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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	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	
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

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	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	
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.
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	

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	1	2	3	1	2	3	1	2	3	
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	
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	

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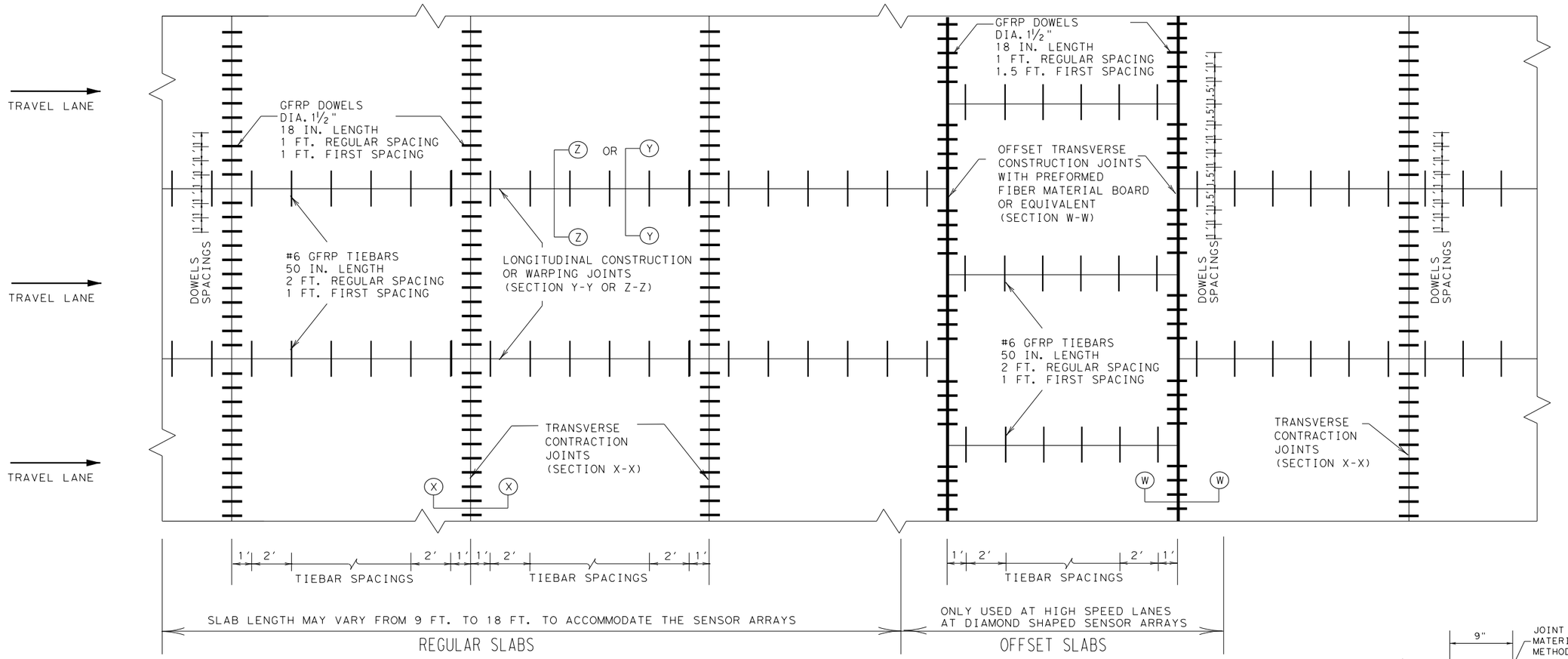
	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	
Documentation: ETS As-built Drawings	C	D	C	D	D	D	A	A	A	
FCC Licenses/Regulations as applies to toll systems	C	D	C	D	D	D	A	A	A	
Advanced Toll Signage	C	D	D	A	A	A	D	D	D	
Lane Controller Hardware	C	D	C	D	D	C	A	A	A	D will coordinate access to roadway for installations
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

