TEXAS DEPARTMENT OF TRANSPORTATION

TECHNICAL PROVISIONS

FOR

SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2

ATTACHMENT 11-1
CROSS STREET DESIGN CRITERIA MATRIX

ADDENDUM #1

JUNE 25, 2015

SH 99 GRAND PARKWAY
ATTACHMENT 11-1
Cross Street Design Criteria Matrix
SEGMENT H

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	NORTHBOUND					Turn Lanes	Median	SOUTHBOUND				
							U-Turn (each)	Clear Zone for Cross Street Thru Lanes	Sidewalk and Min. Usable Width (LF)	Curb and Gutter	Through Lanes			Through Lanes	Curb and Gutter	Sidewalk and Min. Usable Width (LF)	Clear Zone for Cross Stet Thru Lanes	U-Turn (each)
Future Road 2G	A	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	4' Curbed	2 (12')	Y	5'	6'	1
IH69/US59 Northbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	1 (12')	0	N/A	N/A	N/A	N/A	N/A
IH69/US59 Mainlanes	N/A	TxDOT	Rural Freeway	70	Under SH 99	N/A	0	30'	Match Existing Mainlanes and Structures								30'	0
IH69/US59 Southbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	N/A	N/A	N/A	N/A	N/A	1 (12')	0	2 (12')	Y	5'	6'	1
Loop 494	C	TxDOT	Rural Collector	45	Under SH 99	WB-50	0	16'	N/A	N	1 (12')	2 (12')	0	1 (12')	N	N/A	16'	0
Future Thoroughfare #1	A	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0
Baptist Encampment Road	F	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	1	6'	5'	N	1 (12')	2 (12')	0	1 (12')	Y	5'	6'	1
FM1485	D	TxDOT	Rural Collector	45	Under SH 99	WB-50	1	16'	N/A	N	1 (12')	1 (12')	0	1 (12')	N	N/A	16'	0
Wilderness Road	F	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	1 (12')	2 (12')	0	1 (12')	Y	5'	6'	0
Galaxy Blvd.	A	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0
FM1485 EB (Westbound Frontage Rd)	I	TxDOT	Rural Collector	45	Under SH 99	WB-50	1	N/A	N/A	N/A	N/A	N	0	2 (12')	N	N/A	16'	0
Cypress Hollow/ Roots Down Rd.	H	Harris Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	1 (12')	N	0	1 (12')	N	N/A	10'	0
Huffman - Cleveland Road	A	Harris Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	26	1 (12') 1 (14')	Y	5'	6'	0

SH 99 GRAND PARKWAY
ATTACHMENT 11-1
Cross Street Design Criteria Matrix
SEGMENT H

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph	Position (over/under)	Design Vehicle	EASTBOUND					Turn Lanes	Median	WESTBOUND				
							U-Turn (each)	Clear Zone for Cross Street Thru Lanes	Sidewalk and Min. Usable Width (LF)	Curb and Gutter	Through Lanes			Through Lanes	Curb and Gutter	Sidewalk and Min. Usable Width (LF)	Clear Zone for Cross Stet Thru Lanes	U-Turn (each)
Future Thoroughfare #2 (Miller Wilson)	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	26	1 (12') 1 (14')	Y	5'	6'	0
Future Thoroughfare #3 (Community)	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	26	1 (12') 1 (14')	Y	5'	6'	0
Future Thoroughfare #3A (Wolf Trot)	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	26	1 (12') 1 (14')	Y	5'	6'	0
Future Thoroughfare #4 (Kingwood)	A	Liberty Co.	Urban Collector	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0
CR622	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0
FM686	D	TxDOT	Rural Collector	45	Under SH 99	WB-50	0	16'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	16'	0
CR621	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0
FM1960	D	TxDOT	Rural Arterial	45	Under SH 99	WB-50	0	16'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	16'	0
CR491	I	Liberty Co.	Rural Local	30	N/A	WB-50	0	10'	N/A	N	1 (10')	N	0	1 (10')	N	N/A	10'	0
CR605	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0
CR603	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0
CR602	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0

Assumptions:

Urban - Curb and gutter with minimum 5' sidewalk on all urban roadways. Pedestrian accommodations only on Urban Facilities.

Rural - No curb and gutter, minimum 6' shoulders, minimum 10' clear zone (unless otherwise shown).

SH 99 GRAND PARKWAY
ATTACHMENT 11-1
Cross Street Design Criteria Matrix
SEGMENT I-1

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	EASTBOUND					Turn Lanes	Median	WESTBOUND				
							U-Turn (each)	Clear Zone for Cross Street Thru Lanes	Sidewalk and Min. Usable Width (LF)	Curb and Gutter	Through Lanes			Through Lanes	Curb and Gutter	Sidewalk and Min. Usable Width (LF)	Clear Zone for Cross Stet Thru Lanes	U-Turn (each)
US90	E	TxDOT	Rural Arterial	45	Under SH 99	WB-50	0	30'	N/A	N	2 (12')	N/A	0	2 (12')	N	N/A	30'	0
FM1413	D	TxDOT	Rural Collector	45	Under SH 99	WB-50	0	16'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	16'	0
Future Thoroughfare #5A	D	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	10'	0
Future Thoroughfare #5B (Sta 2549+95)	H	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	1 (12')	N	0	1 (12')	N	N/A	10'	0
Future Thoroughfare #5B (Sta 2551+25)	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	0	2 (12')	N	N/A	10'	0
Future Thoroughfare #5C	D	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	10'	0
SH146	D	TxDOT	Rural Arterial	45	Under SH 99	WB-50	0	16'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	16'	0
FM565 (North Crossing)	D	TxDOT	Rural Collector	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	2 (12')	0	2 (12')	N	N/A	10'	0
Future Thoroughfare #6	A	Chambers Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0
IH10 Eastbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	N/A	N/A	N/A	N/A	N/A	1 (12')	0	2 (12')	Y	5'	6'	1
IH10 Mainlanes	N/A	TxDOT	Rural Freeway	70	Under SH 99	N/A	0	30'	Match Existing Mainlanes and Structures								30'	0
IH10 Westbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	1 (12')	0	N/A	N/A	N/A	N/A	N/A
Future Thoroughfare #7	A	Chambers Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0
Kilgore Road	A	Chambers Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	0

Assumptions:

Urban - Curb and gutter with minimum 5' sidewalk on all urban roadways. Pedestrian accommodations only on Urban Facilities.

