

**Texas Department of Transportation**  
**TECHNICAL PROVISIONS**  
**FOR**  
**LOOP 1604 WESTERN EXTENSION**  
**Design-Build Project**

**ATTACHMENT 19-1**  
**PERFORMANCE AND MEASUREMENT TABLE BASELINE**

**April 26, 2013**



**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
							<p><b>b) Ruts – Mainlanes, shoulders &amp; ramps</b> Depth as measured using an automated device in compliance with TxDOT Standards.</p>	<ul style="list-style-type: none"> <li>• Frontage roads - 70</li> </ul> Percentage of wheel path length with ruts greater than ¼" in depth in each Auditable Section	100%
	1.2 con't.	Pavement		24 hrs	28 days	6 months	<p>10ft straight edge used to measure rut depth for localized areas.</p>	<ul style="list-style-type: none"> <li>• Mainlanes, shoulders and ramps – 3%</li> <li>• Frontage roads – 10%</li> </ul> Depth of rut at any location greater than 0.5"	Nil  Nil  Nil
							<p><b>c) Ride quality</b> Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles</p>	For 80% of all Auditable Sections measured, IRI throughout 98% of each Auditable Section is less than or equal to: <ul style="list-style-type: none"> <li>• Mainlanes, ramps - 95" per mile**</li> <li>• Frontage roads - 120" per mile**</li> </ul>	100%  100%

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							IRI measured throughout 98% of Auditable Section of less than or equal to:  • Mainlanes, ramps 120" per mile  • Frontage roads – 150" per mile	100%  100%	
							(Renewal Work and new construction subject to construction quality standards)	Mainlanes, ramps, 0.1 mile average – 150" per mile	100%
	1.2 con't.	Pavement		24 hrs	28 days	6 months	3-ft straightedge used to measure discontinuities	Frontage roads, 0.1 mile average – 180" per mile  IRI measured throughout 98% of each lane containing a bridge deck in any Auditable Section , 0.1 mile average – 200" per mile  Individual discontinuities greater than 0.75"	100%  100%  Nil
							<b>d) Failures</b> Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and	Occurrence of any failure	Nil

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
							jointed concrete pavement failures		
							<b>e) 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>f) 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 are in excess of 30.	100%
	1.2 con't.	Pavement		24 hrs	28 days	6 months		• 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.	100%

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			Road users warned of potential skidding hazards	24hrs	7days	N/A	<b>Skid resistance</b> (as above)	<ul style="list-style-type: none"> <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 Concessionaire shall perform a site investigation and perform required corrective action.</li> </ul> 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>  <b>b) Base failures</b>	Potholes of low severity or higher (Number)  Base failures of low severity or higher (Number)	Nil  Nil
	1.4	Joints in concrete	Joints in concrete paving are sealed and watertight  Longitudinal joint separation	24 hrs	28 days	6 months	Visual inspection of joints  Measurement of joint width and level difference of two sides of joints	Length unsealed joints greater than ¼"  Joint width more than 1" or faulting more than ¼"	Nil  Nil
	1.5	Curbs	Curbs are free of defects	24 hrs	28 days	6 months	Visual inspection	Length out of alignment	Nil
<b>2) DRAINAGE</b>									

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	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 section clear (feet)	Nil
	2.2	Drainage treatment devices	Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation in Emergency.	24 hrs	28 days	6 months	Visual inspection	Devices functioning correctly with means of operation displayed (Number)	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	Substructures and superstructures are free of:	24 hrs	28 days	6 months	Inspection and assessment in accordance with the	Records as required in the TxDOT Bridge Inspection	

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
		measured along the centre of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes	<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>				requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration’s Bridge Inspector’s Reference Manual.	Manual  Occurrences of condition rating below seven for any deck, superstructure or substructure  All condition states to be one for all structure components	Nil  100%
	3.2	Structure components	i) Expansion joints are free of: <ul style="list-style-type: none"> <li>dirt debris and vegetation</li> <li>defects in drainage systems</li> </ul>	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection	Records as required in the TxDOT Bridge Inspection Manual	Nil
	3.2 con’t.	Structure Components	<ul style="list-style-type: none"> <li>loose nuts and bolts</li> <li>defects in gaskets</li> </ul> ii) The deck drainage system is free of all and operates as intended. iii) Parapets are free of: <ul style="list-style-type: none"> <li>loose nuts or bolts</li> <li>blockages of hollow section drain holes</li> <li>graffiti</li> <li>vegetation</li> </ul>	24 hrs	28 days	6 months	Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration’s Bridge Inspector’s Reference Manual.	Occurrences of condition rating below seven for any deck, superstructure or substructure  All condition states to be one for all structure components	100%

