

**Texas Department of Transportation
Technical Provisions**

SH 183 Managed Lanes Project

**Attachment 21-1
Toll Responsibility Matrix**

SH 183 Toll Responsibility Matrix

Texas Department of Transportation

Toll Systems Responsibility Matrix

LEGEND		Work Description		
Primary Responsibility	A	1	2	3
Support Responsibility	B	Design	Procure	Install and/or Construct
Coordination Responsibility Only	C			
No Responsibility	D			

Element/Task/Component/ Sub-system	TxDOT (TOD) (T)			Developer (D)			System Integrator (SI)			Comments Other Responsibility/Information
	1	2	3	1	2	3	1	2	3	
FACILITIES										
Toll Plaza Layout	A	D	C	B	A	A	B	A	A	Elements of the layout will be constructed by either D or SI as identified in the layout
Metered power service to roadside equipment cabinet	C	D	C	A	A	A	B	D	C	SI to provide T power requirements and special requirement for construction of utilities near toll collection point.
Electrical conductors from Equip Pad to Toll Zone Equipment	A	D	C	C	D	D	B	A	A	
Complete backup power systems: generators, automatic transfer switches, and fuel tanks	A	D	C	D	D	D	B	A	A	
Uninterruptible Power Supplies for the lane controllers/Tolling Equipment at Toll Sites	C	D	C	D	D	C	A	A	A	
Lightning Protection & Grounding	A	D	C	C	D	C	B	A	A	
Concrete Duct Bank (Toll Zones)	C	D	C	A	A	A	B	D	C	D to provide fiber in a dedicated vault separate from ITS
Fiber Optic cables in Duct Bank for Toll Systems	C	D	C	A	A	A	B	D	C	D to provide 4 strands single mode dedicated fiber to each toll zone. No daisy chaining.
Fiber Optic Data/ Communication to roadside equipment cabinet	C	D	C	A	A	A	B	D	C	D to provide fiber in accordance with SI specs to ground boxes adjacent to each toll zone equipment cabinet pad

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Data/Communication wire/fiber from roadside equipment cabinet to toll systems equipment	A	D	C	D	D	C	B	A	A	
Installation/Electrical Design and Plans to roadside equipment cabinet	A	D	C	C	A	A	B	D	D	D will install to electrical ground box adjacent to pads.
Installation/Electrical Design and Plans from roadside equipment cabinet to toll systems equipment	A	D	C	C	D	C	B	A	A	SI will install from electrical ground box to gantries.
Toll Zone pavement, using special pavement section and conduit stub outs for pavement sensors	B	D	C	A	A	A	B	D	C	SI to provide pavement loop details with stub-up locations. Stub Ups to terminate in ground boxes adjacent to toll zone
Concrete Barrier Installation	B	D	C	A	A	A	D	D	C	D to provide Concrete Barrier as per Toll Plaza Layout. Barrier openings will accommodate maintenance driveways.
Pavement sensors	B	D	C	D	D	C	A	A	A	D to provide access to SI to saw cut and install pavement sensors
Gantries (foundations, columns, trusses)	A	D	C	C	D	C	B	A	A	SI to provide toll gantry foundations, columns and trusses. D to coordinate locations with T
Toll Equipment mounts on Gantries	A	D	C	D	D	C	B	A	A	SI to install any required equipment mounts on gantries. SI to coordinate with T during the design phase to incorporate any req'd framing to support equipment mounts.