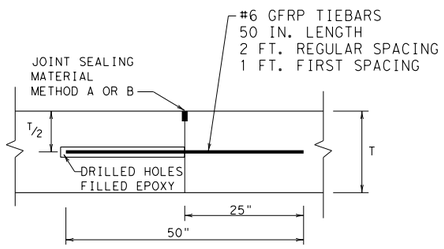


JOINTED PAVEMENT DETAIL LAYOUT

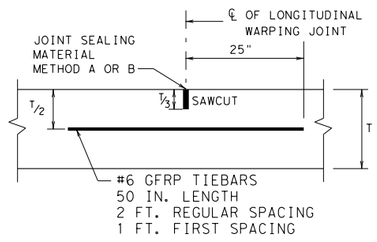
(NOT TO SCALE)

GENERAL NOTES

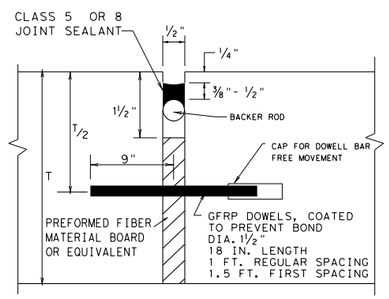
1. THE TERMINAL ANCHOR SLAB DETAILS ARE AS SHOWN ELSEWHERE IN THE PLANS.
2. DETAILS AS TO PAVEMENT SLAB WIDTH, THICKNESS, AND CROWN CROSS-SLOPE SHALL BE AS SHOWN ELSEWHERE ON THE PLANS.
3. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR SHALL BE SHOWN IN CONCRETE PAVEMENT DETAIL, JOINT SEALS STANDARD (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.



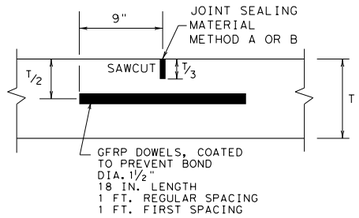
LONGITUDINAL CONSTRUCTION JOINT
SECTION Y-Y



LONGITUDINAL WARPING JOINT
SECTION Z-Z



OFFSET TRANSVERSE
CONSTRUCTION JOINT
SECTION W-W



TRANSVERSE CONTRACTION JOINT
SECTION X-X

Texas Department of Transportation
Design Division (Pavement)

JOINTED CONCRETE PAVEMENT

USING GLASS FIBER REINFORCED POLYMER BARS

T-11 INCHES

JCPGFRPB-04 (TTA STANDARD)

