINING ACCESS TO ALL CROSS STREETS.
   - B. WIDTH OF 22 FOOT EDGE TO EDGE ALL WEATHER RIDING SURFACE AT ALL TIMES TO PERMIT LOCAL TRAFFIC FLOW. LANE WIDTH MINIMUM IS 11-FT, NEED TO MAINTAIN (2) 11-FT LANES AT ALL TIMES.
   - C. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ALONG TIMBERLAKE DRIVE SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE NOTED.
   - D. THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL BUSINESS LOCATIONS AT ALL TIMES DURING THE CONSTRUCTION.
   - E. CONTRACTOR SHALL MAINTAIN EMERGENCY VEHICLE ACCESS, MAIL SERVICE, AND TRASH SERVICE TO ALL ADDRESSES IN THE PROJECT AREA AT ALL TIMES. CONTRACTOR SHALL COORDINATE WITH THE CITY REGARDING EMERGENCY SERVICE ACCESS PRIOR TO PLANNED LANE, ROADWAY OR INTERSECTION CLOSURES.
   - F. TRAFFIC CONTROL MEASURES THAT AFFECT EXISTING SIGNAL OPERATIONS SHALL BE PROHIBITED, UNLESS APPROVED BY THE CITY PRIOR TO IMPLEMENTATION.
4. DAILY LANE CLOSURES FOR WORK ON TIMBERLAKE DRIVE MAY BE IMPLEMENTED BETWEEN THE HOURS OF 9:00AM AND 3:00PM. NO LONG-TERM LANE CLOSURES WILL BE ALLOWED WITHOUT CITY APPROVAL. WORK SHALL BE DONE ONLY DURING THE HOURS BETWEEN 7AM AND 6PM UNLESS WRITTEN APPROVAL FOR EXTENDED HOURS IS OBTAINED FROM THE CITY.
5. CONTRACTOR SHALL NOTIFY CITY OF ARLINGTON AT LEAST 48 HOURS IN ADVANCE OF IMPLEMENTING TRAFFIC CONTROL MEASURES AT INTERSECTIONS.
6. EXISTING PEDESTRIAN ROUTES SHALL BE MAINTAINED AT ALL TIMES OR DETOURED AROUND THE WORK ZONE. PEDESTRIAN TRAFFIC CONTROL SHALL INCLUDE ADVANCED WARNING AND APPROPRIATE SAFETY FEATURES IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, TXDOT, AASHTO, AND CITY GUIDELINES. PEDESTRIAN ROUTES SHALL BE INCLUDED WITH THE CONTRACTOR'S SUBMITTED TEMPORARY TRAFFIC CONTROL PLAN.
7. CONTRACTOR SHALL PROVIDE ELECTRONIC PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) FOR ALL LANE CLOSURES IN EACH DIRECTION OF TRAVEL TO NOTIFY THE PUBLIC OF UPCOMING CLOSURES AND TRAFFIC SHIFTS. PCMS SHALL BE PLACED NO LATER THAN SEVEN (7) CALENDAR DAYS PRIOR TO CLOSURES AND TRAFFIC SHIFTS. CITY SHALL APPROVE ALL MESSAGE BOARD LOCATIONS AND MESSAGES PRIOR TO IMPLEMENTATION.
8. CONTRACTOR SHALL PROVIDE BUSINESS WAYFINDING SIGNS FOR ALL COMMERCIAL DRIVES IMPACTED BY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS PRIOR TO ANY WORK IMPACTING DRIVES.
9. OTHER CONSTRUCTION IMPACTING TRAFFIC PATTERNS IN THE PROJECT AREA MAY TAKE PLACE DURING THIS PROJECT. CONTRACTOR SHALL COORDINATE ANY NECESSARY LANE CLOSURES WITH OTHER WORK TO MAINTAIN TRAFFIC FLOW, ENSURE SAFETY, AND MINIMIZE THE INCONVENIENCE TO THE TRAVELING PUBLIC.
10. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME AT THE END OF THE WORKDAY, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
11. ALL EXISTING SIGNS THAT ARE IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL SETUP SHALL BE REMOVED OR COVERED SO THAT THEY ARE NOT VISIBLE.
12. CONTRACTOR SHALL PROVIDE TEMPORARY SIGNS AND/OR TRAFFIC SIGNAL ADJUSTMENTS DURING EACH CONSTRUCTION PHASE.
13. ALL WORK REQUIRED UNDER THIS CONSTRUCTION CONTRACT SHALL BE FULLY COMPLETED AND READY FOR ACCEPTANCE IN ACCORDANCE WITH THE CONTRACT TIME STATED IN THE CONSTRUCTION CONTRACT.
14. WORK WITHIN THE ROADWAY SHALL BE CONSTRUCTED IN TWO (2) SEPARATE AND SEQUENTIAL PHASES OF WORK AS DESCRIBED IN THE TRAFFIC CONTROL NARRATIVE. CONTRACTOR SHALL NOT WORK ON MORE THAN ONE PHASE AT ANY TIME WITHOUT PRIOR APPROVAL FROM THE CITY. EACH PHASE OF WORK SHALL BE REVIEWED BY THE CITY TO DETERMINE STATUS OF WORK. CONTRACTOR SHALL RECEIVE THE CITY'S APPROVAL BEFORE INITIATING WORK ON EACH SUBSEQUENT PHASE. ALL TRAFFIC CONTROL MEASURES SHALL BE REMOVED PRIOR TO IMPLEMENTING EACH SUBSEQUENT PHASE OF THE PROJECT. CONTRACTOR MAY, AT HIS OPTION, SUBMIT AN ALTERNATE CONSTRUCTION PHASING NARRATIVE FOR CITY REVIEW AND APPROVAL. ANY ALTERNATE PHASING SHALL BE SUBMITTED PRIOR TO THE PRE-CONSTRUCTION MEETING.

SUMMARY OF PHASE CONSTRUCTION

PHASE I CONSTRUCTION (SANITARY SEWER AND SOUTH BOUND LANE)

SOUTH BOUND LANES OF PAVEMENT (22') SHALL BE CONSTRUCTED DURING PHASE I AS WELL AS COMPLETING THE SANITARY SEWER IMPROVEMENTS.