Rural - No curb and gutter, minimum 6' shoulders, minimum 10' clear zone (unless otherwise shown).

SH 99 GRAND PARKWAY
ATTACHMENT 11-1
Cross Street Design Criteria Matrix
SEGMENT I-2

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	NORTHBOUND					Turn Lanes	Median	SOUTHBOUND				
							U-Turn (each)	Clear Zone for Cross Street Thru Lanes	Sidewalk and Min. Usable Width (LF)	Curb and Gutter	Through Lanes			Through Lanes	Curb and Gutter	Sidewalk and Min. Usable Width (LF)	Clear Zone for Cross Stet Thru Lanes	U-Turn (each)
Wyoming	F	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	1 (12')	2 (12')	0	1 (12')	Y	5'	6'	1
Lee Drive	A	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	y	5'	6'	1
Wismer Road	A	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	1 (12') 1 (14')	2 (12')	2	1 (12') 1 (14')	Y	5'	6'	1
BS146	A	TxDOT	Urban Arterial	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	12	2 (12')	Y	5'	6'	1
Tri-Cities Beach Road	G	Harris Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	1 (12')	2 (12')	0	1 (12')	N	N/A	10'	1
FM1405	A	TxDOT	Rural Collector	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	4	2 (12')	Y	5'	6'	1
Fisher Road	A	Chambers County	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	14	2 (12')	Y	5'	6'	0

Assumptions:

Urban - Curb and gutter with minimum 5' sidewalk on all urban roadways. Pedestrian accommodations only on Urban Facilities.

Rural - No curb and gutter, minimum 6' shoulders, minimum 10' clear zone (unless otherwise shown).

TEXAS DEPARTMENT OF TRANSPORTATION
TECHNICAL PROVISIONS

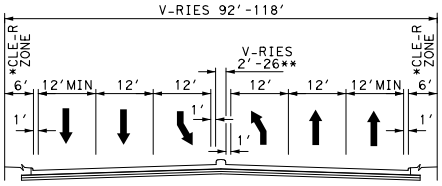
FOR

SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2

ATTACHMENT 11-2
ULTIMATE CROSS STREET TYPICAL SECTIONS

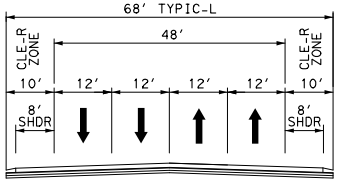
ADDENDUM #1

JUNE 25, 2015



SECTION A

* INCLUDES MIN 5' SIDEW-LK
**OVER 4' WIDE, USE R-ISED MEDI-N WITH 1' OFFSETS



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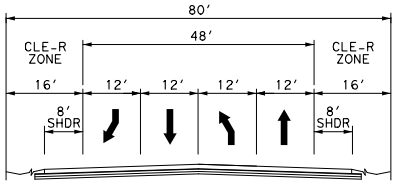

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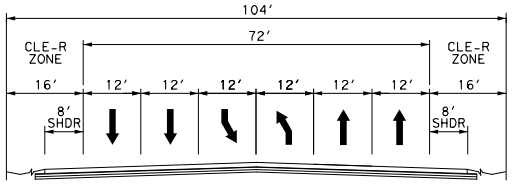
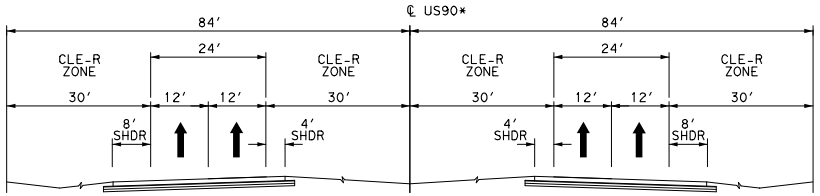
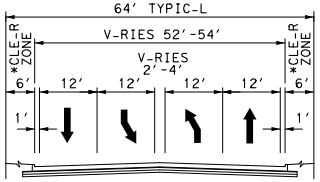


SECTION D



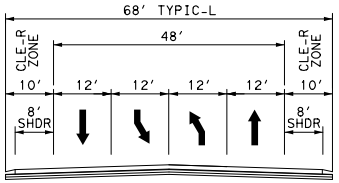
SECTION E

* CENTER COLUMN -LLOWED (PROTECT WITHIN CLE-R ZONE)

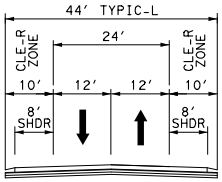


SECTION F

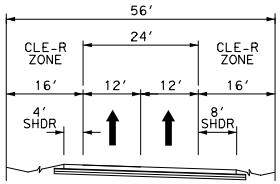
* INCLUDES MIN 5' SIDEW-LK



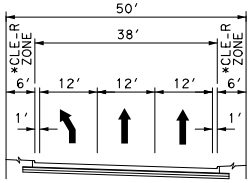
SECTION G



SECTION H



SECTION I



SECTION J

* INCLUDES MIN 5' SIDEW-LK

NOTE: NORTHBOUND -ND E-STBOUND FR SHOWN
SOUTHBOUND -ND WESTBOUND MIRRORED

N.T.S.