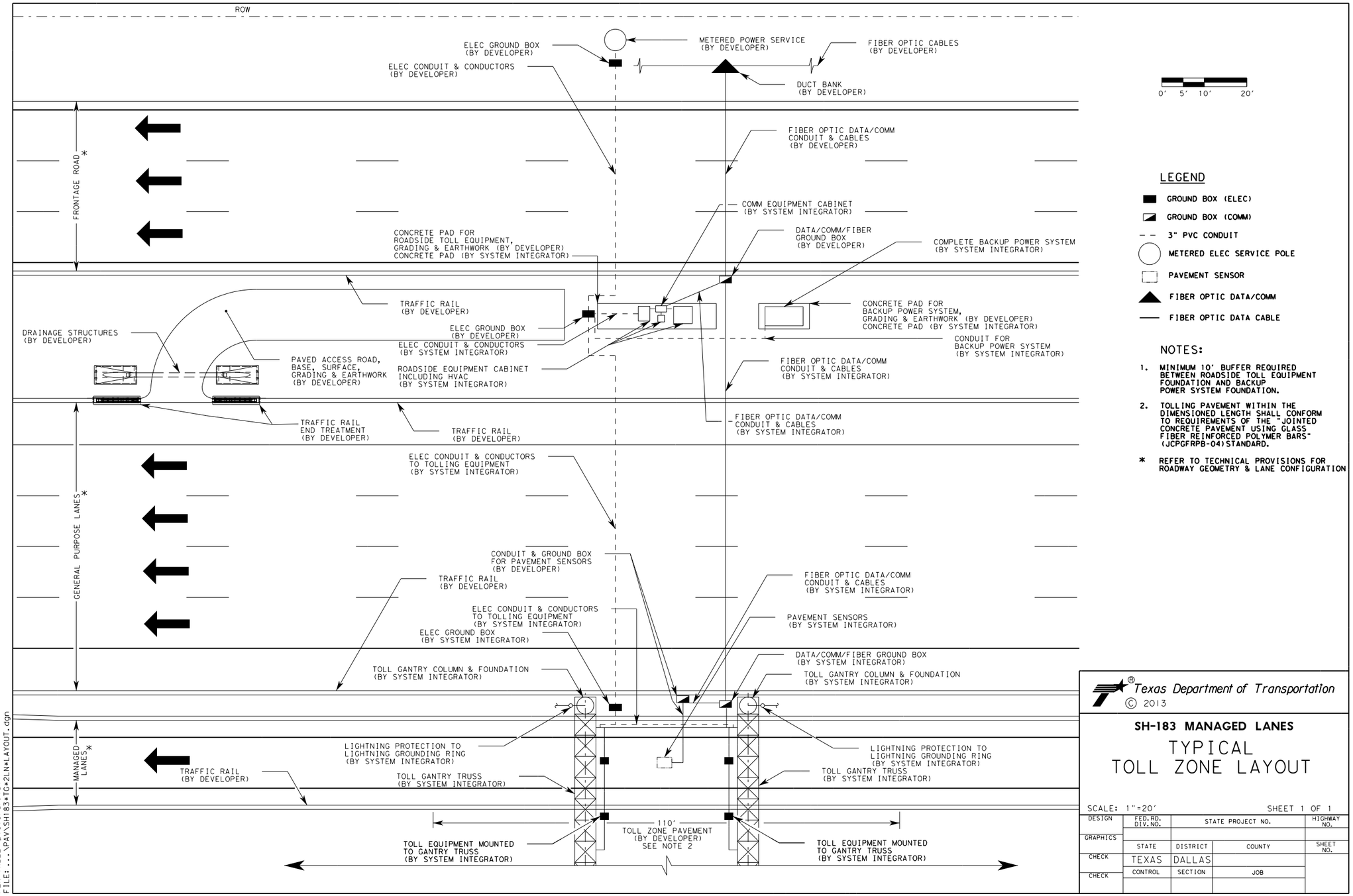
©TxDOT JULY 2004	DN: MCW	CK: MCW	DW: HC	CK: HC	REG NO.:
MODIFICATIONS	STATE DISTRICT: AUS	FEDERAL REGION: 6	FEDERAL AID PROJECT: •		SHEET: 212A
	COUNTY: WILLIAMSON	CONTROL: 0683	SECTION: 06	JOB: 027	HIGHWAY: SH 45 LOOP 1

LEVELS DISPLAYED
1 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 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>

