

**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**

**APRIL 30, 2015**

**ATTACHMENT 11-1  
CROSS STREET DESIGN CRITERIA MATRIX**

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	SH99 INITIAL BUILD										
							NORTHBOUND					Turn Lanes	SOUTHBOUND				
							U-Turn (each)	ClearZone 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)	ClearZone for Cross Street 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') with 4' curbed median	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')	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')	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')	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	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Baptist Encampment Road	F	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	1	6'	5'	N	2 (12')	2 (12')	2 (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')	1 (12')	N	N/A	16'	0
Wilderness Road	F	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Galaxy Blvd.	A	Montgomery Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	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/A	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	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	2 (12')	2 (12')	2 (12')	Y	5'	6'	0

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	EASTBOUND					Turn Lanes	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 Street 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	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Future Thoroughfare #3 (Community)	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Future Thoroughfare #3A (Wolf Trot)	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Future Thoroughfare #4 (Kingwood)	A	Liberty Co.	Urban Collector	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
CR622	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	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')	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	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')	2 (12')	N	N/A	16'	0
CR605	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	2 (12')	N	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	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	2 (12')	N	N/A	10'	0

Assumptions:

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

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

Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	SH99 INITIAL BUILD										
							EASTBOUND					Turn Lanes	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 Street 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	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')	2 (12')	N	N/A	16'	0
Future Thoroughfare #5	A	Liberty Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
CR491	B	Liberty Co.	Rural Local	45	Under SH 99	WB-50	0	10'	N/A	N	1 (12')	N	1 (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')	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')	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	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
IH10Eastbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	N/A	N/A	N/A	N/A	N/A	1 (12')	2 (12')	Y	5'	6'	1
IH10Mainlanes	N/A	TxDOT	Rural Freeway	70	Under SH 99		0	30'	Match Existing Mainlanes and Structures							30'	0
IH10Westbound Frontage Road	J	TxDOT	Urban Collector	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	1 (12')	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	2 (12')	2 (12')	2 (12')	Y	5'	6'	0
Kilgore Road	A	Chambers Co.	Urban Local	45	Under SH 99	WB-50	0	6'	5'	N	2 (12')	2 (12')	2 (12')	Y	5'	6'	0

Assumptions:

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

SH99 INITIAL BUILD																	
Intersecting Street	Ultimate Typical Section	Jurisdiction	Roadway Classification	Design Speed (mph)	Position (over/under)	Design Vehicle	NORTHBOUND					Turn Lanes	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)
Fisher Road	A	Chambers County	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2(12')	2(12')	2(12')	Y	5'	6'	0
Wyoming	F	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	1(12')	2(12')	1(12')	Y	5'	6'	1
Lee Drive	A	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	2 (12')	y	5'	6'	1
Wismer Road	A	City of Baytown	Urban Local	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (12')	2 (12')	Y	5'	6'	1
BS146	A	TxDOT	Urban Arterial	45	Under SH 99	WB-50	1	6'	5'	Y	2 (12')	2 (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')	1 (12')	N	N/A	10'	1
FM1405	D	TxDOT	Rural Collector	45	Under SH 99	WB-50	1	16'	N/A	N	2 (12')	2 (12')	2 (12')	N	N/A	16'	1

Assumptions:

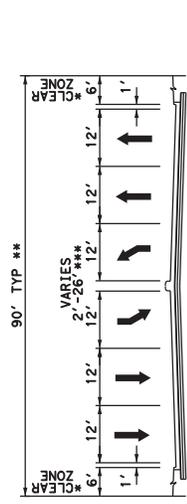
Urban - Curb and gutter with minimum 5' sidewalk on all urban roadways. Pedestrian accommodations are only on Urban Facilities.

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**

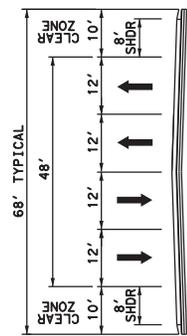
**ATTACHMENT 11-2**  
**ULTIMATE CROSS STREET TYPICAL SECTIONS**

**APRIL 30, 2015**

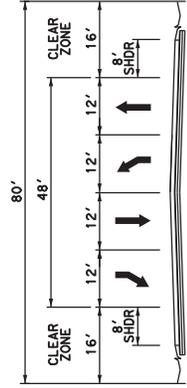


**SECTION A**

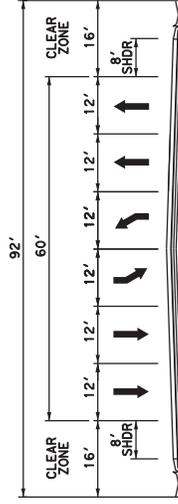
\* INCLUDES MIN 5' SIDEWALK  
 \*\* MIN 12' MEDIAN AT BS146 (98' TOTAL WIDTH)  
 \*\*\* OVER 4' WIDE, USE RAISED MEDIAN



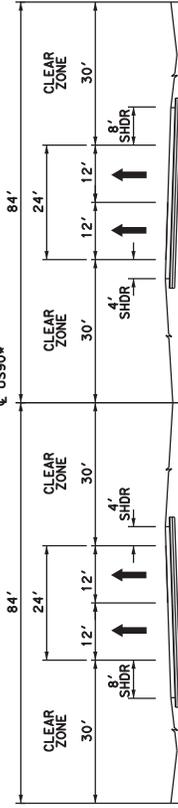
**SECTION B**



**SECTION C**

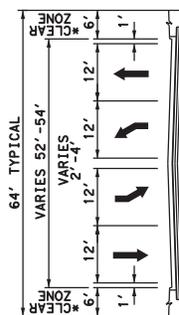


**SECTION D**



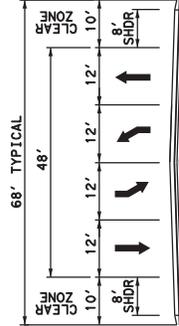
**SECTION E**

\* CENTER COLUMN ALLOWED (PROTECT WITHIN CLEAR ZONE)

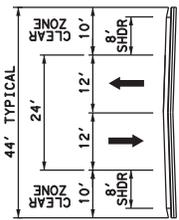


**SECTION F**

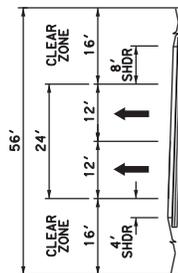
\* INCLUDES MIN 5' SIDEWALK



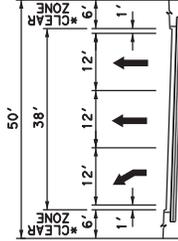
**SECTION G**



**SECTION H**



**SECTION I**



**SECTION J**

\* INCLUDES MIN 5' SIDEWALK  
 \*\* NORTHBOUND AND WESTBOUND MIRRORED



99 TEXAS

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

N.T.S.

**TEXAS DEPARTMENT OF TRANSPORTATION**  
**TECHNICAL PROVISIONS**  
**FOR**  
**SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2**

**ATTACHMENT 13-1**  
**TXDOT STANDARD BRIDGE RAILING**

**APRIL 30, 2015**

**ATTACHMENT 13-1  
TXDOT STANDARD BRIDGE RAILING**

Table 1 lists currently approved TxDOT Bridge Railing Standards:

**Table 1: TxDOT Standard Bridge Railing**

<b>TRAFFIC RAILS</b>		
<b>Rev Date</b>	<b>Std Name</b>	<b>Description</b>
05-11	T1F	Stl Post w/Alum Tube & Opt Curb Drains (33" tall)
05-11	T1W	Stl Post w/Stl Tube & Opt Curb Drains (32" tall)
04-09	T101	Steel Post with W-Beam (27" tall)
05-11	T221	Concrete Parapet (32" tall)
05-11	T223	Conc Bm & Post w/6' Openings (32" tall)
05-11	T401	Concrete Parapet w/Stl Post and Rail (33" tall)
05-11	T402	Concrete Parapet w/Stl Post and Rail (42" tall)
05-11	T411	Conc Traf Rail w/Windows(Tx Classic)(32" tall)
05-11	T551	Concrete Safety F-Shape (32" tall)
05-11	T552	T551 w/Multiple Drain Slots (32" tall)
04-09	T6	Steel Post w/Doubled W-Beams (27.125" tall)
05-11	T66	Conc Bm, Post & Curb w/5.25' Max Open (32" tall)
05-11	SSCB	Single Slope Concrete Barrier, Type 1 (42" tall)
05-11	SSTR	Conc Single Slope Traffic Rail (36" tall)
<b>COMBINATION RAILS</b>		
<b>Rev Date</b>	<b>Std Name</b>	<b>Description</b>
05-11	C1W	Steel Post w/Stl Tube & Opt Curb Drain (42" tall)
05-11	C221	T221 w/Steel Pipe Rail (42" tall)
05-11	C223	T223 w/Steel Pipe Rail (42" tall)
05-11	C402	T402 w/Steel Pipe Rail (42" tall)
05-11	C411	Comb Rail w/windows (Tx Classic) (42" tall)
05-11	C412	Conc Comb Rail w/Windows (TL-4) (42" tall)
<b>MISCELLANEOUS RAILS</b>		
<b>Rev Date</b>	<b>Std Name</b>	<b>Description</b>
05-11	C-RAIL-R	Retrofit Guide for Concrete Rails
04-09	T101RC	Retrofit Guide for T101 on Curbs
04-09	T1-101R	Retrofit (Convert T1 to T101)
04-09	T2/T201TR	Guide for T2/T201(Retrofit Thrie-Beam Transition)
04-09	T202TR	Guide for T202 (Retrofit Thrie-Beam Transition)
05-11	TRF	Traffic Rail Foundation
04-09	PR1	Pedestrian Rail,Steel Pipe (42" tall)
05-11	PR2	Pedestrian Rail,Steel Pipe on Parapet (42" tall)
04-09	PR3	Pedestrian Rail,Steel and Conc (43.75" tall)
04-09	PR3-HD	Handrail Details for PR3 Pedestrian Rail
04-09	CLF-RO	8 Ft Chain Link Fence for Railroad Overpass
05-11	C-RAIL-R	Retrofit Guide for Concrete Rails

**TEXAS DEPARTMENT OF TRANSPORTATION**  
**TECHNICAL PROVISIONS**  
**FOR**  
**SH 99 GRAND PARKWAY SEGMENTS H, I-1 AND I-2**

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE**  
**PRIOR TO SUBSTANTIAL COMPLETION**

**APRIL 30, 2015**

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO 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	Perma-nent Remedy	Perma-nent Repair			
<b>1) ROADWAY</b>									
							Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's <i>Pavement Management Information System Rater's Manual</i> . Unless otherwise stated, pavement performance measurement records relate to 0.1-mile sections as described in the <i>Pavement Management Information System Rater's Manual</i> .		
	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	<b>a) Ruts – Mainlanes, shoulders &amp; ramps</b> Visual inspection at travel speed  10ft straight edge used to measure rut depth for localized areas.	Depth of rut at any location greater than 0.5"	N/A  Nil
							<b>b) Ride quality</b> Ride quality will not be measured during this phase.		N/A

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO 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	Perma-nent Remedy	Perma-nent Repair			
							<b>c) Failures</b> 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
	1.2 cont						<b>d) Edge drop-offs</b> Physical measurement of edge drop-off level compared to adjacent surface	Instances of edge drop-off greater than 2" (Number)	Nil
							<b>e) Skid resistance</b> 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 – Number of sections investigated as to potential risk of skidding accident and appropriate remedial action taken where average Skid Number for 0.5-mile section of mainlanes, shoulders and ramps is in excess of 30.	100%

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO 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	Perma-nent Remedy	Perma-nent Repair			
	1.2 cont						<ul style="list-style-type: none"> <li>• Frontage roads –Number of sections investigated as to potential risk of skidding accident and appropriate remedial action taken where average Skid Number for 0.5-mile section of frontage roads is in excess of 30.</li> <li>• When the skid number is below 25 and/or when required by the Wet Weather Accident Reduction Program, areas categorized as high risk, the DB Contractor shall perform a site investigation and perform required corrective action.</li> </ul>	100%	
			Road Users warned of potential skidding hazards	24hrs	7days	N/A	<b>Skid resistance</b> (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	<b>a) Potholes</b>	Potholes of low severity or higher (Number)	Nil

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>										
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>	
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>				
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>				
							<b>b) Base failures</b>	Base failures of low severity or higher (Number)	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 1/4"  Joint width more than 1" or faulting more than 1/4"	Nil  Nil	
	1.5	Curbs	Curbs are free of defects	24 hrs	28 days	6 months	3 feet straight edge will be used to measure curb alignment	Deviation from original alignment greater than 1 inch	Nil	
<b>2) DRAINAGE</b>										
	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 following heavy rain	Identify areas of water back up	Nil	

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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%
<b>3) STRUCTURES</b>									
	3.1	Structures having an opening measured along the centre of the roadway of more than 20 feet	The following items and their components shall be in accordance with this performance standard. <ul style="list-style-type: none"> <li>• Deck</li> <li>• Superstructure</li> </ul>	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	Records as required in the TxDOT Bridge Inspection Manual	100%

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO 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	Perma-nent Remedy	Perma-nent Repair			
		between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes	<ul style="list-style-type: none"> <li>• Substructure</li> <li>• Channel</li> <li>• Culverts</li> <li>• Approaches</li> </ul>				TxDOT Bridge inspection Manual, and the Federal Administration’s Bridge Inspector’s Reference Manual.	Occurrences of condition rating below six (6) for any deck, superstructure or substructure	Nil
			(i) Substructures and superstructures are free of: <ul style="list-style-type: none"> <li>• graffiti</li> <li>• undesirable vegetation</li> <li>• debris and bird droppings</li> <li>• blocked drains, weep pipes manholes and chambers</li> <li>• blocked drainage holes in structural components</li> <li>• defects in joint sealants</li> <li>• defects in pedestrian protection measure</li> <li>• scour damage</li> <li>• corrosion of rebar</li> <li>• paint system failures</li> <li>• impact damage</li> </ul> (ii) Expansion joints free of: <ul style="list-style-type: none"> <li>• dirt, debris and vegetation</li> <li>• defects in drainage systems</li> <li>• loose nuts and bolts</li> </ul>	24 hrs	28 days	6 months	Visual Inspection	At a minimum, recorded annually per TxDOT Maintenance Operations Manual and in accordance with Good Industry Practice.	100%

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				Cat 1	Cat 1	Cat 2			
				Hazard Mitigation	Perma-nent Remedy	Perma-nent Repair			
			<ul style="list-style-type: none"> <li>• defects in gaskets</li> </ul> (iii) The deck drainage system is free of all and operates as intended. (iv) Parapets free of: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• blockages of hollow section drain holes</li> <li>• graffiti</li> <li>• vegetation</li> <li>• accident damage</li> </ul> (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						

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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	Perma-nent Remedy	Perma-nent Repair			
			devices is maintained.						
	3.2	Non-bridge class culverts	Non-bridge-class culverts are free of: <ul style="list-style-type: none"> <li>• vegetation and debris and silt</li> <li>• defects in sealant to movement joints</li> <li>• scour damage</li> </ul>	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: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• defects in surface protection systems</li> <li>• graffiti</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number with loose assemblies  Number with defects in surface protection	Nil  Nil

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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	Perma-nent Remedy	Perma-nent Repair			
<b>4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS</b>									
	4.1	Pavement markings	Pavement markings are: <ul style="list-style-type: none"> <li>• clean and visible during the day and at night</li> <li>• whole and complete and of the correct color, type, width and length</li> <li>• placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets</li> </ul>	24 hrs	28 days	6 months	a) Markings - General Visual inspection at 300 ft with low beams as per earlier TxDOT practice.	Length found defective.	100%
							Visual inspection	Length with more than 5% loss of area of material at any point	Nil
							b) Profile Markings Visual inspection	Length with spread more than 10% of specified dimensions. Length performing its intended function and compliant with relevant regulations	Nil 100%
							Number with graffiti	Nil	



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<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
<b>5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS</b>									
	5.1	Guard rails and safety barriers	All guardrails, safety barriers, concrete barriers, etc... 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%
<b>6) TRAFFIC SIGNS</b>									
	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	<b>a) Retroreflectivity</b>  Visual inspection at 300 ft with low beams as per earlier TxDOT practice	Number of signs found non-reflective.	Nil

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<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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				<b>b) Face damage</b> Visual inspection  <b>c) Placement</b> Visual inspection  <b>d) Sign Information</b> Visual inspection  <b>e) Sign Information</b> Visual inspection  <b>f) Dynamic Message Signs</b> 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  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%  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	Perma-nent Remedy	Perma-nent Repair			
			(x) Dynamic message signs are in an operational condition						
	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.	2hrs	1 week	6 months	Visual inspection	Number of damaged safety critical signs	Nil
<b>7) TRAFFIC SIGNALS</b>									
	7.1	General	(i) Traffic Signals and their associated equipment are: <ul style="list-style-type: none"> <li>• clean and visible</li> <li>• correctly aligned and operational</li> <li>• free from damage caused by accident or vandalism</li> <li>• correctly aligned and operational</li> </ul> (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	<b>a) General condition</b> Visual inspection  <b>b) Damage</b> Visual inspection  <b>c) Signal timing</b> Timed measurements	Signals are clean and visible  Signals are undamaged  Installations have correct signal timings	100%  100%  100%

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

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<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
							<b>d) Contingency plans</b> Records review	Full contingency plans are in place	100%
	7.2	Soundness	Traffic signals are structurally and electrically sound	24 hrs	28 days	6 months	<b>a) Structural soundness</b> Visual inspection  <b>b) Electrical soundness</b> 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%
<b>8) LIGHTING</b>									

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

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<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	8.1	Roadway lighting – General	(i) All lighting is free from defects and provides acceptable uniform lighting quality	24 hrs	28 days	6 months	<b>a) Mainlane lights operable</b> Night time inspection or automated logs	Number of sections with less than 90% of lights functioning correctly at all times	Nil
			(ii) Lanterns are clean and correctly positioned				<b>b) Mainlane lights out of action</b> 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

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<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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  (iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion  (for structural requirements refer to Element Category 3)	24 hrs	48 hrs	1 Month	Yearly inspection and night time inspections or automated logs	Instances of two or more lamps not working per high mast pole	Nil
							Identification of other defects	Nil	
<b>9) FENCES, WALLS AND SOUND ABATEMENT</b>									
	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%
<b>10) ROADSIDE MANAGEMENT</b>									

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**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