Texas Department of Transportation

99 TEX-S

PROPOSED ULTIMATE CROSS STREET TYPICAL SECTIONS GRAND PARKWAY (SH 99) SEGMENTS H, I1 & I2 RFP ADDENDUM #1

TEXAS DEPARTMENT OF TRANSPORTATION

TECHNICAL PROVISIONS

FOR

SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

ADDENDUM #1

JUNE 25, 2015

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Attachment 19-2: Performance and Measurement Table Baseline After Substantial Completion

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
1) ROADWAY									
							Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's *Pavement Management Information System Rater's Manual.* Unless otherwise stated, pavement performance measurement records relate to 0.1-mile sections as described in the *Pavement Management Information System Rater's Manual*.		
	1.1	Obstructions and debris	Roadway and clear zone free from obstructions and debris	2 hrs	N/A	N/A	Visual Inspection	Number of obstructions and debris	Nil
	1.2	Pavement	All roadways have a smooth surface course (including bridge decks, covers, gratings, frames and boxes) with adequate skid resistance and free from Defects.	24 hrs	28 days	6 months	**a) Ruts – Mainlanes, shoulders & ramps** Depth as measured using an automated device in compliance with TxDOT Standards. 10-ft straight edge used to measure rut depth for localized areas. **b) Ride quality** Measurement of International	Percentage of wheel path length with ruts greater than ¼" in depth in each Auditable Section • Mainlanes, shoulders and ramps - 3% • Frontage roads - 10% Depth of rut at any location greater than 0.5"	 Nil Nil Nil

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	1.2 cont						Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles ** To allow for measurement bias, an adjustment of -10 (minus ten) is made to IRI measurements for concrete pavements before assessing threshold compliance (Renewal Work and new construction subject to construction quality standards)	(i) For 80% of all Auditable Sections Measured, IRI throughout 98% of each Auditable Section is less than or equal to: • Mainlanes, ramps - 95" per mile** • Frontage roads - 120" per mile** (ii) IRI measured throughout 98% of Auditable Section of less than or equal to: • Mainlanes, ramps - 120" per mile** • Frontage roads - 150" per mile** • Mainlanes, ramps, 0.1 mile average - 150" per mile** • Frontage roads, 0.1 mile average - 180" per mile**	100% 100% 100% 100% 100% 100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitiga-tion	**Perma-nent Remedy**	**Perma-nent Repair**			
	1.2 cont							(iii) IRI measured throughout 98% of each lane containing a bridge deck in any Auditable Section, 0.1 mile average - 200" per mile**	100%
							10-ft straightedge used to measure discontinuities	Individual discontinuities greater than 1/4”	Nil
							c) Failures		
							Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater’s Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	Occurrence of any failure	Nil
							d) Edge drop-offs		
							Physical measurement of edge drop-off level compared to adjacent surface	Instances of edge drop-off greater than 2" (Number)	Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	1.2 cont						**e) Skid resistance** ASTM E274/E274M-11 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E524-08.	• Mainlanes, shoulders and ramps – Sections investigated as to potential risk of skidding accident where average Skid Number for 0.5-mile section of mainlanes, shoulders and ramps is below 30. • Frontage roads – Sections investigated as to potential risk of skidding accident where average Skid Number for 0.5-mile section of frontage roads is below 30. • The DB Contractor shall perform a site investigation and perform required corrective action when the skid number is below 25 and/or when required by the Wet Weather Accident Reduction Program for areas categorized as high risk.	100% 100% 100%

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitiga-tion	**Perma-nent Remedy**	**Perma-nent Repair**			
	1.2 cont		Road Users warned of potential skidding hazards	24 hrs	7 days	N/A	**Skid resistance** (as above)	Instances where road Users warned of potential skidding hazard where remedial action is identified.	100%
	1.3	Crossovers and other paved areas	Crossovers and other paved areas are free of Defects	24 hrs	28 days	6 months	**a) Potholes** **b) Base failures**	Potholes of low severity or higher (Number) Base failures of low severity or higher (Number)	Nil Nil
	1.4	Joints in concrete	Joints in concrete paving are sealed and watertight Longitudinal joint separation	24 hrs	28 days	6 months	Visual inspection of joints Measurement of joint width and level difference of two sides of joints	Length unsealed joints greater than ¼" Joint width more than 1" or faulting more than ¼”	Nil Nil
	1.5	Curbs	Curbs are free of Defects	24 hrs	28 days	6 months	10-ft straightedge will be used to measure curb alignment	Deviation from original alignment greater than 1 inch	Nil

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
2) DRAINAGE									
	2.1	Pipes and channels	Each Element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way.	24 hrs	28 days	6 months	Visual inspection supplemented by CCTV where required to inspect buried pipe work	Length with less than 90% of cross-sectional area clear (feet)	Nil
	2.2	Drainage treatment devices	Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation in Emergency.	24 hrs	28 days	6 months	Visual inspection	Devices functioning correctly with means of operation displayed	100%
	2.3	Travel way	The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth.	24 hrs	28 days	6 months	Visual inspection of water on surface	Instances of hazardous water build-up	Nil
	2.4	Discharge systems	Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits.	24 hrs	28 days	6 months	Visual inspection and records	Non-compliances with legislation	Nil
	2.5	Protected species	Named species and habitats are protected.	24 hrs	28 days	6 months	Visual inspection	Compliance with the requirement	100%
3) STRUCTURES									

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	3.1	Structure Components (Structures having an opening measured along the centre of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes)	(i) Substructures and superstructures are free of: • graffiti • undesirable vegetation • debris and bird droppings • blocked drains, weep pipes manholes and chambers • blocked drainage holes in structural components • defects in joint sealants • defects in pedestrian protection measure • scour damage • corrosion of rebar • paint system failures • impact damage (ii) Expansion joints free of: • dirt, debris and vegetation • defects in drainage systems • loose nuts and bolts • defects in gaskets (iii) The deck drainage system is free of all and operates as intended.	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Highway Administration's Bridge Inspector's Reference Manual.	Records as required in the TxDOT Bridge Inspection Manual Occurrences of condition rating below six (6) for any deck, superstructure or substructure Auditable Sections with structure components with condition states of one	100% Nil 100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	3.1 cont.		(iv) Parapets free of: • loose nuts and bolts • blockages of hollow section drain holes • graffiti • vegetation • accident damage (v) Bearings and bearing shelves are clean. (vi) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions in the Structure Maintenance Manual is followed. Special finishes are clean and perform to the appropriate standards. (vii) All non-structural items such as hoists and electrical fixings, operate correctly, are clean and lubricated as appropriate, in accordance with the manufacturer's recommendations and certification of lifting devices is maintained.						