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Concrete Pads for power, elec, roadside toll equip, generator, LP tank	A	D	C	C	D	C	B	A	A	D to provide grading, earthwork, and drainage. SI to provide pads for equip cabinets, generator, and fuel source.
Roadside equipment cabinets (including HVAC systems)	C	D	C	D	D	C	A	A	A	SI to install complete
Toll DMS Signage (Static and dynamic portion of the DMS)	C	D	C	A	A	A	A	A	A	D to install static portion and SI to install dynamic portion
Maintenance Driveway (including all roadway items within the toll zones)	A	D	C	C	A	A	B	D	C	D to provide maintenance access driveway w' a min of 6" flex base and 3"HMA
ELECTRONIC TOLL COLLECTION SUB-SYSTEMS (ETC)										
Automatic Vehicle Classification System and Image Capturing System (ICS) Hardware	C	D	C	D	D	C	A	A	A	D will coordinate access to roadway for installations.
Computer rack system, routers, hubs, switches, firewalls, VPN, modems, patch/distribution panels,	C	D	C	D	D	C	A	A	A	D will coordinate access to roadway for installations.
Toll Plaza Host Computer	C	D	C	D	D	D	A	A	A	
Support equipment at TxDOT Designated Customer Service Center	C	D	C	D	D	D	A	A	A	
Commissioning and Operational Testing	C	D	C	D	D	C	A	A	A	
Lane controller software	C	D	C	D	D	D	A	A	A	
Plaza Computer Software	C	D	C	D	D	D	A	A	A	

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Host Computer Software	C	D	C	D	D	D	A	A	A	
Toll Collection System Application Software	C	D	C	D	D	D	A	A	A	
Maintenance Online Management System Software	C	D	C	D	D	D	A	A	A	
Site Acceptance Test	C	D	C	D	D	C	A	A	A	
Project Acceptance Test	C	D	C	D	D	C	A	A	A	
Training: (User and Maintenance)	C	D	C	D	D	D	A	A	A	
Documentation: (User and Maintenance)	C	D	C	D	D	D	A	A	A	
Documentation: ETS Installation/Electrical Design and Plans	C	D	C	D	D	D	A	A	A	
Documentation: Civil As-built Drawings, and Contract Closeout Documents	C	D	C	D	D	D	A	A	A	
Documentation: ETS As-built Drawings	C	D	C	D	D	D	A	A	A	
FCC Licenses/Regulations as applies to toll systems	C	D	C	D	D	D	A	A	A	
Advanced Toll Signage	C	D	D	A	A	A	D	D	D	
Lane Controller Hardware	C	D	C	D	D	C	A	A	A	D will coordinate access to roadway for installations

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Texas Department of Transportation

Toll Systems Responsibility Matrix

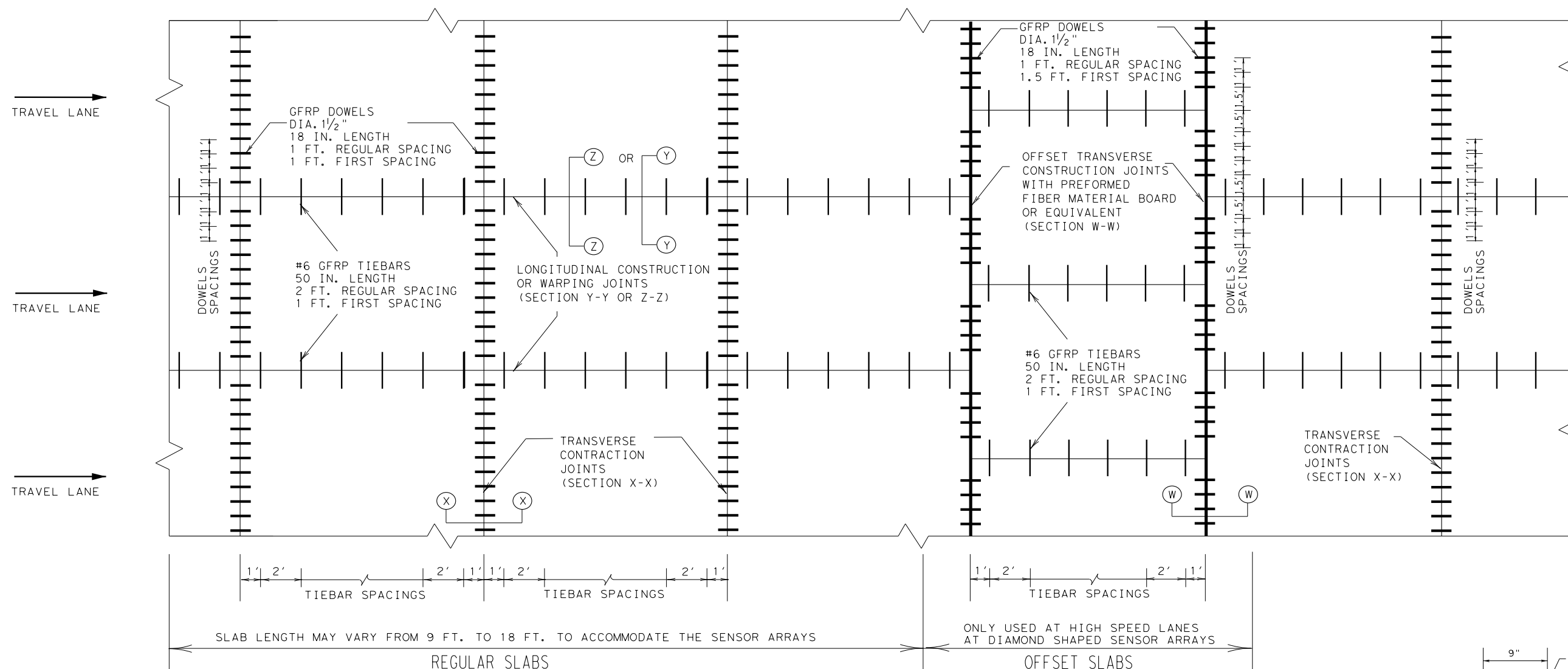
LEGEND		Work Description		
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	1	2	3	1	2	3	1	2	3	
Communication Equipment	C	D	C	D	D	C	A	A	A	D will coordinate access to roadway for installations.