Texas Department of Transportation
Technical Provisions

SH 183 Managed Lanes Project

Attachment 21-3
Typical Toll Zone Layout


ROW
ELEC GROUND BOX (BY DEVELOPER)
METERED POWER SERVICE (BY DEVELOPER)
FIBER OPTIC CABLES (BY DEVELOPER)
ELEC CONDUIT & CONDUCTORS (BY DEVELOPER)
DUCT BANK (BY DEVELOPER)
FRONTAGE ROAD *
FIBER OPTIC DATA/COMM CONDUIT & CABLES (BY DEVELOPER)
COMM EQUIPMENT CABINET (BY SYSTEM INTEGRATOR)
CONCRETE PAD FOR ROADSIDE TOLL EQUIPMENT, GRADING & EARTHWORK (BY DEVELOPER) CONCRETE PAD (BY SYSTEM INTEGRATOR)
DATA/COMM/FIBER GROUND BOX (BY DEVELOPER)
COMPLETE BACKUP POWER SYSTEM (BY SYSTEM INTEGRATOR)
TRAFFIC RAIL (BY DEVELOPER)
ELEC GROUND BOX (BY DEVELOPER)
CONCRETE PAD FOR BACKUP POWER SYSTEM, GRADING & EARTHWORK (BY DEVELOPER) CONCRETE PAD (BY SYSTEM INTEGRATOR)
DRAINAGE STRUCTURES (BY DEVELOPER)
ELEC CONDUIT & CONDUCTORS (BY SYSTEM INTEGRATOR)
CONDUIT FOR BACKUP POWER SYSTEM (BY SYSTEM INTEGRATOR)
PAVED ACCESS ROAD, BASE, SURFACE, GRADING & EARTHWORK (BY DEVELOPER)
ROADSIDE EQUIPMENT CABINET INCLUDING HVAC (BY SYSTEM INTEGRATOR)
FIBER OPTIC DATA/COMM CONDUIT & CABLES (BY SYSTEM INTEGRATOR)
TRAFFIC RAIL END TREATMENT (BY DEVELOPER)
TRAFFIC RAIL (BY DEVELOPER)
FIBER OPTIC DATA/COMM CONDUIT & CABLES (BY SYSTEM INTEGRATOR)
ELEC CONDUIT & CONDUCTORS TO TOLLING EQUIPMENT (BY SYSTEM INTEGRATOR)
GENERAL PURPOSE LANES *
CONDUIT & GROUND BOX FOR PAVEMENT SENSORS (BY DEVELOPER)
TRAFFIC RAIL (BY DEVELOPER)
FIBER OPTIC DATA/COMM CONDUIT & CABLES (BY SYSTEM INTEGRATOR)
ELEC CONDUIT & CONDUCTORS TO TOLLING EQUIPMENT (BY SYSTEM INTEGRATOR)
PAVEMENT SENSORS (BY SYSTEM INTEGRATOR)
ELEC GROUND BOX (BY SYSTEM INTEGRATOR)
DATA/COMM/FIBER GROUND BOX (BY SYSTEM INTEGRATOR)
TOLL GANTRY COLUMN & FOUNDATION (BY SYSTEM INTEGRATOR)
TOLL GANTRY COLUMN & FOUNDATION (BY SYSTEM INTEGRATOR)
MANAGED LANES *
LIGHTNING PROTECTION TO LIGHTNING GROUNDING RING (BY SYSTEM INTEGRATOR)
LIGHTNING PROTECTION TO LIGHTNING GROUNDING RING (BY SYSTEM INTEGRATOR)
TRAFFIC RAIL (BY DEVELOPER)
TOLL GANTRY TRUSS (BY SYSTEM INTEGRATOR)
TOLL GANTRY TRUSS (BY SYSTEM INTEGRATOR)
110'
TOLL ZONE PAVEMENT (BY DEVELOPER) SEE NOTE 2
TOLL EQUIPMENT MOUNTED TO GANTRY TRUSS (BY SYSTEM INTEGRATOR)
TOLL EQUIPMENT MOUNTED TO GANTRY TRUSS (BY SYSTEM INTEGRATOR)
0' 5' 10' 20'
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 "JOINTED 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: RD4x17*PDF.plt
PEN TABLE: plotordr.tbl
FILE: ...\PAV\SH183*TG*2LN*LAYOUT.dgn
Texas Department of Transportation
© 2013
SH-183 MANAGED LANES
TYPICAL TOLL ZONE LAYOUT
SCALE: 1"=20'
SHEET 1 OF 1
DESIGN
GRAPHICS
CHECK
CHECK
FED.RD. DIV.NO.
STATE PROJECT NO.
HIGHWAY NO.
STATE
DISTRICT
COUNTY
SHEET NO.
TEXAS
DALLAS
CONTROL
SECTION
JOB