1. PLACE TEMPORARY PAVEMENT MARKINGS FOR THIS PHASE.
2. PLACE CHANNELIZING DEVICES.
3. CONSTRUCT 8" SANITARY SEWER AND SANITARY SEWER MANHOLES
4. CONSTRUCT STORM DRAIN LATERAL EXTENSIONS
5. PLACE FINAL CONCRETE PAVEMENT.
6. CONSTRUCT DRIVEWAYS.

PHASE II CONSTRUCTION (NORTH BOUND LANE)

NORTH BOUND LANES OF PAVEMENT (22') SHALL BE CONSTRUCTED DURING PHASE II.

1. PLACE TEMPORARY PAVEMENT MARKINGS FOR THIS PHASE.
2. PLACE CHANNELIZING DEVICES.
3. CONSTRUCT STORM DRAIN LATERAL EXTENSIONS.
4. PLACE FINAL CONCRETE PAVEMENT.
5. CONSTRUCT DRIVEWAYS.

CONSTRUCTION AT RAILROAD CROSSING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH UNION PACIFIC RAILROAD REGARDING ALL CONSTRUCTION.
2. UNION PACIFIC WILL REQUIRE THAT A FLAGGER BE PRESENT AT ALL TIMES WHEN CONSTRUCTION IS WITHIN 25' OF UNION PACIFIC RIGHT-OF-WAY AND MUST ADHERE TO ALL UPRR REQUIREMENTS.
3. UNION PACIFIC WILL CONSTRUCT RAILROAD PANELS WITHIN THEIR RIGHT-OF-WAY. DURING THIS OPERATION THE RAIL CROSSING WILL BE COMPLETELY CLOSED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL AND DETOUR ROUTES TO ASSIST UNION PACIFIC CONSTRUCTION OPERATIONS. A FULL TRAFFIC CONTROL PLAN INCLUDING DETOUR ROUTE FOR THIS OPERATION SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO CONSTRUCTION FOR CITY REVIEW AND APPROVAL. TRAFFIC CONTROL PLAN SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.

No.	REVISIONS	DATE	BY

PROJECT NO. PW5175006

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PHONE: 214-565-0660
TBPE FIRM REGISTRATION #696
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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
RYAN DELMOTTE
116242
LICENSED
12/30/2016

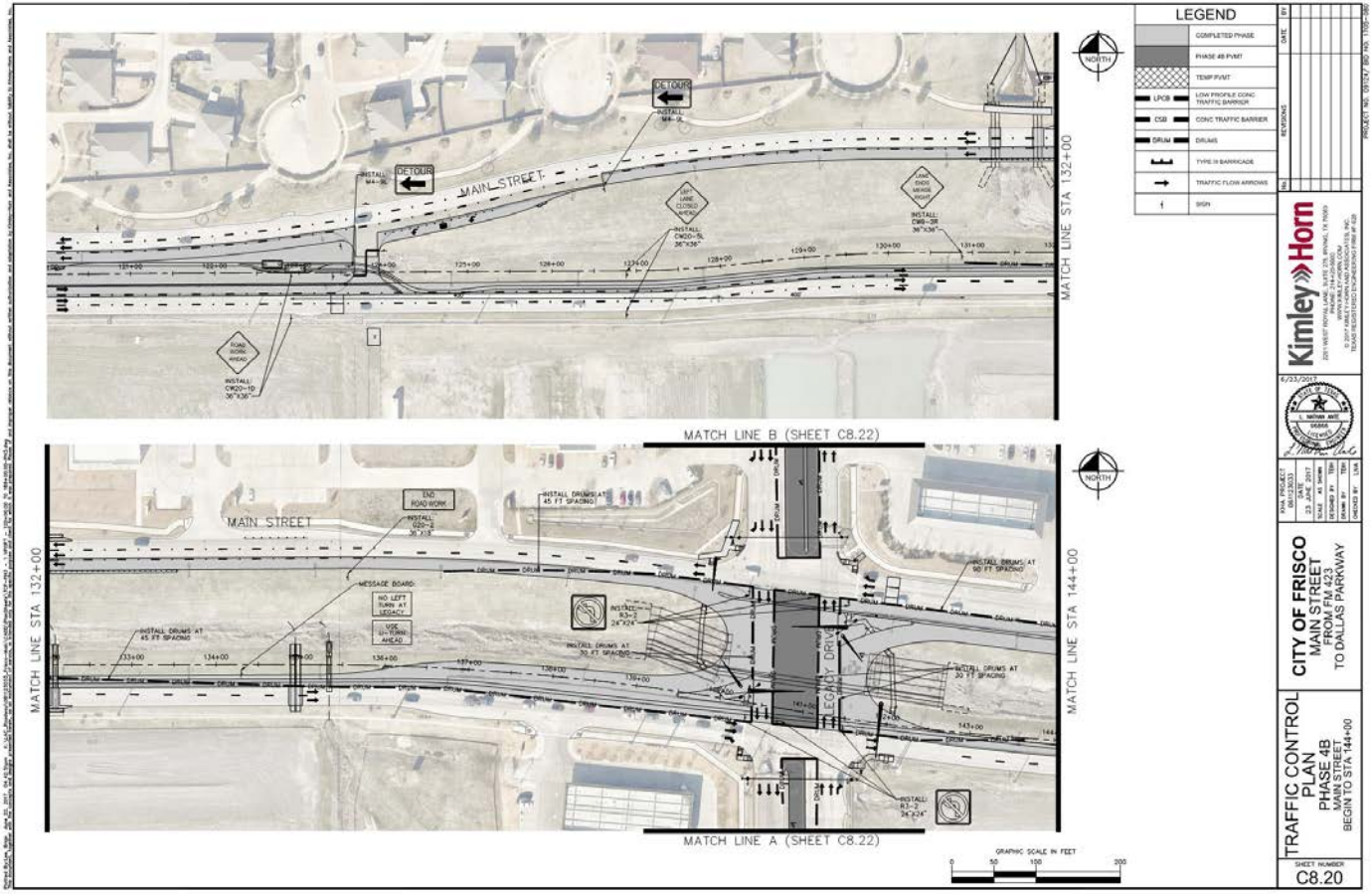
KHA PROJECT 061572032
DATE 11/30/2017
SCALE AS SHOWN
DESIGNED BY RMD
DRAWN BY JC
CHECKED BY DRA