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<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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. (ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance.	24 hrs	7 days	28 days	<b>a) Urban areas</b> Physical measurement of height of grass and weeds  <b>b) Rural areas</b> 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%
			(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.				<b>c) Encroachment</b> Visual inspection of instances of encroachment of vegetation  <b>d) Wildflowers</b> Visual Inspection with audit of process.  <b>e) Sight lines</b> 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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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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
<b>11) REST AREAS AND PICNIC AREAS (Not Used)</b>									
<b>12) EARTHWORKS, EMBANKMENTS AND CUTTINGS</b>									

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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	12.1	Slope failure	All structural or natural failures of the embankment and cut slopes of the Facility 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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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
<b>13) ITS EQUIPMENT</b>									
	13.1	Dynamic message sign equipment	Dynamic message signs are free from faults such as:  (i) Any signal displaying an 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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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	13.2	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%
	13.3	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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				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
<b>14) TOLLING Facilities and Buildings (Not Used)</b>									
<b>15) AMENITY</b>									
	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 from the ROW	2 hrs	N/A	N/A	Visual inspection	No dead or injured animals are present on ROW	100%
	15.3	Abandoned vehicles and equipment	All abandoned vehicles and equipment are removed from the ROW.	1 hr	24 hrs	N/A	Visual inspection	No abandoned vehicles or equipment present	100%
<b>16) SNOW AND ICE CONTROL</b>									
	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 2hrs from departure from loading point to complete treatment and return to loading point  Maximum 1hr response time for	Inspection records showing compliance	100%

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma- nent Remedy</b>	<b>Perma- nent Repair</b>			
							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 snowfall 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%
<b>17) INCIDENT RESPONSE</b>									
	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%

**ATTACHMENT 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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%
<b>18) CUSTOMER RESPONSE</b>									
	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 19-1**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE PRIOR TO SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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
<b>19) SWEEPING AND CLEANING</b>									
	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 right of way 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 19-2**  
**PERFORMANCE AND MEASUREMENT TABLE BASELINE**  
**AFTER SUBSTANTIAL COMPLETION**

**APRIL 30, 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			
<b>1) ROADWAY</b>									
							Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's <i>Pavement Management Information System Rater's Manual</i> . Unless otherwise stated, pavement performance measurement records relate to 0.1-mile sections as described in the <i>Pavement Management Information System Rater's Manual</i> .		
	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	<b>a) Ruts – Mainlanes, shoulders &amp; ramps</b>  Depth as measured using an automated device in compliance with TxDOT Standards.	Percentage of wheel path length with ruts greater than ¼" in depth in each Auditable Section  • Mainlanes, shoulders and ramps - 3%	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			
							construction quality standards)	of less than or equal to: <ul style="list-style-type: none"> <li>• Mainlanes, ramps - 120" per mile**</li> <li>• Frontage roads - 150" per mile**</li> <li>• Mainlanes, ramps, 0.1 mile average - 150" per mile**</li> </ul>	100%
								<ul style="list-style-type: none"> <li>• Frontage roads, 0.1 mile average - 180" per mile**</li> </ul>	100%
							10-ft straightedge used to measure discontinuities	(iii) IRI measured throughout 98% of each lane containing a bridge deck in any Auditable Section, 0.1 mile average - 200" per mile**	100%
								Individual discontinuities greater than 1/4"	Nil
							<b>c) Failures</b> Instances of failures exceeding the	Occurrence of any failure	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			
							failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures		
							<b>d) Edge drop-offs</b> Physical measurement of edge drop-off level compared to adjacent surface	Instances of edge drop-off greater than 2" (Number)	Nil
	1.2 cont						<b>e) Skid resistance</b> 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 – Number of sections investigated as to potential risk of skidding accident and appropriate remedial action taken where average Skid Number for 0.5-mile section of mainlanes, shoulders and ramps is in excess of 30.	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 Mitigation	Permanent Remedy	Permanent Repair			
							<b>b) Base failures</b>	Base failures of low severity or higher (Number)	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	3 feet straight edge will be used to measure curb alignment	Deviation from original alignment greater than 1 inch	Nil
<b>2) DRAINAGE</b>									
	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

**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			
	2.2	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%
<b>3) STRUCTURES</b>									
	3.1	Structure Components (Structures having an opening measured along the centre of the	(i) Substructures and superstructures are free of: <ul style="list-style-type: none"> <li>• graffiti</li> <li>• undesirable vegetation</li> <li>• debris and bird droppings</li> </ul>	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	Records as required in the TxDOT Bridge Inspection Manual	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 Mitigation	Permanent Remedy	Permanent Repair			
		roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes)	<ul style="list-style-type: none"> <li>• blocked drains, weep pipes manholes and chambers</li> <li>• blocked drainage holes in structural components</li> <li>• defects in joint sealants</li> <li>• defects in pedestrian protection measure</li> <li>• scour damage</li> <li>• corrosion of rebar</li> <li>• paint system failures</li> <li>• impact damage</li> </ul> <p>(ii) Expansion joints free of:</p> <ul style="list-style-type: none"> <li>• dirt, debris and vegetation</li> <li>• defects in drainage systems</li> <li>• loose nuts and bolts</li> <li>• defects in gaskets</li> </ul> <p>(iii) The deck drainage system is free of all and operates as intended.</p> <p>(iv) Parapets free of:</p> <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• blockages of hollow section drain holes</li> <li>• graffiti</li> <li>• vegetation</li> </ul>				TxDOT Bridge Inspection Manual, and the Federal Highway Administration’s Bridge Inspector’s Reference Manual.	Occurrences of condition rating below six (6) for any deck, superstructure or substructure  Auditable Sections with structure components with condition states of one	Nil  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 Mitigation	Permanent Remedy	Permanent Repair			
			<ul style="list-style-type: none"> <li>• accident damage</li> </ul> (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.						
	3.2	Non-bridge class culverts	Non-bridge-class culverts are free of: <ul style="list-style-type: none"> <li>• vegetation and debris and silt</li> <li>• defects in sealant to movement joints</li> <li>• scour damage</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number with vegetation, debris and silt  Number with defects in sealant and movement joints	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			
							Number with scour damage	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: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• defects in surface protection systems</li> <li>• graffiti</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number with loose assemblies	Nil
Number with defects in surface protection								Nil	
Number with graffiti								Nil	
	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

**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			
	3.6	Mechanically Stabilized Earth and Retaining Walls	Mechanically Stabilized Earth and Retaining Walls free of: <ul style="list-style-type: none"> <li>• blocked weep holes</li> <li>• undesirable vegetation</li> <li>• defects in joint sealants</li> <li>• defects in pedestrian protection</li> <li>• scour damage</li> <li>• corrosion of reinforcing bars</li> <li>• paint system failure</li> <li>• concrete spalling</li> <li>• impact damage</li> </ul> Parapets free of: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• blockage of drain holes</li> <li>• undesirable vegetation</li> <li>• impact damage</li> <li>• concrete spalling</li> </ul>	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal Nations 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%
<b>4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS</b>									
	4.1	Pavement markings	Pavement markings are: <ul style="list-style-type: none"> <li>• clean and visible during the day and at night</li> <li>• whole and complete and of the</li> </ul>	24 hrs	28 days	6 months	a) Markings - General  General Portable retroreflectometer, which uses 30 meter geometry meeting the	Length meeting the minimum retroreflectivity 175 med/sqm/lx for white	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 Mitigation	Permanent Remedy	Permanent Repair			
			<ul style="list-style-type: none"> <li>correct color, type, width and length</li> <li>placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets</li> </ul>				requirements described in ASTM E 1710  Physical measurement  b) Profile Markings Visual inspection	Length meeting the minimum retroreflectivity 125 med/sqm/lx for white  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%  Nil  Nil  100%
	4.2	Raised reflective markers	Raised reflective pavement markers, object markers and delineators are: <ul style="list-style-type: none"> <li>clean and clearly visible</li> <li>of the correct color and type</li> <li>reflective or retroreflective as TxDOT standard</li> <li>correctly located, aligned and at the correct level</li> <li>are firmly fixed</li> <li>are in a condition that will ensure that they remain at the correct level.</li> </ul>	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)	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				
								have equivalent physical and performance characteristics to adjacent markers).	100%	
	4.3	Delineators & markers	Object markers, mail box markers and delineators are: <ul style="list-style-type: none"> <li>• clean and visible</li> <li>• of the correct color and type</li> <li>• legible and reflective</li> <li>• straight and vertical</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number of object markers or delineators defective or missing	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			
<b>5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS</b>									
	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	100%
								Length free from Defects	100%
								Length at correct height	100%
								Length at correct distance from roadway and obstacle	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%
<b>6) TRAFFIC SIGNS</b>									
	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) <b>Retroreflectivity</b> Coefficient of retro -reflectivity	Number of signs with reflectivity below the requirements of TxDOT's TMUTCD	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			
			(ii) Identification markers are provided, correctly located, visible, clean and legible				<b>b) Face damage</b> Visual inspection	Number of signs with face damage greater than 5% of area	Nil
	6.1 cont.		(iii) Sign mounting posts are vertical, structurally sound and rust free				<b>c) Placement</b> Visual inspection	Signs are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning	100%
			(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				<b>d) Sign Information</b> Visual inspection	Sign information is of the correct size, location, type and wording to meet its intended purpose	100%
			(v) Obsolete and redundant signs are removed or replaced as appropriate				<b>e) Sign Information</b> Visual inspection	Sign information is of the correct size, location, type and wording to meet its intended purpose	100%
			(vi) Visibility distances meet the stated requirements				<b>f) Dynamic Message Signs</b> Visual inspection	Dynamic message signs are fully functioning	100%
			(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						

**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			
			(x) Dynamic message signs are in an operational condition						
	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
<b>7) TRAFFIC SIGNALS</b>									
	7.1	General	(i) Traffic Signals and their associated equipment are: <ul style="list-style-type: none"> <li>• clean and visible</li> <li>• correctly aligned and operational</li> <li>• free from damage caused by accident or vandalism</li> <li>• correctly aligned and operational</li> </ul> (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	<b>a) General condition</b> Visual inspection  <b>b) Damage</b> Visual inspection  <b>c) Signal timing</b> Timed measurements	Signals are clean and visible  Signals are undamaged  Installations have correct signal timings	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 Mitigation	Permanent Remedy	Permanent Repair			
							<b>d) Contingency plans</b> Records review	Full contingency plans are in place	100%
	7.2	Soundness	Traffic signals are structurally and electrically sound	24 hrs	28 days	6 months	<b>a) Structural soundness</b> Visual inspection	Inspection records showing safe installation and maintenance	100%
							<b>b) Electrical soundness</b> Testing to meet NEC regulations		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%
<b>8) LIGHTING</b>									

**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			
	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  (iii) Lighting units are free from accidental damage or vandalism  (iv) Columns are upright, correctly founded, visually acceptable and structurally sound	24 hrs	28 days	6 months	<b>a) Mainlane lights operable</b>  Night time inspection or automated logs  <b>b) Mainlane lights out of action</b>  Night time inspection or automated logs	Number of sections with less than 90% of lights functioning correctly at all times   Instances of more than two consecutive lights out of action	Nil   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

**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			
	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 (iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion  (for structural requirements refer to Element Category 3)	24 hrs	48 hrs	1 month	Yearly inspection and night time inspections or automated logs	Instances of two or more lamps not working per high mast pole  Identification of other defects	Nil  Nil
<b>9) FENCES, WALLS AND SOUND ABATEMENT</b>									
	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%
<b>10) ROADSIDE MANAGEMENT</b>									

**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			
	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. (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.	24 hrs	7 days	28 days	<b>a) Urban areas</b> Physical measurement of height of grass and weeds  <b>b) Rural areas</b> Physical measurement of height of grass and weeds  <b>c) Encroachment</b> Visual inspection of instances of encroachment of vegetation  <b>d) Wildflowers</b> Visual Inspection with audit of process.  <b>e) Sight lines</b> Visual inspection	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  Occurrences of vegetation encroachment in each auditable section  Adherence to vegetation management manuals  Instances of impairment of sight lines or sight distance to signs	100%  100%  Nil  100%  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			
	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

**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			
	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
<b>11) REST AREAS AND PICNIC AREAS (Not Used)</b>									
<b>12) EARTHWORKS, EMBANKMENTS AND CUTTINGS</b>									

**ATTACHMENT 19-2**

**PERFORMANCE AND MEASUREMENT TABLE BASELINE AFTER SUBSTANTIAL COMPLETION**

<b>Performance and Measurement Table Baseline</b>									
<b>ELEMENT CATEGORY</b>	<b>REF</b>	<b>ELEMENT</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>RESPONSE TO DEFECTS</b>			<b>INSPECTION AND MEASUREMENT METHOD*</b>	<b>MEASUREMENT RECORD*</b>	<b>TARGET</b>
				<b>Cat 1</b>	<b>Cat 1</b>	<b>Cat 2</b>			
				<b>Hazard Mitigation</b>	<b>Perma-nent Remedy</b>	<b>Perma-nent Repair</b>			
	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%

**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			
<b>13) ITS EQUIPMENT</b>									
	13.1	ITS Equipment	<p>All ITS equipment is fully functional and housing is functioning and free of defects.</p> <p>(i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear</p> <p>(ii) Steps, handrails and accesses are kept in a good condition</p> <p>(iii) Access to all communication hubs, ground boxes, cabinets and sites is clear</p> <p>(iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition</p> <p>(v) All communication cable markers, cable joint markers and duct markers are visible and missing markers are replaced</p> <p>Backup power supply system is available at all times</p>	24 hrs	14 days	1 month	Visual inspection	Inspection records showing compliance with requirements for maintenance of ITS equipment in each auditable section.	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 Mitigation	Permanent Remedy	Permanent Repair			
	13.2	Dynamic message sign equipment	Dynamic message signs are free from faults such as: (i) Any signal displaying an 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%

**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			
	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%
	13.34	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

**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			
<b>14) TOLLING Facilities and Buildings (Not Used)</b>									
<b>15) AMENITY</b>									
	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	100%
	15.3	Abandoned vehicles and equipment	All abandoned vehicles and equipment are removed	1 hr	24 hrs	N/A	Visual inspection	No abandoned vehicles or equipment present	100%
<b>16) SNOW AND ICE CONTROL</b>									
	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%

**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			
							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%
<b>17) INCIDENT RESPONSE</b>									
	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%

**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			
	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%
<b>18) CUSTOMER RESPONSE</b>									
	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**

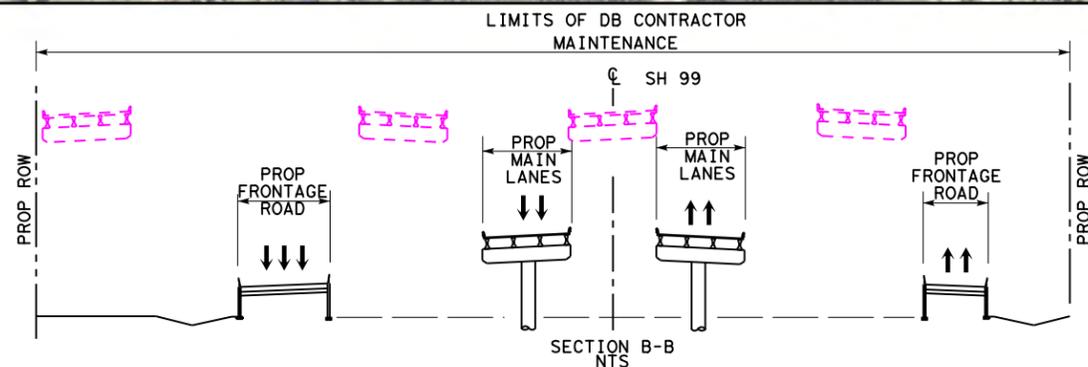
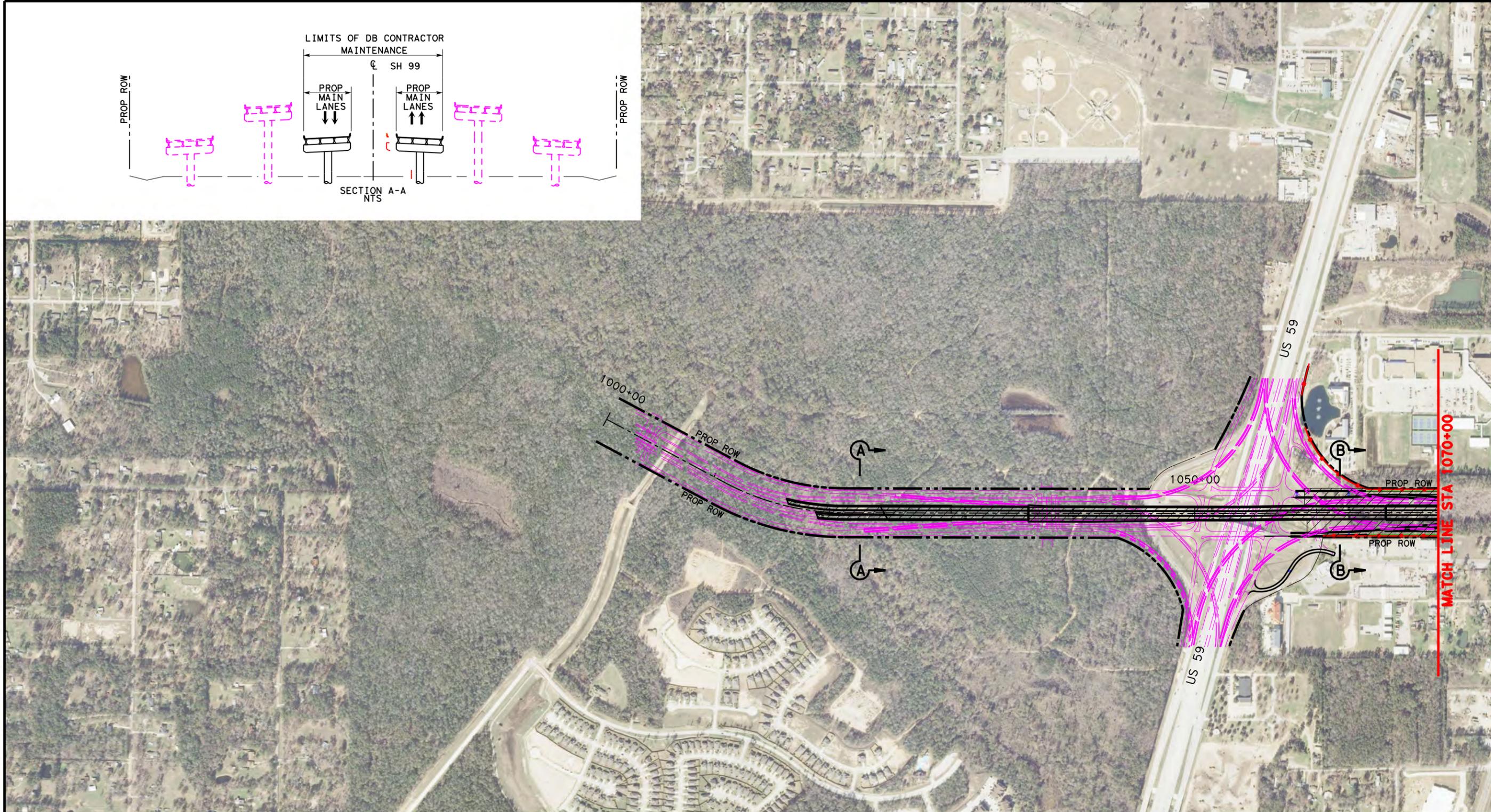
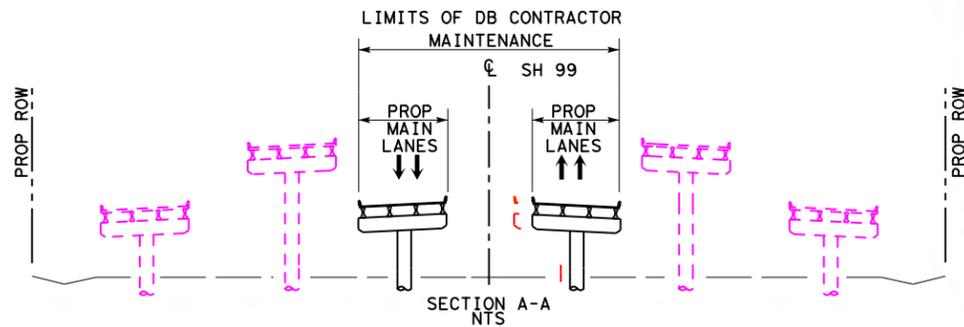
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Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
				Hazard Mitigation	Permanent Remedy	Permanent Repair			
	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
<b>19) SWEEPING AND CLEANING</b>									
	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 right of way 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 19-3**  
**O&M LIMITS**

