Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-1
BASELINE PERFORMANCE AND MEASUREMENT TABLE NEW HARBOR BRIDGE

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
1) ROADWAY						*Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual.*		
1.1	**Obstructions and debris**	Roadway and clear zone free from obstructions and debris	2 hrs	NA	NA	Visual Inspection	1.1.1	Number of obstructions and debris
1.2	**Pavement**	All roadways have a smooth and quiet surface course (including bridge decks, covers, gratings, frames and boxes) with adequate skid resistance and free from Defects.	24 hrs	28 days	6 months	**a) Ruts – Mainlanes, shoulders & ramps** Depth as measured using an automated device in compliance with TxDOT Standards.		*Percentage of wheel path length with ruts greater than ¼" in depth in each Performance Section*
							1.2.1	• Mainlanes, shoulders and ramps - 3%
						10ft straight edge used to measure rut depth for localized areas.	1.2.3	Depth of rut at any location greater than ½"
						b) Ride quality		*NOT USED*
						c) Failures Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	1.2.4	Individual discontinuities greater than 1/4"
						d) Edge drop-offs Physical measurement of edge drop-off level compared to adjacent surface	1.2.5	Occurrence of any failure
							1.2.6	Number of instances of edge drop-off greater than 2"
1.2	**Pavement**	Road users warned of potential skidding hazards	24 hrs	28 days	6 months	**e) Skid resistance** ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524	1.2.7	• Performance Sections with skid numbers for 0.5-mile section of mainlines, shoulders and ramps exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.
							1.2.8	• Performance Sections with skid numbers for 0.5-mile section of frontage roads exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.
							1.2.9	• When the skid number is below 25 and/or when a site is categorized by TxDOT in accordance with the Wet Weather Accident Reduction Program, as a Wet Weather Accident Site, Developer shall perform a site investigation and perform required corrective action.
							1.2.10	Instances where road users are warned of a potential skidding hazard where corrective action is required following the categorization as a Wet Weather Accident Reduction Site.
1.3	**Crossovers and other paved areas**	Crossovers and other paved areas are free of Defects	24 hrs	28 days	6 months	**a) Potholes**	1.3.1	Number of potholes of low severity or higher
						b) Base failures	1.3.2	NOT USED
1.4	**Joints in concrete**	Joints in concrete paving are sealed and watertight Longitudinal joint separation is controlled	24 hrs	28 days	6 months	Visual inspection of joints	1.4.1	Length of unsealed joints greater than ¼"
						Measurement of joint width and level difference of two sides of joints	1.4.2	Joint width more than 1" or faulting more than ¼"

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1.5	**Curbs**	Curbs are in good alignment and free of Defects	24 hrs	28 days	6 months	Visual inspection	1.5.1	Continuous curb lengths where more than 10% of the length has defects such as cracks and chips
						Physical measurement	1.5.2	Continuous curb lengths where more than 5% of the length has a separation exceeding 0.25" between curb face and adjacent roadway surface
						Survey and 10' straight edge	1.5.3	Continuous curb lengths where more than 5% of the length has either the top or face of curbs exceeding 0.5" from intended design alignment
1.6	**Maintenance/Access Roads**	Maintenance / access roads are fee of Defects	24 hrs	28 days	6 months	Crown: Flat A shape or super-elevation with 4% cross slopes maintained to minimize ponding	1.6.1	Cross slope less than 3% or more than 6%
						Shoulder: Maintain slope away from the travel way and shoulder flush with travel way	1.6.2	Shoulder cross slope less than travel way cross slope; shoulder lower or higher than travel way
						Ditch: Maintain size and shape of ditch for proper drainage	1.6.3	Sides of ditches slumping or eroding, or obstructed by debris
						Ruts/potholes: Depth as measured using an automated device in compliance with TxDOT standards	1.6.4	Depth of ruts or potholes at any location greater than 1"
						Subgrade: Identify and repair any subgrade failures	1.6.5	Locations where subgrade failure is evident
2) DRAINAGE								
2.1	**Pipes and Channels**	Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way.	24 hrs	28 days	6 months	Visual inspection supplemented by CCTV where required to inspect buried pipe work.	2.1.1	Length of pipe or channel in feet with less than 90% of cross sectional clear area, calculated as the arithmetic mean of the clear cross-sectional areas of individual 10 feet lengths of pipes and channels in each Performance Section.
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 on Emergency.	24 hrs	28 days	6 months	Visual inspection	2.2.1	Number of devices functioning correctly with means of operation displayed.
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.	2.3.1	Number of instances of hazardous water build-up.
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	2.4.1	Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits.
2.5	**Protected Species**	Named species and habitats are protected.	24 hrs	28 days	6 months	Visual inspection	2.5.1	Performance Sections with named species and habitats with protection of these named species and habitats.

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3) STRUCTURES								
3.1	**Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes**	Substructures and superstructures are free of: • undesirable vegetation • debris and excessive bird droppings • blocked drains, weep pipes manholes and chambers • blocked drainage holes in structural components	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.		*Records as required in the TxDOT Bridge Inspection Manual*
		• defects in joint sealants • defects in pedestrian protection measure • scour damage • corrosion of rebar • paint system failures • impact damage				As above	3.1.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below seven for any deck, superstructure or substructure
						As above	3.1.2	Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual
3.2	**Structure components**	i) Expansion joints are free of: • dirt debris and vegetation • defects in drainage systems • loose nuts and bolts • defects in gaskets ii) The deck drainage system is free of all debris and operates as intended. iii) Parapets are free of: • loose nuts or bolts • blockages of hollow section drain holes • vegetation • accident damage iv) Bearings and bearing shelves are clean. Bearings allow for translation and rotation as designed. No presence of water exists on bearings and bearing seats. v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions is followed. vi) 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.	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.	3.2.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below seven for any deck, superstructure or substructure
						~~As above~~	~~3.2.2~~	~~Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual~~
						Visual inspection of Elements listed in (i) through (vii) of the general performance requirement column.	3.2.2	Instances of condition of any element not meeting general performance requirement as determined in accordance with Good Industry Practice.

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3.3	**Integral wearing surface**	Integral wearing surface is in a structurally sound condition in which cracking and concrete cover to reinforcement is controlled to ensure durability	24 hrs	28 days	6 months	Concrete cover measured at [10ft] intervals	3.3.1	Occurrence of any instance where integral wearing surface thickness is less than [50%] of design value
						Cracks measured at [3 ft] intervals on the surface of the deck prior to 3 hours after sunrise at concrete age greater than 28 days	3.3.2	Instances of cracks wider than [0.025] inches
						De-lamination or spalling	3.3.3	Instances of de-lamination or spalling
3.4	**Stay Cables**	Stay cable system operates as intended including damping system (if any) and acoustic monitoring system.	24 hrs	28 days	NA	Visual and hands-on inspection	3.4.1	Instances of damage or deterioration of the corrosion protection system including coatings, protective pipes and anchorage units
							3.4.2	Instances of damaged or broken strand / wire
							3.4.3	Instances of stay cable damping system not operating as intended including failure to provide the minimum design level of damping
							3.4.4	Instances of stay cable acoustic monitoring system not operating as intended including failure to transmit measured information.
3.5	**Inspection and access equipment**	Inspection and access equipment is properly maintained including: • Under-deck inspection systems such as maintenance travelers • Fixed access and inspection platforms • Access stairways and lift systems	24 hrs	28 days	6 months	Visual and hands-on inspection	3.5.1	Instances of loose assemblies or nuts and bolts not fully tightened
							3.5.2	Instances of defects in surface protection such as failures of coating systems to bare metal or loss of galvanizing
							3.5.3	Instances of failures to conform with relevant standards for fixed and mobile inspection facilities, hoists and lifts
							3.5.4	Instances where maintenance traveler fails to operate smoothly under power or braking, has uneven or inconsistent movement of any driven component or exhibits binding or swaying, in each case in a manner that exceeds normal operational parameters.
3.6	**Ship impact protection system**	The ship impact protection system (if any) including any fenders and exposed foundations shall be maintained such that it is able to perform its intended function	24 hrs	28 days	6 months	Visual inspection	3.6.1	Instances of marine boring (timber systems)
							3.6.2	Instances of corrosion that would reduce the system resistance to below its intended design state
							3.6.3	Instances of damage from vessel impact that would reduce the system resistance to below its intended design state or would cause a material reduction in the remaining service life
3.7	**Corrosion protection systems**	Corrosion protection systems are intact and operating in line with design intent including: • Paint systems for steel • Concrete surface protection systems • Sacrificial protection systems Zinc metalizing	24 hrs	28 days	6 months	Visual inspection	3.7.1	Instances of failure of coating system down to bare metal or instances of repair / removal of overcoat that damages underlying metallized coating.
							3.7.2	Loss of galvanizing
							3.7.3	Damaged, blistered, cracked, delaminated or peeling material including any painted surface for which a color is specified that has changed color by more than 10 Delta-E CIE LAB units.

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							3.7.4	Noncompliance with manufacturer's recommendations for the maintenance and re-application of coatings
3.8	**Lightning Protection Systems**	Lightning protection systems are intact and operating in line with design intent.	24 hrs	7 days	NA	Inspection and assessment in accordance with the requirements of Underwriters Laboratories, Inc. (UL) 96 and Lightning Protection Institute (LPI) 175.	3.8.1	Noncompliance with specified standards.
							3.8.2	Instances of lightning protection system not operating as intended.
3.11	**Load Ratings**	All structures maintain the design load capacity.	24 hrs	7 days	NA	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual and per the Technical Provisions	3.11.1	Number of structures with load restrictions for Texas legal loads (including legally permitted vehicles) in each Performance Section
3.12	**Access Points**	All hatches and points of access have fully operational and lockable entryways.	24 hrs	28 days	6 months	Visual Inspection	3.12.1	Number with defects in locks or entryways
3.14	**Structural Surfaces**	Vertical Surfaces free of graffiti, markings by vandalism.	24 hrs	28 days	6 months	Visual Inspection	3.14.1	Number of areas where graffiti is present

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4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS								
4.1	**Pavement markings**	Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hrs	28 days	6 months	**a) Markings - General**		
						Portable retroreflectometer, which uses 30 meter geometry, meeting the requirements described in ASTM E 1710	4.1.1	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 175 med/sqm/lx for white
							4.1.2	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for white
						Physical measurement	4.1.3	Length of pavement marking in each Performance Section with more than 5% loss of area of material at any point
							4.1.4	Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions.
						b) Profile Markings		
						Visual inspection	4.1.5	Percentage of total length of pavement marking in each Performance Section performing its intended function and compliant with relevant regulations
4.2	**Raised Reflective Markings**	Raised reflective pavement markers are: • clean and clearly visible • of the correct color and type • reflective or retroreflective in accordance with TxDOT standards • correctly located, aligned and at the correct level • are firmly fixed • are in a condition that will ensure that they remain at the correct level.	24 hrs	28 days	6 months	Visual inspection	4.2.1	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)
							4.2.2	A minimum of four markers are visible at 80' spacing when viewed under low beam headlights.
							4.2.3	Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers).
4.3	**Delineators and Markers**	Object markers, mail box markers and delineators are: • clean and visible • of the correct color and type • legible and reflective • straight and vertical	24 hrs	28 days	6 months	Visual inspection	4.3.1	Number of object markers or delineators in each Performance Section that is defective or missing

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5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS								
5.1	**Guardrails and Safety Barriers**	All guardrails, safety barriers, concrete barriers, etc. are maintained free of Defects, , and undesirable vegetation. 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	5.1.1	Performance Sections with all guard rails and safety barriers appropriately placed and correction installed
							5.1.2	Performance Sections with all guard rails and safety barriers free from defects
							5.1.3	Performance Sections with all guard rails and safety barriers at correct heights
							5.1.4	Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles
5.2	**Impact Attenuators**	All impact attenuators are appropriately placed and correctly installed	24 hrs	28 days	6 months	Visual inspection	5.2.1	Performance Sections will all impact attenuators appropriately placed and correctly installed.
6) TRAFFIC SIGNS								
6.1	**General - All Gantry-Mounted overhead signs**	i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects	24 hrs	28 days	6 months	**a) Retroreflectivity** Determination of Coefficient of retro-reflectivity	6.1.1	Number of signs with actual reflectivity below the requirements of TxDOT's TMUTCD in each Performance Section
		ii) Identification markers are provided, correctly located, visible, clean and legible				**b) Face damage** Visual inspection	6.1.2	Number of signs in each Performance Section with face damage greater than 5% of area
		iii) Visibility distances meet the stated requirements				**c) Placement** Visual inspection	6.1.3	All signs in each Performance Section are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning
		iv) Obsolete and redundant signs are removed or replaced as appropriate				**d) Obsolete signs** Visual inspection	6.1.4	Number of obsolete signs in each Performance Section
		v) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements vi) All structures and elements of the signing system are kept clean and free from debris and have clear access provided. vii) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD				**e) Sign Information** Visual inspection	6.1.5	All sign information in each Performance Section is of the correct size, location, type and wording to meet its intended purpose
		viii) Dynamic message signs are in an operational condition				**f) Dynamic Message Signs** Visual inspection	6.1.6	Dynamic message signs are fully functioning
6.2	**Gantries**	Sign and signal mounting structures (including gantries) are structurally sound and free of: • defects in surface protection systems	24 hrs	28 days	6 months	Visual inspection	6.2.1	Number with defects in surface protection system
		• loose nuts and bolts					6.2.1	Number with loose nuts and bolts
		• graffiti					6.2.3	Number with graffiti