CITY OF ARLINGTON
TIMBERLAKE DRIVE

TRAFFIC CONTROL NARRATIVE

SHEET NUMBER
C7.01

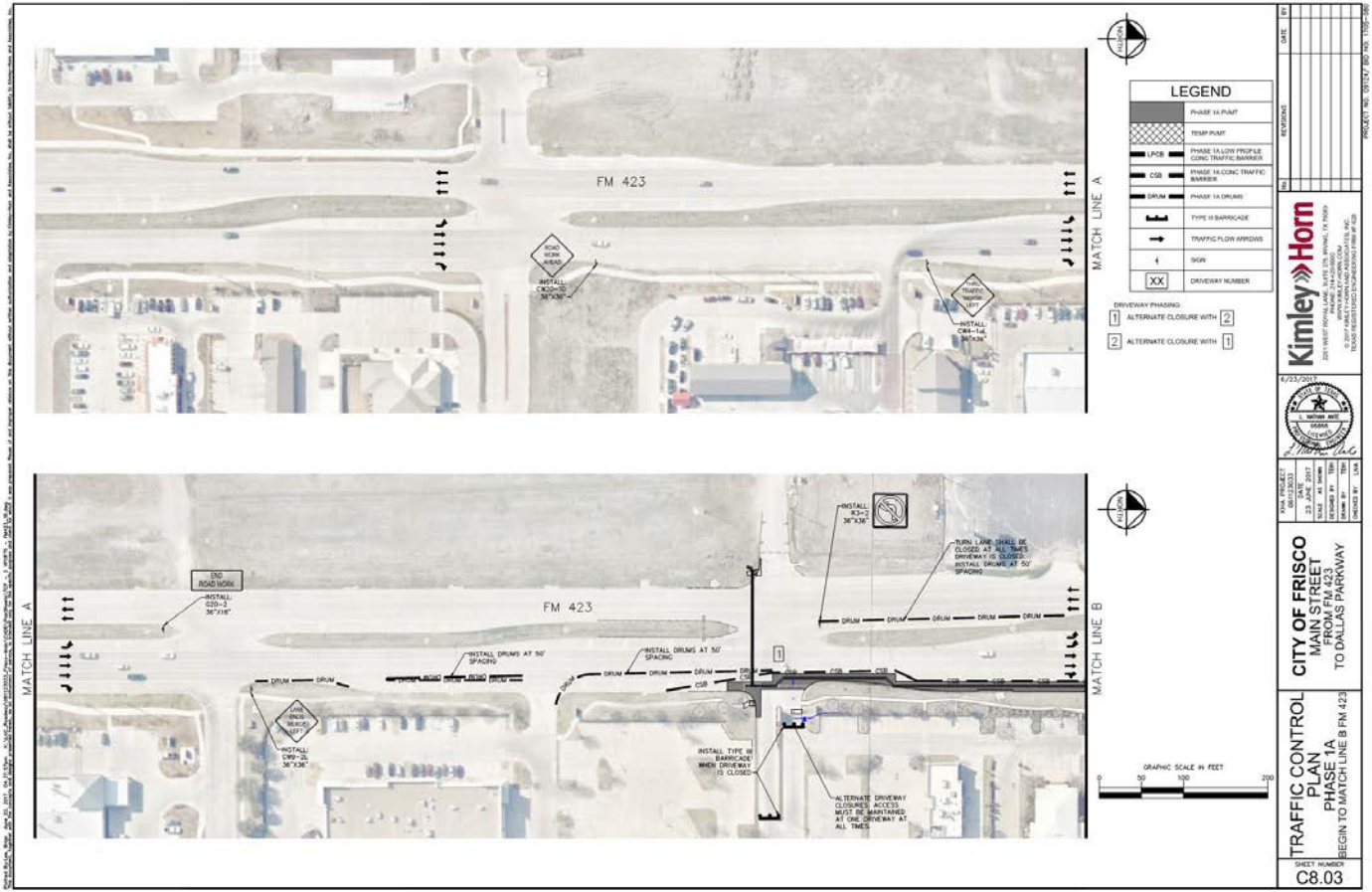
Traffic Control Plan



WORK ZONE
CASE SCENARIOS

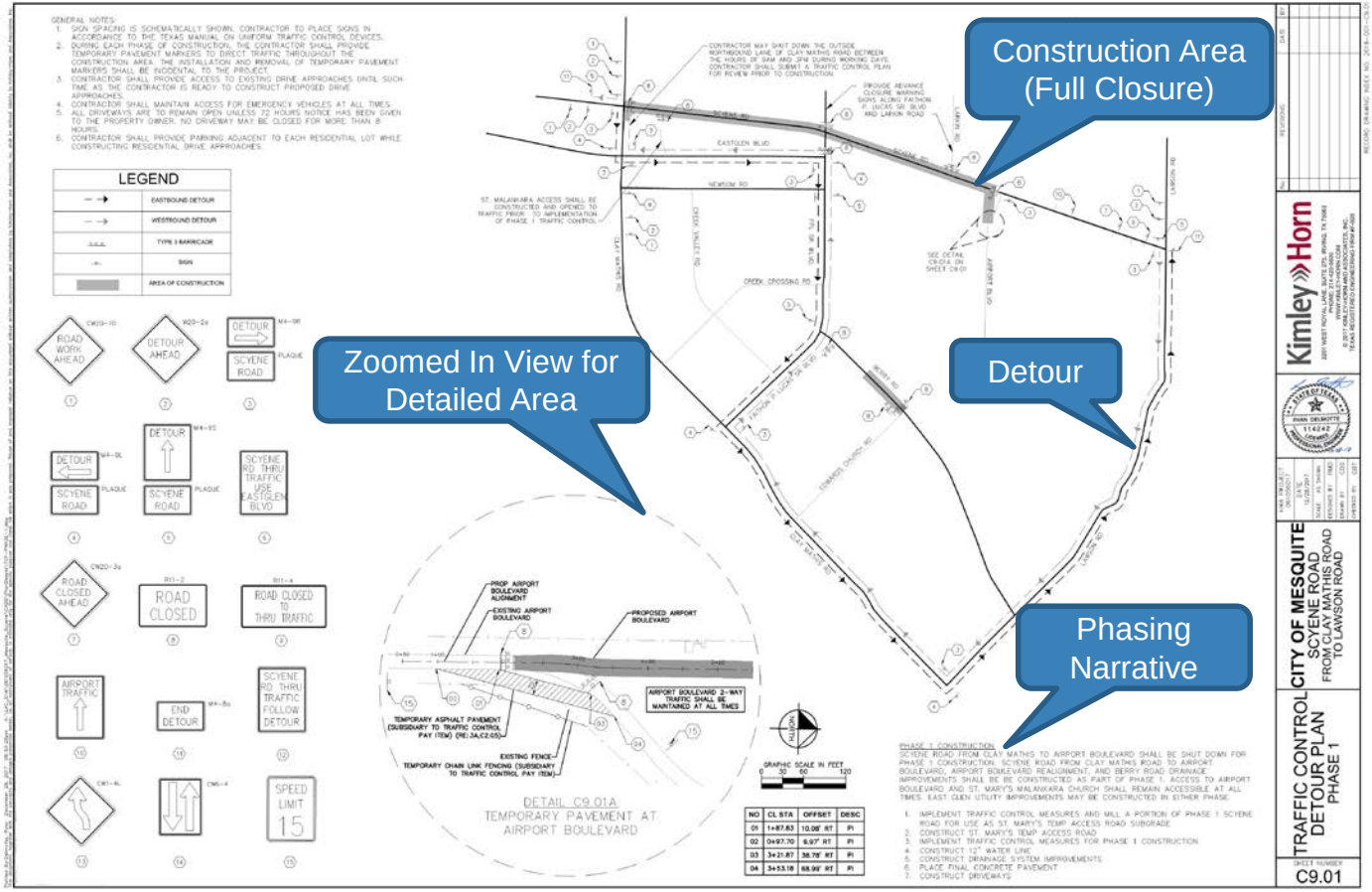
How do we do it?