**APRIL 30, 2015**



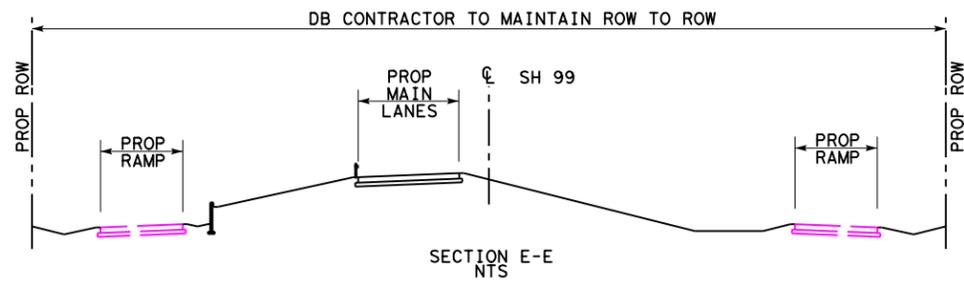
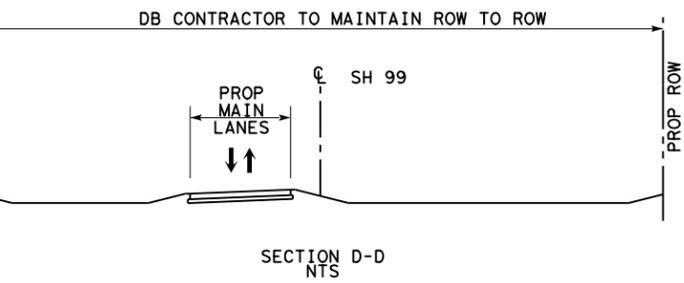
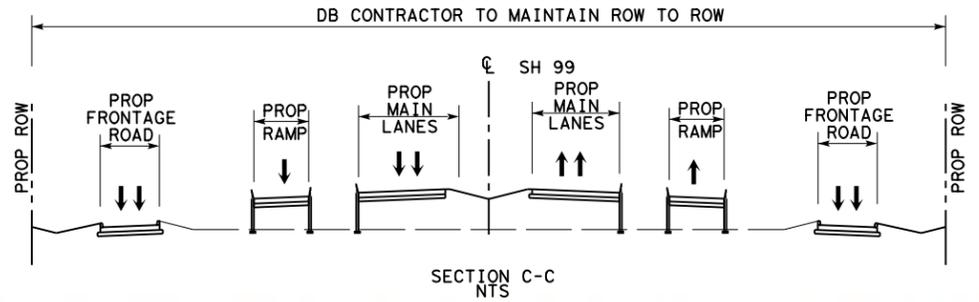
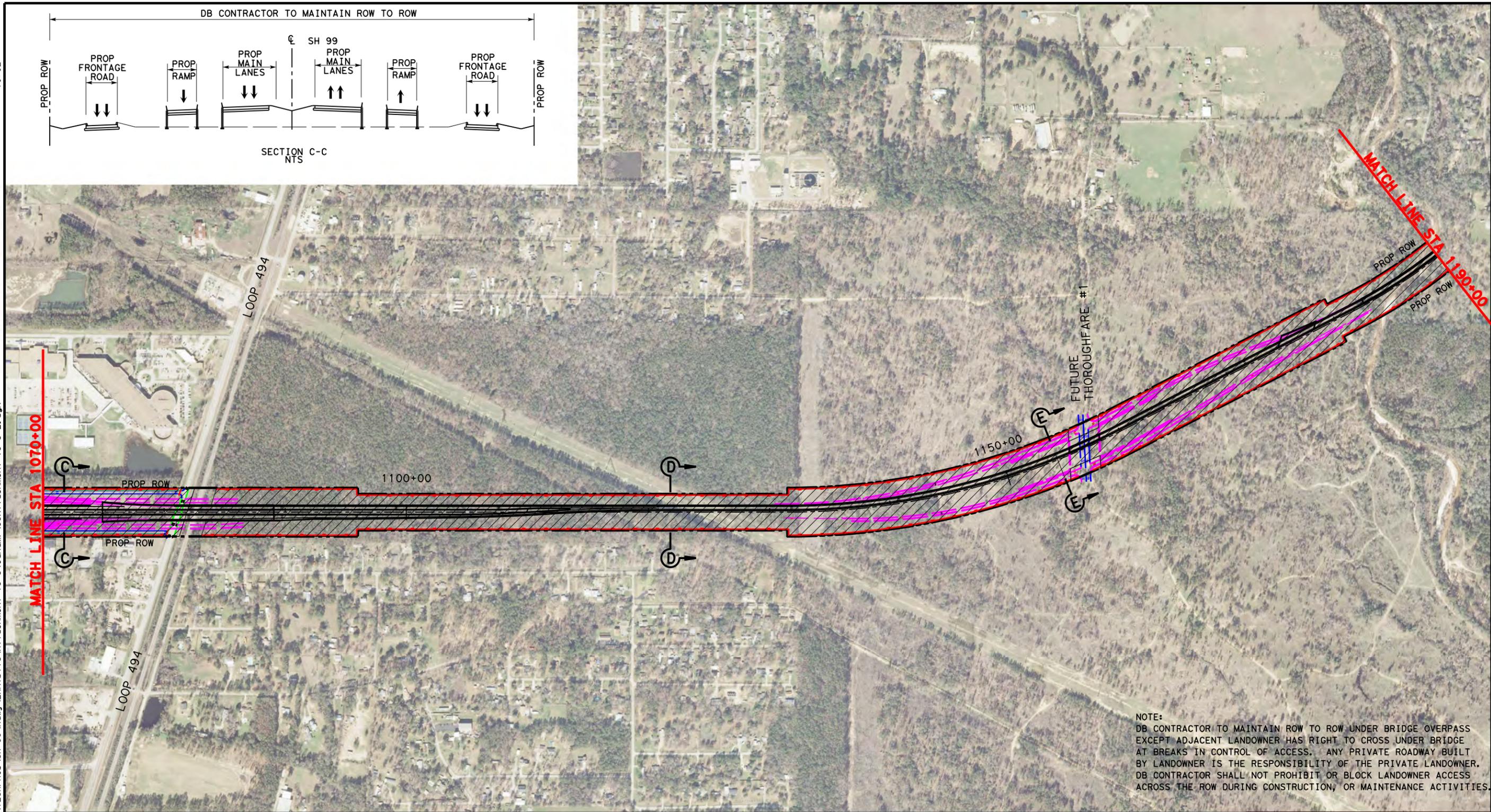
- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
  - PROP CONTROL OF ACCESS
  - EXISTING ROW
  - PROPERTY LINE
  - PROPOSED GRAND PARKWAY BY OTHERS



**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**



DSN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT:	COUNTY:	CONTROL NO.:	SECTION NO.:
CK:				
			JOB NO.:	SHEET NO.:
				1



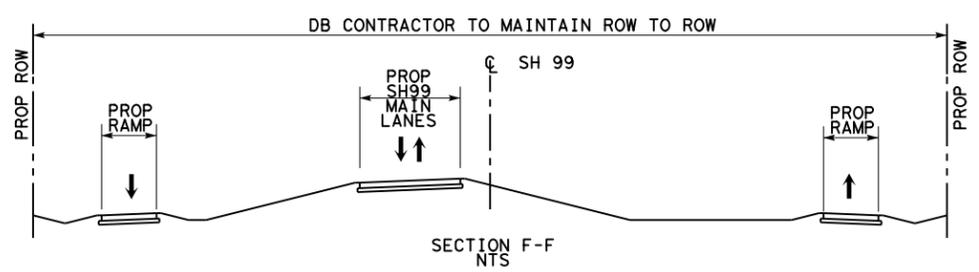
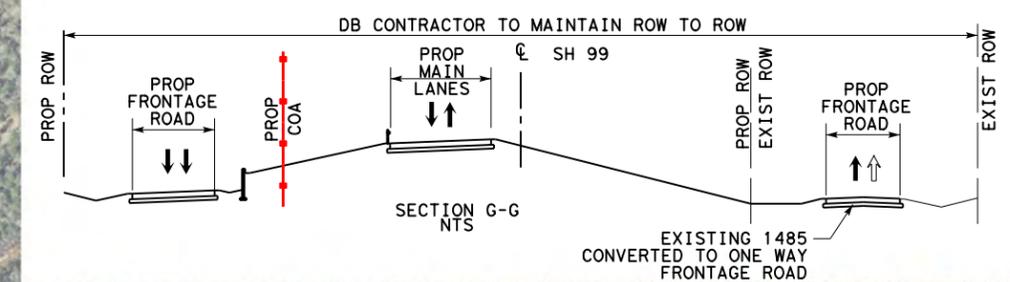
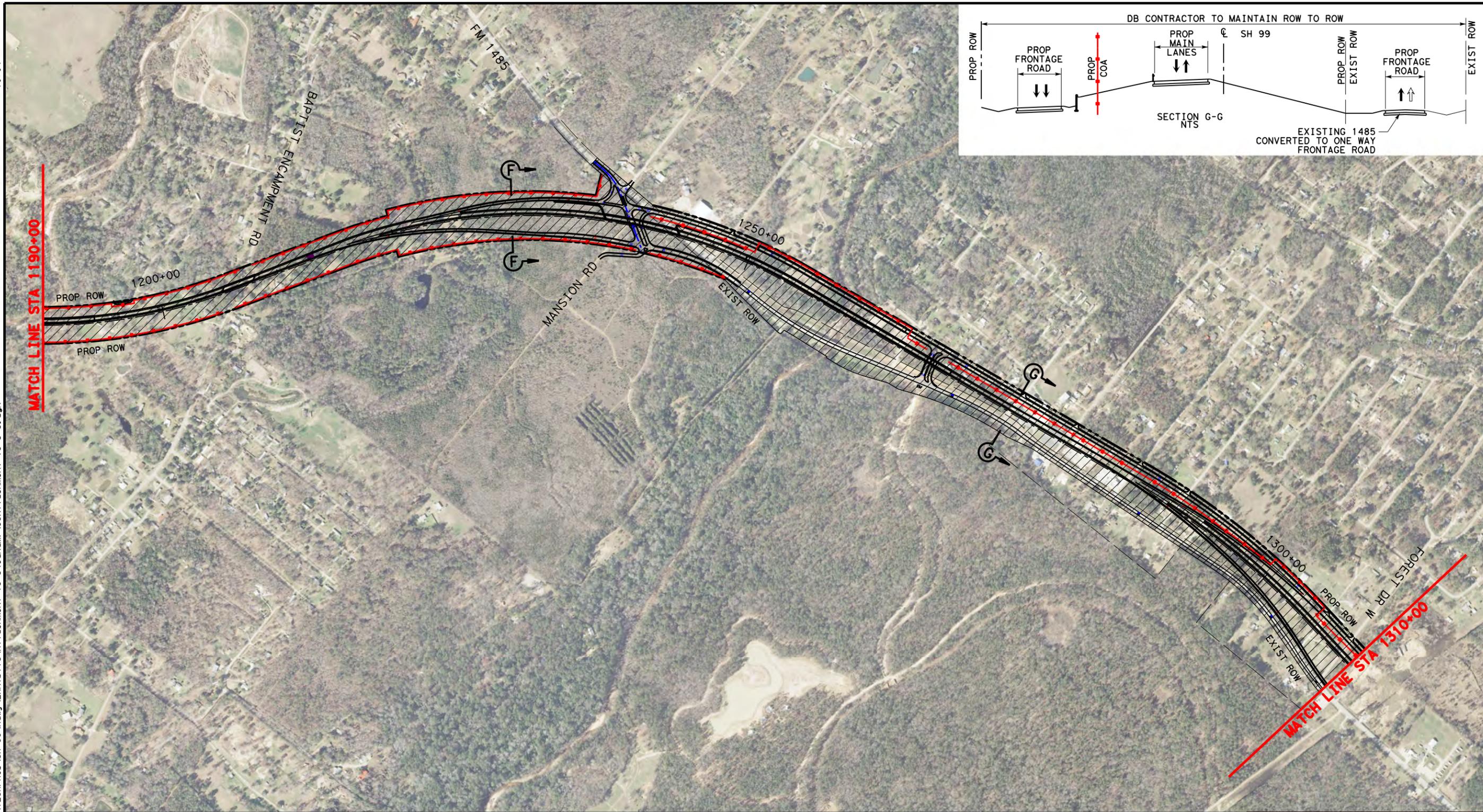
NOTE:  
 DB CONTRACTOR TO MAINTAIN ROW TO ROW UNDER BRIDGE OVERPASS EXCEPT ADJACENT LANDOWNER HAS RIGHT TO CROSS UNDER BRIDGE AT BREAKS IN CONTROL OF ACCESS. ANY PRIVATE ROADWAY BUILT BY LANDOWNER IS THE RESPONSIBILITY OF THE PRIVATE LANDOWNER. DB CONTRACTOR SHALL NOT PROHIBIT OR BLOCK LANDOWNER ACCESS ACROSS THE ROW DURING CONSTRUCTION, OR MAINTENANCE ACTIVITIES.

- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT:	COUNTY:	CONTROL NO.:	SECTION NO.:
CK:				JOB NO.:
				SHEET NO.:
				2



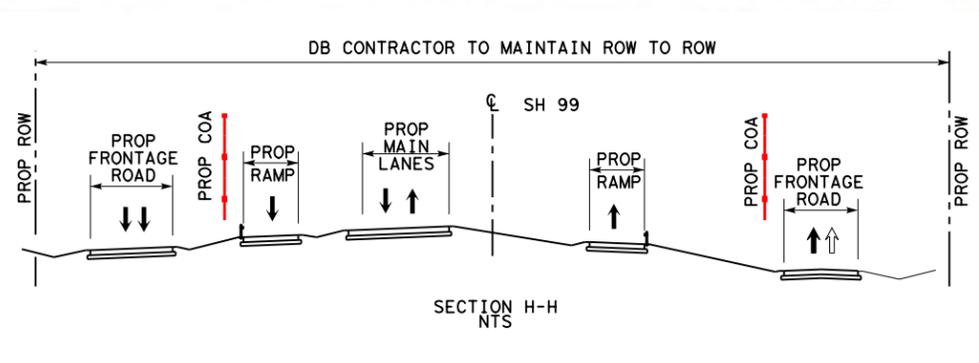
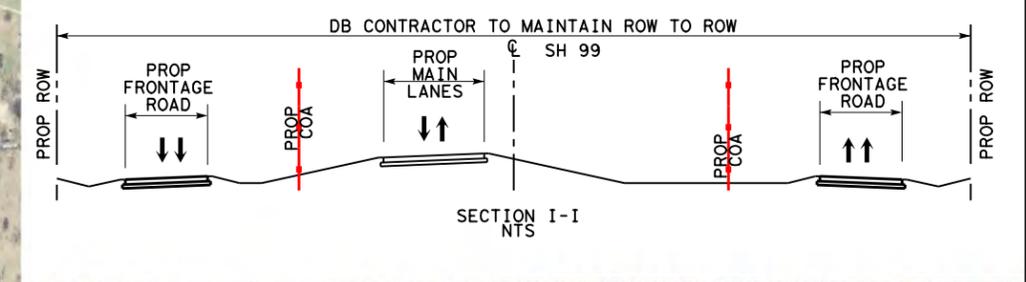
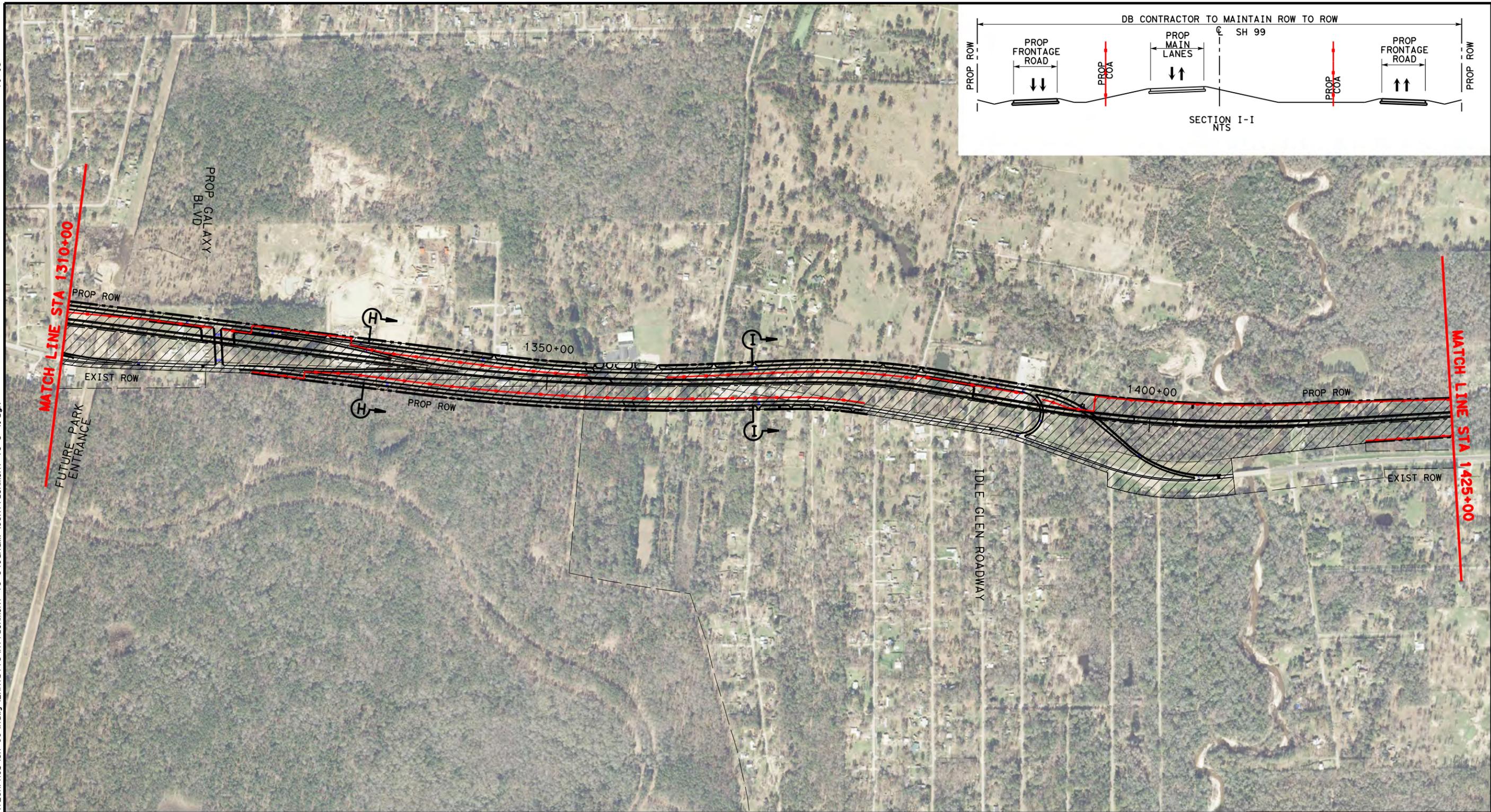
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  - PROPOSED GRAND PARKWAY
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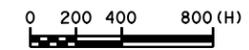
**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**