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			<ul style="list-style-type: none"> <li>• accident damage</li> <li>iv) Bearings and bearing shelves are clean.</li> <li>v) 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.</li> <li>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</li> </ul>						
	3.2 con't.	Structure Components	devices is maintained.	24 hrs	28 days	6 months			
	3.3	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</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number with vegetation, debris and silt  Number with defects in sealant and	Nil  Nil

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			movement joints <ul style="list-style-type: none"> <li>scour damage</li> </ul>					movement joints Number with scour damage	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 Number with graffiti	Nil Nil Nil
	3.5	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
<b>4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS</b>									

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	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 Portable retroreflectometer, which uses 30 meter geometry meeting the requirements described in ASTM E 1710  Physical measurement  b) Profile Markings Visual inspection	Length meeting the minimum retroreflectivity 175 mcd/sqm/lx for white  Length meeting the minimum retroreflectivity 125 mcd/sqm/lx for yellow  Length with more than 5% loss of area of material at any point  Length with spread more than 10% of specified dimensions.  Length performing its intended function and compliant with relevant regulations	100%  100%  Nil  Nil  100%
	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</li> </ul>	24hrs	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	Nil  100%

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	4.2 con't.	Raised reflective markers	ensure that they remain at the correct level.	24 hrs	28 days	6 months		under low beam headlights.  Uniformity (replacement rpms having 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
<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%

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<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  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	24 hrs	28 days	6 months	<b>a) Retroreflectivity</b> Coefficient of retro reflectivity  <b>b) Face damage</b> Visual inspection  <b>c) Placement</b> Visual inspection  <b>d) Obsolete signs</b> Visual inspection  <b>e) Sign Information</b> Visual inspection  <b>f) Dynamic Message Signs</b> Visual inspection	Number of signs with reflectivity below the requirements of TxDOT's TMUTCD  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  Number of obsolete signs  Sign information is of the correct size, location, type and wording to meet its intended purpose  Dynamic message signs are	Nil  Nil  100%  Nil  100%  100%

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
			and wording to meet its intended purpose and any statutory requirements					fully functioning	
	6.1 con't.	General – All Signs	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	24 hrs	28 days	6 months			
	6.2	General - Safety critical signs	i) Requirements of the TMUTCD ii) Dynamic message signs are in an operational condition	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	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  <b>d) Contingency plans</b> Records Review	Signals are clean and visible  Signals are undamaged  Installations have correct signal timings  Full contingency plans are in place	100%  100%  100%  100%

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
			traffic control is provided during a period of failure						
	7.2	Soundness	Traffic Signals are structurally and electrically sound	24 hrs	28 days	6 months	a) <b>Structural soundness</b> Visual inspection b) <b>Electrical soundness</b>	Inspection records showing	100%
	7.2 con't.	Soundness		24 hrs	28 days	6 months	Testing to meet NEC regulations	safe installation and maintenance	
	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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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 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
	8.5	High Mast Lighting	i) All high mast luminaries functioning on each pole ii) All obstruction lights are present and working (if required) iii) Compartment door is secure with all bolts in place	24 hrs	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

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			iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion (for structural requirements refer to Element Category 3)						
<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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	10.1	Vegetated Areas – Except landscaped areas – General	<p>Vegetation is maintained so that:</p> <ul style="list-style-type: none"> <li>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.</li> <li>ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance.</li> <li>iii) Grass or vegetation does not encroach into or on paved shoulders, main lanes, sidewalks, islands, riprap, traffic barrier or curbs.</li> <li>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.</li> <li>v) A full width mowing cycle is completed after the first frost.</li> <li>vi) Wildflowers are preserved utilizing the guidelines in the mowing specifications</li> </ul>	24 hrs	7 days	28 days	<p><b>a) Urban areas</b> Physical measurement of height of grass and weeds</p> <p><b>b) Rural areas</b> Physical measurement of height of grass and weeds</p> <p><b>c) Encroachment</b> Visual inspection of instances of encroachment of vegetation</p> <p><b>d) Wildflowers</b> Visual Inspection with audit of process.</p> <p><b>e) Sight lines</b> Visual inspection</p>	<p>Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 18 in</p> <p>Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 30 in</p> <p>Occurrences of vegetation encroachment in each auditable section</p> <p>Adherence to vegetation management manuals</p> <p>Instances of impairment of sight lines or sight distance to signs</p>	<p>100%</p> <p>100%</p> <p>Nil</p> <p>100%</p> <p>Nil</p>