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	3.2	Non-bridge class culverts	Non-bridge-class culverts are free of: • vegetation and debris and silt • defects in sealant to movement joints • scour damage	24 hrs	28 days	6 months	Visual inspection	Number with vegetation, debris and silt Number with defects in sealant and movement joints Number with scour damage	Nil Nil Nil
	3.3	Load ratings	All structures maintain the design load capacity.	24 hrs	28 days	6 months	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual. Load restriction requirements as per the TxDOT Bridge Inspection Manual	Number of load restrictions for Texas legal loads (including legally permitted vehicles)	Nil
	3.4	Gantries and high masts	Sign signal gantries, high masts are structurally sound and free of: • loose nuts and bolts • defects in surface protection systems • graffiti	24 hrs	28 days	6 months	Visual inspection	Number with loose assemblies Number with defects in surface protection Number with graffiti	Nil Nil Nil

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	3.5	Access points	All hatches and points of access have fully operational and lockable entryways.	24 hrs	28 days	6 months	Visual inspection	Number of Defects in locks or entryways	Nil
	3.6	Mechanically Stabilized Earth and Retaining Walls	Mechanically Stabilized Earth and Retaining Walls free of: • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage Parapets free of: • loose nuts and bolts • blockage of drain holes • undesirable vegetation • impact damage • concrete spalling	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways - Part 650, the TxDOT Bridge Inspection Manual and the Federal Highway Administration's Bridge Inspector's Reference Manual.	Records as required in the TxDOT Bridge Inspection Manual	100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS									
	4.1	Pavement markings	Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hrs	28 days	6 months	a) Markings - General General Portable retroreflectometer, which uses 30 meter geometry meeting the requirements described in ASTM E 1710 Physical measurement b) Profile Markings Visual inspection	Length meeting the minimum retroreflectivity 175 mcd/m^2/lx for white Length meeting the minimum retroreflectivity 125 mcd/m^2/lx for yellow Length with more than 5% loss of area of material at any point Length with spread more than 10% of specified dimensions. Length performing its intended function and compliant with relevant regulations	100% 100% Nil Nil 100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	4.2	Raised reflective markers	Raised reflective pavement markers, object markers and delineators are: • clean and clearly visible • of the correct color and type • reflective or retroreflective as TxDOT standard • correctly located, aligned and at the correct level • are firmly fixed • are in a condition that will ensure that they remain at the correct level.	24 hrs	28 days	6 months	Visual inspection	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk) A minimum of four markers should be visible at 80’ spacing when viewed under low beam headlights Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers).	Nil 100% 100%
	4.3	Delineators & markers	Object markers, mail box markers and delineators are: • clean and visible • of the correct color and type • legible and reflective • straight and vertical	24 hrs	28 days	6 months	Visual inspection	Less than 5% of object markers or delineators defective or missing	100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS									
	5.1	Guard rails and safety barriers	All guardrails, safety barriers, and concrete barriers are maintained free of Defects. They are appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs shall be carried out in accordance with the requirements of NCHRP 350 standards.	24 hrs	28 days	6 months	Visual inspection	Length of road restraint systems correctly installed Length free from Defects Length at correct height Length at correct distance from roadway and obstacle	100% 100% 100% 100%
	5.2	Impact attenuators	All impact attenuators are appropriately placed and correctly installed	24 hrs	7 days	6 months	Visual inspection	Number correctly placed and installed	100%
6) TRAFFIC SIGNS									
	6.1	General – All signs	(i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects	24 hrs	28 days	6 months	**a) Retroreflectivity** Coefficient of retro -reflectivity	Number of signs with reflectivity below the requirements of TxDOT's TMUTCD	Nil