1-Lane Closure

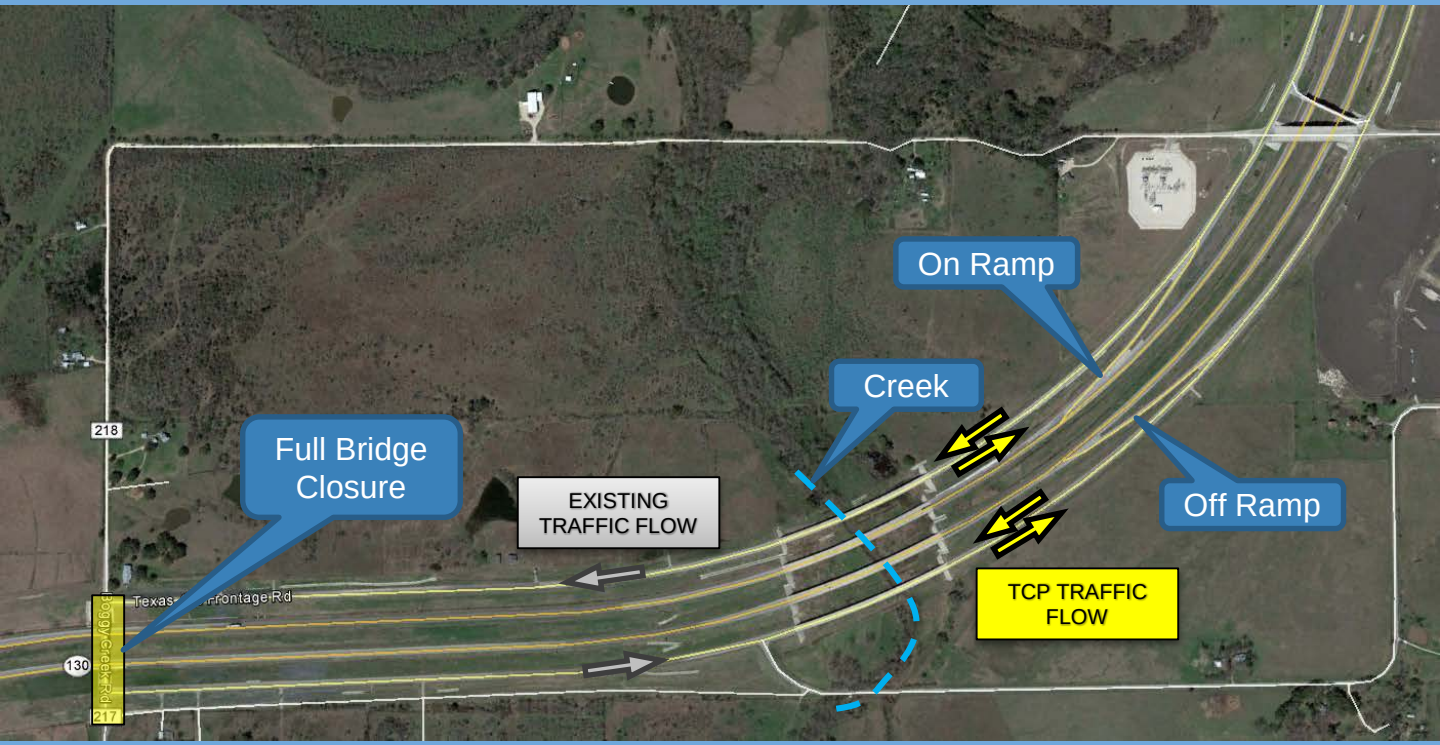


1-Lane Closure

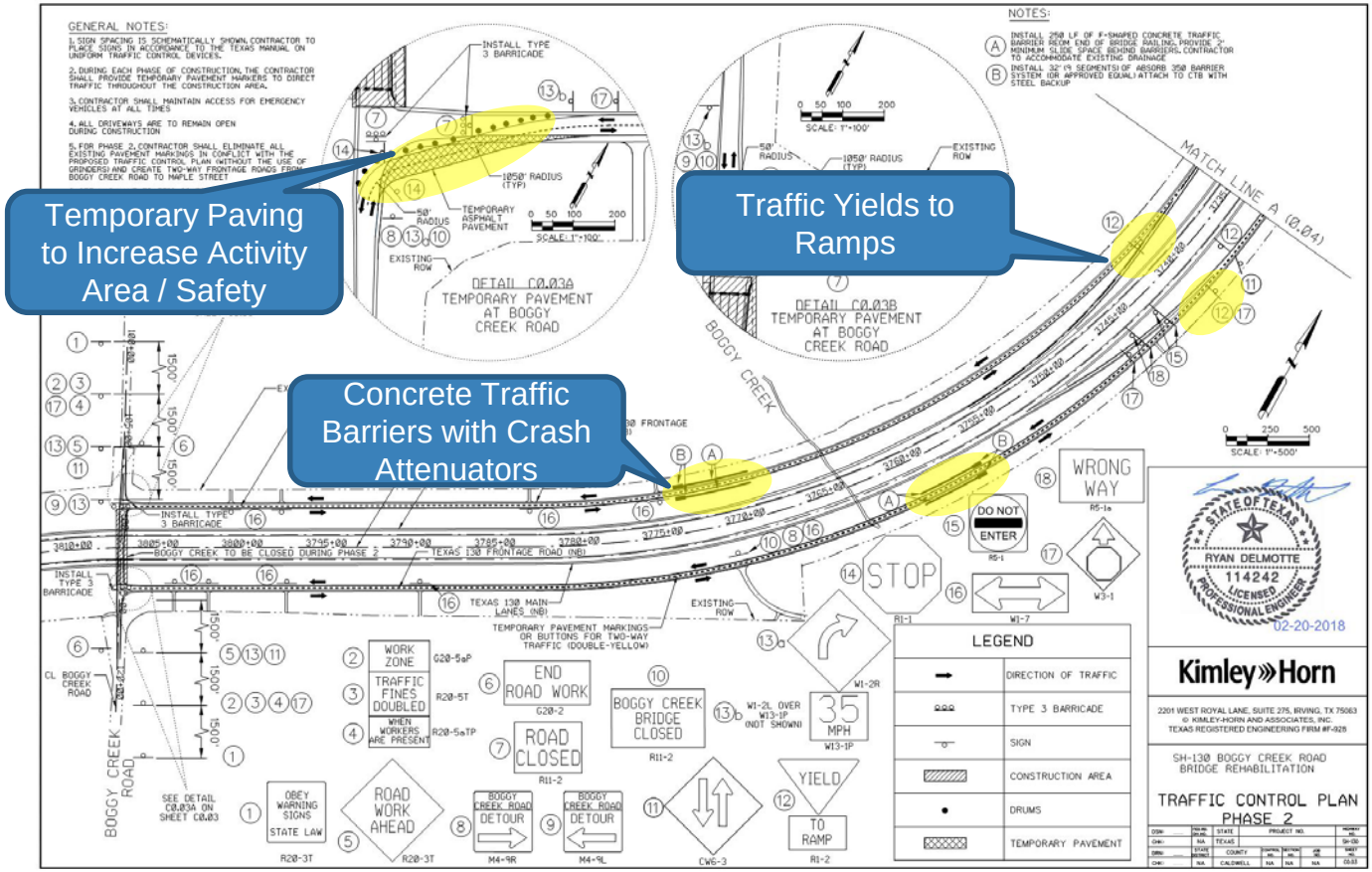
A Mixed Approach



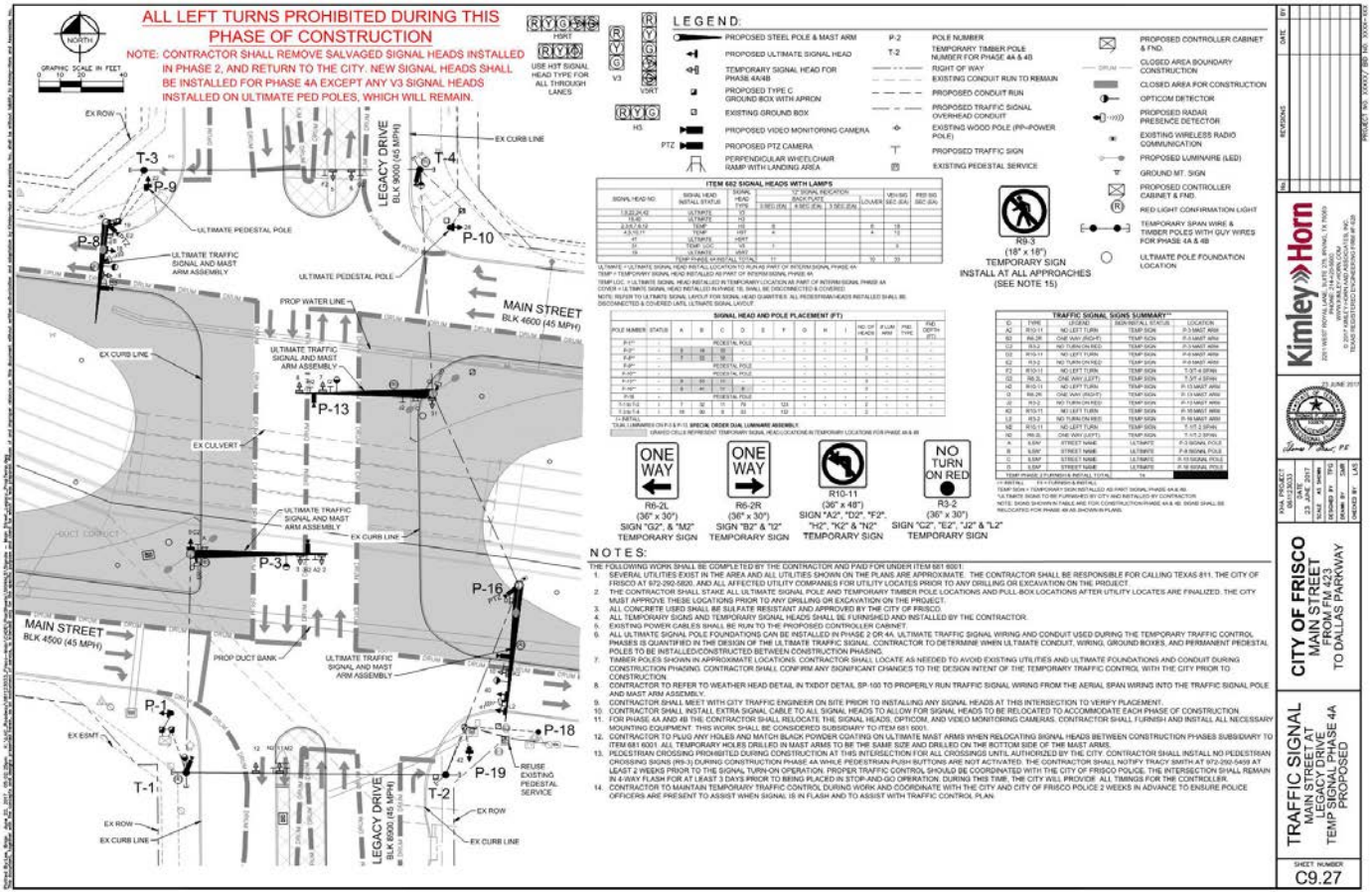
One -Way to Two -Way Traffic



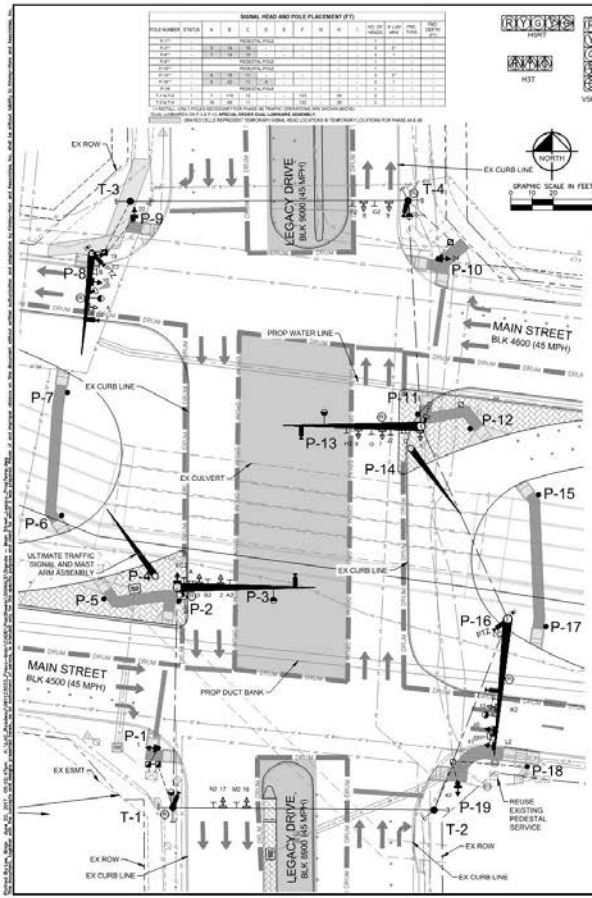
One -Way to Two -Way Traffic



Temporary Signals



Temporary Signals



SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A	B	C	D	E	F	G	H	I	NO. OF HEADS	PLUS ARM AREA	PED. TYPE	PED. DEPTH (FT)
P-1*				PEDESTAL POLE							1	0*		
P-2*		8	18	8							3	0*		
P-3*		8	18	8							3	0*		
P-4*				PEDESTAL POLE							1			
P-5*				PEDESTAL POLE							1			
P-6*		8	18	8							3	0*		
P-7*		8	18	8							3	0*		
P-8				PEDESTAL POLE							1			