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7) TRAFFIC SIGNALS (NOT PART OF MAINTAINED ELEMENTS)								
8) LIGHTING								
8.1	**Roadway Lighting**	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 any damage or vandalism iv) Columns are upright, correctly founded, visually acceptable and structurally sound	24 hrs	28 days	6 months	**a) Mainlane lights operable** Night time inspection or automated logs	8.1.1	Performance Sections with less than 90% of lights functioning correctly at all times
						b) Mainlane lights out of action Night time inspection or automated logs	8.1.2	Instances of more than two consecutive lights out of action
8.2	**Sign Lighting**	Sign lighting is fully operational	24 hrs	28 days	6 months	Night time inspection or automated logs	8.2.1	Number of instances of more than one bulb per sign not working in each Performance Section
8.3	**Electrical Supply**	Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning	24 hrs	7 days	28 days	Testing to meet NEC regulations, visual inspection	8.3.1	Inspection records showing safe installation and maintenance in each Performance Section
8.4	**Access Panels**	All access panels in place at all times.	24 hrs	7 days	28 days	Visual Inspection	8.4.1	Number of instances of missing or damaged access panels in each Performance Section
8.5	**High Mast Lighting**	*NOT USED*				*NOT USED*		
8.6	**Navigational Lighting**	Navigational lighting is fully operational	24 hrs	7 days	28 days	Night time inspection or automated logs	8.5.1	Number of instances of more than one bulb per sign not working in each Performance Section
8.7	**Architectural Lighting**	All architectural lighting is functioning in accordance with the original design requirements and specifications			28 days	Night time inspection or automated logs	8.6.1	Instances of architectural lighing with more than 10% of lamps not functioning
8.8	**Bridge Inspection Lighting**	All bridge inspection lighting is functioning in accordance with original design requirements and specifications	24 hrs	7 days	28 days	Night time inspection or automated logs	8.7.1	Instances of bridge inspection lighting where failures could adversely impact safety or security of inspections or access
9) FENCES, WALLS AND SOUND ABATEMENT (NOT USED)								
10) ROADSIDE MANAGEMENT (NOT USED)								
11) REST AREAS AND PICNIC AREAS (NOT USED)								
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS (NOT USED)								
13) ITS EQUIPMENT								
13.1	**ITS Equipment - Maintenance**	All ITS equipment is fully functional and housing is functioning and free of defects. i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear. ii) Steps, handrails and accesses are kept in a good condition. iii) Access to all communication hubs, ground boxes, cabinets and sites is clear. iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition. v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced. vi) Backup power supply system is available at all times	24 hrs	14 days	28 days	Visual Inspection	13.1.1	Inspection records showing compliance with requirements for maintenance of ITS equipment in each Performance Section.

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13.2	**Dynamic Message Sign Equipment**	Dynamic Message Signs are free from faults such as: i) Any signal displaying a message which is deemed to be a safety hazard. ii) Failure of system to clear sign settings when appropriate. iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions. iv) Signs displaying an incorrect message.	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	13.2.1	Inspection records showing compliance with requirements for Dynamic Message Signs in each Performance Section
13.3	**CCTV Equipment**	CCTV Systems are free from serious faults that significantly 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	13.3.1	Inspection records showing compliance with requirements for CCTV equipment in each Performance Section
13.4	**Vehicle Detection Equipment**	All equipment free of defects and operational problems such as: i) Inoperable loops. ii) Malfunctioning camera controllers.	2 hrs	24 hrs	28 days	Defect measurement dependent on equipment	13.4.1	Inspection records showing compliance with requirements for vehicle detection equipment in each Performance Section
							13.4.2	Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries.
							13.4.3	Insulation resistance to be > 50 meg ohms.
14) TOLLING FACILITIES AND BUILDINGS (NOT USED)								
15) AMENITY (NOT USED)								
16) SNOW AND ICE CONTROL								
16.1	**Travel lanes**	Maintain travel way free from snow and ice.	2 hrs	NA	NA	Maximum 1hr response time to complete manning and loading of spreading vehicles.	16.1.1	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 2hrs from departure from loading point to complete treatment and return to loading point.	16.1.2	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 1hr response time for snow and ice clearance vehicles to depart from base.	16.1.3	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
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.	2 hrs	NA	NA	Operations plan details the process and procedures in place and followed.	16.2.1	Inspection records showing compliance with requirements for weather forecasting in each Performance Section
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.	2 hrs	NA	NA	Operations plan details the process and procedures in place and followed.	16.3.1	Inspection records showing compliance with snow and ice clearance plans in each Performance Section

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16.4	**Operations and Maintenance Manual**	Operations and maintenance instructions for the anti-icing system and items of equipment (if Used)	2 hrs	NA	NA	Operations and maintenance instructions detail the process and procedures in place and followed.	16.4.1	Inspection records showing compliance with operations and maintenance instructions in each Performance Section.

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17) INCIDENT RESPONSE								
17.1	**General**	Monitor the Project and respond to Incidents in accordance with the Maintenance Management Plan (MMP).	1 hr	NA	NA	Response times are met for 98% of incidents measured on a 1 year rolling basis.	17.1.1	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
						No complaints from Emergency Services.	17.1.2	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
17.2	**Hazardous Materials**	Monitor the Project and respond to Incidents involving Hazardous Materials in accordance with the Maintenance Management Plan (MMP).	1 hr	NA	NA	MMP details the process and procedures in place and followed.	17.2.1	Inspection records showing compliance with the MMP details regarding hazardous materials in each Performance Section
17.3	**Structural Assessment**	Evaluate structural damage to structures and liaise with emergency services to ensure safe working environment while clearing the incident	1 hr	NA	NA	Inspections and surveys as required by incident	17.3.1	Inspection records showing compliance with the MMP and requirements for incidents in each Performance Section
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	NA	Review and inspection of the incident site	17.4.1	Inspection records showing compliance with requirements for temporary and permanent remedy for incidents in each Performance Section
18) CUSTOMER RESPONSE								
18.1	**Response to inquiries**	Timely and effective response to customer inquiries and complaints.	48 hrs	NA	NA	Contact the customer within 48 hours following initial customer inquiry.	18.1.1	Percentage of responses within specified times in each Performance Section.
						All work resulting from customer requests is scheduled within 48 hours of customer contact.	18.1.2	Demonstrated by O&M Records
						Follow-up contact with the customer within 72 hours of initial inquiry.	18.1.3	Demonstrated by O&M Records
						All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	18.1.4	Demonstrated by O&M Records
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	7 days	NA	Instances of line out of action or unmanned	18.2.1	Number of operations records showing non availability of the customer contact line in each Performance Section including complaints from public.
19) SWEEPING AND CLEANING								
19.1	**Sweeping**	i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean with vacuum sweepers, 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	3 months	Buildup of dirt, ice, rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	19.1.1	Inspection records showing compliance with requirements for sweeping in each Performance Section.
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. Dispose of all litter and debris collected at an approved solid waste site.	24 hrs	28 days	3 months	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	19.2.1	Inspection records showing compliance with requirements regarding litter pick-up in each Performance Section.

ATTACHMENT 19-1: PERFORMANCE AND MEASUREMENT TABLE BASELINE FOR NEW HARBOR BRIDGE

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			

NOTES FOR ATTACHMENT 19-1

1 Hazard Mitigation shall be an action taken by Developer to mitigate a hazard to Users or imminent risk of damage or deterioration to property or the environment such that the Category 1 Defect no longer exists.

2 Permanent Remedy shall be an action taken by Developer to restore the condition of an Element following Hazard Mitigation of a Category 1 Defect: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such that th achieved for each Measurement Record.

3 Permanent Repair shall be an action taken by Developer to restore the condition of an Element for which a Category 2 Defect has been recorded: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such that the achieved for each Measurement Record.

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BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-2
BASELINE PERFORMANCE AND MEASUREMENT TABLE ROADWAY SECTION DURING CONSTRUCTION

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
1) ROADWAY						*Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual.*		
1.1	**Obstructions and debris**	Roadway and clear zone free from obstructions and debris	2 hrs	N/A	N/A	Visual Inspection	1.1.1	Number of obstructions and debris
1.2	**Pavement**	All roadways shall be safe for road users and shall maintain or exceed the applicable reference condition (on a location-specific basis) as identified in the BECR (including shoulders, bridge decks, covers, gratings, frames and boxes).	24 hrs	28 days	28 days	**a) Ruts – Mainlanes, shoulders & ramps** Physical measurement and visual inspection.	1.2.1	Wheel path length with ruts greater than the reference condition in the BECR
						10ft straight edge used to measure rut depth for localized areas.	1.2.2	Depth of rut greater than the reference condition in the BECR
						b) Ride quality 10-ft straightedge used to measure discontinuities	1.2.3	Individual discontinuities greater than the reference condition in the BECR
						d) Failures Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	1.2.4	Occurrence of any failure exceeding the reference condition in the BECR
						e) Edge drop-offs Physical measurement of edge drop-off level compared to adjacent surface	1.2.5	Number of instances of edge drop-off greater than the reference condition in the BECR
						f) Skid resistance ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524	1.2.6	Not used
1.2	**Pavement**	Road users warned of potential skidding hazards	24hrs	7 days	N/A		1.2.7	Instances where road users are warned of a potential skidding hazard where remedial action is identified.
1.3	**Crossovers and other paved areas**	Crossovers and other paved areas are free of defects exceeding the reference condition (on a location-specific basis) as identified in the BECR.	24 hrs	28 days	28 days	**a) Potholes**	1.3.1	Number of potholes exceeding the reference condition in the BECR
						b) Base failures	1.3.2	Number of base failures exceeding the reference condition in the BECR
1.4	**Joints in concrete**	Joints in concrete paving meet or exceed the reference condition (on a location-specific basis) as identified in the BECR	24 hrs	28 days	28 days	Visual inspection of joints	1.4.1	Length of unsealed joints exceeding the reference condition in the BECR
		Longitudinal joint separation meets or exceeds the reference condition (on a location-specific basis) as identified in the BECR.				Visual inspection	1.4.2	Joint width exceeding the reference condition in the BECR
2) DRAINAGE								
2.1	**Pipes and Channels**	Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way.	24 hrs	28 days	28 days	Visual inspection	2.1.1	Length of pipe or channel subject to accumulation of debris, silt or other blockage exceeding the reference condition in the BECR.
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 on Emergency.	24 hrs	28 days	28 days	Visual inspection	2.2.1	Number of devices functioning correctly with means of operation displayed

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
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	NA	Visual inspection of water on surface	2.3.1	Number of instances of hazardous water build-up
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	2.4.1	Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits.
2.5	**Protected Species**	Named species and habitats are protected.	24 hrs	28 days	6 months	Visual inspection	2.5.1	Performance Sections with named species and habitats with protection of these named species and habitats
3) STRUCTURES								
3.1	**Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes**	Substructures and superstructures shall maintain or exceed the applicable reference condition (on a location-specific basis) as identified in the BECR including: • graffiti • undesirable vegetation • debris and excessive bird droppings • blocked drains, weep pipes manholes and chambers • blocked drainage holes in structural components • defects in joint sealants • defects in pedestrian protection measure • scour damage • corrosion of rebar • paint system failures • impact damage	24 hrs	28 days	28 days	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.		Records as required in the TxDOT Bridge Inspection Manual
							3.1.1	Presence of any defect not recorded in the applicable reference condition (on a location-specific basis) as identified in the BECR
							3.1.2	All condition states to be at least equal to the condition states recorded on a structure-specific basis in the BECR for all structure components

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
3.2	**Structure components**	Except as otherwise recorded as the reference condition on a structure-specific basis in the BECR: i) Expansion joints are free of: • dirt debris and vegetation • defects in drainage systems • loose nuts and bolts • defects in gaskets ii) The deck drainage system is free of debris all and operates as intended. iii) Parapets are free of: • loose nuts or bolts • blockages of hollow section drain holes • graffiti • vegetation • accident damage iv) Bearings and bearing shelves are clean. 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. 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.	24 hrs	28 days	28 days	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.		Records as required in the TxDOT Bridge Inspection Manual
							3.2.1	Presence of any defect not recorded in the applicable reference condition (on a location-specific basis) as identified in the BECR
							3.2.2	All condition states to be at least equal to the condition states recorded on a structure-specific basis in the BECR for all structure components
3.3	**Non-bridge class culverts**	Except as otherwise recorded as the reference condition on a structure-specific basis in the BECR: Non-bridge-class culverts are free of: • vegetation and debris and silt • defects in sealant to movement joints • scour damage	24 hrs	28 days	28 days	Visual inspection	3.3.1	Presence of any defect not recorded in the applicable reference condition (on a location-specific basis) as identified in the BECR
							3.3.2	Not used
							3.3.3	Not used
3.4	**Gantries and high masts**	Except as otherwise recorded as the reference condition on a structure-specific basis in the BECR: Sign signal gantries, high masts are structurally sound and free of: • loose nuts and bolts • defects in surface protection systems • graffiti	24 hrs	28 days	6 months	Visual inspection	3.4.1	Number of gantries and high masts with loose assemblies
							3.4.2	Number of gantries and high masts with defects in surface protection

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
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	3.5.1	Number of structures with load restrictions for Texas legal loads (including legally permitted vehicles)
3.6	**Access points**	All hatches and points of access have fully operational and lockable entryways.	24 hrs	28 days	6 months	Visual Inspection	3.6.1	Number with defects in locks or entryways
3.7	**Mechanically Stabilized Earth and Retaining Walls**	Except as otherwise recorded as the reference condition on a structure-specific basis in the BECR: Mechanically Stabilized Earth and Retaining Walls free of: • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage Parapets free of: • loose nuts and bolts • blockage of drain holes • undesirable vegetation • impact damage • concrete spalling • graffiti	24 hrs	28 days	28 days	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.	3.7.1	Records as required in the TxDOT Bridge Inspection Manual
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS								
4.1	**Pavement markings**	Pavement markings are: • clean and visible during the day and at night • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hrs	28 days	28 days	**a)** Markings - General		
						Visual inspection (to include a record of visibility of markings under low beam headlights)	4.1.1	Occurrence of any marking visibility condition on a location-specific basis less than the reference condition in the BECR
						Physical measurement	4.1.2	Length of pavement marking where the loss of pavement marking material exceeds the reference condition for loss of pavement marking material recorded on a location-sepcific basis in the BECR
								Not used
						b) Profile Markings		
						Visual inspection	4.1.3	Profile marking condition at least equal to the reference condition in the BECR