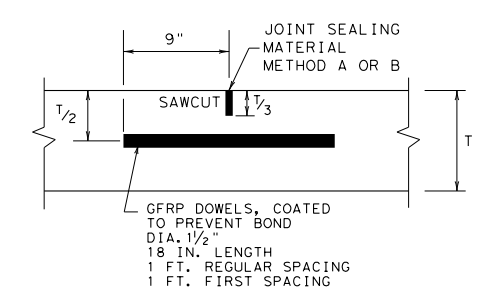
**Texas Department of Transportation
Technical Provisions**

SH 183 Managed Lanes Project

**Attachment 21-2
Jointed Concrete Pavement Using Glass Fiber
Reinforced Polymer Bars**

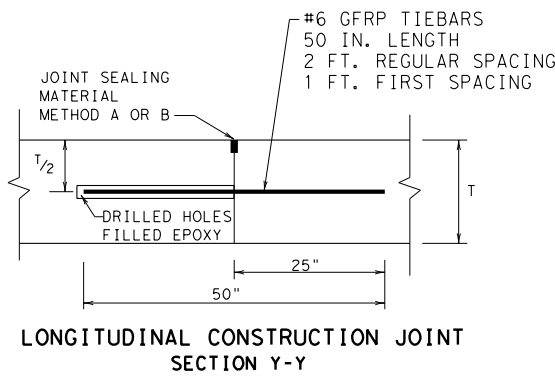


JOINTED PAVEMENT DETAIL LAYOUT
(NOT TO SCALE)