P-9				PEDESTAL POLE							1			
T-3 ALTE	1	7	176	11					123		32		2	
T-3 ALTE	2	16	80	11					112		30		2	

(1) INSTALL ONLY POLES NECESSARY FOR PHASE 4B TRAFFIC OPERATIONS (NO SHOWN ABOVE)
DUAL LUMINAIRE ON P-4 & P-10 **SPECIAL ORDER DUAL LUMINAIRE ASSEMBLY**
SHADED CELLS REPRESENT TEMPORARY SIGNAL HEAD LOCATIONS & TEMPORARY LOCATIONS FOR PHASE 4A & 4B

LEGEND:

- PROPOSED STEEL POLE & MAST ARM
- EXISTING STEEL POLE & MAST ARM REMOVED
- PROPOSED SIGNAL HEAD
- TEMPORARY SIGNAL HEAD
- PROPOSED PEDESTRIAN SIGNAL & NUMBER
- PROPOSED TYPE C GROUND BOX WITH APRON
- EXISTING GROUND BOX
- PROPOSED VIDEO MONITORING CAMERA
- PTZ — PROPOSED PTZ CAMERA
- TEMPORARY SPAN WIRE & TIMBER POLES WITH GUY WIRES FOR PHASE 4A & 4B
- P-2 — ULTIMATE POLE NUMBER
- T-2 — TEMPORARY TIMBER POLE NUMBER FOR PHASE 4A & 4B
- RIGHT OF WAY
- EXISTING CONDUIT RUN TO REMAIN
- PROPOSED CONDUIT RUN FOR PHASE 4A
- PROPOSED TRAFFIC SIGNAL OVERHEAD CONDUIT
- EXISTING WOOD POLE (PP=POWER POLE)
- PROPOSED TRAFFIC SIGN
- EXISTING PEDESTAL SERVICE
- PROPOSED CONTROLLER CABINET & FND.
- DRUM — CLOSED AREA BOUNDARY CONSTRUCTION
- CLOSED AREA FOR CONSTRUCTION
- OPTICOM DETECTOR
- PROPOSED RADAR PRESENCE DETECTOR
- PROPOSED WIRELESS RADIO COMMUNICATION
- PROPOSED LUMINAIRE (LED)
- EXISTING GROUND MT. SIGN
- PROPOSED CONTROLLER CABINET & FND.
- PERPENDICULAR WHEELCHAIR RAMP WITH LANDING AREA
- R — RED LIGHT CONFIRMATION LIGHT