DSN:	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO.	HIGHWAY NO. SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	JOB NO.
CK:			SECTION NO.	SHEET NO. 3

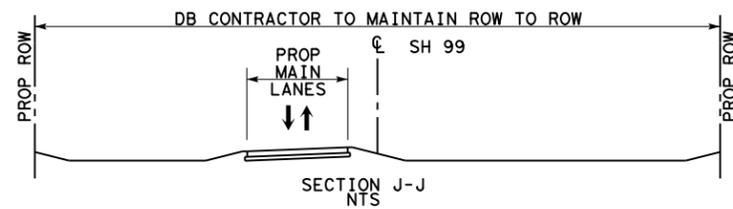
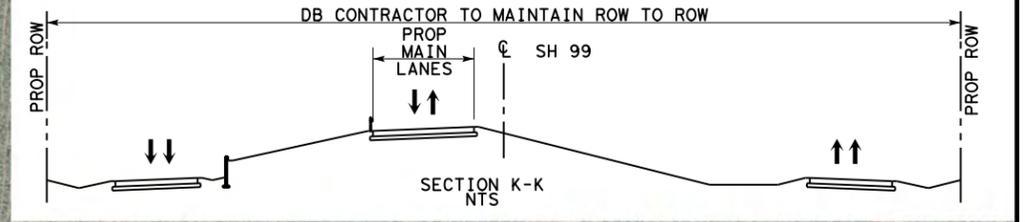
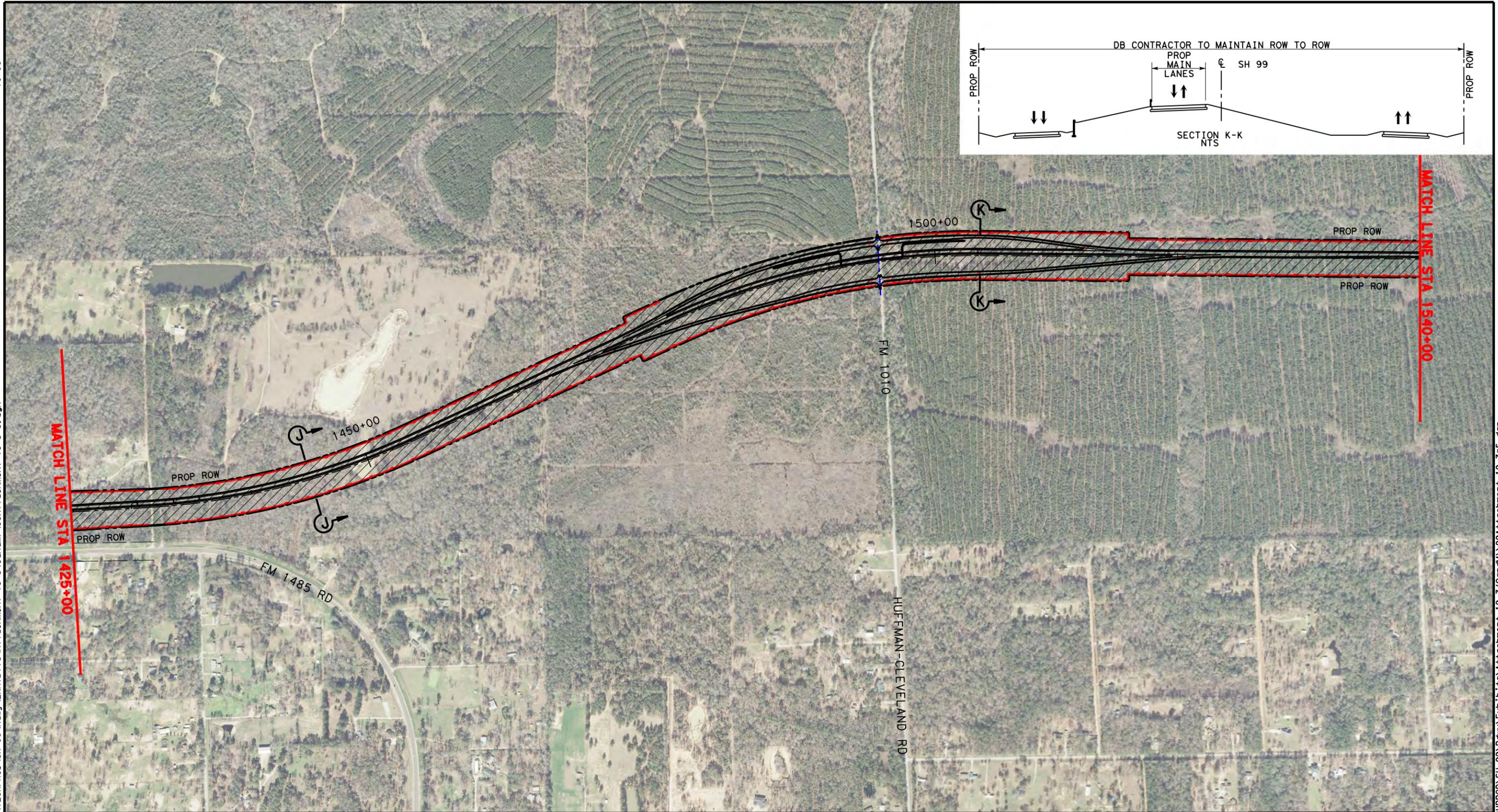


- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				4

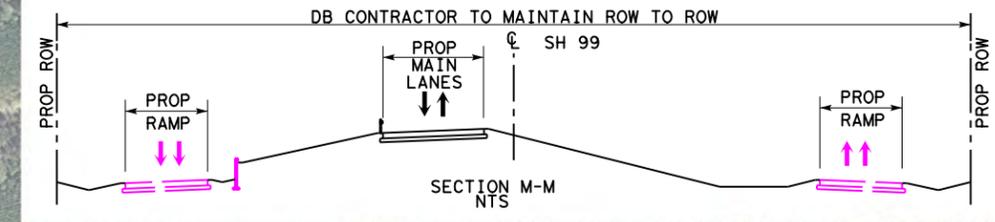
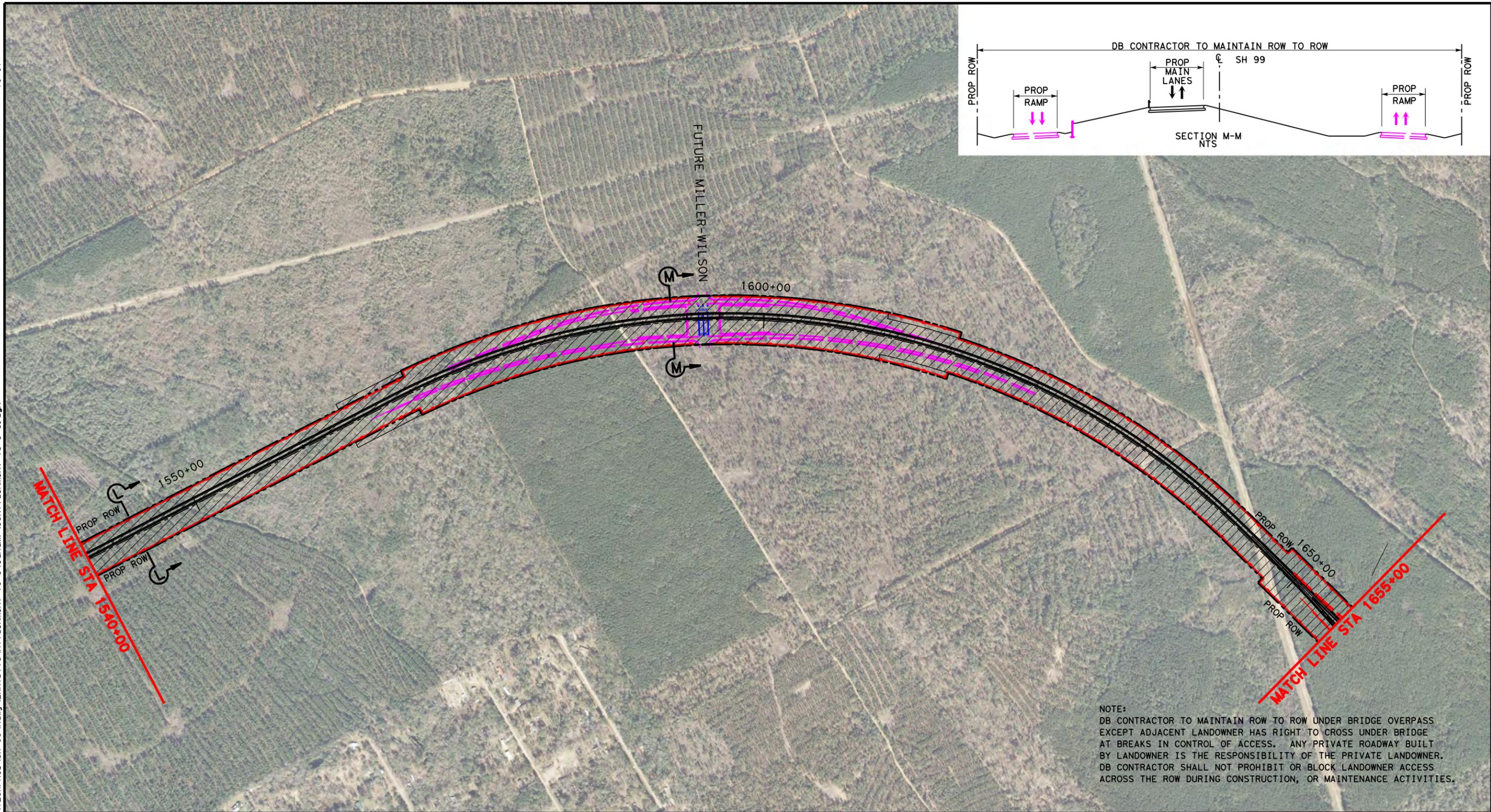


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  - PROPOSED GRAND PARKWAY
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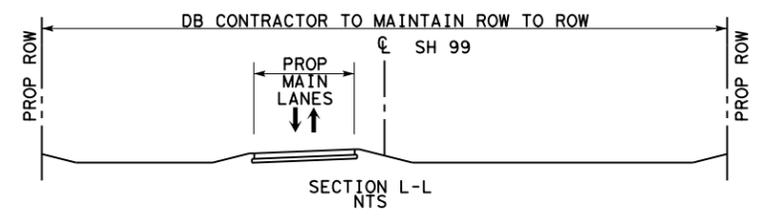


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO.	HIGHWAY NO. SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	JOB NO.
CK:			SECTION NO.	SHEET NO. 5



**NOTE:**  
 DB CONTRACTOR TO MAINTAIN ROW TO ROW UNDER BRIDGE OVERPASS EXCEPT ADJACENT LANDOWNER HAS RIGHT TO CROSS UNDER BRIDGE AT BREAKS IN CONTROL OF ACCESS. ANY PRIVATE ROADWAY BUILT BY LANDOWNER IS THE RESPONSIBILITY OF THE PRIVATE LANDOWNER. DB CONTRACTOR SHALL NOT PROHIBIT OR BLOCK LANDOWNER ACCESS ACROSS THE ROW DURING CONSTRUCTION, OR MAINTENANCE ACTIVITIES.

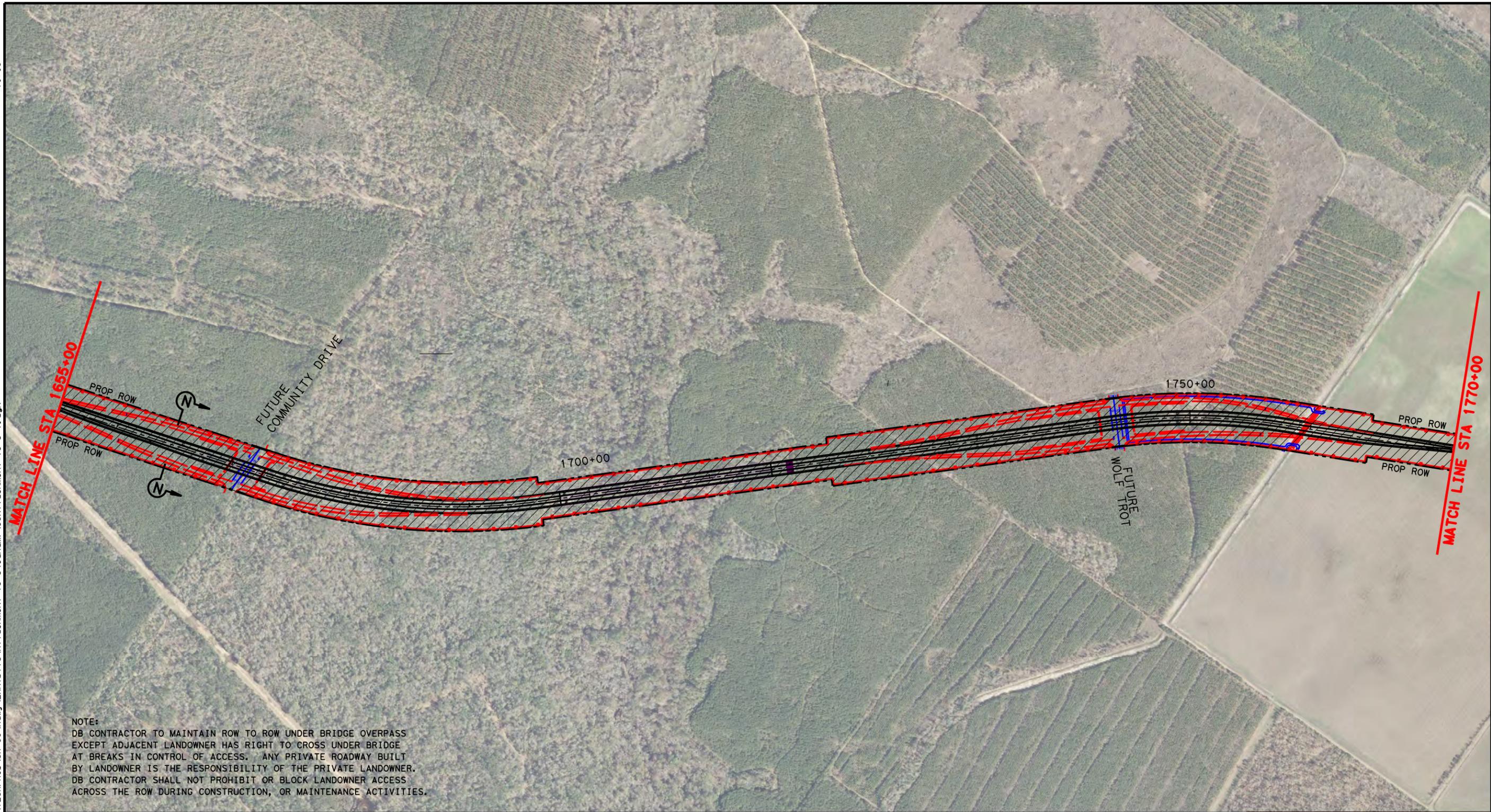


- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
  - PROP CONTROL OF ACCESS
  - EXISTING ROW
  - PROPERTY LINE
  - PROPOSED GRAND PARKWAY BY OTHERS

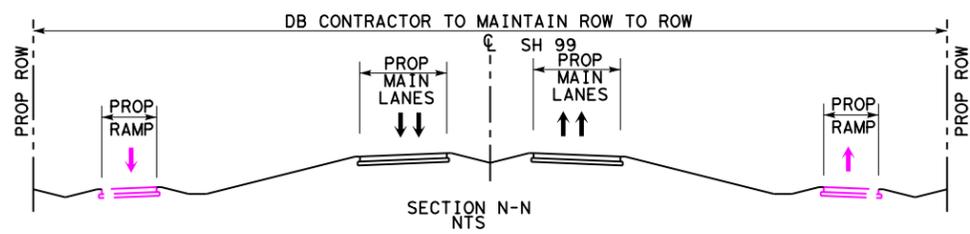


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				6



NOTE:  
 DB CONTRACTOR TO MAINTAIN ROW TO ROW UNDER BRIDGE OVERPASS EXCEPT ADJACENT LANDOWNER HAS RIGHT TO CROSS UNDER BRIDGE AT BREAKS IN CONTROL OF ACCESS. ANY PRIVATE ROADWAY BUILT BY LANDOWNER IS THE RESPONSIBILITY OF THE PRIVATE LANDOWNER. DB CONTRACTOR SHALL NOT PROHIBIT OR BLOCK LANDOWNER ACCESS ACROSS THE ROW DURING CONSTRUCTION, OR MAINTENANCE ACTIVITIES.