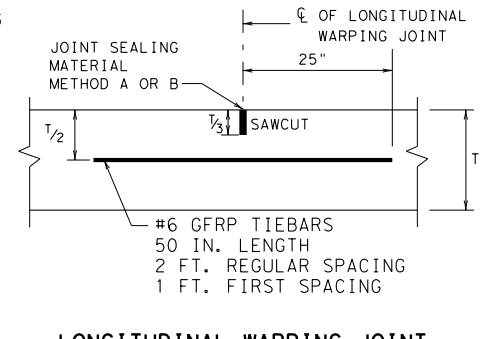


**TRANSVERSE CONTRACTION JOINT
SECTION X-X**

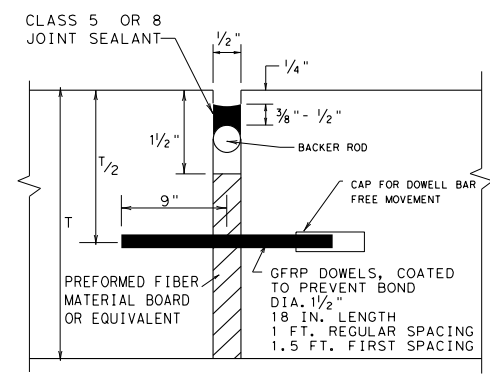
- GENERAL NOTES**
1. THE TERMINAL ANCHOR SLAB DETAILS ARE AS SHOWN ELSEWHERE IN THE PLANS.
 2. DETAILS AS TO PAVEMENT SLAB WIDTH, THICKNESS, AND CROWN CROSS-SLOPE SHALL BE AS SHOWN ELSEWHERE ON THE PLANS.
 3. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR SHALL BE SHOWN IN CONCRETE PAVEMENT DETAIL, JOINT SEALS STANDARD (JS-94).
 4. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND REINFORCEMENT, REFER TO THE GOVERNING SPECIFICATIONS FOR "CONCRETE PAVEMENT", AND "GFRP REINFORCEMENT."
 5. PAVEMENT WIDTH OF MORE THAN 16' SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6" OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
 6. SAW CUT DEPTH FOR LONGITUDINAL AND TRANSVERSE CONTRACTION JOINTS MAY BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGAE.
 7. CONCRETE SLABS WIDER THAN 100' WITHOUT A FREE JOINT, ARE NOT COVERED BY THIS STANDARD.



**LONGITUDINAL CONSTRUCTION JOINT
SECTION Y-Y**



**LONGITUDINAL WARPING JOINT
SECTION Z-Z**



**OFFSET TRANSVERSE
CONSTRUCTION JOINT
SECTION W-W**

Texas Department of Transportation
Design Division (Pavement)

JOINTED CONCRETE PAVEMENT
USING GLASS FIBER REINFORCED
POLYMER BARS
T-11 INCHES

JCPGFRPB-04 (TTA STANDARD)