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
4.2	**Raised reflective markers**	Raised reflective pavement markers are: • clean and clearly visible • of the correct color and type • reflective or retroreflective in accordance with TxDOT Standards • correctly located, aligned and at the correct level • are firmly fixed • are in a condition that will ensure that they remain at the correct level.	24 hrs	28 days	6 months	Visual inspection	4.2.1	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)
							4.2.2	Not Used
							4.2.3	Not Used
4.3	**Delineators & Markers**	Object markers, mail box markers and delineators are: • clean and visible • of the correct color and type • legible and reflective • straight and vertical	24 hrs	28 days	28 days	Visual inspection	4.3.1	Delineators and markers condition at least equal to the reference condition in the BECR
5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS								
5.1	**Guardrails and safety barriers**	All guardrails, safety barriers, concrete barriers, etc. are maintained free of defects, graffiti, and undesirable vegetation. 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	28 days	Visual inspection	5.1.1	Guardrail condition at least equal to the reference condition in the BECR
							5.1.2	Not used
							5.1.3	Guardrail correct height and offset at least equal to the reference condition in the BECR
							5.1.4	Not used
5.2	**Impact attenuators**	All impact attenuators are appropriately placed and correctly installed	24 hrs	7 days	6 months	Visual inspection	5.2.1	Impact Attenuator condition at least equal to the reference condition in the BECR
6) TRAFFIC SIGNS								
6.1	**Gantry-mounted overhead signs**	Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects	24 hrs	28 days	28 days	Visual inspection	6.1.1	Condition of gantry-mounted signs at least equal to the reference condition in the BECR
7) TRAFFIC SIGNALS (NOT PART OF MAINTAINED ELEMENTS)								
8) LIGHTING								
8.1	**Roadway Lighting**	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 any damage or vandalism iv) Columns are upright, correctly founded, visually acceptable and structurally sound	24 hrs	28 days	28 days	Visual inspection	6.1.1	Condition of roadway lighting at least equal to the reference condition in the BECR
9) FENCES, WALLS AND SOUND ABATEMENT								
9.1	**Construction**	Integrity and structural condition of fences is maintained	24 hrs	28 days	6 months	Structural assessment if visual inspection warrants	9.1.1	Inspection records for fences and walls showing compliance with fence and wall requirements

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
10) ROADSIDE MANAGEMENT								
10.1	**Vegetated Areas - Except landscaped areas – General**	Vegetation is maintained so that: i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height. 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, main lanes, sidewalks, islands, riprap, traffic barrier or curbs. iv) A full width mowing cycle is completed after the first frost	24 hrs	7 days	28 days	**a) Urban areas** Physical measurement of height of grass and weeds	10.1.1	Individual measurement to have 95% of grass and weeds between 5” and 18”in height.
						b) Rural areas Physical measurement of height of grass and weeds	10.1.2	Individual measurement to have 95% of height of grass and weeds between 5” and 30” in height.
						c) Encroachment Visual inspection of instances of encroachment of vegetation	10.1.3	Number of occurrences of vegetation encroachment
						d) Sight lines Visual inspection	10.1.4	Number of instances of impairment of sight lines or sight distance to signs
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.	24 hrs	7 days	28 days	Visual inspection	10.2.1	Inspection records showing compliance with requirements for landscaping.
10.3	**Fire Hazards**	Fire hazards are controlled	24 hrs	7 days	28 days	Visual inspection	10.3.1	Number of instances of dry brush or vegetation forming fire hazard
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	10.4.1	Inspection records showing compliance with requirements for trees, brush and ornamentals
10.5	**Wetlands**	Wetlands are managed in accordance with the permit requirements.	24 hrs	7 days	28 days	Visual inspection, assessment of permit issuers	10.5.1	Number of instances of permit requirements not met
11) REST AREAS AND PICNIC AREAS (Not Used)								

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS								
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	12.1.1	Number of recorded instances of slope failure
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	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	12.2.1	Inspection records showing compliance with requirements for slopes
13) ITS EQUIPMENT								
13.1	**ITS Equipment - Maintenance**	All ITS equipment is fully functional and housing is functioning and free of defects. i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear. ii) Steps, handrails and accesses are kept in a good condition. iii) Access to all communication hubs, ground boxes, cabinets and sites is clear. iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition. v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced. vi) Backup power supply system is available at all times	24 hrs	14 days	1 month	Visual Inspection	13.1.1	Inspection records showing compliance with requirements for maintenance of ITS equipment
13.2	**Dynamic Message Sign Equipment**	Dynamic Message Signs are free from faults such as: i) Any signal displaying a message which is deemed to be a safety hazard. ii) Failure of system to clear sign settings when appropriate. iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions. iv) Signs displaying an incorrect message.	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	13.2.1	Inspection records showing compliance with requirements for Dynamic Message Signs
13.3	**CCTV Equipment**	CCTV Systems are free from serious faults that significantly 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	13.3.1	Inspection records showing compliance with requirements for CCTV equipment

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
13.4	**Vehicle Detection Equipment**	All equipment free of defects and operational problems such as:	2 hrs	24 hrs	1 month	Defect measurement dependent on equipment	13.4.1	Inspection records showing compliance with requirements for vehicle detection equipment in each Performance Section
		i) Inoperable loops.				Traffic Detector Loops:	13.4.2	Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries.
		ii) Malfunctioning camera controllers.				Loop circuit's inductance to be > 50 and < 1,000 micro henries.	13.4.3	Insulation resistance to be > 50 meg ohms.
14) TOLLING Facilities and Buildings (Not Used)								
15) AMENITY								
16) SNOW AND ICE CONTROL								
16.1	**Travel lanes**	Maintain travel way free from snow and ice	2 hrs	N/A	N/A	Maximum 1hr response time to complete manning and loading of spreading vehicles.	16.1.1	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 2hrs from departure from loading point to complete treatment and return to loading point.	16.1.2	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 1hr response time for snow and ice clearance vehicles to depart from base.	16.1.3	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
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.	2 hrs	N/A	N/A	Operations plan details the process and procedures in place and followed.	16.2.1	Inspection records showing compliance with requirements for weather forecasting in each Performance Section
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.	2 hrs	N/A	N/A	Operations plan details the process and procedures in place and followed.	16.3.1	Inspection records showing compliance with snow and ice clearance plans in each Performance Section
17) INCIDENT RESPONSE								
17.1	**General**	Monitor the Project and respond to Incidents in accordance with the Maintenance Management Plan (MMP).	1 hr	N/A	N/A	Maintenance Specifications are met for 98% of incidents measured on a 1 year rolling basis.	17.1.1	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
						No complaints from Emergency Services.	17.1.2	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
17.2	**Hazardous Materials**	Monitor the Project and respond to Incidents involving Hazardous Materials in accordance with the Maintenance Management Plan (MMP).	1 hr	N/A	N/A	MMP details the process and procedures in place and followed.	17.2.1	Inspection records showing compliance with the MMP details regarding hazardous materials in each Performance Section
17.3	**Structural assessment**	Evaluate structural damage to structures and liaise with emergency services to ensure safe working environment while clearing the incident	1 hr	N/A	N/A	Inspections and surveys as required by incident	17.3.1	Inspection records showing compliance with the MMP and requirements for incidents in each Performance Section
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	17.4.1	Inspection records showing compliance with requirements for temporary and permanent remedy for incidents in each Performance Section

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Baseline Condition Repair			
18) CUSTOMER RESPONSE								
18.1	**Response to inquiries**	Timely and effective response to customer inquiries and complaints.	48 hrs	NA	NA	Contact the customer within 48 hours following initial customer inquiry.	18.1.1	Percentage of responses within specified times in each Performance Section.
						All work resulting from customer requests is scheduled within 48 hours of customer contact.	18.1.2	Demonstrated by O&M Records
						Follow-up contact with the customer within 72 hours of initial inquiry.	18.1.3	Demonstrated by O&M Records
						All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	18.1.4	Demonstrated by O&M Records
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	7 days	NA	Instances of line out of action or unmanned	18.2.1	Number of operations records showing non availability of the customer contact line in each Performance Section including complaints from public.
19) SWEEPING AND CLEANING								
19.1	**Sweeping**	i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean with vacuum sweepers, 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	3 months	Buildup of dirt, ice, rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	19.1.1	Inspection records showing compliance with requirements for sweeping in each Performance Section.
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. Dispose of all litter and debris collected at an approved solid waste site.	24 hrs	28 days	3 months	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	19.2.1	Inspection records showing compliance with requirements regarding litter pick-up in each Performance Section.

NOTES FOR ATTACHMENT 19-1

1 Hazard Mitigation shall be an action taken by Developer to mitigate a hazard to Users or imminent risk of damage or deterioration to property or the environment such that the Category 1 Defect no longer exists.

2 Permanent Remedy shall be an action taken by Developer to restore the condition of an Element following Hazard Mitigation of a Category 1 Defect: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such that the achieved for each Measurement Record.

3 Baseline Condition Repair shall be an action taken by Developer to restore the condition of an Element for which a Category 2 Defect has been recorded: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such th is achieved for each Measurement Record.

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Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-3
BASELINE PERFORMANCE AND MEASUREMENT TABLE ROADWAY SECTION AFTER SUBSTANTIAL COMPLETION

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
1) ROADWAY						*Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual.* *Renewal Work and new construction are subject to construction quality IRI standards (75 inches per mile for rigid pavements, 65 inches per mile for flexible pavements- refer to Technical Provisions Section 8.3.2)*		
1.1	**Obstructions and debris**	Roadway and clear zone free from obstructions and debris	2 hrs	NA	NA	Visual Inspection	1.1.1	Number of obstructions and debris
1.2	**Pavement**	All roadways have a smooth and quiet surface course (including bridge decks, covers, gratings, frames and boxes) with adequate skid resistance and free from Defects.	24 hrs	28 days	6 months	**a) Ruts – Mainlanes, shoulders & ramps** Depth as measured using an automated device in compliance with TxDOT Standards.		*Percentage of wheel path length with ruts greater than ¼" in depth in each Performance Section*
							1.2.1	• Mainlanes, shoulders and ramps - 3%
							1.2.2	• Frontage roads - 10%
						10ft straight edge used to measure rut depth for localized areas.	1.2.3	Depth of rut at any location greater than ½"
						b) Ride quality Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles ** To allow for measurement bias, an adjustment of -10 (minus ten) is made to IRI measurements for concrete pavements before assessing threshold compliance.		*For 80% of all Performance Sections measured, IRI throughout 98% of each Performance Section is less than or equal to:*
							1.2.4	• Mainlanes, ramps -95" per mile**
							1.2.5	• Frontage roads - 120" per mile**
								IRI throughout 98% of each Performance Section is less than or equal to:
							1.2.6	• Mainlanes, ramps - 120" per mile**
							1.2.7	• Frontage roads - 150" per mile**
							1.2.8	Mainlanes, ramps, 0.1 mile average - 150" per mile**
							1.2.9	Frontage roads, 0.1 mile average - 180" per mile**
						10-ft straightedge used to measure discontinuities	1.2.10	IRI measured throughout 98% of each lane containing a bridge deck in any Performance Section, 0.1 mile average - 200" per mile**
						c) Failures Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	1.2.11	Individual discontinuities greater than 1/4"
							1.2.12	Occurrence of any failure
						d) Edge drop-offs Physical measurement of edge drop-off level compared to adjacent surface	1.2.13	Number of instances of edge drop-off greater than 2"

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
1.2	**Pavement**	Road users warned of potential skidding hazards	24 hrs	28 days	6 months	**e) Skid resistance** ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524	1.2.14	• Performance Sections with skid numbers for 0.5-mile section of mainlines, shoulders and ramps exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.
							1.2.15	• Performance Sections with skid numbers for 0.5-mile section of frontage roads exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.
							1.2.16	• When the skid number is below 25 and/or when a site is categorized by TxDOT in accordance with the Wet Weather Accident Reduction Program, as a Wet Weather Accident Site, Developer shall perform a site investigation and perform required corrective action.
							1.2.17	Instances where road users are warned of a potential skidding hazard where corrective action is required following the categorization as a Wet Weather Accident Reduction Site.
1.3	**Crossovers and other paved areas**	Crossovers and other paved areas are free of Defects	24 hrs	28 days	6 months	**a) Potholes**	1.3.1	Number of potholes of low severity or higher
						b) Base failures	1.3.2	Number of base failures of low severity or higher
1.4	**Joints in concrete**	Joints in concrete paving are sealed and watertight Longitudinal joint separation is controlled	24 hrs	28 days	6 months	Visual inspection of joints	1.4.1	Length of unsealed joints greater than ¼"
						Measurement of joint width and level difference of two sides of joints	1.4.2	Joint width more than 1" or faulting more than ¼"
1.5	**Curbs**	Curbs are in good alignment and free of Defects	24 hrs	28 days	6 months	Visual inspection	1.5.1	Continuous curb lengths where more than 10% of the length has defects such as cracks and chips
						Physical measurement	1.5.2	Continuous curb lengths where more than 5% of the length has a separation exceeding 0.25" between curb face and adjacent roadway surface
						Survey and 10' straight edge	1.5.3	Continuous curb lengths where more than 5% of the length has either the top or face of curbs exceeding 0.5" from intended design alignment
1.6	**Maintenance/Access Roads**	Maintenance / access roads are fee of Defects	24 hrs	28 days	6 months	Crown: Flat A shape or super-elevation with 4% cross slopes maintained to minimize ponding	1.6.1	Cross slope less than 3% or more than 6%
						Shoulder: Maintain slope away from the travel way and shoulder flush with travel way	1.6.2	Shoulder cross slope less than travel way cross slope; shoulder lower or higher than travel way
						Ditch: Maintain size and shape of ditch for proper drainage	1.6.3	Sides of ditches slumping or eroding, or obstructed by debris
						Ruts/potholes: Depth as measured using an automated device in compliance with TxDOT standards	1.6.4	Depth of ruts or potholes at any location greater than 1"
						Subgrade: Identify and repair any subgrade failures	1.6.5	Locations where subgrade failure is evident