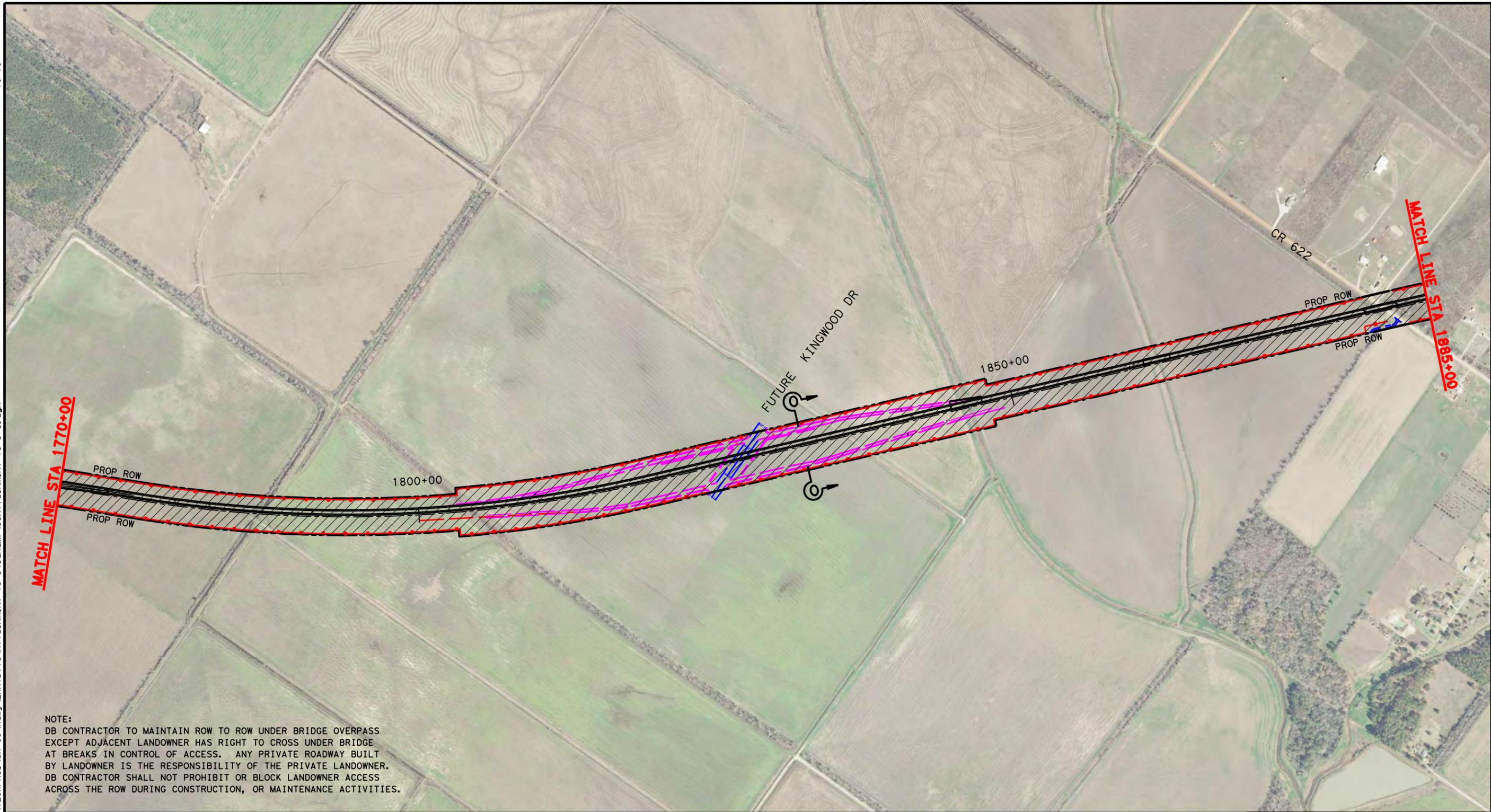
- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
  - PROP CONTROL OF ACCESS
  - EXISTING ROW
  - PROPERTY LINE
  - PROPOSED GRAND PARKWAY BY OTHERS



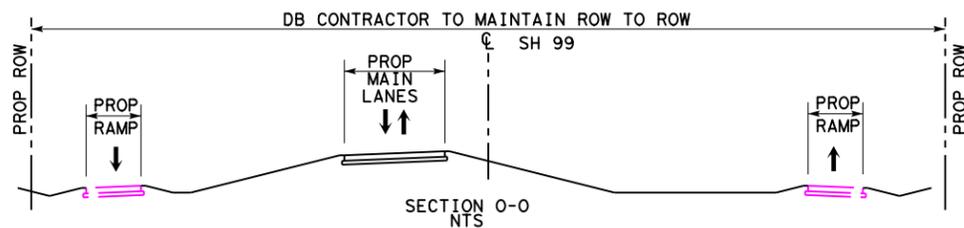
**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**



DSN:	FED. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				7



NOTE:  
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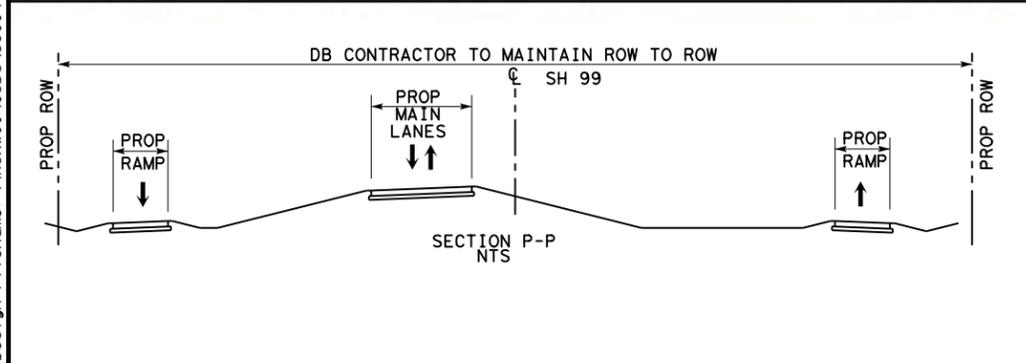
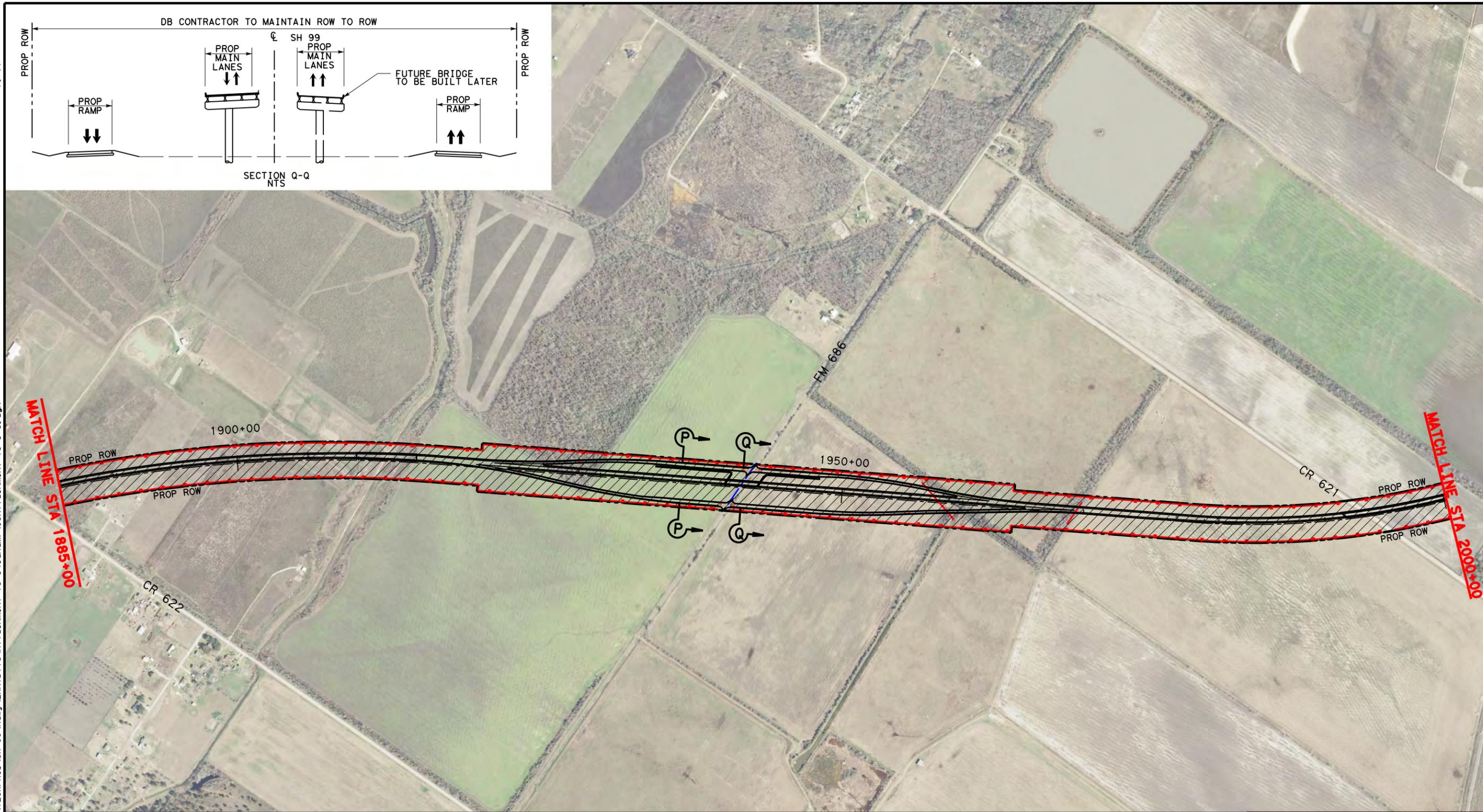
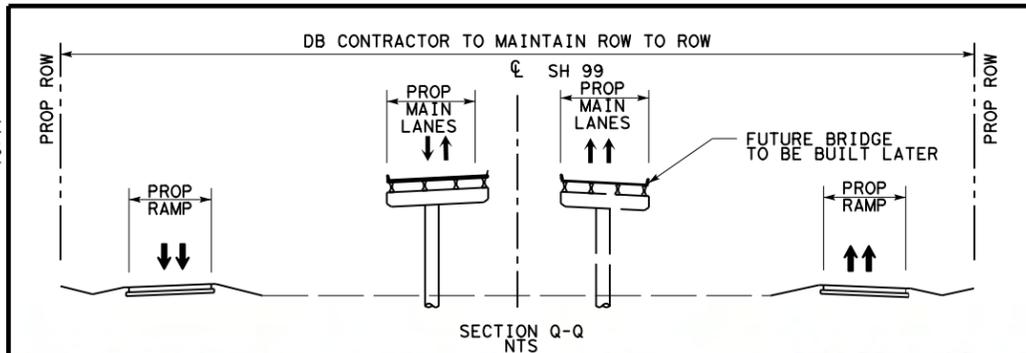
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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
- PROPOSED GRAND PARKWAY
- PROP ROW
- PROP CONTROL OF ACCESS
- EXISTING ROW
- PROPERTY LINE
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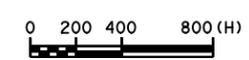


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO.
				SHEET NO.
				8

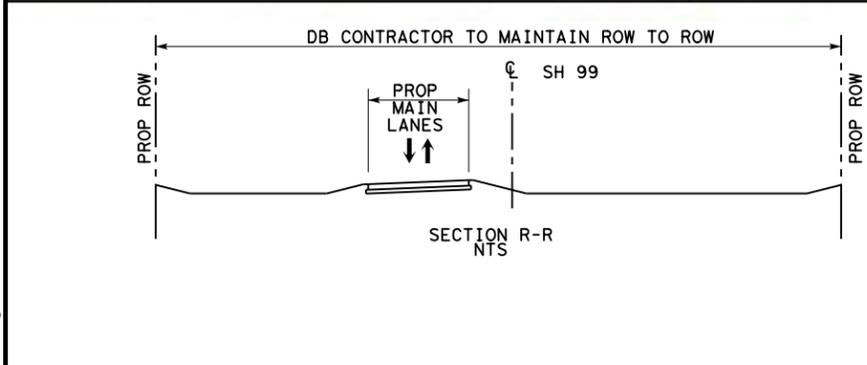
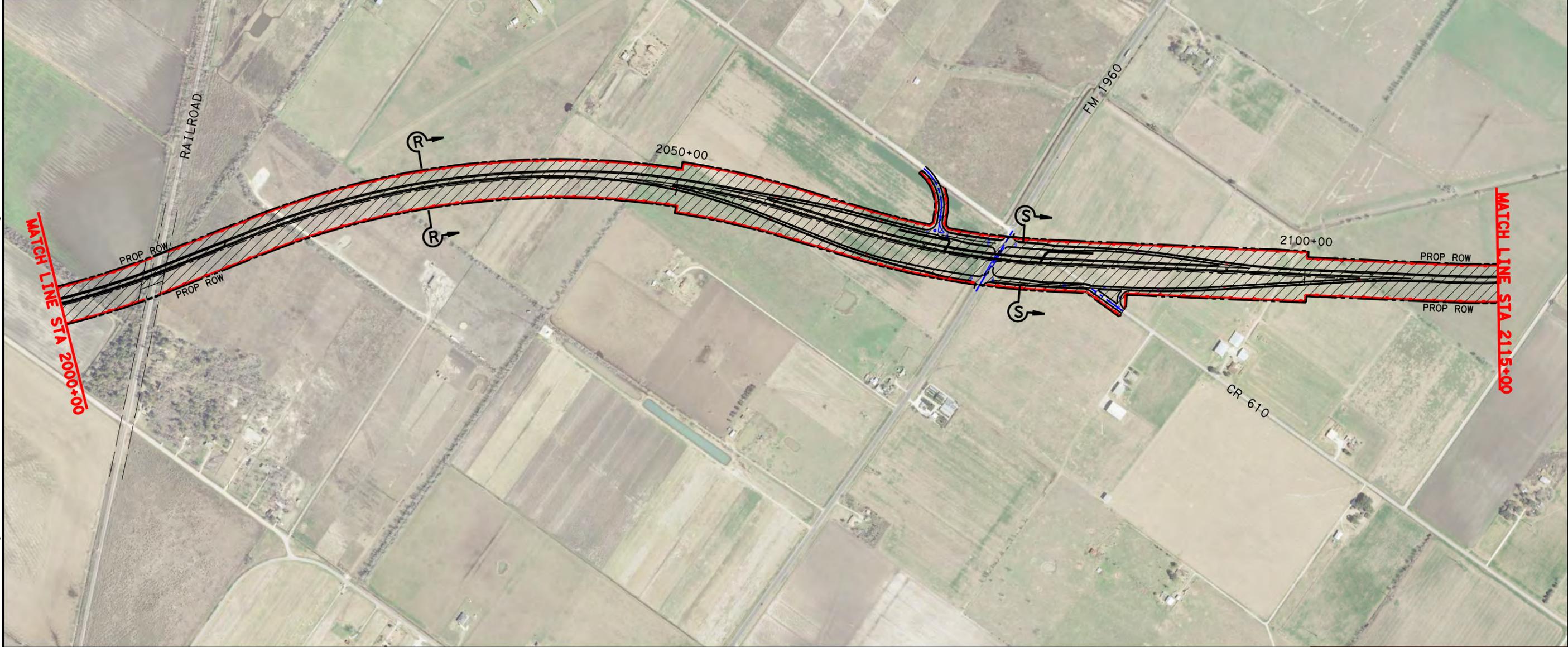
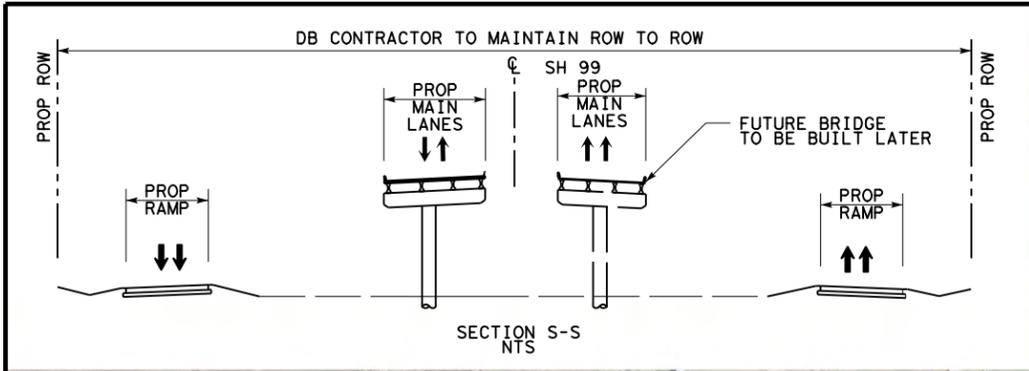