NOTES:

THE FOLLOWING WORK SHALL BE COMPLETED BY THE CONTRACTOR AND PAID FOR UNDER ITEM 681 6001:

1. SIGNAL HEADS AND SIGNS FROM PHASE 4A ARE TO BE RELOCATED AS SHOWN AND INDICATED IN TABLE AND LAYOUT.
2. SEVERAL UTILITIES EXIST IN THE AREA AND ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING TEXAS 811, THE CITY OF FRISCO AT 972-292-5620, AND ALL AFFECTED UTILITY COMPANIES FOR UTILITY LOCATES PRIOR TO ANY DRILLING OR EXCAVATION ON THE PROJECT.
3. THE CONTRACTOR SHALL STAKE ALL ULTIMATE SIGNAL POLE AND TEMPORARY TIMBER POLE LOCATIONS AND PULL-BOX LOCATIONS AFTER UTILITY LOCATES ARE FINALIZED. THE CITY MUST APPROVE THESE LOCATIONS PRIOR TO ANY DRILLING OR EXCAVATION ON THE PROJECT.
4. ALL CONCRETE USED SHALL BE SULFATE RESISTANT AND APPROVED BY THE CITY OF FRISCO.
5. CONTRACTOR SHALL INSTALL EXTRA SIGNAL CABLE TO ALL HEADS TO ALLOW FOR HEADS TO BE RELOCATED TO ACCOMMODATE EACH PHASE OF CONSTRUCTION.
6. EXISTING POWER CABLES SHALL BE RUN TO THE PROPOSED CONTROLLER CABINET.
7. FOR PHASE 4A AND 4B THE CONTRACTOR SHALL RELOCATE THE SIGNAL HEADS, SIGNS, OPTICOM, AND VIDEO MONITORING CAMERAS. THESE ITEMS ARE THE SAME FOR PHASE 4A AND 4B, ALTHOUGH THEIR LOCATIONS CHANGE.
8. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY MOUNTING EQUIPMENT.
9. CONTRACTOR TO DETERMINE WHEN ULTIMATE CONDUIT, WIRING, GROUND BOXES, AND PERMANENT PEDESTAL POLES TO BE INSTALLED/CONSTRUCTED BETWEEN CONSTRUCTION PHASING. CONTRACTOR SHALL VERIFY ANY CHANGES TO THE PROPOSED TEMPORARY TRAFFIC CONTROL WITH THE CITY PRIOR TO CONSTRUCTION.
10. TIMBER POLES SHOWN IN APPROXIMATE LOCATIONS. CONTRACTOR SHALL LOCATE AS NEEDED TO AVOID EXISTING UTILITIES AND CONSTRUCTION PHASING. CONTRACTOR SHALL CONFIRM ANY SIGNIFICANT CHANGES TO THE DESIGN INTENT OF THE TEMPORARY TRAFFIC CONTROL WITH THE CITY PRIOR TO CONSTRUCTION.
11. CONTRACTOR TO REFER TO WEATHER HEAD DETAIL IN TXDOT DETAIL SP-100 TO PROPERLY RUN TRAFFIC SIGNAL WIRING FROM THE AERIAL SPAN WIRING INTO THE TRAFFIC SIGNAL POLE AND MAST ARM ASSEMBLY.
12. ULTIMATE TRAFFIC SIGNAL WIRING AND CONDUIT USED DURING THE TEMPORARY TRAFFIC CONTROL PHASES IS QUANTIFIED IN THE DESIGN OF THE ULTIMATE TRAFFIC SIGNAL. CONTRACTOR TO DETERMINE WHEN ULTIMATE CONDUIT, WIRING, GROUND BOXES, AND PERMANENT PEDESTAL POLES TO BE INSTALLED/CONSTRUCTED BETWEEN CONSTRUCTION PHASING.
13. THE CONTRACTOR SHALL NOTIFY TRACY SMITH AT 972-292-5459 AT LEAST 2 WEEKS PRIOR TO THE SIGNAL TURN-ON OPERATION. PROPER TRAFFIC CONTROL SHOULD BE COORDINATED WITH THE CITY OF FRISCO POLICE. THE INTERSECTION SHALL REMAIN IN 4-WAY FLASH FOR AT LEAST 3 DAYS PRIOR TO BEING PLACED IN STOP-AND-GO OPERATION. DURING THIS TIME, THE CITY WILL PROVIDE ALL TIMINGS FOR THE CONTROLLER.
14. CONTRACTOR TO MAINTAIN TEMPORARY TRAFFIC CONTROL DURING WORK AND COORDINATE WITH THE CITY AND CITY OF FRISCO POLICE 2 WEEKS IN ADVANCE TO ENSURE POLICE OFFICERS ARE PRESENT TO ASSIST WHEN SIGNAL IS IN FLASH AND TO ASSIST WITH TRAFFIC CONTROL PLAN.
15. CONTRACTOR TO PLUG ANY HOLES AND MATCH BLACK POWDER COATING ON ULTIMATE MAST ARMS WHEN RELOCATING SIGNAL HEADS BETWEEN CONSTRUCTION PHASES. ALL TEMPORARY HOLES DRILLED IN MAST ARMS TO BE THE SAME SIZE AND DRILLED ON THE BOTTOM SIDE OF THE MAST ARMS.
16. CONTRACTOR SHALL MEET WITH CITY TRAFFIC ENGINEER ON SITE PRIOR TO INSTALLING ANY SIGNAL HEADS AT THIS INTERSECTION TO VERIFY PLACEMENT.
17. PEDESTRIAN CROSSING PROHIBITED DURING CONSTRUCTION AT THIS INTERSECTION FOR ALL CROSSINGS UNTIL AUTHORIZED BY THE CITY. CONTRACTOR SHALL INSTALL NO PEDESTRIAN CROSSING SIGNS (R9-3) DURING CONSTRUCTION PHASE 4B WHILE PEDESTRIAN PUSH BUTTONS ARE NOT ACTIVATED.