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
2) DRAINAGE								
2.1	**Pipes and Channels**	Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way.	24 hrs	28 days	6 months	Visual inspection supplemented by CCTV where required to inspect buried pipe work.	2.1.1	Length of pipe or channel in feet with less than 90% of cross sectional clear area, calculated as the arithmetic mean of the clear cross-sectional areas of individual 10 feet lengths of pipes and channels in each Performance Section.
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 on Emergency.	24 hrs	28 days	6 months	Visual inspection	2.2.1	Number of devices functioning correctly with means of operation displayed.
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.	2.3.1	Number of instances of hazardous water build-up.
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	2.4.1	Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits.
2.5	**Protected Species**	Named species and habitats are protected.	24 hrs	28 days	6 months	Visual inspection	2.5.1	Performance Sections with named species and habitats with protection of these named species and habitats.
3) STRUCTURES								
3.1	**Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes**	Substructures and superstructures are free of: • undesirable vegetation • debris and excessive bird droppings • blocked drains, weep pipes manholes and chambers • blocked drainage holes in structural components	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.		*Records as required in the TxDOT Bridge Inspection Manual*
		• defects in joint sealants • defects in pedestrian protection measure • scour damage • corrosion of rebar • paint system failures • impact damage				As above	3.1.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below seven for any deck, superstructure or substructure
						As above	3.1.2	Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
3.2	**Structure components**	i) Expansion joints are free of: • dirt debris and vegetation • defects in drainage systems • loose nuts and bolts • defects in gaskets ii) The deck drainage system is free of all debris and operates as intended. iii) Parapets are free of: • loose nuts or bolts • blockages of hollow section drain holes • vegetation • accident damage iv) Bearings and bearing shelves are clean. Bearings allow for translation and rotation as designed. No presence of water exists on bearings and bearing seats. v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions is followed. vi) 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.	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.	3.2.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below **seven (7)** for any deck, superstructure or substructure
						~~As above~~	~~3.2.2~~	~~Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual]~~
						Visual inspection of Elements listed in (i) through (vii) of the general performance requirement column.	3.2.2	Instances of condition of any element not meeting general performance requirement as determined in accordance with Good Industry Practice.
3.9	**Non-bridge class culverts**	Non-bridge-class culverts are free of: • vegetation and debris and silt • defects in sealant to movement joints • scour damage	24 hrs	28 days	NA	Visual inspection	3.9.1	Number of non-bridge class culverts with vegetation, debris and silt in each Performance Section
							3.9.2	Number of non-bridge class culverts with defects in sealant and movement joints in each Performance Section
							3.9.3	Number of non-bridge class culverts with scour damage in each Performance Section
3.10	**Gantries and High-masts**	Overhead sign bridges, high masts are structurally sound and free of: • loose nuts and bolts • defects in surface protection systems	24 hrs	28 days	NA	Visual and up close inspection	3.10.1	Number of gantries and high masts with loose assemblies in each Performance Section
							3.10.2	Number of gantries and high masts with defects in surface protection in each Performance Section
3.11	**Load Ratings**	All structures maintain the design load capacity.	24 hrs	7 days	NA	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual and per the Technical Provisions	3.11.1	Number of structures with load restrictions for Texas legal loads (including legally permitted vehicles) in each Performance Section
3.12	**Access Points**	All hatches and points of access have fully operational and lockable entryways.	24 hrs	28 days	6 months	Visual Inspection	3.12.1	Number with defects in locks or entryways

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
3.13	**Mechanically Stabilized Earth and Retaining Walls**	Mechanically Stabilized Earth and Retaining Walls free of: • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage	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.	3.13.1	Records as required in the TxDOT Bridge Inspection Manual
		Parapets free of: • loose nuts and bolts • blockage of drain holes • undesirable vegetation • impact damage • concrete spalling				Visual Inspection	3.13.2	Number of parapet areas with loose nuts & bolts, blockage, undesirable vegetation, impact damage or concrete spalling in the Performance Section.
3.14	**Structural Surfaces**	Vertical Surfaces free of graffiti, markings by vandalism.	24 hrs	28 days	6 months	Visual Inspection	3.14.1	Number of areas where graffiti is present
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS								
4.1	**Pavement markings**	Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hrs	28 days	6 months	**a) Markings - General**		
						Portable retroreflectometer, which uses 30 meter geometry, meeting the requirements described in ASTM E 1710	4.1.1	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 175 med/sqm/lx for white
							4.1.2	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for white
						Physical measurement	4.1.3	Length of pavement marking in each Performance Section with more than 5% loss of area of material at any point
							4.1.4	Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions.
						b) Profile Markings		
						Visual inspection	4.1.5	Percentage of total length of pavement marking in each Performance Section performing its intended function and compliant with relevant regulations
4.2	**Raised Reflective Markings**	Raised reflective pavement markers are: • clean and clearly visible • of the correct color and type • reflective or retroreflective in accordance with TxDOT standards • correctly located, aligned and at the correct level • are firmly fixed • are in a condition that will ensure that they remain at the correct level.	24 hrs	28 days	6 months	Visual inspection	4.2.1	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)
							4.2.2	A minimum of four markers are visible at 80' spacing when viewed under low beam headlights.

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
							4.2.3	Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers).
4.3	**Delineators and Markers**	Object markers, mail box markers and delineators are: • clean and visible • of the correct color and type • legible and reflective • straight and vertical	24 hrs	28 days	6 months	Visual inspection	4.3.1	Number of object markers or delineators in each Performance Section that is defective or missing
5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS								
5.1	**Guardrails and Safety Barriers**	All guardrails, safety barriers, concrete barriers, etc. are maintained free of Defects, , and undesirable vegetation. 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	5.1.1	Performance Sections with all guard rails and safety barriers appropriately placed and correction installed
							5.1.2	Performance Sections with all guard rails and safety barriers free from defects
							5.1.3	Performance Sections with all guard rails and safety barriers at correct heights
							5.1.4	Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles
5.2	**Impact Attenuators**	All impact attenuators are appropriately placed and correctly installed	24 hrs	28 days	6 months	Visual inspection	5.2.1	Performance Sections will all impact attenuators appropriately placed and correctly installed.
6) TRAFFIC SIGNS								
6.1	**General - All Gantry-Mounted overhead 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) Visibility distances meet the stated requirements iv) Obsolete and redundant signs are removed or replaced as appropriate v) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements vi) All structures and elements of the signing system are kept clean and free from debris and have clear access provided. vii) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD viii) Dynamic message signs are in an operational condition	24 hrs	28 days	6 months	**a) Retroreflectivity** Determination of Coefficient of retro-reflectivity	6.1.1	Number of signs with actual reflectivity below the requirements of TxDOT's TMUTCD in each Performance Section
						b) Face damage Visual inspection	6.1.2	Number of signs in each Performance Section with face damage greater than 5% of area
						c) Placement Visual inspection	6.1.3	All signs in each Performance Section are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning
						d) Obsolete signs Visual inspection	6.1.4	Number of obsolete signs in each Performance Section
						e) Sign Information Visual inspection	6.1.5	All sign information in each Performance Section is of the correct size, location, type and wording to meet its intended purpose
						f) Dynamic Message Signs Visual inspection	6.1.6	Dynamic message signs are fully functioning

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
6.2	Gantries	Sign and signal mounting structures (including gantries) are structurally sound and free of: • defects in surface protection systems • loose nuts and bolts • graffiti	24 hrs	28 days	6 months	Visual inspection	6.2.1	Number with defects in surface protection system
							6.2.1	Number with loose nuts and bolts
							6.2.3	Number with graffiti
7) TRAFFIC SIGNALS (NOT PART OF MAINTAINED ELEMENTS)								
8) LIGHTING								
8.1	Roadway Lighting	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 any damage or vandalism iv) Columns are upright, correctly founded, visually acceptable and structurally sound	24 hrs	28 days	6 months	**a) Mainlane lights operable** Night time inspection or automated logs	8.1.1	Performance Sections with less than 90% of lights functioning correctly at all times
						b) Mainlane lights out of action Night time inspection or automated logs	8.1.2	Instances of more than two consecutive lights out of action
8.2	Sign Lighting	Sign lighting is fully operational	24 hrs	28 days	6 months	Night time inspection or automated logs	8.2.1	Number of instances of more than one bulb per sign not working in each Performance Section
8.3	Electrical Supply	Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning	24 hrs	7 days	28 days	Testing to meet NEC regulations, visual inspection	8.3.1	Inspection records showing safe installation and maintenance in each Performance Section
8.4	Access Panels	All access panels in place at all times.	24 hrs	7 days	28 days	Visual Inspection	8.4.1	Number of instances of missing or damaged access panels in each Performance Section
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	24 hrs	28 days	6 months	Night-time inspections or automated logs	8.5.1	Instances of two or more lamps not working per high mast pole
							8.5.2	Any other defects per the "general Performance Requirements" column

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
9) FENCES, WALLS AND SOUND ABATEMENT								
9.1	**Design and Location**	Fences and walls act as designed and serve the purpose for which they were intended	24 hrs	28 days	6 months	Visual Inspection	9.1.1	Inspection records for fences and walls showing compliance with fence and wall requirements in each Performance Section
9.2	**Construction**	Integrity and structural condition of the fence is maintained	24 hrs	28 days	6 months	Structural assessment if visual inspection warrants	9.2.2	Inspection records for fences and walls showing compliance with fence and wall requirements in each Performance Section
9.3	**Operation**	Fences, Walls, and Sound Abatement elements free of: • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage • graffiti	24 hrs	28 days	6 months	Structural assessment if visual inspection warrants	9.3.1	Inspection records for fences and walls showing compliance with fence and wall requirements in each Performance Section
10) ROADSIDE MANAGEMENT								
10.1	**Vegetated Areas - Except landscaped areas - General**	Vegetation is maintained so that: i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height. 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, main lanes, 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.	24 hrs	7 days	28 days	**a) Urban areas** Physical measurement of height of grass and weeds	10.1.1	Individual measurement areas in each Performance Section to have 95% of grass and weeds between 5" and 18" in height.
						b) Encroachment Visual inspection of instances of encroachment of vegetation	10.1.2	Number of occurrences of vegetation encroachment in each Performance Section
						c) Wildflowers Visual Inspection with audit of process.	10.1.3	Adherence to vegetation management manuals
						d) Sight lines Visual inspection	10.1.4	Number of instances of impairment of sight lines or sight distance to signs in each Performance Section

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			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. v) Areas under approach structures are kept free of weeds and undesirable vegetation, and under-bridge gravel or rip-rap is maintained in its originally constructed condition.	24 hrs	7 days	28 days	Visual inspection	10.2.1	Inspection records showing compliance with requirements for landscaping in each Performance Section.
10.3	**Fire Hazards**	Fire hazards are controlled	24 hrs	7 days	28 days	Visual inspection	10.3.1	Number of instances of dry brush or vegetation forming fire hazard in each Performance Section.
10.4	**Trees, Bushes 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	10.4.1	Inspection records showing compliance with requirements for trees, brush and ornamentals in each Performance Section.
10.5	**Wetlands**	Wetlands are managed in accordance with the permit requirements.	24 hrs	7 days	28 days	Visual inspection, assessment of permit issuers	10.5.1	Number of instances of permit requirements not met in each Performance Section
11) REST AREAS AND PICNIC AREAS (Not Used)								
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS								
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	12.1.1	Number of recorded instances of slope failure in each Performance Section
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	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	12.2.1	Inspection records showing compliance with requirements for slopes in each Performance Section.

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
13) ITS EQUIPMENT								
13.1	**ITS Equipment - Maintenance**	All ITS equipment is fully functional and housing is functioning and free of defects. i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear. ii) Steps, handrails and accesses are kept in a good condition. iii) Access to all communication hubs, ground boxes, cabinets and sites is clear. iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition. v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced. vi) Backup power supply system is available at all times	24 hrs	14 days	28 days	Visual Inspection	13.1.1	Inspection records showing compliance with requirements for maintenance of ITS equipment in each Performance Section.
13.2	**Dynamic Message Sign Equipment**	Dynamic Message Signs are free from faults such as: i) Any signal displaying a message which is deemed to be a safety hazard. ii) Failure of system to clear sign settings when appropriate. iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions. iv) Signs displaying an incorrect message.	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	13.2.1	Inspection records showing compliance with requirements for Dynamic Message Signs in each Performance Section
13.3	**CCTV Equipment**	CCTV Systems are free from serious faults that significantly 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	13.3.1	Inspection records showing compliance with requirements for CCTV equipment in each Performance Section
13.4	**Vehicle Detection Equipment**	All equipment free of defects and operational problems such as: i) Inoperable loops. ii) Malfunctioning camera controllers.	2 hrs	24 hrs	28 days	Defect measurement dependent on equipment	13.4.1	Inspection records showing compliance with requirements for vehicle detection equipment in each Performance Section
							13.4.2	Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries.
							13.4.3	Insulation resistance to be > 50 meg ohms.