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	6.1 cont.		(ii) Identification markers are provided, correctly located, visible, clean and legible (iii) Sign mounting posts are vertical, structurally sound and rust free (iv) All break-away sign mounts are clear of silt or other debris that could impede break-away features and shall have correct stub heights (v) Obsolete and redundant signs are removed or replaced as appropriate (vi) Visibility distances meet the stated requirements (vii) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements (viii) All structures and Elements of the signing system are kept clean and free from debris and have clear access provided. (ix) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD (x) Dynamic message signs are in an operational condition				**b) Face damage** Visual inspection **c) Placement** Visual inspection **d) Sign Information** Visual inspection **e) Dynamic Message Signs** Visual inspection	Number of signs with face damage greater than 5% of area Signs are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning Sign information is of the correct size, location, type and wording to meet its intended purpose Dynamic message signs are fully functioning	Nil 100% 100% 100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	6.2	General - Safety critical signs	Requirements as 6.1, Plus: "Stop," "Yield," "Do Not Enter," "One Way" and "Wrong Way" signs are clean legible and undamaged.	2 hrs	1 week	6 months	Visual inspection	Number of damaged safety critical signs	Nil
7) TRAFFIC SIGNALS									
	7.1	General	(i) Traffic Signals and their associated equipment are: • clean and visible • correctly aligned and operational • free from damage caused by accident or vandalism (ii) Signal timing and operation is correct (iii) Contingency plans are in place to rectify Category 1 defects not immediately repairable to assure alternative traffic control is provided during a period of failure	2 hrs	24 hrs	6 months	**a) General condition** Visual inspection **b) Damage** Visual inspection **c) Signal timing** Timed measurements **d) Contingency plans** Records review	Signals are clean and visible Signals are undamaged Installations have correct signal timings Full contingency plans are in place	100% 100% 100% 100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitiga-tion	**Perma-nent Remedy**	**Perma-nent Repair**			
	7.2	Soundness	Traffic signals are structurally and electrically sound	24 hrs	28 days	6 months	**a) Structural soundness** Visual inspection **b) Electrical soundness** Testing to meet NEC regulations	Inspection records showing safe installation and maintenance	100% 100%
	7.3	Identification marking	Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible	N/A	28 days	6 months	Visual inspection	Inspection records showing identification markers and other information are easily readable	100%
	7.4	Pedestrian Elements and vehicle detectors	All pedestrian Elements and vehicle detectors are correctly positioned and fully functional at all times	24 hrs	28 days	6 months	Visual Inspection	Inspection records showing compliance	100%
8) LIGHTING									
	8.1	Roadway lighting – General	(i) All lighting is free from defects and provides acceptable uniform lighting quality (ii) Lanterns are clean and correctly positioned	24 hrs	28 days	6 months	**a) Mainlane lights operable** Night time inspection or automated logs	Number of sections with less than 90% of lights functioning correctly at all times	Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	8.1 cont.		(iii) Lighting units are free from accidental damage or vandalism (iv) Columns are upright, correctly founded, visually acceptable and structurally sound				**b) Mainlane lights out of action** Night time inspection or automated logs	Instances of more than two consecutive lights out of action	Nil
	8.2	Sign lighting	Sign lighting is fully operational	24 hrs	28 days	6 months	Night time inspection or automated logs	Instances of more than one bulb per sign not working	Nil
	8.3	Electrical supply	Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning	24 hrs	7 days	1 month	Testing to meet NEC regulations, visual inspection	Inspection records showing safe installation and maintenance	100%
	8.4	Access panels	All access panels in place at all times.	24 hrs	7 days	1 month	Visual inspection	Instances of missing access panels	Nil
	8.5	High mast lighting	(i) All high mast luminaries functioning on each pole (ii) All obstruction lights are present and working (if required) (iii) Compartment door is secure with all bolts in place	24 hrs	28 days	6 months	Yearly inspection and night time inspections or automated logs	Instances of two or more lamps not working per high mast pole	Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	8.5 cont.		(iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion (for structural requirements refer to Element Category 3)					Identification of other defects	Nil
9) FENCES, WALLS AND SOUND ABATEMENT									
	9.1	Design and location	Fences and walls act as designed and serve the purpose for which they were intended	24 hrs	28 days	6 months	Visual inspection	Inspection records showing compliance	100%
	9.2	Construction	Integrity and structural condition of the fence is maintained	24 hrs	28 days	6 months	Structural assessment if visual inspection warrants	Inspection records showing compliance	100%
10) ROADSIDE MANAGEMENT									
	10.1	Vegetated areas – Except landscaped areas – General	Vegetation is maintained so that: (i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height.	24 hrs	7 days	28 days	**a) Urban areas** Physical measurement of height of grass and weeds **b) Rural areas** Physical measurement of height of grass and weeds	Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 18 in Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 30 in	100% 100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	10.1 cont.		(ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance. (iii) Grass or vegetation does not encroach into or on paved shoulders, mainlanes, sidewalks, islands, riprap, traffic barrier or curbs. (iv) A herbicide program is undertaken in accordance with the TxDOT Herbicide Manual to control noxious weeds and to eliminate grass in pavement or concrete. (v) A full width mowing cycle is completed after the first frost (vi) Wildflowers are preserved utilizing the guidelines in the mowing specifications and TXDOT Roadside Vegetation Manual.				**c) Encroachment** Visual inspection of instances of encroachment of vegetation **d) Wildflowers** Visual inspection with audit of process. **e) Sight lines** Visual inspection	Occurrences of vegetation encroachment in each auditable section Adherence to vegetation management manuals Instances of impairment of sight lines or sight distance to signs	Nil 100% Nil

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	10.2	Landscaped areas	(i) All landscaped areas are maintained to their originally constructed condition. Landscaped areas are as designated in the plans. (ii) Mowing, litter pickup, irrigation system maintenance and operation, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance, watering is undertaken as per MMP. (iii) The height of grass and weeds is kept between 2“ and 8”. Mowing begins before vegetation reaches 8 in (iv) Damaged or dead vegetation is replaced.	24 hrs	7 days	28 days	Visual inspection	Inspection records showing compliance	100%
	10.3	Fire hazards	Fire hazards are controlled	24 hrs	7 days	28 days	Visual inspection	Instances of dry brush or vegetation forming fire hazard	Nil

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	10.4	Trees, brush and ornamentals	(i) Trees, brush and ornamentals on the right of way, except in established no mow areas, are trimmed in accordance with TxDOT standards. (ii) Trees, brush and ornamentals are trimmed to insure they do not interfere with vehicles or sight distance, or inhibit the visibility of signs. (iii) Dead trees, brush, ornamentals and branches are removed. Potentially dangerous trees or limbs are removed. (iv) All undesirable trees and vegetation are removed. Diseased trees or limbs are treated or removed by licensed contractors.	24 hrs	7 days	28 days	Visual inspection	Inspection records showing compliance	100%
	10.5	Wetlands	Wetlands are managed in accordance with the permit requirements	24 hrs	7 days	28 days	Visual inspection, assessment of permit issuers	Instances of permit requirements not met	Nil
11) REST AREAS AND PICNIC AREAS (Not Used)									
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS									

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	12.1	Slope failure	All structural or natural failures of the embankment and cut slopes of the Project are repaired	24 hrs	28 days	6 months	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	Recorded instances of slope failure	Nil
	12.2	Slopes - General	Slopes are maintained in general conformance to the original graded cross-sections, the replacement of landscaping materials, reseeding and re-vegetation for erosion control purposes and removal and disposal of all eroded materials from the roadway and shoulders	24 hrs	28 days	6 months		Inspection records showing compliance	100%