- LEGEND**
- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
  - PROP CONTROL OF ACCESS
  - EXISTING ROW
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**ATTACHMENT 19-3  
O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO.
				SHEET NO.
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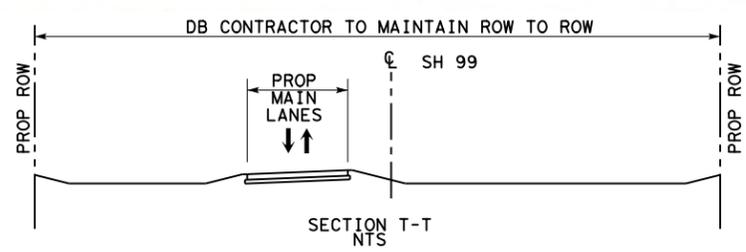
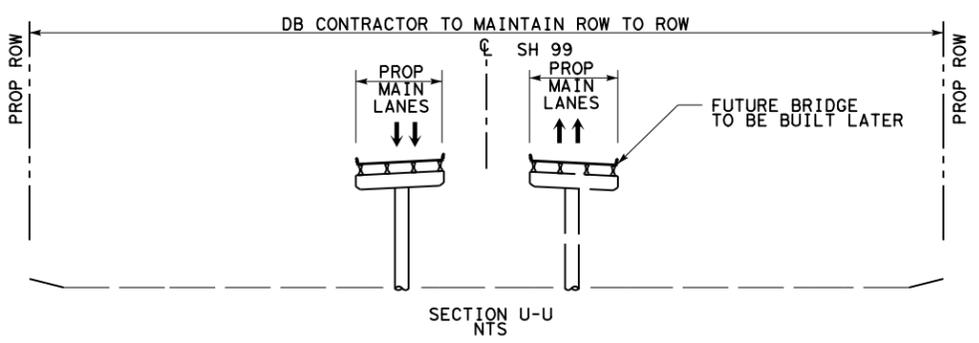
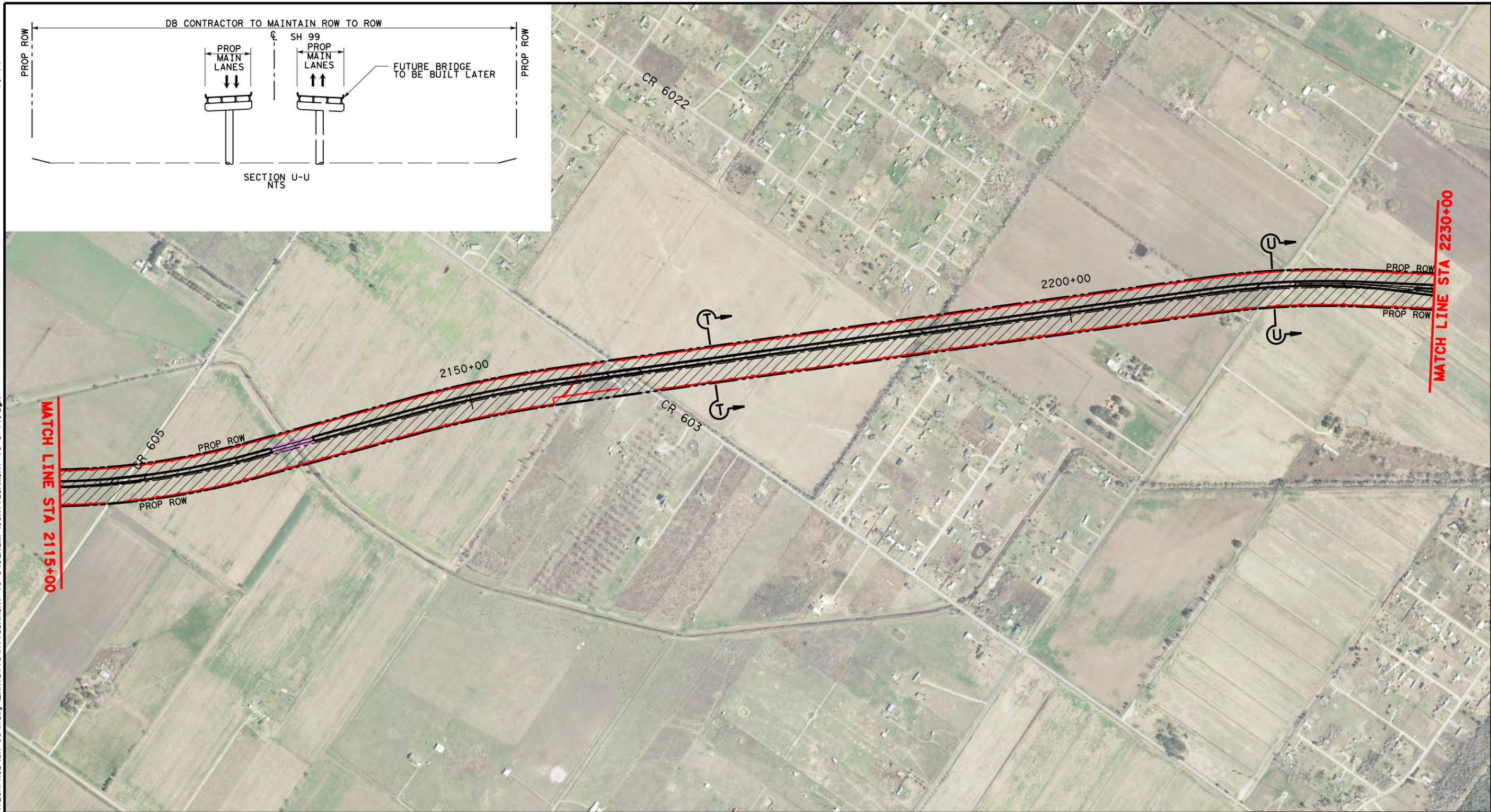
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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
- PROPOSED GRAND PARKWAY
- PROP ROW
- PROP CONTROL OF ACCESS
- EXISTING ROW
- PROPERTY LINE
- PROPOSED GRAND PARKWAY BY OTHERS

0 200 400 800 (H)

**ATTACHMENT 19-3**  
**O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO.
				SHEET NO.
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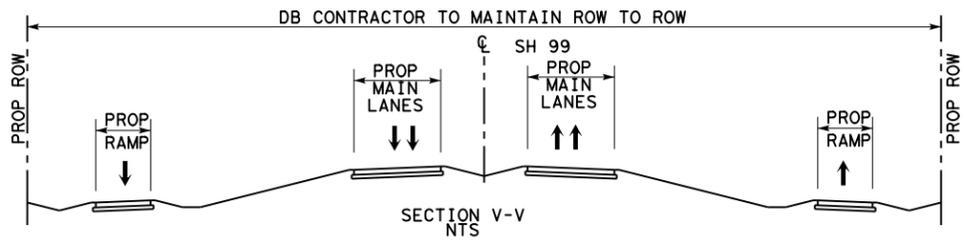


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT:	COUNTY:	CONTROL NO.:	SECTION NO.:
CK:				
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				SHEET NO.:
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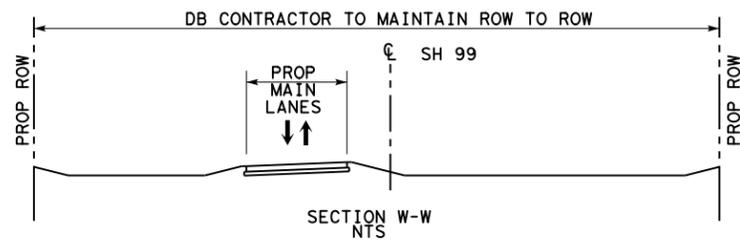


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
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**ATTACHMENT 19-3  
O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
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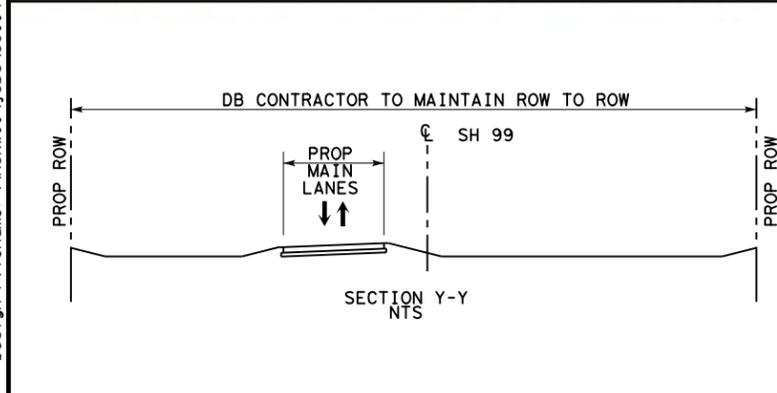
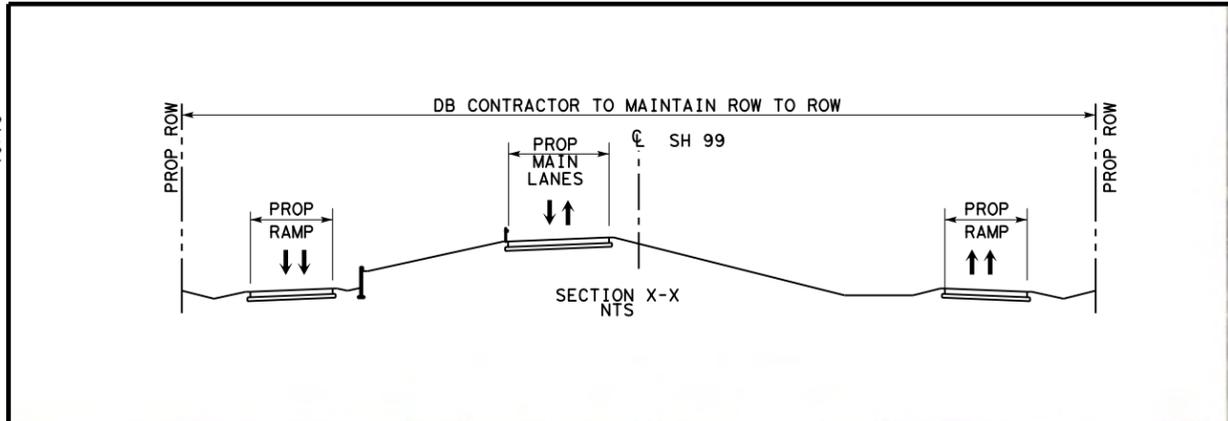


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
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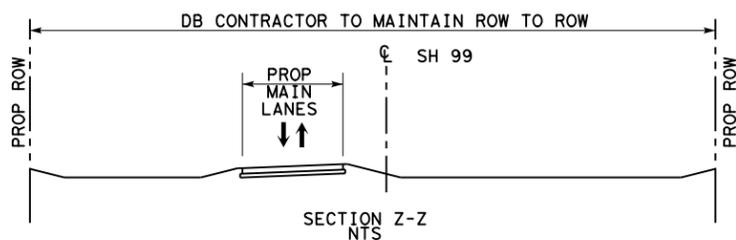
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**



DSN:	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO.	HIGHWAY NO. SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:			JOB NO.	SHEET NO. 14

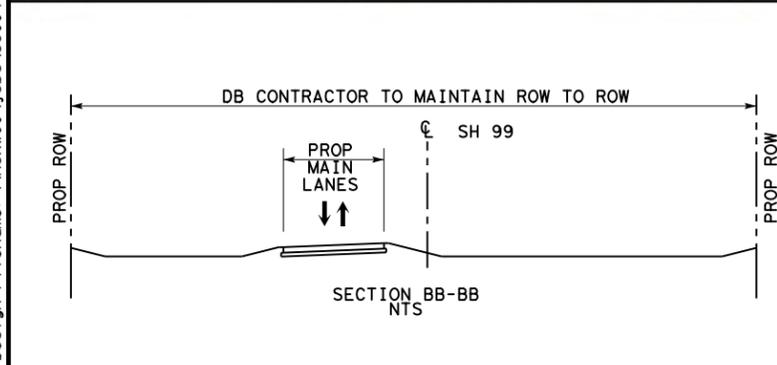
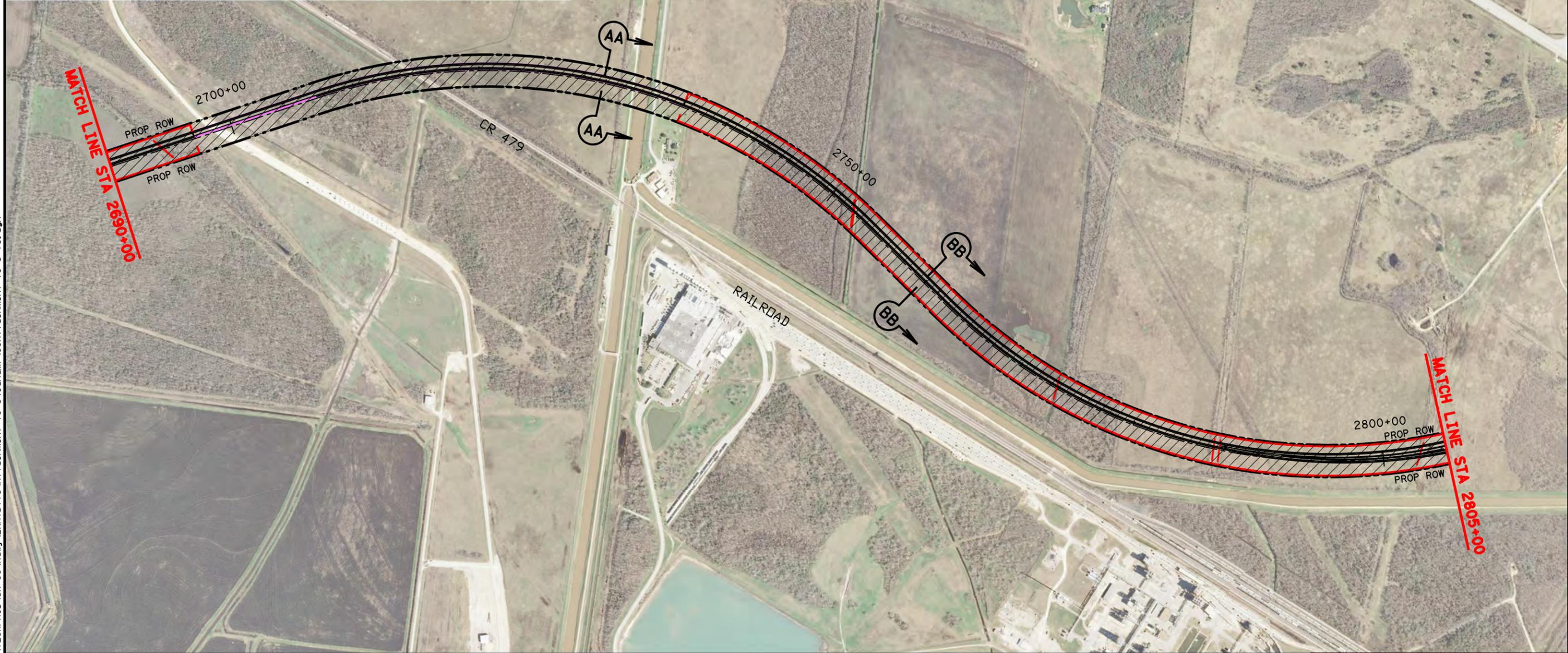
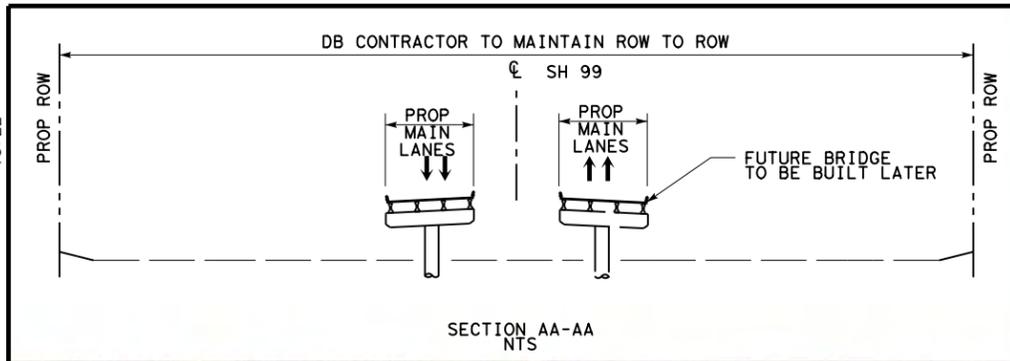