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
14) TOLLING FACITLITIES AND BUILDINGS (NOT USED)								
15) AMENITY (NOT USED)								
16) SNOW AND ICE CONTROL								
16.1	**Travel lanes**	Maintain travel way free from snow and ice.	2 hrs	NA	NA	Maximum 1hr response time to complete manning and loading of spreading vehicles.	16.1.1	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 2hrs from departure from loading point to complete treatment and return to loading point.	16.1.2	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
						Maximum 1hr response time for snow and ice clearance vehicles to depart from base.	16.1.3	Inspection records showing compliance with requirements for snow and ice control in each Performance Section
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.	2 hrs	NA	NA	Operations plan details the process and procedures in place and followed.	16.2.1	Inspection records showing compliance with requirements for weather forecasting in each Performance Section
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.	2 hrs	NA	NA	Operations plan details the process and procedures in place and followed.	16.3.1	Inspection records showing compliance with snow and ice clearance plans in each Performance Section
16.4	**Operations and Maintenance Manual**	Operations and maintenance instructions for the anti-icing system and items of equipment (if Used)	2 hrs	NA	NA	Operations and maintenance instructions detail the process and procedures in place and followed.	16.4.1	Inspection records showing compliance with operations and maintenance instructions in each Performance Section.
17) INCIDENT RESPONSE								
17.1	**General**	Monitor the Project and respond to Incidents in accordance with the Maintenance Management Plan (MMP).	1 hr	NA	NA	Response times are met for 98% of incidents measured on a 1 year rolling basis.	17.1.1	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
						No complaints from Emergency Services.	17.1.2	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section
17.2	**Hazardous Materials**	Monitor the Project and respond to Incidents involving Hazardous Materials in accordance with the Maintenance Management Plan (MMP).	1 hr	NA	NA	MMP details the process and procedures in place and followed.	17.2.1	Inspection records showing compliance with the MMP details regarding hazardous materials in each Performance Section
17.3	**Structural Assessment**	Evaluate structural damage to structures and liaise with emergency services to ensure safe working environment while clearing the incident	1 hr	NA	NA	Inspections and surveys as required by incident	17.3.1	Inspection records showing compliance with the MMP and requirements for incidents in each Performance Section
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	NA	Review and inspection of the incident site	17.4.1	Inspection records showing compliance with requirements for temporary and permanent remedy for incidents in each Performance Section

ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	DEFECT REMEDY PERIOD			INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD
			Cat 1	Cat 1	Cat 2			
			Hazard Mitigation	Permanent Remedy	Permanent Repair			
18) CUSTOMER RESPONSE								
18.1	**Response to inquiries**	Timely and effective response to customer inquiries and complaints.	48 hrs	NA	NA	Contact the customer within 48 hours following initial customer inquiry.	18.1.1	Percentage of responses within specified times in each Performance Section.
						All work resulting from customer requests is scheduled within 48 hours of customer contact.	18.1.2	Demonstrated by O&M Records
						Follow-up contact with the customer within 72 hours of initial inquiry.	18.1.3	Demonstrated by O&M Records
						All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	18.1.4	Demonstrated by O&M Records
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	7 days	NA	Instances of line out of action or unmanned	18.2.1	Number of operations records showing non availability of the customer contact line in each Performance Section including complaints from public.
19) SWEEPING AND CLEANING								
19.1	**Sweeping**	i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean with vacuum sweepers, 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	3 months	Buildup of dirt, ice, rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	19.1.1	Inspection records showing compliance with requirements for sweeping in each Performance Section.
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. Dispose of all litter and debris collected at an approved solid waste site.	24 hrs	28 days	3 months	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	19.2.1	Inspection records showing compliance with requirements regarding litter pick-up in each Performance Section.

NOTES FOR ATTACHMENT 19-3

1 Hazard Mitigation shall be an action taken by Developer to mitigate a hazard to Users or imminent risk of damage or deterioration to property or the environment such that the Category 1 Defect no longer exists.

2 Permanent Remedy shall be an action taken by Developer to restore the condition of an Element following Hazard Mitigation of a Category 1 Defect: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such that th achieved for each Measurement Record.

3 Permanent Repair shall be an action taken by Developer to restore the condition of an Element for which a Category 2 Defect has been recorded: (a) to the standard required for new construction / Renewal Work; or (b) to a condition such that the achieved for each Measurement Record.

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Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-4
OPERATIONS AND MAINTENANCE LIMITS

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

POT 65+07.00

SHORELINE BLVD

SHORELINE BLVD

PC 71+19.42

WATER STREET

CHAPARRAL STREET

PT 75+87.43

MESQUITE STREET

IH 370+00

75+00

80+00

85+00

BEGIN PROJECT
I-37
STA 67+64.90

N. LOWER BROADWAY STREET

N. UPPER BROADWAY STREET

WINNEBAGO ST.

CARANCAHUA STREET

I 37

37 STA 89+50

MATCHLINE I-37

PADRE STREET

W. BROADWAY STREET

TANCAHUA STREET

WATER ST.

CHAPARRAL ST.

BELDEN DR.

MESQUITE ST.

MATCHLINE C-C
SEE SHEET 15 OF 15

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 1 OF 15

Scale: 1:200
Plotted on: 9/29/2014

Model Name: PLN031

Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I, II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

I-37 STA 89+50

MATCHLINE I-37 STA 89+50

I-37 STA 117+50

MATCHLINE I-37 STA 117+50

TANCAHUA STREET

BUFFALO STREET

CARRIZO STREET

ARTESIAN STREET

WACO STREET

I 37

N. STAPLES STREET

RAMIREZ STREET

90+00

95+00

100+00

PC 100+42.73

105+00

PI 107+82.13

110+00

115+00

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 2 OF 15

Scale: 1:200
Plotted on: 9/29/2014

Model Name: PLN032

Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

MATCHLINE US-181/SH-286 STA 1169+90.6
SEE SHEET 13 OF 15

PRELIMINARY
SUBJECT TO CHANGE

LEGEND
- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

MESTINA STREET
US 181/SH 286
LEOPARD STREET
I 37
1165+00
CLEVELAND STREET
DOSS STREET
LESTER STREET
I 37
MATCHLINE I-37 STA 117+50
120+00
125+00
130+00
135+00
140+00
145+00
MATCHLINE I-37 STA 145+50
1160+00
WINNEBAGO STREET
US 181
1155+00
TC AYERS PARK
COKE STREET
NORTH PORT AVENUE

MATCHLINE US-181 STA 1151+58.1
SEE SHEET 12 OF 15

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 3 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN033
Pen Table:TexasTwoStep•pentable•co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

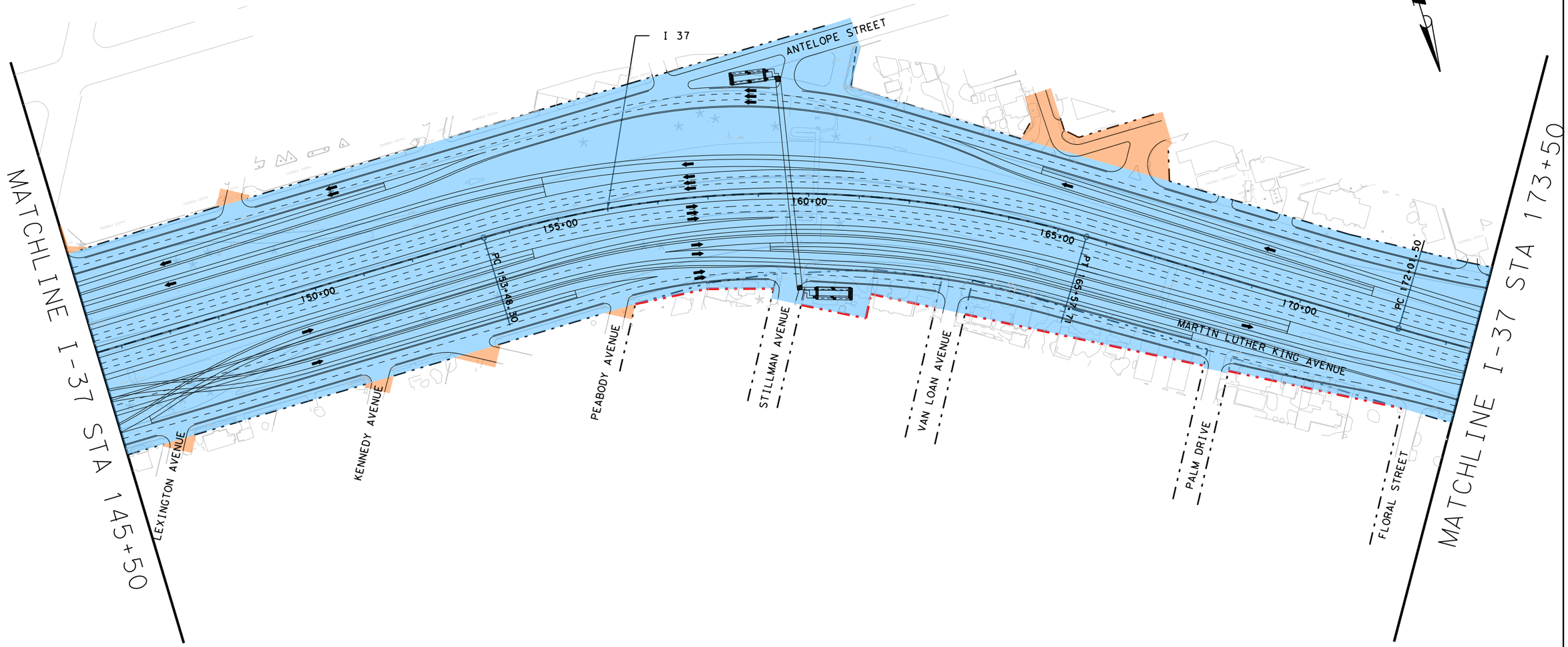

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 4 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN034
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

N

MATCHLINE I-37 STA 173+50

NUECES BAY BOULEVARD

HUISACHE STREET

END PROJECT
I 37
STA 184+96.83

GARDENIA BOULEVARD

PT 199+03.21

175+00

180+00

185+00

190+00

195+00

200+00

I 37

BAYMOOR BOULEVARD

HUISACHE STREET

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 5 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN035
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

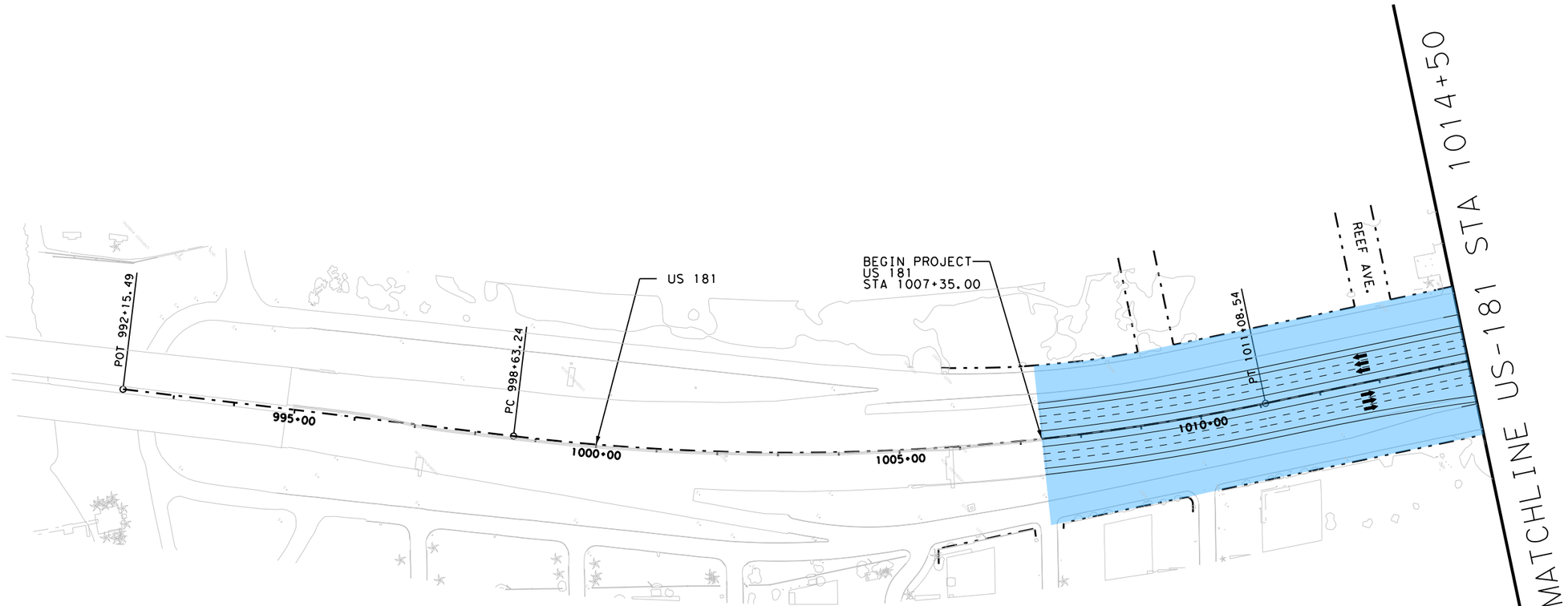

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 6 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN036
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

MATCHLINE US-181 STA 1014+50

US 181

GULFSPRAY AVE.

SURFBOARD AVE.

ST. CHARLES ST.

PC 1017+76.93

PRC 1023+10.69

PT 1028+36.88

1015+00 1020+00 1025+00 1030+00 1035+00 1040+00

MATCHLINE US-181 STA 1042+50

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 7 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN037
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

MATCHLINE A-A
SEE SHEET 14 OF 15

SURFSIDE BLVD.

CHURCHDALE AVE.

ELM ST.

BRIDGEPORT AVE.

PLUM ST.

WALNUT ST.

PLUM ST.

COASTAL AVE.

CAUSEWAY BLVD.

MATCHLINE US-181 STA 1042+50

1045+00

1050+00

1055+00

1060+00

1065+00

1070+00

PC 1052+81.37

PT 1068+71.81

US 181

SEIGLER ST.

BURLESON ST.

MATCHLINE US-181 STA 1070+50

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 8 OF 15

Scale: 1:200
Plotted on: 9/29/2014

Model Name: PLN038

Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

PRELIMINARY
SUBJECT TO CHANGE

LEGEND
- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

MATCHLINE US-181 STA 1070+50

MATCHLINE US-181 STA 1098+50

SEAGULF BLVD.

BREAKWATER AVE.