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ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
13) ITS EQUIPMENT									
	13.1	ITS Equipment	All ITS equipment is fully functional and housing is functioning and free of defects. (i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear (ii) Steps, handrails and accesses are kept in a good condition (iii) Access to all communication hubs, ground boxes, cabinets and sites is clear (iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition (v) All communication cable markers, cable joint markers and duct markers are visible and missing markers are replaced (vi) Backup power supply system is available at all times	24 hrs	14 days	1 month	Visual inspection	Inspection records showing compliance with requirements for maintenance of ITS equipment in each auditable section.	100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	13.2	Dynamic message sign equipment	Dynamic message signs are free from faults such as: (i) Any signal displaying a message which is deemed to be a safety hazard (ii) Failure of system to clear sign settings when appropriate. (iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions (iv) Signs displaying an incorrect message.	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	Inspection records showing compliance	100%

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PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

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ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
	13.3	CCTV equipment	CCTV Systems are free from faults that limit the availability of the operators to monitor the area network, such as: (i) Failure of CCTV Systems to provide control offices with access and control of CCTV images (ii) Failure of a CCTV camera or its video transmission system. (iii) Failure of a pan / tilt unit or its control system. (iv) Moisture ingress onto CCTV camera lens (v) Faults that result in significant degradation of CCTV images	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	Inspection records showing compliance	100%
	13. 4	Vehicle detection equipment	All equipment free of defects and operational problems such as; (i) Inoperable loops. (ii) Malfunctioning camera controllers.	2 hrs	24 hrs	1 month	Defect measurement dependent on equipment Traffic detector loops: Loop circuit's inductance to be > 50 and < 1,000 micro henries. Insulation resistance to be > 50 meg ohms.	Inspection records showing compliance Instances of loops out of compliance	100% Nil

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ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
14) TOLLING Facilities and Buildings (Not Used)									
15) AMENITY									
	15.1	Graffiti	Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces	24 hrs	28 days	6 months	All graffiti is considered a Category 1 defect	Inspection records showing compliance	100%
	15.2	Animals	All dead or injured animals are removed	2 hrs	N/A	N/A	Visual inspection	No dead or injured animals are present	100%
	15.3	Abandoned vehicles and equipment	All abandoned vehicles and equipment are removed	1 hr	72 hrs	N/A	Visual inspection	No abandoned vehicles or equipment present	100%
16) SNOW AND ICE CONTROL									
	16.1	Travel lanes	Maintain travel way free from snow and ice	2hrs	N/A	N/A	Maximum 1hr response time to complete manning and loading of spreading vehicles Maximum 2 hrs from departure from loading point to complete treatment and return to loading point Maximum 1 hr response time for	Inspection records showing compliance	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitigation	**Permanent Remedy**	**Permanent Repair**			
							snow and ice clearance vehicles to depart from base		
	16.2	Weather forecasting	Weather forecast information is obtained and assessed and appropriate precautionary treatment is carried out to prevent ice forming on the travel way	2hrs	N/A	N/A	Operations plan details the process and procedures in place and followed	Inspection records showing compliance	100%
	16.3	Operational plans	Operate snow and ice clearance plans to maintain traffic flows during and after precipitation resulting in snowfall or ice and restore the travel way to a clear condition as soon as possible.	2hrs	N/A	N/A	Operations plan details the process and procedures in place and followed	Inspection records showing compliance	100%
17) INCIDENT RESPONSE									
	17.1	General	Respond to Incidents in accordance with the MMP	1 hr	N/A	N/A	Response times met for 98% of Incidents measured on a 1 year rolling basis. No complaints from Emergency Services.	Inspection records showing compliance	100%
	17.2	Hazardous Materials	For any Hazardous Materials spills, comply with the requirements of the MMP.	1 hr	N/A	N/A	MMP details the process and procedures in place and followed.	Inspection records showing compliance	100%

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ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitiga-tion	**Perma-nent Remedy**	**Perma-nent Repair**			
	17.3	Structural assessment	Evaluate structural damage to structures and liaise with Emergency Services to ensure safe working in clearing the Incident	1 hr	N/A	N/A	Inspections and surveys as required by Incident	Incident reports showing compliance	100%
	17.4	Temporary and permanent remedy	Propose and implement temporary measures or permanent repairs to Defects arising from the Incident. Ensure the structural safety of any structures affected by the Incident	24 hrs	28 days	N/A	Review and inspection of the Incident site	Auditable inspection records showing compliance	100%
18) CUSTOMER RESPONSE									
	18.1	Response to inquiries	Timely and effective response to customer inquiries and complaints.	48 hrs	28 days	N/A	Contact the customer within 48 hours following initial customer inquiry. All work resulting from customer requests is scheduled within 48 hours of customer contact. Follow-up contact with the customer within 72 hours of initial inquiry. All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	Number of responses within specified times	100%

ATTACHMENT 19-2

PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	**REF**	**ELEMENT**	**PERFORMANCE REQUIREMENT**	**RESPONSE TO DEFECTS**			**INSPECTION AND MEASUREMENT METHOD***	**MEASUREMENT RECORD***	**TARGET**
				Cat 1	**Cat 1**	**Cat 2**			
				Hazard Mitiga-tion	**Perma-nent Remedy**	**Perma-nent Repair**			
	18.2	Customer contact line	Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified	24 hrs	28 days	N/A	Instances of line out of action or unmanned	Operations records showing non availability including complaints from public.	nil
19) SWEEPING AND CLEANING									
	19.1	Sweeping	(i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean, (ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways (iii) Remove all sweepings without stockpiling in the right of way and dispose of at approved tip.	24 hrs	28 days	6 months	Buildup of dirt, ice rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	Inspection records showing compliance	100%
	19.2	Litter	(i) Keep the Project in a neat condition, remove litter regularly (ii) Pick up large litter items before mowing operations. (iii) Dispose of all litter and debris collected at an approved solid waste site.	24 hrs	28 days	6 months	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	Inspection records showing compliance	100%