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO.	HIGHWAY NO. SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
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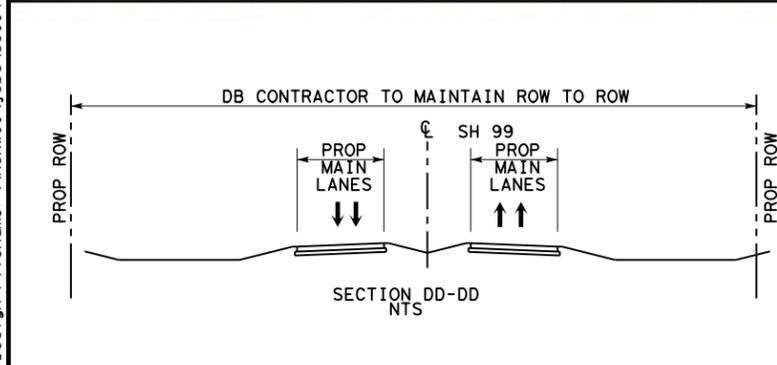
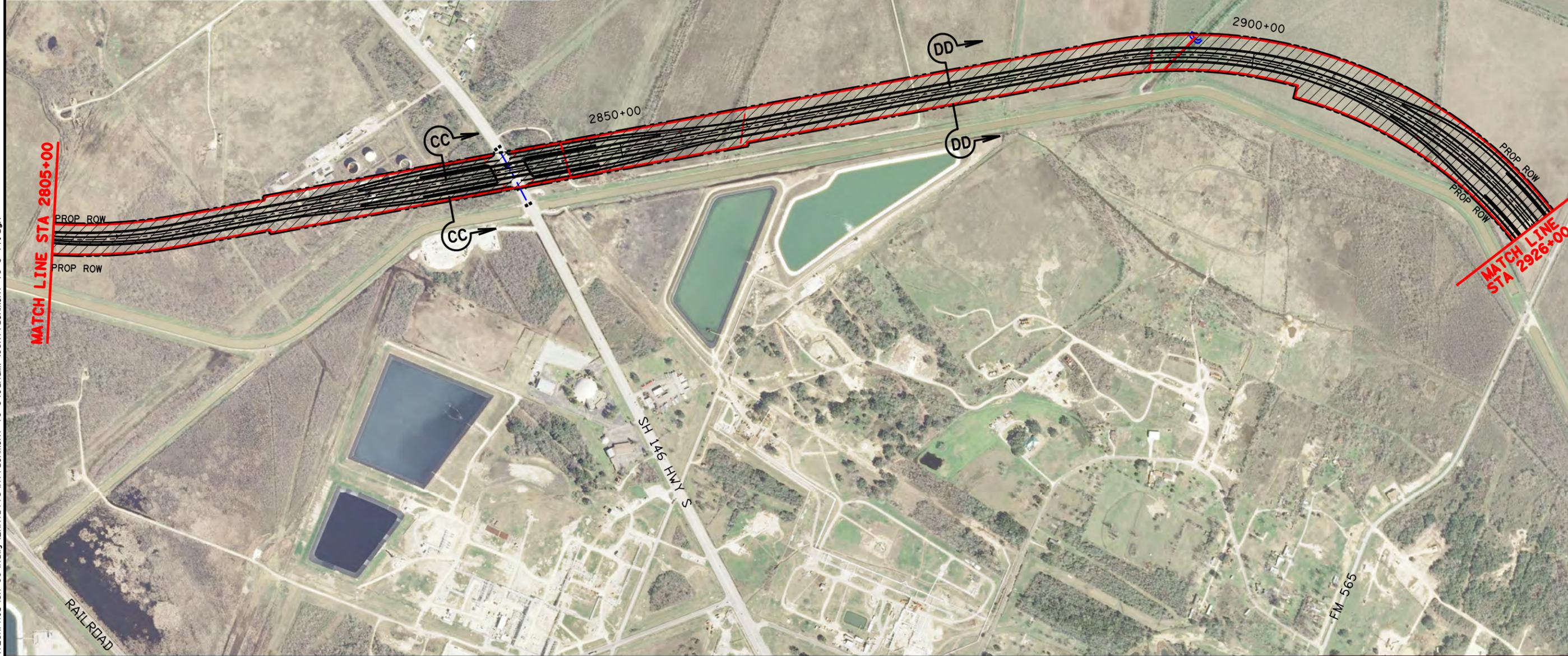
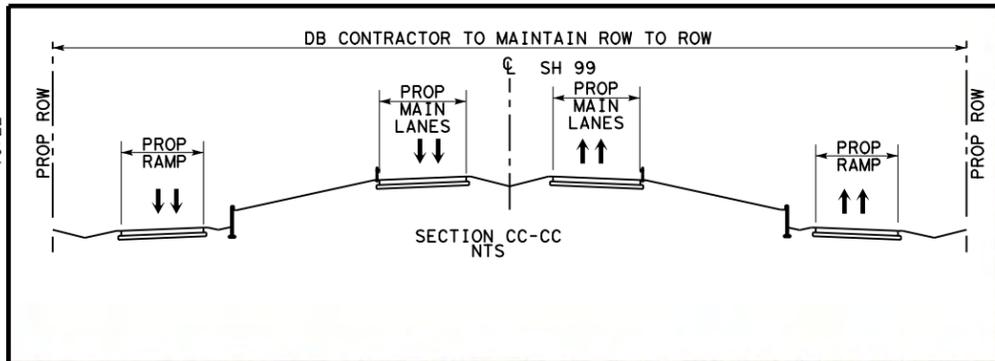


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
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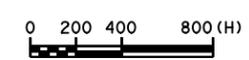


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
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DRN:	STATE DISTRICT:	COUNTY:	CONTROL NO.:	SECTION NO.:
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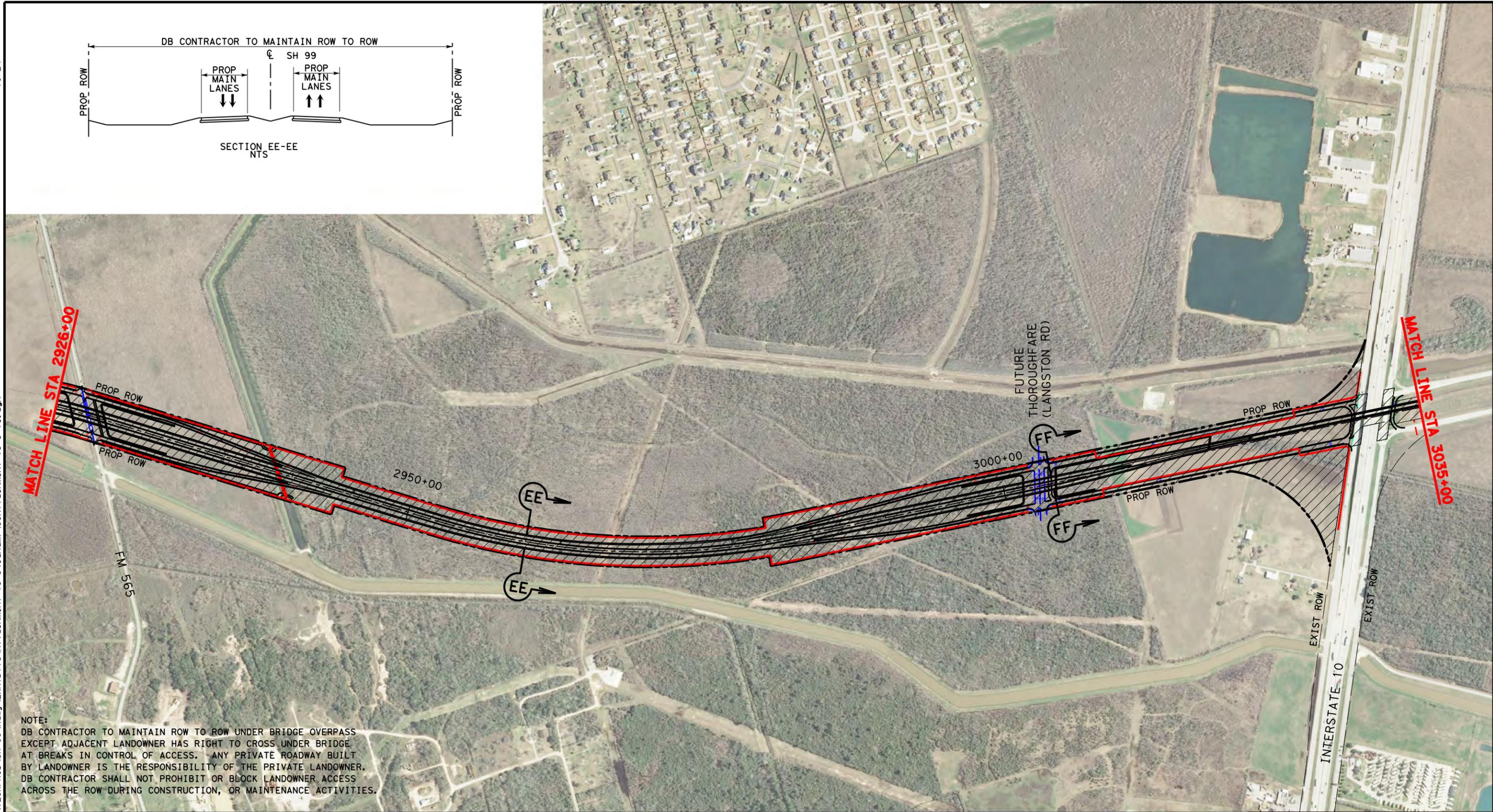


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  - PROPOSED GRAND PARKWAY
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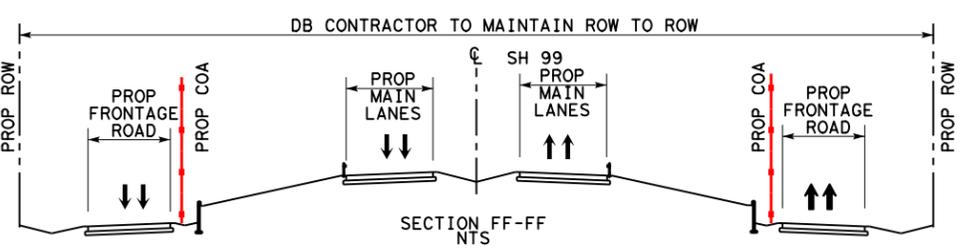
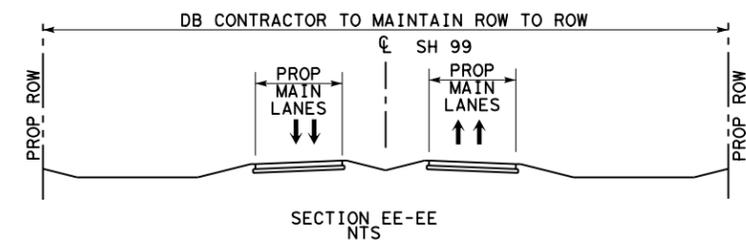


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				17



NOTE:  
 DB CONTRACTOR TO MAINTAIN ROW TO ROW UNDER BRIDGE OVERPASS EXCEPT ADJACENT LANDOWNER HAS RIGHT TO CROSS UNDER BRIDGE AT BREAKS IN CONTROL OF ACCESS. ANY PRIVATE ROADWAY BUILT BY LANDOWNER IS THE RESPONSIBILITY OF THE PRIVATE LANDOWNER. DB CONTRACTOR SHALL NOT PROHIBIT OR BLOCK LANDOWNER ACCESS ACROSS THE ROW DURING CONSTRUCTION, OR MAINTENANCE ACTIVITIES.

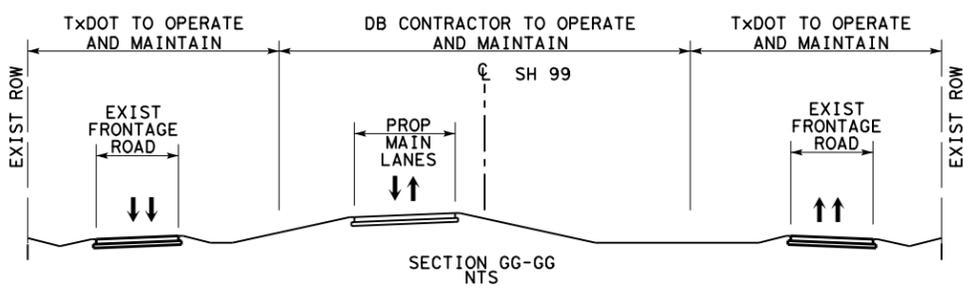
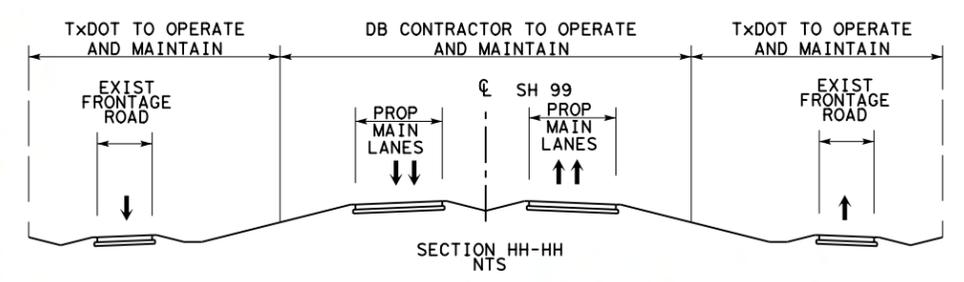
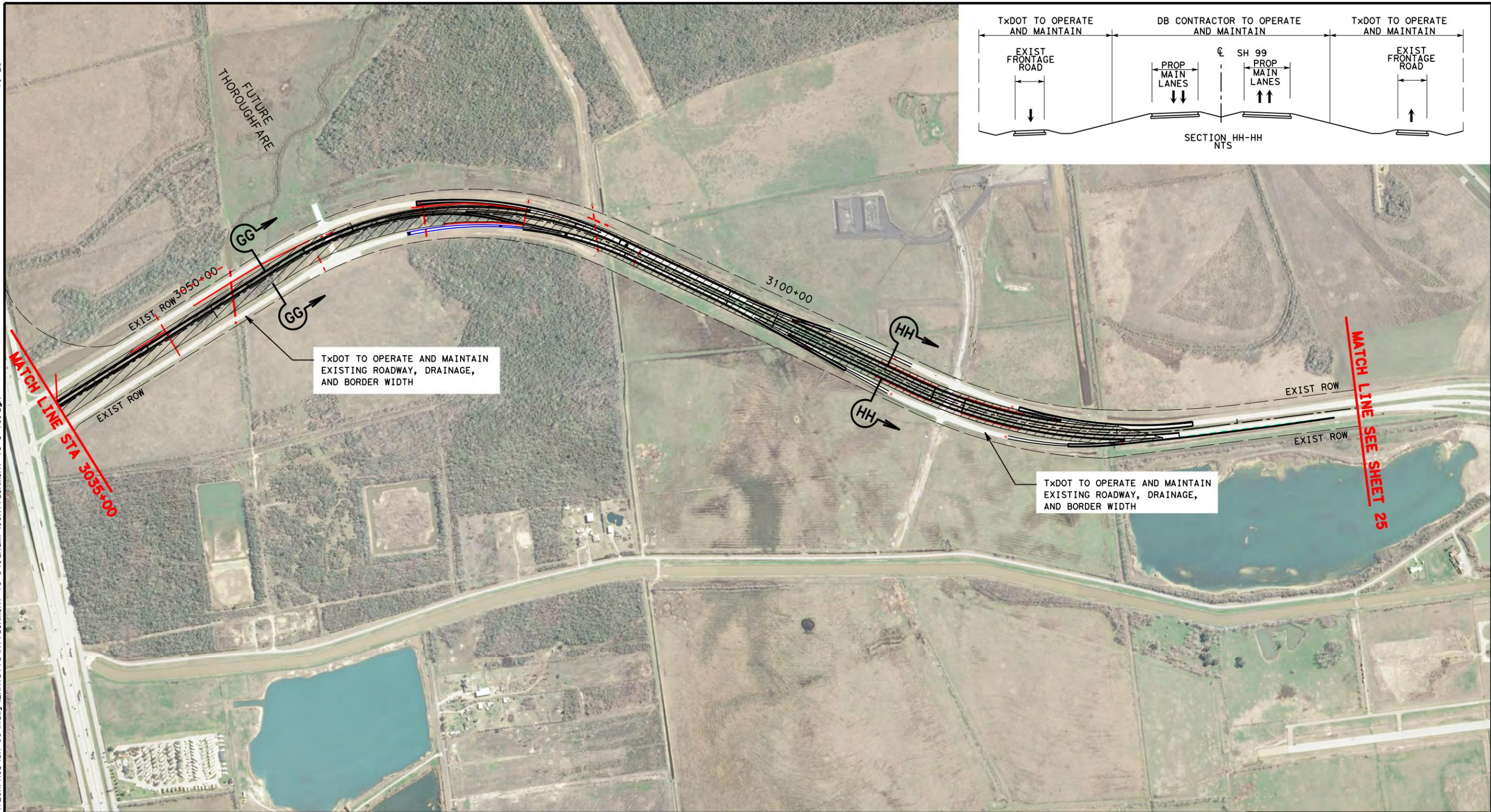


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- LIMITS OF DB CONTRACTOR'S CONSTRUCTION, OPERATIONS, AND MAINTENANCE RESPONSIBILITIES
  - PROPOSED GRAND PARKWAY
  - PROP ROW
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  - EXISTING ROW
  - PROPERTY LINE
  - PROPOSED GRAND PARKWAY BY OTHERS

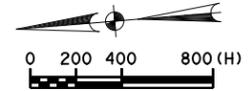


**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
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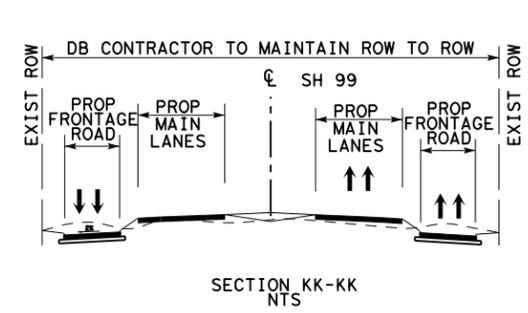
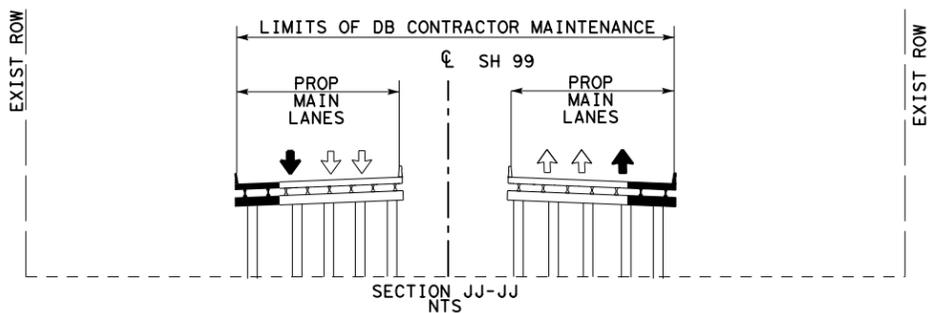


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  - PROPOSED GRAND PARKWAY
  - PROP ROW
  - PROP CONTOL OF ACCESS
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  - PROPERTY LINE
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**ATTACHMENT 19-3  
 O & M LIMITS, H & I-1**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
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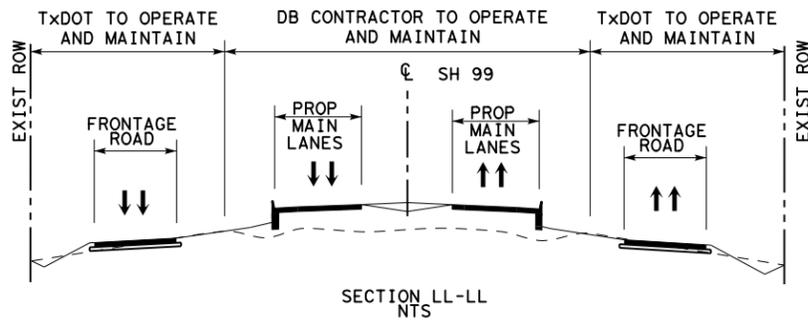


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**ATTACHMENT 19-3  
 O & M LIMITS, I-2**

DSN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT:	COUNTY:	CONTROL NO.:	SECTION NO.:
CK:				20