BEGIN NEW HARBOR BRIDGE
APPROXIMATE STA 1082+30

US 181

1075+00 1080+00 1085+00 1090+00 1095+00

AVENUE F

NAVIGATION BLVD.

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 9 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN039
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

MATCHLINE US-181 STA 1098+50

MATCHLINE US-181 STA 1126+50

HARBOR DR

END NEW HARBOR BRIDGE
APPROXIMATE STA 1111+80

E. PORT AVENUE

PC 1113+39.12

US 181

BREWSTER STREET

SAM RANKIN STREET

1100+00

1105+00

1110+00

1115+00

1120+00

1125+00

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 10 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN040
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

PRELIMINARY
SUBJECT TO CHANGE

LEGEND
- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

MATCHLINE US-181 STA 1126+50

BURNS STREET

US 181

FRANK STREET

TANNER STREET

1130+00

1135+00

1140+00

1145+00

1150+00

WHEATLEY STREET

NUECES STREET

MATCHLINE SEE SHEET 3 OF 15 US-181 STA 1151+58.1

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 11 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN041
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

PRELIMINARY
SUBJECT TO CHANGE

LEGEND
- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

SEE SHEET 3 OF 15
MATCHLINE US-181/SH-286 STA 1169+90.6

MESTINA STREET
LIPAN STREET
COMANCHE STREET
MEXICO STREET
HOWARD STREET
CALDWELL STREET
LOWELL STREET
MUSSETT STREET
US 181/SH 286
S. BROWNLEE BOULEVARD
LAREDO STREET
N. BROWNLEE BOULEVARD
PT 1183+98.52
1175+00
1185+00
1190+00
1195+00
PC 1186+35.28
N. CULBERSON STREET
END PROJECT
US 181/SH 286
STA 1196+62.67
16TH
MESTINA STREET
BEN GARZA PARK
MATCHLINE US-181/SH-286 STA 1197+50

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 12 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN042
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET13 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN043
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

PRELIMINARY
SUBJECT TO CHANGE

LEGEND
- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

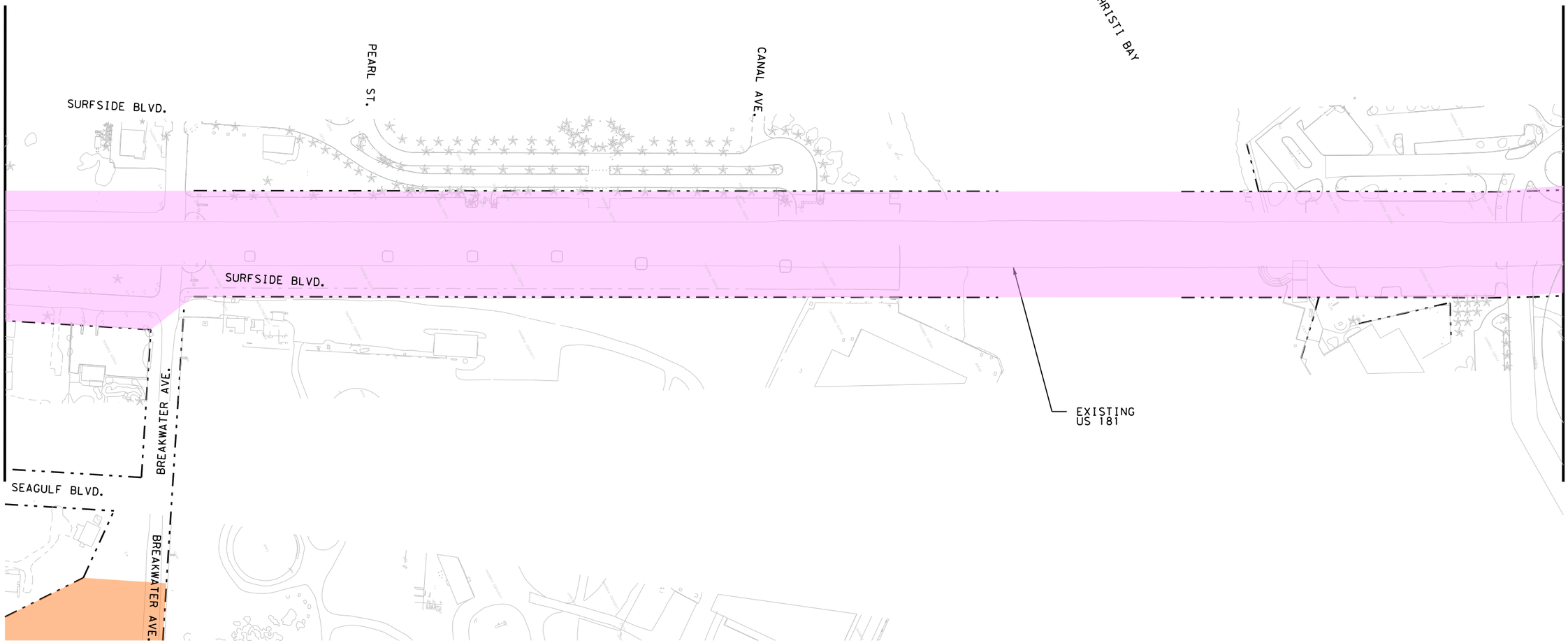

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 14 OF 15

Scale: 1:200
Plotted on: 9/29/2014
Model Name: PLN044
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

LEGEND

- PHASE II
- PHASE I & II
- PHASE I,II & O&M
- EXISTING ROW
- PROPOSED ROW

PRELIMINARY
SUBJECT TO CHANGE

MATCHLINE B-B

HIRSCH ST.

BREWSTER ST.

HUGHES ST.

FITZGERALD ST.

PALO ALTO ST.

POWER ST.

MATCHLINE C-C
SEE SHEET 3 OF 15

BREAKWATER AVE.

E. PORT AVENUE

EXISTING
US 181

TANCAHUA STREET

EXHIBIT 19-4
OPERATIONS AND MAINTENANCE
LIMITS EXHIBIT
SCALE: 1" = 200'

SHEET 15 OF 15

Scale: 1:200
Plotted on: 9/29/2014

Model Name: PLN045

Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-5
ASSET CONDITION SCORE CALCULATION METHOD NEW HARBOR BRIDGE

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [1]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
1) ROADWAY									3.6
1.1	**Obstructions and debris**	Visual Inspection	1.1.1	Number of obstructions and debris	25	2.3%	3	0.07	
1.2	**Pavement**	**a) Ruts – Mainlanes, shoulders & ramps** 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 Performance Section*					
			1.2.1	• Mainlanes, shoulders and ramps - 3%	10	0.9%	4	0.04	
		10ft straight edge used to measure rut depth for localized areas.	1.2.3	Depth of rut at any location greater than ½"	10	0.9%	4	0.04	
		b) Ride quality		*NOT USED*					
		c) Failures Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	1.2.4	Individual discontinuities greater than 1/4"	10	0.9%	4	0.04	
		d) Edge drop-offs Physical measurement of edge drop-off level compared to adjacent surface	1.2.12	Occurrence of any failure	5	0.5%	5	0.02	
			1.2.13	Number of instances of edge drop-off greater than 2"	5	0.5%	5	0.02	
1.2	**Pavement**	**e) Skid resistance** ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524	1.2.14	• Performance Sections with skid numbers for 0.5-mile section of mainlines, shoulders and ramps exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.	10	0.9%	5	0.05	
			1.2.15	• Performance Sections with skid numbers for 0.5-mile section of frontage roads exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.	10	0.9%	5	0.05	
			1.2.16	• When the skid number is below 25 and/or when required by the Wet Weather Accident Reduction Program, areas categorized as high risk, Developer shall perform a site investigation and perform required corrective action.	10	0.9%	2	0.02	
			1.2.17	Instances where road users are warned of a potential skidding hazard where remedial action is identified.	10	0.9%	2	0.02	
1.3	**Crossovers and other paved areas**	**a) Potholes**	1.3.1	Number of potholes of low severity or higher	5	0.5%	4	0.02	
		b) Base failures	1.3.2	NOT USED	0	0.0%	0	0.00	
1.4	**Joints in concrete**	Visual inspection of joints	1.4.1	Length of unsealed joints greater than ¼"	10	0.9%	3	0.03	
		Measurement of joint width and level difference of two sides of joints	1.4.2	Joint width more than 1" or faulting more than ¼"	10	0.9%	3	0.03	
1.5	**Curbs**	Visual inspection	1.5.1	Continuous curb lengths where more than 10% of the length has defects such as cracks and chips	5	0.5%	3	0.01	
		Physical measurement	1.5.2	Continuous curb lengths where more than 5% of the length has a separation exceeding 0.25" between curb face and adjacent roadway surface	5	0.5%	3	0.01	
		Survey and 10' straight edge	1.5.3	Continuous curb lengths where more than 5% of the length has either the top or face of curbs exceeding 0.5" from intended design alignment	5	0.5%	3	0.01	

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [1]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
1.6	**Maintenance/Access Roads**	Crown: Flat A shape or super-elevation with 4% cross slopes maintained to minimize ponding	1.6.1	Cross slope less than 3% or more than 6%	2	0.2%	4	0.01	
		Shoulder: Maintain slope away from the travel way and shoulder flush with travel way	1.6.2	Shoulder cross slope less than travel way cross slope; shoulder lower or higher than travel way	2	0.2%	4	0.01	
		Ditch: Maintain size and shape of ditch for proper drainage	1.6.3	Sides of ditches slumping or eroding, or obstructed by debris	2	0.2%	5	0.01	
		Ruts/potholes: Depth as measured using an automated device in compliance with TxDOT standards	1.6.4	Depth of ruts or potholes at any location greater than 1”	2	0.2%	5	0.01	
		Subgrade: Identify and repair any subgrade failures	1.6.5	Locations where subgrade failure is evident	2	0.2%	5	0.01	
2) DRAINAGE									3.1
2.1	**Pipes and Channels**	Visual inspection supplemented by CCTV where required to inspect buried pipe work.	2.1.1	Length of pipe or channel in feet with less than 90% of cross sectional clear area, calculated as the arithmetic mean of the clear cross-sectional areas of individual 10 feet lengths of pipes and channels in each Performance Section.	5	0.5%	5	0.02	
2.2	**Drainage treatment devices**	Visual inspection	2.2.1	Number of devices functioning correctly with means of operation displayed.	5	0.5%	2	0.01	
2.3	**Travel Way**	Visual inspection of water on surface.	2.3.1	Number of instances of hazardous water build-up.	20	1.8%	2	0.04	
2.4	**Discharge systems**	Visual inspection and records	2.4.1	Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits.	10	0.9%	3	0.03	
2.5	**Protected Species**	Visual inspection	2.5.1	Performance Sections with named species and habitats with protection of these named species and habitats.	20	1.8%	4	0.07	
3) STRUCTURES									3.9
3.1	**Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes**	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration’s Bridge Inspector’s Reference Manual.		*Records as required in the TxDOT Bridge Inspection Manual*					
		As above	3.1.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below **seven** for any deck, superstructure or substructure	50	4.6%	5	0.23	
		As above	3.1.2	Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual	50	4.6%	5	0.23	

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3.2	**Structure components**	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.	3.2.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below **seven** for any deck, superstructure or substructure	50	4.6%	3	0.14	
		Visual inspection of Elements listed in (i) through (vii) of the general performance requirement column in the Performance and Measurement Table.	3.2.2	Instances of condition of any element not meeting general performance requirement as determined in accordance with Good Industry Practice.	50	4.6%	4	0.18	
3.3	**Integral wearing surface**	Concrete cover measured at [10ft] intervals	3.3.1	Occurrence of any instance where integral wearing surface thickness is less than [50%] of design value	25	2.3%	4	0.09	
		Cracks measured at [3 ft] intervals on the surface of the deck prior to 3 hours after sunrise at concrete age greater than 28 days	3.3.2	Instances of cracks wider than [0.025] inches	25	2.3%	2	0.05	
		De-lamination or spalling	3.3.3	Instances of de-lamination or spalling	10	0.9%	2	0.02	
3.4	**Stay Cables**	Visual and hands-on inspection	3.4.1	Instances of damage or deterioration of the corrosion protection system including coatings, protective pipes and anchorage units	20	1.8%	3	0.06	
			3.4.2	Instances of damaged or broken strand / wire	50	4.6%	5	0.23	
			3.4.3	Instances of stay cable damping system not operating as intended including failure to provide the minimum design level of damping	20	1.8%	5	0.09	
			3.4.4	Instances of stay cable acoustic monitoring system not operating as intended including failure to transmit measured information.	20	1.8%	5	0.09	
3.5	**Inspection and access equipment**	Visual and hands-on inspection	3.5.1	Instances of loose assemblies or nuts and bolts not fully tightened	10	0.9%	2	0.02	
			3.5.2	Instances of defects in surface protection such as failures of coating systems to bare metal or loss of galvanizing	10	0.9%	1	0.01	
			3.5.3	Instances of failures to conform with relevant standards for fixed and mobile inspection facilities, hoists and lifts	10	0.9%	2	0.02	
			3.5.4	Instances where maintenance traveler fails to operate smoothly under power or braking, has uneven or inconsistent movement of any driven component or exhibits binding or swaying, in each case in a manner that exceeds normal operational parameters.	10	0.9%	3	0.03	
3.6	**Ship impact protection system**	Visual inspection	3.6.1	Instances of marine boring (timber systems)	10	0.9%	5	0.05	
			3.6.2	Instances of corrosion that would reduce the system resistance to below its intended design state	10	0.9%	5	0.05	
			3.6.3	Instances of damage from vessel impact that would reduce the system resistance to below its intended design state or would cause a material reduction in the remaining service life	10	0.9%	4	0.04	