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	10.1	Vegetated Areas – Except landscaped areas – General	and TXDOT <i>Roadside Vegetation Manual</i> .	24 hrs	7 days	28 days			
	10.2	Landscaped Areas	i) All landscaped areas are maintained to their originally construction 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 FMP. iii) The height of grass and weeds is kept between 2“ and 8”. Mowing begins before vegetation reaches 8” 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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	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

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<b>11) REST AREAS AND PICNIC AREAS</b>									
	11.1	Rest areas and picnic areas	i) Picnic areas are clean and neat in appearance.  ii) Trash barrels are painted and attached to their supports to prevent stealing.  iii) Site free of any visible litter, all litter properly disposed. Litter removed from the picnic area grounds and barrels before being allowed to accumulate outside of the barrels.  iv) All vehicles used in transporting litter are equipped to prevent the accumulated litter from being strewn along the roadway.	24 hrs	28 days	6 months	Inspection records showing compliance	Instances where 90% of measured area shall have grass and weeds height between 2 in. and 8 in.  Mowing shall begin before vegetation reaches 8 in.  Number of bare ground areas larger than 5 square feet  Number of prohibited, invasive or noxious weeds present.	100%  100%  Nil  Nil

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				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
			v) Vegetation damaged due to improper or careless mowing and trimming operations or any other reason is replaced.					Occurrences of encroachment of vegetation or debris for more than two (2) inches onto any curb or sidewalk located throughout each rest area.	Nil
	11.1 cont	Rest areas and picnic areas	vi) Weeds, grass and other undesirable growth are removed from beds of plants and shrubs as needed. Trees and shrubs are trimmed neatly. All curbs and sidewalks are edged and repaired. vii) All picnic tables are clean, free of stains and free of any defect. viii) All directional, informational, safety and any other type of signage is properly installed, contains accurate information and is visible from a reasonable distance. ix) All striping is intact and all parking and travel areas are clearly marked. x) All curbs are in place and intact.	24 hrs	28 days	6 months		Occurrences of deviation of soil or mulch above or below the top of the curb.  Paved surfaces maintained clean and safe with minimal obstruction.  Occurrences of undermining greater than 2”  Number of unsealed cracks > ½ inch.  Number of lights fully functional.	Nil  100%  Nil  Nil  100%
<b>12) EARTHWORKS, EMBANKMENTS AND CUTTINGS</b>									

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	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%
<b>13) ITS and ETCS EQUIPMENT</b>									

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	13.1	ETCS Equipment – Maintenance	All ITS and ETCS equipment is fully functional and housing is functioning and free of defects. i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear. ii) Steps, handrails and accesses are kept in a good condition. iii) Access to all communication hubs, ground boxes, cabinets and sites is clear, iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition. v) All communications cable markers, cable joint markers and duct markers are visible and missing	24 hrs	14 days	1 month	Visual Inspection	Inspection records showing compliance	100%
<b>13) ITS and ETCS EQUIPMENT</b>									
	13.1 con't.	ETCS Equipment – Maintenance	markers are replaced. vi) Backup power supply system is available at all times	24 hrs	14 days	1 month	Visual Inspection	Inspection records showing compliance	100%
	13.2	VES Equipment - Maintenance	All VES equipment is kept clean, the identification numbers are visible.	24 hrs	14 days	1 month	Visual Inspection	Inspection records showing compliance	100%

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	13.3	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%
	13.4	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	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	Inspection records showing compliance	100%
	13.4 con't.	CCTV Equipment	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%

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	13.5	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
<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%
<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	Inspection records showing compliance	100%
	16.1 con't.	Travel lanes		2hrs	N/A	N/A	Maximum 1hr response time for snow and ice clearance vehicles to depart from base		
	16.2	Weather Forecasting	weather forecast information is obtained and assessed and appropriate precautionary	2hrs	N/A	N/A	Operations plan details the process and procedures in place and followed	Inspection records showing compliance	100%

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
			treatment is carried out to prevent ice forming on the travel way						
	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 Section 22.	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 Section 22.	1 hr	N/A	N/A	FMP details the process and procedures in place and followed.	Inspection records showing compliance	100%
	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.	24hrs	28 days	N/A	Review and inspection of the incident site	Auditable inspection records showing compliance	100%
	17.4	Temporary and permanent remedy	Ensure the structural safety of any structures affected by the incident.	24hrs	28 days	N/A			
<b>18) CUSTOMER RESPONSE</b>									

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	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%
	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.	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%

**Table 19-1: Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
	19.1 con't.	Sweeping	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			
	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%