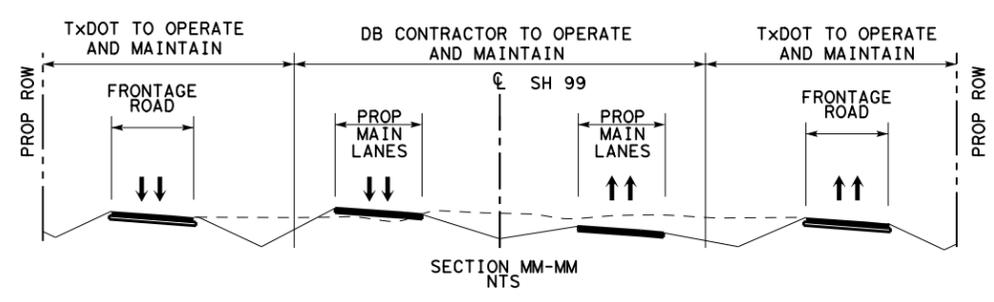
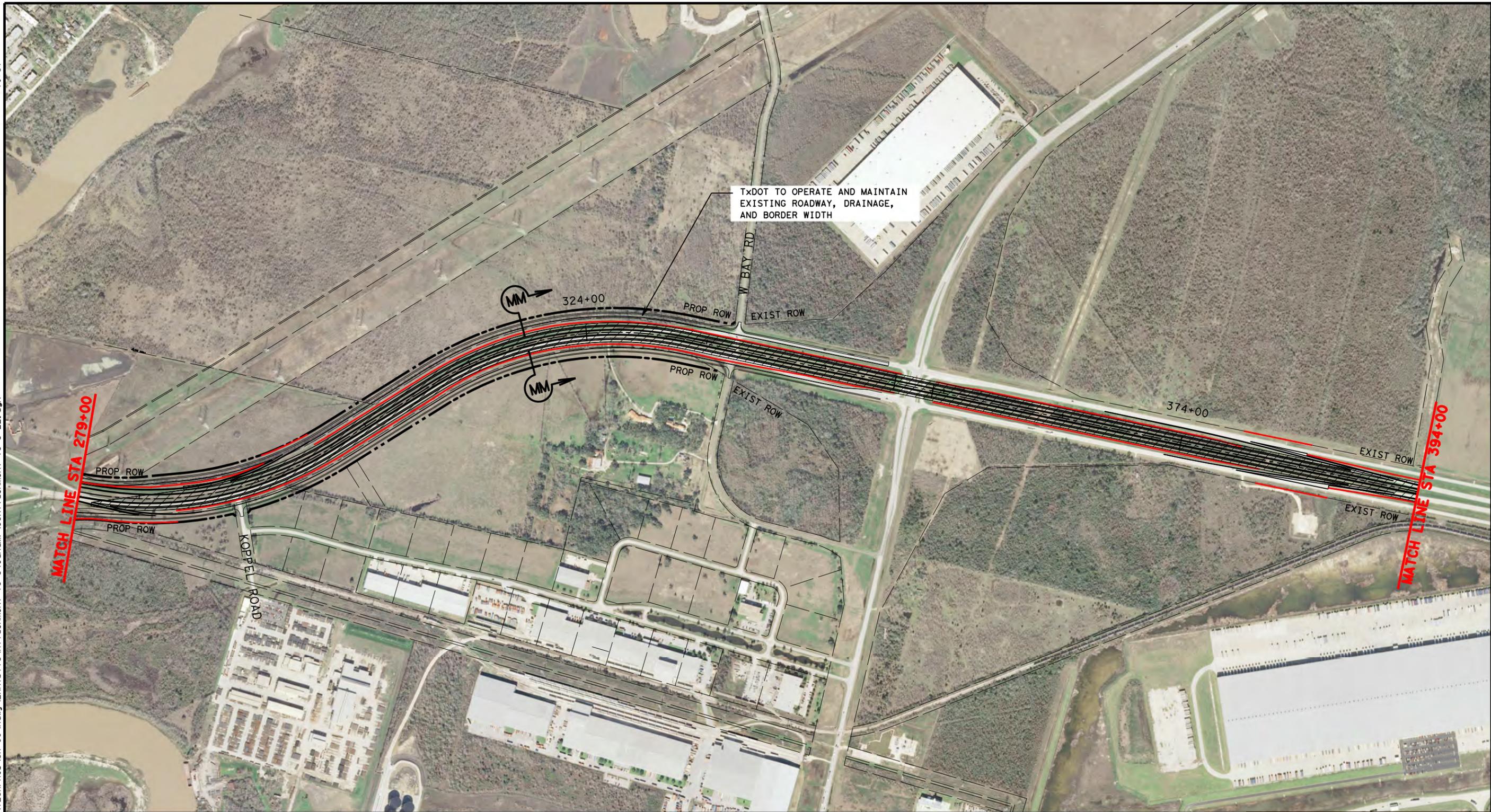


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**ATTACHMENT 19-3  
O & M LIMITS, I-2**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO.
				SHEET NO.
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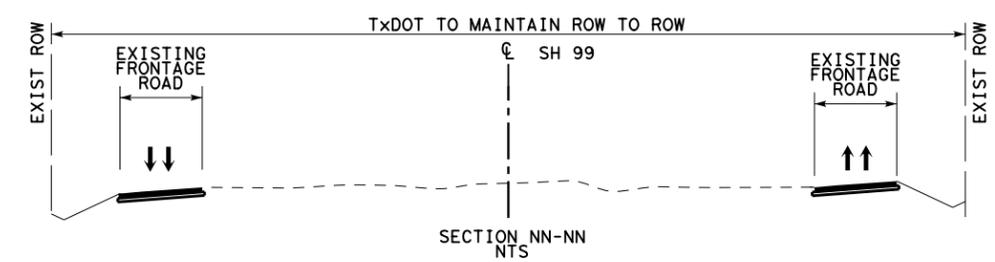


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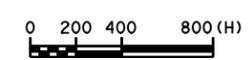


**ATTACHMENT 19-3  
O & M LIMITS, I-2**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO.
				SHEET NO.
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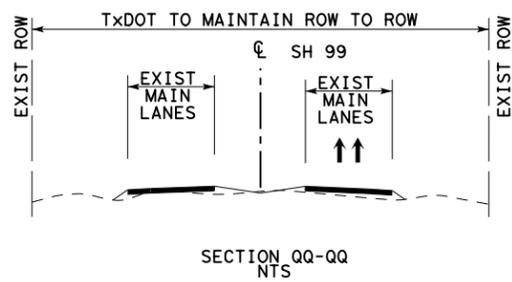


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  - EXISTING ROW
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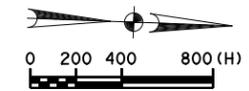


**ATTACHMENT 19-3  
 O & M LIMITS, I-2**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				23



- LEGEND**
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**ATTACHMENT 19-3  
O & M LIMITS, I-2**

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK:	6	TEXAS		SH 99
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.
CK:				JOB NO. SHEET NO.
				24



**TEXAS DEPARTMENT OF TRANSPORTATION  
TECHNICAL PROVISIONS**

**FOR**

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

**ATTACHMENT 21-1  
TOLL SYSTEMS RESPONSIBILITY MATRIX**

**APRIL 30, 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	
<b>FACILITIES</b>										
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.

**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	
<b>FACILITIES</b>										
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
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 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

**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	
<b>FACILITIES</b>										
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, 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	
<b>FACILITIES</b>										
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.
<b>ELECTRONIC TOLL COLLECTION SUB-SYSTEMS (ETC)</b>										
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	
<b>ELECTRONIC TOLL COLLECTION SUB-SYSTEMS (ETC)</b>										
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**

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

<b>Element/Task/Component/ Sub-system</b>	<b>TxDOT (TOD Design) (T)</b>			<b>Developer (Contractor) (Dev)</b>			<b>System Integrator (SI)</b>			<b>Comments Other Responsibility/Information</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	
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	

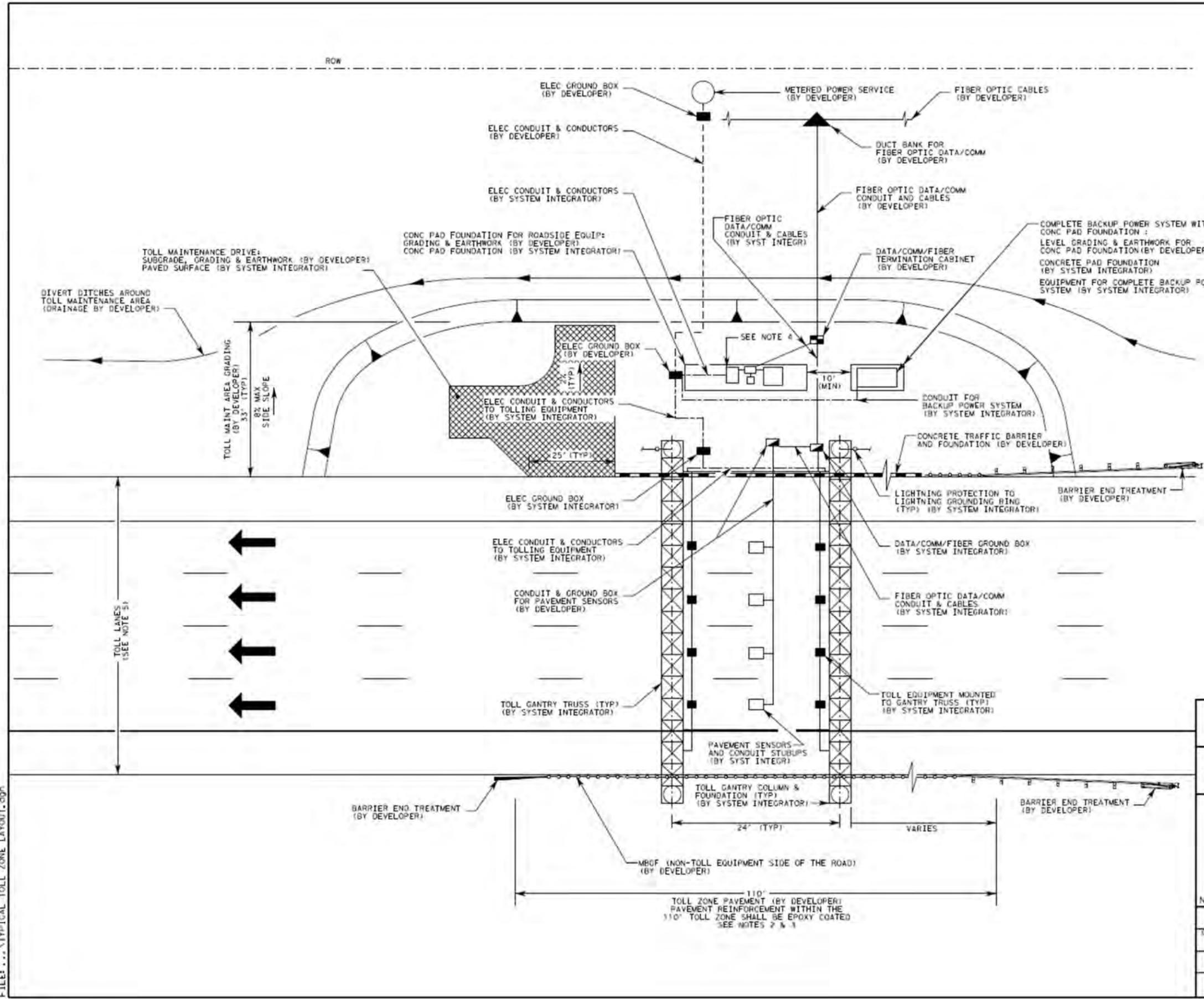
**TEXAS DEPARTMENT OF TRANSPORTATION  
TECHNICAL PROVISIONS**

**FOR**

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

**ATTACHMENT 21-2  
TYPICAL TOLL ZONE LAYOUT**

**APRIL 30, 2015**



NOT TO SCALE

**LEGEND**

- PAVED MAINT DRIVE
- 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.

**ATKINS**  
TYPE REG. # E-474

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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
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TX	HOU		
CHECK	CONTROL	SECTION	JOB	

DATE: 1/12/2015 TIME: 9:35:10 AM  
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 PEN TABLE: plotdrv.tbl  
 FILE: ...TYPICAL TOLL ZONE LAYOUT.dwg

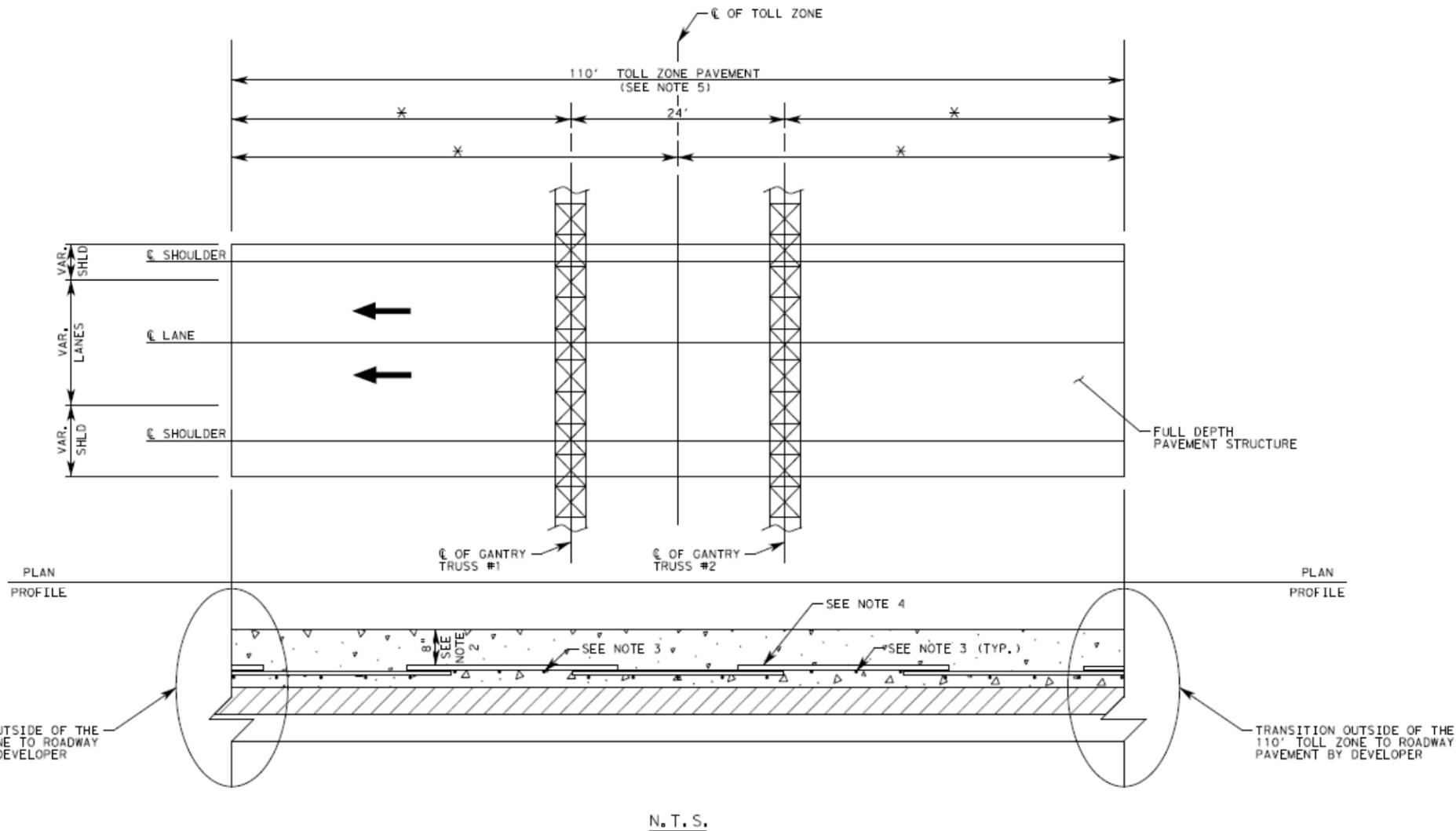
**TEXAS DEPARTMENT OF TRANSPORTATION  
TECHNICAL PROVISIONS**

**FOR**

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

**ATTACHMENT 21-3  
TOLL ZONE PAVEMENT DETAILS**

**APRIL 30, 2015**



NOTES:

1. FINAL PAVEMENT DESIGN WILL BE THE RESPONSIBILITY OF THE DEVELOPER. DETAILS AND DIMENSIONS PROVIDED ON THIS SHEET ARE REQUIREMENTS FOR THE SYSTEM INTEGRATOR AND SHALL BE INCORPORATED INTO THE DEVELOPER'S PAVEMENT DESIGN.
2. 8" IS MEASURED FROM TOP OF PAVEMENT TO TOP OF STEEL.
3. ALL TOLL ZONE PAVEMENT SHALL BE CONCRETE AND THE REINFORCING STEEL SHALL BE EPOXY COATED (CONTINUOUSLY REINFORCED CONCRETE PAVEMENT, CRCP).  
  
WHEN CONCRETE PAVING IS USED IMMEDIATELY OUTSIDE THE TOLL ZONE PAVEMENT LIMITS, THE TOLL ZONE CONCRETE TYPE AND REINFORCING STEEL SIZE ARE TO MATCH EXISTING OR PROPOSED CONCRETE PAVEMENT. WHEN ASPHALTIC CONCRETE PAVING (ACP) IS USED IMMEDIATELY OUTSIDE THE TOLL ZONE PAVEMENT LIMITS, THE DEVELOPER SHALL DESIGN AN APPROPRIATE TRANSITION AND SUBSTRUCTURE BETWEEN TOLL ZONE CONCRETE AND ACP.
4. A MINIMUM OF 2/3 OF SPLICES SHALL BE OFFSET FROM ADJACENT SPLICES. THIS OFFSET SHOULD BE A MINIMUM OF 2'.
5. NO CONSTRUCTION JOINTS ARE ALLOWED WITHIN THE 110' TOLL ZONE PAVEMENT AREA. LONGITUDINAL AND TRANSVERSE EXPANSION JOINTS ARE ONLY ALLOWED PER JOINT AND STUBUP DETAIL SHEETS THAT ARE TO BE PROVIDED BY TXDOT AND THE SYSTEM INTEGRATOR.
6. ALL ACCESSORIES SUCH AS TIES, BAR CHAIRS, SUPPORTS OR CLIPS SHALL BE NON-FERROUS, PLASTIC, PRECAST MORTAR OR CONCRETE BLOCK SUPPORTS OR AS APPROVED BY THE ENGINEER.

LEGEND	
	PROPOSED CONC PVMT (CRCP)
	PAVEMENT STRUCTURE
	PAVEMENT STRUCTURE
	PAVEMENT STRUCTURE
	DIRECTION OF TRAFFIC

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**SH 99 - SEGMENTS H, I-1 AND I-2  
GRAND PARKWAY  
TOLL ZONE PAVEMENT DETAILS**

SHEET 1 OF 1

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