TEXAS DEPARTMENT OF TRANSPORTATION
TECHNICAL PROVISIONS

FOR

SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2

ATTACHMENT 21-1
TYPICAL TOLL ZONE LAYOUT

ADDENDUM #1

JUNE 25, 2015

Attachment 21-1
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 Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	1	2	3	1	2	3	1	2	3	
FACILITIES										
Toll plaza design layout	A	N/A	N/A	B	N/A	N/A	B	N/A	N/A	See Sec 21.3 of TPs
Metered power service to roadside equipment cabinet	B	D	C	A	A	A	B	D	C	SI to provide power requirements and special requirements for Dev to construct utilities near toll collection points
Electrical conductors from equipment pad to Toll Zone equipment	C	D	C	C	D	C	A	A	A	Dev will coordinate access to roadway for installations
Complete backup power systems: generators, automatic transfer switches, and fuel tanks	C	D	C	D	D	C	A	A	A	Dev will coordinate access to roadway for installations
Concrete pad/foundation and conduits for backup power systems	A	D	C	D	D	C	B	A	A	T to design for SI. Dev to construct grading, earthwork and subgrade for SI work. Dev will coordinate access to roadway for installations
Uninterruptible power supplies for the lane controllers/tolling equipment at Toll Zones	C	D	C	D	D	C	A	A	A	Dev will coordinate access to roadway for installations
Lightning protection & grounding	A	D	C	D	D	C	B	A	A	Dev will coordinate access to roadway for installations. Dev to coordinate with SI for SI placement of conduit prior to Dev placing pavement.

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Element/Task/Component/ Sub-system	TxDOT (TOD Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	1	2	3	1	2	3	1	2	3	
FACILITIES										
Concrete encased duct bank for dedicated toll needs	C	D	C	A	A	A	C	D	C	Dev to install conduit in Duct Bank complete with pull strings
Fiber optic cables in duct bank for toll systems	B	D	C	A	A	A	B	D	C	Dev to provide fiber with 4 strands single mode dedicated fiber to each toll zone (E.g. 24 toll zones would require 96 fiber strands). No daisy chaining. Dev to install pull strings, fiber optic markers, test stations and tracer wire with fiber optic cables
Termination cabinet and fiber optic data/communication to termination cabinet	B	D	C	A	A	A	B	D	C	SI to provide communication/data requirements. Dev to provide and test fiber to Dev provided fiber termination cabinets adjacent to each toll zone equipment cabinet pad.
Data/communication wire/fiber from termination cabinet to toll systems equipment	C	D	C	D	D	C	A	A	A	SI to install from roadside termination cabinet to toll systems equipment
Toll Zone pavement and structure, using special pavement section and conduit stub ups for pavement sensors (see Attachment 21-3 of Technical Provisions)	B	D	C	A	A	A	B	D	C	SI to provide pavement loop details with stub-up locations. T will coordinate with Dev for joint layouts. Dev to construct Stub Ups to terminate in junction boxes, provided by Dev, adjacent to toll zone pavement

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No Responsibility	D			

Element/Task/Component/ Sub-system	TxDOT (TOD Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	1	2	3	1	2	3	1	2	3	
FACILITIES										
Loop conduit from junction box to roadside equipment cabinet	A	D	C	D	D	C	B	A	A	Dev will coordinate access to roadway for installations
Gantry equipment conduit from roadside equipment cabinet to toll systems equipment	A	D	C	D	D	C	B	A	A	Dev will coordinate access to roadway for installations
Pavement sensors	A	D	C	D	D	C	B	A	A	Dev to provide access to SI to saw cut and install pavement sensors
Gantries and foundations (includes columns and trusses)	A	D	C	D	D	C	B	A	A	T to design and SI to construct. Dev to provide access for T geotechnical borings and SI construction.
Toll equipment mounts on gantries	C	D	C	D	D	C	A	A	A	SI to install any required equipment mounts on gantries. SI to coordinate with T during the design phase to incorporate any required framing to support equipment mounts.
Concrete traffic barrier and foundation, MBGF, barrier end treatments, Toll Zone drainage, grading, & earthwork, SW3P and retaining walls within Toll Zone	C	D	D	A	A	A	C	D	C	All reinforcement (barrier, pavement, etc.) within the Toll Zone shall be epoxy coated.
Roadside equipment cabinet concrete pads/foundations	A	D	C	D	D	C	B	A	A	T to design for SI to construct. Dev to provide grading, earthwork and subgrade for SI's slabs. Dev to provide SI access for construction.

Attachment 21-1
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 Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	1	2	3	1	2	3	1	2	3	
FACILITIES										
Toll Zone maintenance driveways	A	D	C	B	B	B	C	A	A	T to design for SI to construct maintenance driveway pavement surface. Dev to construct grading, earthwork and subgrade for SI work.
Roadside equipment cabinets (incl power, comm and HVAC systems)	C	D	C	D	D	C	A	A	A	SI to install complete. Dev will coordinate access to roadway for installations.
Toll rate signage	A	D	C	D	D	C	C	A	A	Dev will coordinate access to roadway for installations.
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	Dev 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	Dev will coordinate access to roadway for installations.
Toll plaza host computer	C	D	C	D	D	D	A	A	A	
Lane controller hardware	C	D	C	D	D	C	A	A	A	Dev will coordinate access to roadway for installations
Communication equipment	C	D	C	D	D	C	A	A	A	Dev will coordinate access to roadway for installations.