ALL LEFT TURNS PROHIBITED DURING THIS PHASE OF CONSTRUCTION

NOTE: PROPOSED LAYOUT SHOWS ULTIMATE CONDUIT, WIRING, GROUND BOXES, SIGNAL POLES, AND PEDESTAL POLES THAT COULD BE CONSTRUCTED BEFORE/DURING PHASE 4B. CONTRACTOR TO DETERMINE WHEN ULTIMATE IS TO BE INSTALLED/CONSTRUCTED BETWEEN CONSTRUCTION PHASING.

CABLE TERMINATION CHART

	CNDR COLOR	CABLE 1 FROM P-1 TO CNTRL IN CNDR	CABLE 2 FROM P-2 TO CNTRL IN CNDR	CABLE 3 FROM P-3 TO CNTRL IN CNDR	CABLE 4 FROM P-4 TO CNTRL IN CNDR	CABLE 5 FROM P-5 TO CNTRL IN CNDR	CABLE 6 FROM P-16 TO CNTRL IN CNDR	CABLE 7 FROM P-17 TO CNTRL IN CNDR	CABLE 8 FROM T-1/T-2 TO CNTRL IN CNDR	CABLE 9 FROM T-4/T-4 TO CNTRL IN CNDR
1	BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	E. COMMON	E. COMMON	E. COMMON	E. COMMON	E. COMMON	E. COMMON	E. COMMON	E. COMMON	E. COMMON
3	RED	SH 1 R	SH 2,3,7 R	SH 4,10,19 R	SH 22 R	SH 2,3,4 R	SH 10,40,41 R	SH 42 R	SH 16, 17 R	SH 5, 9 R
4	GREEN	SH 1 G	SH 2,3,7 G	SH 4,10,19 G	SH 22 G	SH 2,3,4 G	SH 10,40,41 G	SH 42 G	SH 16, 17 G	SH 5, 9 G
5	ORANGE	SH 1 Y	SH 2,3,7 Y	SH 4,10,19 Y	SH 22 Y	SH 2,3,4 Y	SH 10,40,41 Y	SH 42 Y	SH 16, 17 Y	SH 5, 9 Y
6	BLUE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
7	WHITE/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
8	RED/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
10	ORANGE/BLACK	SH 31	SH 31	SH 19	SH 41	SH 41	SH 41	SPARE	SPARE	SPARE
11	BLUE/BLACK	SH 31	SH 31	SH 19	SH 41	SH 41	SH 41		SPARE	SPARE
12	BLACK/WHITE		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
13	RED/WHITE		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
14	GREEN/WHITE		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
15	BLUE/WHITE		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
16	BLACK/RED		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
17	WHITE/RED		RLC OL X	RLC OL X		RLC OL X	RLC OL 11		RLC OL 9	RLC OL 10, 12
18	ORANGE/RED		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
19	BLUE/RED		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE
20	RED/GREEN		SPARE	SPARE		SPARE	SPARE		SPARE	SPARE

NOTE: 2 CONDUCTOR 12 AWG TO BE RUN TO EACH APS PUSH BUTTON STATION. REFER TO ULTIMATE SIGNAL LAYOUT FOR SIGNAL HEAD QUANTITIES.
RLC = RED LIGHT CONFIRMATION
SHADED CELLS REPRESENT TEMPORARY CHANGES FOR PHASE 4B

No.	REVISIONS	DATE	BY

PROJECT NO. XXXXX / BID NO. XXX-XX

Kimley»Horn
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TEXAS REGISTERED ENGINEERING FIRM #F-928

23 JUNE 2017
Jason P. Shaw, P.E.

JOB PROJECT 69-0003
DATE 23 JUNE 2017
SCALE AS SHOWN
DESIGNED BY: JPS
DRAWN BY: SKR
CHECKED BY: LAS

CITY OF FRISCO
MAIN STREET
FROM FM 423
TO DALLAS PARKWAY

TRAFFIC SIGNAL
MAIN STREET AT LEGACY DRIVE
TEMP SIGN PHASE 4B PROPOSED

SHEET NUMBER
C9.29

WORK ZONE PRACTICAL STEPS

How do we implement it?

ACTION PLAN

- **DRAFT** YOUR TCP
  - **REVIEW** YOUR TCP
- **COMMUNICATE** YOUR TCP
  - **REVIEW** YOUR TCP
- **IMPLEMENT** YOUR TCP
  - **REVIEW** YOUR TCP

ACTION PLAN

COMMUNICATE YOUR TCP

ACTION PLAN

- **COMMUNICATE** YOUR TCP

Roadclosures@yourcity .com

ACTION PLAN

IMPLEMENT YOUR TCP

BEFORE

- REVIEW
- PLAN FOR CONTINGENCIES

ACTION PLAN

IMPLEMENT YOUR TCP

DURING

- BE READY TO TWEAK

ACTION PLAN

IMPLEMENT YOUR TCP

BEFORE

- REVIEW
- PLAN FOR CONTINGENCIES

DURING

- BE READY TO TWEAK

AFTER

- DOCUMENT YOUR SUCCESSES (& FAILURES)

WORK ZONE QUESTIONS

THANKS!

Any questions?

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- Ryan.Delmotte@kimley-horn.com