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3.7	**Corrosion protection systems**	Visual inspection	3.7.1	Instances of failure of coating system down to bare metal	15	1.4%	3	0.04	
			3.7.2	Loss of galvanizing	10	0.9%	2	0.02	
			3.7.3	Damaged or peeling material	10	0.9%	3	0.03	
			3.7.4	Noncompliance with manufacturer's recommendations for the maintenance and re-application of coatings	10	0.9%	4	0.04	
3.8	**Lightning Protection Systems**	Inspection and assessment in accordance with the requirements of Underwriters Laboratories, Inc. (UL) 96 and Lightning Protection Institute (LPI) 175.	3.8.1	Noncompliance with specified standards.	5	0.5%	5	0.02	
			3.8.2	Instances of lightning protection system not operating as intended.	5	0.5%	5	0.02	
3.11	**Load Ratings**	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual and per the Technical Provisions	3.11.1	Number of structures with load restrictions for Texas legal loads (including legally permitted vehicles) in each Performance Section	10	0.9%	5	0.05	
3.12	**Access Points**	Visual Inspection	3.12.1	Number with defects in locks or entryways	5	0.5%	3	0.01	
3.14	**Structural Surfaces**	Visual Inspection	3.14.1	Number of areas where graffiti is present	5	0.5%	3	0.01	
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS									3.9
4.1	**Pavement markings**	**a) Markings - General**							
		Portable retroreflectometer, which uses 30 meter geometry, meeting the requirements described in ASTM E 1710	4.1.1	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 175 med/sqm/lx for white	5	0.5%	3	0.01	
			4.1.2	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for white	5	0.5%	4	0.02	
		Physical measurement	4.1.3	Length of pavement marking in each Performance Section with more than 5% loss of area of material at any point	5	0.5%	4	0.02	
			4.1.4	Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions.	5	0.5%	4	0.02	
		b) Profile Markings							
		Visual inspection	4.1.5	Percentage of total length of pavement marking in each Performance Section performing its intended function and compliant with relevant regulations	5	0.5%	3	0.01	
4.2	**Raised Reflective Markings**	Visual inspection	4.2.1	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)	2	0.2%	5	0.01	
			4.2.2	A minimum of four markers are visible at 80' spacing when viewed under low beam headlights.	2	0.2%	5	0.01	
			4.2.3	Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers).	2	0.2%	5	0.01	
4.3	**Delineators and Markers**	Visual inspection	4.3.1	Number of object markers or delineators in each Performance Section that is defective or missing	2	0.2%	4	0.01	

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5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS									3.8
5.1	**Guardrails and Safety Barriers**	Visual inspection	5.1.1	Performance Sections with all guard rails and safety barriers appropriately placed and correction installed	20	1.8%	3	0.06	
			5.1.2	Performance Sections with all guard rails and safety barriers free from defects	20	1.8%	5	0.09	
			5.1.3	Performance Sections with all guard rails and safety barriers at correct heights	5	0.5%	5	0.02	
			5.1.4	Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles	5	0.5%	3	0.01	
5.2	**Impact Attenuators**	Visual inspection	5.2.1	Performance Sections will all impact attenuators appropriately placed and correctly installed.	5	0.5%	2	0.01	
6) TRAFFIC SIGNS									3.9
6.1	**General - All Signs**	**a) Retroreflectivity** Determination of Coefficient of retro-reflectivity	6.1.1	Number of signs with actual reflectivity below the requirements of TxDOT's TMUTCD in each Performance Section	20	1.8%	3	0.06	
		b) Face damage Visual inspection	6.1.2	Number of signs in each Performance Section with face damage greater than 5% of area	10	0.9%	4	0.04	
		c) Placement Visual inspection	6.1.3	All signs in each Performance Section are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning	5	0.5%	4	0.02	
		d) Obsolete signs Visual inspection	6.1.4	Number of obsolete signs in each Performance Section	5	0.5%	5	0.02	
		e) Sign Information Visual inspection	6.1.5	All sign information in each Performance Section is of the correct size, location, type and wording to meet its intended purpose	5	0.5%	5	0.02	
		f) Dynamic Message Signs Visual inspection	6.1.6	Dynamic message signs are fully functioning	5	0.5%	3	0.01	
6.2	**Gantries**	Visual inspection	6.2.1	Number with defects in surface protection system	10	0.9%	5	0.05	
			6.2.1	Number with loose nuts and bolts	10	0.9%	4	0.04	
			6.2.3	Number with graffiti	10	0.9%	4	0.04	
7) TRAFFIC SIGNALS (NOT PART OF MAINTAINED ELEMENTS)									

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [1]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
8) LIGHTING									4.3
8.1	**Roadway Lighting**	**a) Mainlane lights operable** Night time inspection or automated logs	8.1.1	Performance Sections with less than 90% of lights functioning correctly at all times	25	2.3%	4	0.09	
		b) Mainlane lights out of action Night time inspection or automated logs	8.1.2	Instances of more than two consecutive lights out of action	25	2.3%	5	0.12	
8.2	**Sign Lighting**	Night time inspection or automated logs	8.2.1	Number of instances of more than one bulb per sign not working in each Performance Section	10	0.9%	5	0.05	
8.3	**Electrical Supply**	Testing to meet NEC regulations, visual inspection	8.3.1	Inspection records showing safe installation and maintenance in each Performance Section	10	0.9%	4	0.04	
8.4	**Access Panels**	Visual Inspection	8.4.1	Number of instances of missing or damaged access panels in each Performance Section	5	0.5%	4	0.02	
8.5	**High Mast Lighting**			*NOT USED*					
8.6	**Navigational Lighting**	Night time inspection or automated logs	8.5.1	Number of instances of more than one bulb per sign not working in each Performance Section	15	1.4%	4	0.06	
8.7	**Architectural Lighting**	Night time inspection or automated logs	8.6.1	Instances of architectural lighting with more than 10% of lamps not functioning	25	2.3%	4	0.09	
8.8	**Bridge Inspection Lighting**	Night time inspection or automated logs	8.7.1	Instances of bridge inspection lighting where failures could adversely impact safety or security of inspections or access	10	0.9%	4	0.04	
9) FENCES, WALLS AND SOUND ABATEMENT				*NOT USED*					
9.1	**Design and Location**	Visual Inspection		*NOT USED*					
9.2	**Construction**	Structural assessment if visual inspection warrants		*NOT USED*					
9.3	**Operation**	Structural assessment if visual inspection warrants		*NOT USED*					
10) ROADSIDE MANAGEMENT (NOT USED)									
11) REST AREAS AND PICNIC AREAS (NOT USED)									
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS (NOT USED)									
13) ITS EQUIPMENT									4.3
13.1	**ITS Equipment - Maintenance**	Visual Inspection	13.1.1	Inspection records showing compliance with requirements for maintenance of ITS equipment in each Performance Section.	5	0.5%	4	0.02	
13.2	**Dynamic Message Sign Equipment**	Defect measurement dependent on equipment	13.2.1	Inspection records showing compliance with requirements for Dynamic Message Signs in each Performance Section	5	0.5%	4	0.02	
13.3	**CCTV Equipment**	Defect measurement dependent on equipment	13.3.1	Inspection records showing compliance with requirements for CCTV equipment in each Performance Section	5	0.5%	4	0.02	
13.4	**Vehicle Detection Equipment**	Defect measurement dependent on equipment	13.4.1	Inspection records showing compliance with requirements for vehicle detection equipment in each Performance Section	5	0.5%	4	0.02	
			13.4.2	Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries.	5	0.5%	5	0.02	
			13.4.3	Insulation resistance to be > 50 meg ohms.	5	0.5%	5	0.02	
14) TOLLING FACILITIES AND BUILDINGS (NOT USED)									
15) AMENITY (NOT USED)									

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [1]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
16) SNOW AND ICE CONTROL (NOT PART OF ASSET CONDITION SCORE)									
16.1	**Travel lanes**	Maximum 1hr response time to complete manning and loading of spreading vehicles.	16.1.1	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
		Maximum 2hrs from departure from loading point to complete treatment and return to loading point.	16.1.2	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
		Maximum 1hr response time for snow and ice clearance vehicles to depart from base.	16.1.3	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
16.2	**Weather Forecasting**	Operations plan details the process and procedures in place and followed.	16.2.1	Inspection records showing compliance with requirements for weather forecasting in each Performance Section	0	0.0%			
16.3	**Operational Plans**	Operations plan details the process and procedures in place and followed.	16.3.1	Inspection records showing compliance with snow and ice clearance plans in each Performance Section	0	0.0%			
16.4	**Operations and Maintenance Manual**	Operations and maintenance instructions detail the process and procedures in place and followed.	16.4.1	Inspection records showing compliance with operations and maintenance instructions in each Performance Section.	0	0.0%			
17) INCIDENT RESPONSE (NOT PART OF ASSET CONDITION SCORE)									
17.1	**General**	Response times are met for 98% of incidents measured on a 1 year rolling basis.	17.1.1	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section	0	0.0%			
		No complaints from Emergency Services.	17.1.2	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section	0	0.0%			
17.2	**Hazardous Materials**	MMP details the process and procedures in place and followed.	17.2.1	Inspection records showing compliance with the MMP details regarding hazardous materials in each Performance Section	0	0.0%			
17.3	**Structural Assessment**	Inspections and surveys as required by incident	17.3.1	Inspection records showing compliance with the MMP and requirements for incidents in each Performance Section	0	0.0%			
17.4	**Temporary and permanent remedy**	Review and inspection of the incident site	17.4.1	Inspection records showing compliance with requirements for temporary and permanent remedy for incidents in each Performance Section	0	0.0%			
18) CUSTOMER RESPONSE (NOT PART OF ASSET CONDITION SCRE)									
18.1	**Response to inquiries**	Contact the customer within 48 hours following initial customer inquiry.	18.1.1	Percentage of responses within specified times in each Performance Section.	0	0.0%			
		All work resulting from customer requests is scheduled within 48 hours of customer contact.	18.1.2	Demonstrated by O&M Records	0	0.0%			
		Follow-up contact with the customer within 72 hours of initial inquiry.	18.1.3	Demonstrated by O&M Records	0	0.0%			
		All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	18.1.4	Demonstrated by O&M Records	0	0.0%			
18.2	**Customer Contact Line**	Instances of line out of action or unmanned	18.2.1	Number of operations records showing non availability of the customer contact line in each Performance Section including complaints from public.	0	0.0%			

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [1]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
19) SWEEPING AND CLEANING									4.5
19.1	**Sweeping**	Buildup of dirt, ice, rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	19.1.1	Inspection records showing compliance with requirements for sweeping in each Performance Section.	15	1.4%	4	0.06	
19.2	**Litter**	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	19.2.1	Inspection records showing compliance with requirements regarding litter pick-up in each Performance Section.	15	1.4%	5	0.07	
						100.0%			
AGGREGATED ASSET CONDITION SCORE FOR NEW HARBOR BRIDGE AFTER SUBSTANTIAL COMPLETION [6]								**3.89**	

NOTES FOR ASSET CONDITION SCORE CALCULATION

1 Weighting is the assigned weighting for each Measurement Record on a scale of 1-50 for purpose of Asset Condition Score

2 Weighting Factor is the Weighting expressed as a percentage for each Measurement Record and totaling 100%

3 Example Raw Asset Condition Score = Asset Condition Score for each Measurement Record across all inspected Performance Sections

4 Weighted Score = Raw Asset Condition Score x Weighting Factor

5 Element Category Asset Condition Score = Sum of Weighted Score / Sum of Weighting Factors for each Element Category

6 Aggregated Asset Condition Score = Sum of Weighted Scores for each Measurement Record for all Element Categories

92	Number of non-zero Weightings
1083	Total of Weightings
11.77	Average Weighting

Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-6
ASSET CONDITION SCORE CALCULATION METHOD ROADWAY SECTION AFTER SUBSTANTIAL COMPLETION

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [2]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
1) ROADWAY									
1.1	**Obstructions and debris**	Visual Inspection	1.1.1	Number of obstructions and debris	50	3.8%	3	0.11	3.2
1.2	**Pavement**	**a) Ruts – Mainlanes, shoulders & ramps** 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 Performance Section*					
			1.2.1	• Mainlanes, shoulders and ramps - 3%	15	1.1%	4	0.05	
			1.2.2	• Frontage roads - 10%	10	0.8%	4	0.03	
		10ft straight edge used to measure rut depth for localized areas.	1.2.3	Depth of rut at any location greater than ½"	10	0.8%	4	0.03	
		b) Ride quality Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles		*For 80% of all Performance Sections measured, IRI throughout 98% of each Performance Section is less than or equal to:*					
			1.2.4	• Mainlanes, ramps - 70" per mile**	10	0.8%	3	0.02	
		** To allow for measurement bias, an adjustment of -10 (minus ten) is made to IRI measurements for concrete pavements before assessing threshold compliance.	1.2.5	• Frontage roads - 80" per mile**	10	0.8%	3	0.02	
				IRI throughout 98% of each Performance Section is less than or equal to:					
			1.2.6	• Mainlanes, ramps - 95" per mile**	10	0.8%	4	0.03	
			1.2.7	• Frontage roads - 95" per mile**	10	0.8%	4	0.03	
			1.2.8	Mainlanes, ramps, 0.1 mile average - 150" per mile**	10	0.8%	4	0.03	
			1.2.9	Frontage roads, 0.1 mile average - 180" per mile**	10	0.8%	4	0.03	
		10-ft straightedge used to measure discontinuities	1.2.10	IRI measured throughout 98% of each lane containing a bridge deck in any Performance Section, 0.1 mile average - 200" per mile**	10	0.8%	4	0.03	
		c) Failures Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures	1.2.11	Individual discontinuities greater than 1/4"	20	1.5%	3	0.05	
		d) Edge drop-offs Physical measurement of edge drop-off level compared to adjacent surface	1.2.12	Occurrence of any failure	20	1.5%	5	0.08	
			1.2.13	Number of instances of edge drop-off greater than 2"	20	1.5%	2	0.03	