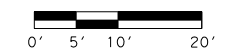
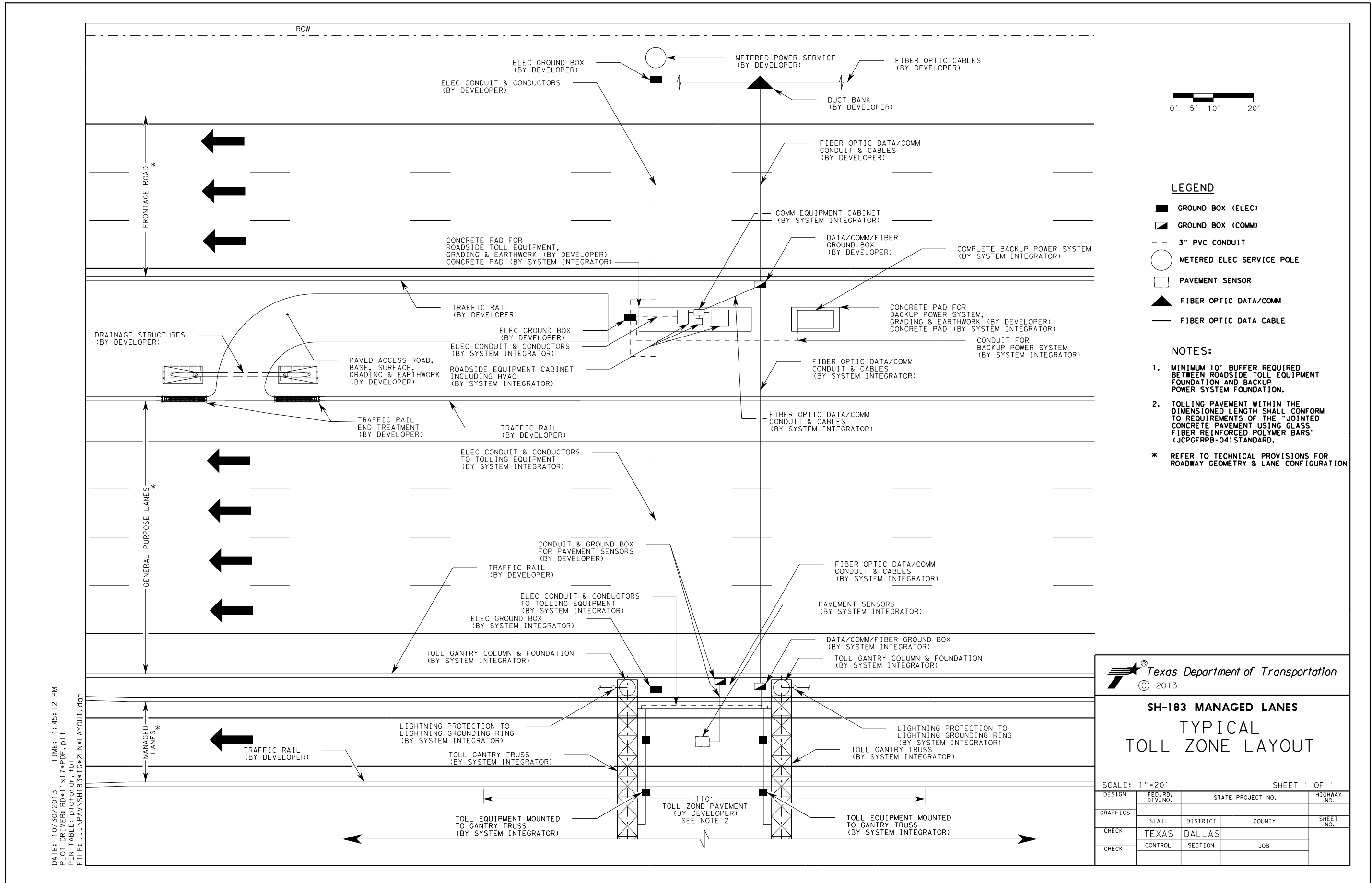
© TXDOT JULY 2004	DR: MCW	CR: MCW	DR: HC	CR: HC	REG NO.:
MODIFICATIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	AUS	6			212A
	COUNTY	CONTROL SECTION	JOB	HIGHWAY	
	WILLIAMSON	0683 06	027	SH 45 LOOP 1	

LEVELS DISPLAYED
1 3 4 15 16 7 18 19 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
FILE: <JCPGFRPB-04.DGN>

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SH 183 Managed Lanes Project

**Attachment 21-3
Typical Main Lane Toll Site**



LEGEND

- GROUND BOX (ELEC)
- ▣ GROUND BOX (COMM)
- 3" PVC CONDUIT
- METERED ELEC SERVICE POLE
- PAVEMENT SENSOR
- ▲ FIBER OPTIC DATA/COMM
- FIBER OPTIC DATA CABLE

NOTES:

1. MINIMUM 10' BUFFER REQUIRED BETWEEN ROADSIDE TOLL EQUIPMENT FOUNDATION AND BACKUP POWER SYSTEM FOUNDATION.
 2. TOLLING PAVEMENT WITHIN THE DIMENSIONED LENGTH SHALL CONFORM TO REQUIREMENTS OF THE "JOINED CONCRETE PAVEMENT USING GLASS FIBER REINFORCED POLYMER BARS" (JCPGFRPB-04) STANDARD.
- * REFER TO TECHNICAL PROVISIONS FOR ROADWAY GEOMETRY & LANE CONFIGURATION

DATE: 10/30/2013 TIME: 1:45:12 PM
 PLOT DRIVER: RD111x17*PDF.plt
 PEN TABLE: plotdrv.tbl
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Texas Department of Transportation
 © 2013

SH-183 MANAGED LANES
TYPICAL
TOLL ZONE LAYOUT

SCALE: 1"=20' SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS		
CHECK	CONTROL	SECTION	JOB	