Attachment 21-1
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 Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	
ELECTRONIC TOLL COLLECTION SUB-SYSTEMS (ETC)										
Support equipment at TxDOT designated customer service center	C	D	C	D	D	D	A	A	A	
Commissioning and site acceptance testing	C	D	B	D	D	C	A	A	A	Dev will coordinate access to roadway for testing
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	
Operational test	C	D	B	D	D	D	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	

Attachment 21-1
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 Design) (T)			Developer (Contractor) (Dev)			System Integrator (SI)			Comments Other Responsibility/Information
	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	

TEXAS DEPARTMENT OF TRANSPORTATION
TECHNICAL PROVISIONS

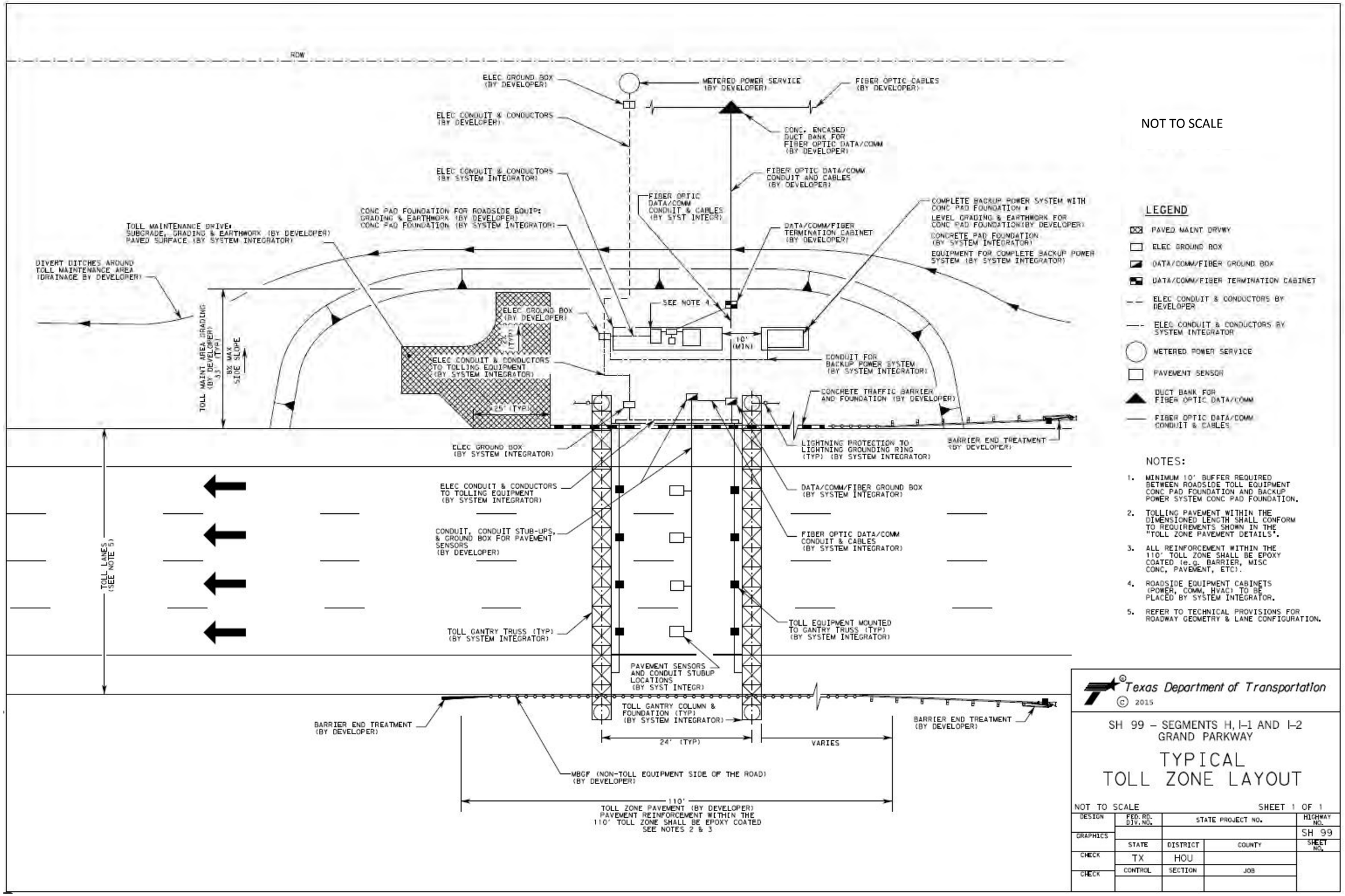
FOR

SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2

ATTACHMENT 21-2
TYPICAL TOLL ZONE LAYOUT

ADDENDUM #1

JUNE 25, 2015



NOT TO SCALE

LEGEND

- PAVED MAINT DRVWY
- ELEC GROUND BOX
- DATA/COMM/FIBER GROUND BOX
- DATA/COMM/FIBER TERMINATION CABINET
- ELEC CONDUIT & CONDUCTORS BY DEVELOPER
- ELEC CONDUIT & CONDUCTORS BY SYSTEM INTEGRATOR
- METERED POWER SERVICE
- PAVEMENT SENSOR
- DUCT BANK FOR FIBER OPTIC DATA/COMM
- FIBER OPTIC DATA/COMM CONDUIT & CABLES

NOTES:

1. MINIMUM 10' BUFFER REQUIRED BETWEEN ROADSIDE TOLL EQUIPMENT CONC PAD FOUNDATION AND BACKUP POWER SYSTEM CONC PAD FOUNDATION.
2. TOLLING PAVEMENT WITHIN THE DIMENSIONED LENGTH SHALL CONFORM TO REQUIREMENTS SHOWN IN THE "TOLL ZONE PAVEMENT DETAILS".
3. ALL REINFORCEMENT WITHIN THE 110' TOLL ZONE SHALL BE EPOXY COATED (e.g. BARRIER, MISC CONC, PAVEMENT, ETC).
4. ROADSIDE EQUIPMENT CABINETS (POWER, COMM, HVAC) TO BE PLACED BY SYSTEM INTEGRATOR.
5. REFER TO TECHNICAL PROVISIONS FOR ROADWAY GEOMETRY & LANE CONFIGURATION.

Texas Department of Transportation

SH 99 – SEGMENTS H, I-1 AND I-2
GRAND PARKWAY

TYPICAL TOLL ZONE LAYOUT

NOT TO SCALE SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS				SH 99
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TX	HOU		
CHECK	CONTROL	SECTION	JOB	