ELEMENT CATEGORY	ELEMENT	INSPECTION AND MEASUREMENT METHOD	MEASURE-MENT REF	MEASUREMENT RECORD	WEIGHTING (1 TO 50) [1]	WEIGHTING FACTOR [2]	EXAMPLE RAW ASSET CONDITION SCORE [3]	WEIGHTED SCORE [4]	ELEMENT CATEGORY ASSET CONDITION SCORE [5]
1.2	**Pavement**	**e) Skid resistance** ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524	1.2.14	• Performance Sections with skid numbers for 0.5-mile section of mainlines, shoulders and ramps exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.	15	1.1%	3	0.03	
			1.2.15	• Performance Sections with skid numbers for 0.5-mile section of frontage roads exceeding 30 and for which investigations as to potential risk of skidding accidents and appropriate remedial actions have been taken.	10	0.8%	5	0.04	
			1.2.16	• When the skid number is below 25 and/or when a site is categorized by TxDOT in accordance with the Wet Weather Accident Reduction Program, as a Wet Weather Accident Site, Developer shall perform a site investigation and perform required corrective action.	15	1.1%	3	0.03	
			1.2.17	Instances where road users are warned of a potential skidding hazard where corrective action is required following the categorization as a Wet Weather Accident Reduction Site.	15	1.1%	1	0.01	
1.3	**Crossovers and other paved areas**	**a) Potholes**	1.3.1	Number of potholes of low severity or higher	50	3.8%	3	0.11	
		b) Base failures	1.3.2	Number of base failures of low severity or higher	50	3.8%	3	0.11	
1.4	**Joints in concrete**	Visual inspection of joints	1.4.1	Length of unsealed joints greater than ¼"	5	0.4%	2	0.01	
		Measurement of joint width and level difference of two sides of joints	1.4.2	Joint width more than 1" or faulting more than ¼"	10	0.8%	3	0.02	
1.5	**Curbs**	Visual inspection	1.5.1	Continuous curb lengths where more than 10% of the length has defects such as cracks and chips	5	0.4%	2	0.01	
		Physical measurement	1.5.2	Continuous curb lengths where more than 5% of the length has a separation exceeding 0.25" between curb face and adjacent roadway surface	5	0.4%	2	0.01	
		Survey and 10' straight edge	1.5.3	Continuous curb lengths where more than 5% of the length has either the top or face of curbs exceeding 0.5" from intended design alignment	5	0.4%	2	0.01	
1.6	**Maintenance/Access Roads**	Crown: Flat A shape or super-elevation with 4% cross slopes maintained to minimize ponding	1.6.1	Cross slope less than 3% or more than 6%	2	0.2%	4	0.01	
		Shoulder: Maintain slope away from the travel way and shoulder flush with travel way	1.6.2	Shoulder cross slope less than travel way cross slope; shoulder lower or higher than travel way	2	0.2%	3	0.00	
		Ditch: Maintain size and shape of ditch for proper drainage	1.6.3	Sides of ditches slumping or eroding, or obstructed by debris	2	0.2%	3	0.00	
		Ruts/potholes: Depth as measured using an automated device in compliance with TxDOT standards	1.6.4	Depth of ruts or potholes at any location greater than 1"	2	0.2%	3	0.00	
		Subgrade: Identify and repair any subgrade failures	1.6.5	Locations where subgrade failure is evident	2	0.2%	3	0.00	

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2) DRAINAGE									2.8
2.1	**Pipes and Channels**	Visual inspection supplemented by CCTV where required to inspect buried pipe work.	2.1.1	Length of pipe or channel in feet with less than 90% of cross sectional clear area, calculated as the arithmetic mean of the clear cross-sectional areas of individual 10 feet lengths of pipes and channels in each Performance Section.	10	0.8%	2	0.02	
2.2	**Drainage treatment devices**	Visual inspection	2.2.1	Number of devices functioning correctly with means of operation displayed.	10	0.8%	3	0.02	
2.3	**Travel Way**	Visual inspection of water on surface.	2.3.1	Number of instances of hazardous water build-up.	10	0.8%	4	0.03	
2.4	**Discharge systems**	Visual inspection and records	2.4.1	Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits.	10	0.8%	3	0.02	
2.5	**Protected Species**	Visual inspection	2.5.1	Performance Sections with named species and habitats with protection of these named species and habitats.	10	0.8%	2	0.02	
3) STRUCTURES									3.1
3.1	**Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes**	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.		*Records as required in the TxDOT Bridge Inspection Manual*					
		As above	3.1.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below seven for any deck, superstructure or substructure	50	3.8%	2	0.08	
		As above	3.1.2	Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual	50	3.8%	2	0.08	
3.2	**Structure components**	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.	3.2.1	Occurrence of condition rating, in accordance with the TxDOT Bridge Inspection Manual, below **seven (7)** for any deck, superstructure or substructure	50	3.8%	3	0.11	
		Visual inspection of Elements listed in (i) through (vii) of the general performance requirement column in the Performance and Measurement Table.	3.2.2	Instances of condition of any element not meeting general performance requirement as determined in accordance with Good Industry Practice.	50	3.8%	3	0.11	

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3.9	**Non-bridge class culverts**	Visual inspection	3.9.1	Number of non-bridge class culverts with vegetation, debris and silt in each Performance Section	10	0.8%	4	0.03	
			3.9.2	Number of non-bridge class culverts with defects in sealant and movement joints in each Performance Section	10	0.8%	4	0.03	
			3.9.3	Number of non-bridge class culverts with scour damage in each Performance Section	10	0.8%	4	0.03	
3.10	**Gantries and High-masts**	Visual and up close inspection	3.10.1	Number of gantries and high masts with loose assemblies in each Performance Section	10	0.8%	4	0.03	
			3.10.2	Number of gantries and high masts with defects in surface protection in each Performance Section	10	0.8%	4	0.03	
3.11	**Load Ratings**	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual and per the Technical Provisions	3.11.1	Number of structures with load restrictions for Texas legal loads (including legally permitted vehicles) in each Performance Section	20	1.5%	5	0.08	
3.12	**Access Points**	Visual Inspection	3.12.1	Number with defects in locks or entryways	5	0.4%	3	0.01	
3.13	**Mechanically Stabilized Earth and Retaining Walls**	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.	3.13.1	Records as required in the TxDOT Bridge Inspection Manual	10	0.8%	5	0.04	
		Visual Inspection	3.13.2	Number of parapet areas with loose nuts & bolts, blockage, undesirable vegetation, impact damage or concrete spalling in the Performance Section.	10	0.8%	4	0.03	
3.14	**Structural Surfaces**	Visual Inspection	3.14.1	Number of areas where graffiti is present	10	0.8%	4	0.03	
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS									3.8
4.1	**Pavement markings**	**a) Markings - General**							
		Portable retroreflectometer, which uses 30 meter geometry, meeting the requirements described in ASTM E 1710	4.1.1	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 175 med/sqm/lx for white	15	1.1%	3	0.03	
			4.1.2	Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for white	15	1.1%	3	0.03	
		Physical measurement	4.1.3	Length of pavement marking in each Performance Section with more than 5% loss of area of material at any point	15	1.1%	3	0.03	
			4.1.4	Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions.	15	1.1%	4	0.05	
		b) Profile Markings							
		Visual inspection	4.1.5	Percentage of total length of pavement marking in each Performance Section performing its intended function and compliant with relevant regulations	5	0.4%	3	0.01	
4.2	**Raised Reflective Markings**	Visual inspection	4.2.1	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)	10	0.8%	5	0.04	

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			4.2.2	A minimum of four markers are visible at 80' spacing when viewed under low beam headlights.	10	0.8%	5	0.04	
			4.2.3	Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers).	10	0.8%	5	0.04	
4.3	**Delineators and Markers**	Visual inspection	4.3.1	Number of object markers or delineators in each Performance Section that is defective or missing	10	0.8%	4	0.03	
5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS									3.0
5.1	**Guardrails and Safety Barriers**	Visual inspection	5.1.1	Performance Sections with all guard rails and safety barriers appropriately placed and correction installed	25	1.9%	3	0.06	
			5.1.2	Performance Sections with all guard rails and safety barriers free from defects	20	1.5%	3	0.05	
			5.1.3	Performance Sections with all guard rails and safety barriers at correct heights	20	1.5%	2	0.03	
			5.1.4	Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles	20	1.5%	4	0.06	
5.2	**Impact Attenuators**	Visual inspection	5.2.1	Performance Sections will all impact attenuators appropriately placed and correctly installed.	20	1.5%	3	0.05	
6) TRAFFIC SIGNS									3.3
6.1	**General - All Gantry-Mounted overhead signs**	**a) Retroreflectivity** Determination of Coefficient of retro-reflectivity	6.1.1	Number of signs with actual reflectivity below the requirements of TxDOT's TMUTCD in each Performance Section	20	1.5%	3	0.05	
		b) Face damage Visual inspection	6.1.2	Number of signs in each Performance Section with face damage greater than 5% of area	10	0.8%	4	0.03	
		c) Placement Visual inspection	6.1.3	All signs in each Performance Section are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning	5	0.4%	4	0.02	
		d) Obsolete signs Visual inspection	6.1.4	Number of obsolete signs in each Performance Section	5	0.4%	3	0.01	
		e) Sign Information Visual inspection	6.1.5	All sign information in each Performance Section is of the correct size, location, type and wording to meet its intended purpose	5	0.4%	3	0.01	
		f) Dynamic Message Signs Visual inspection	6.1.6	All dynamic message signs in each Performance Section are fully functioning	10	0.8%	3	0.02	
7) TRAFFIC SIGNALS (NOT USED)									

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8) LIGHTING									3.7
8.1	**Roadway and aesthetic Lighting – General**	**a) Mainline lights operable** Night time inspection or automated logs	8.1.1	Performance Sections with less than 90% of lights functioning correctly at all times	25	1.9%	3	0.06	
		b) Mainline lights out of action Night time inspection or automated logs	8.1.2	Instances of more than two consecutive lights out of action	25	1.9%	4	0.08	
8.2	**Sign Lighting**	Night time inspection or automated logs	8.2.1	Number of instances of more than one bulb per sign not working in each Performance Section	10	0.8%	4	0.03	
8.3	**Electrical Supply**	Testing to meet NEC regulations, visual inspection	8.3.1	Inspection records showing safe installation and maintenance in each Performance Section	10	0.8%	5	0.04	
8.4	**Access Panels**	Visual Inspection	8.4.1	Number of instances of missing or damaged access panels in each Performance Section	5	0.4%	5	0.02	
8.5	**High Mast Lighting**	Yearly inspection and night time inspections or automated logs	8.5.1	Instances of two or more lamps not working per high mast pole	15	1.1%	3	0.03	
			8.5.2	Any other defects per the "general Performance Requirements" column	10	0.8%	3	0.02	
9) FENCES, WALLS AND SOUND ABATEMENT									4.0
9.1	**Design and Location**								
9.2	**Construction**					0.0%			
9.3	**Operation**	Structural assessment if visual inspection warrants	9.3.1	Inspection records for fences and walls showing compliance with fence and wall requirements in each Performance Section	20	1.5%	4	0.06	
10) ROADSIDE MANAGEMENT									4.0
10.1	**Vegetated Areas - Except landscaped areas - General**	**a) Urban areas** Physical measurement of height of grass and weeds	10.1.1	Individual measurement areas in each Performance Section to have 95% of grass and weeds between 5" and 18" in height.	10	0.8%	3	0.02	
		b) Encroachment Visual inspection of instances of encroachment of vegetation	10.1.2	Number of occurrences of vegetation encroachment in each Performance Section	10	0.8%	5	0.04	
		c) Wildflowers Visual Inspection with audit of process.	10.1.3	Adherence to vegetation management manuals	10	0.8%	3	0.02	
		d) Sight lines Visual inspection	10.1.4	Number of instances of impairment of sight lines or sight distance to signs in each Performance Section	10	0.8%	4	0.03	
10.2	**Landscaped Areas**	Visual inspection	10.2.1	Inspection records showing compliance with requirements for landscaping in each Performance Section.	10	0.8%	4	0.03	
10.3	**Fire Hazards**	Visual inspection	10.3.1	Number of instances of dry brush or vegetation forming fire hazard in each Performance Section.	10	0.8%	5	0.04	
10.4	**Trees, Bushes and Ornamentals**	Visual inspection	10.4.1	Inspection records showing compliance with requirements for trees, brush and ornamentals in each Performance Section.	10	0.8%	5	0.04	
10.5	**Wetlands**	Visual inspection, assessment of permit issuers	10.5.1	Number of instances of permit requirements not met in each Performance Section	10	0.8%	3	0.02	

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11) REST AREAS AND PICNIC AREAS (NOT USED)									
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS									5.0
12.1	**Slope Failure**	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	12.1.1	Number of recorded instances of slope failure in each Performance Section	12	0.9%	5	0.05	
12.2	**Slopes - General**	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	12.2.1	Inspection records showing compliance with requirements for slopes in each Performance Section.	12	0.9%	5	0.05	
13) ITS EQUIPMENT									3.7
13.1	**ITS Equipment - Maintenance**	Visual Inspection	13.1.1	Inspection records showing compliance with requirements for maintenance of ITS equipment in each Performance Section.	5	0.4%	4	0.02	
13.2	**Dynamic Message Sign Equipment**	Defect measurement dependent on equipment	13.2.1	Inspection records showing compliance with requirements for Dynamic Message Signs in each Performance Section	5	0.4%	3	0.01	
13.3	**CCTV Equipment**	Defect measurement dependent on equipment	13.3.1	Inspection records showing compliance with requirements for CCTV equipment in each Performance Section	5	0.4%	4	0.02	
13.4	**Vehicle Detection Equipment**	Defect measurement dependent on equipment	13.4.1	Inspection records showing compliance with requirements for vehicle detection equipment in each Performance Section	5	0.4%	5	0.02	
			13.4.2	Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries.	5	0.4%	3	0.01	
			13.4.3	Insulation resistance to be > 50 meg ohms.	5	0.4%	3	0.01	
14) TOLLING FACILITIES AND BUILDINGS (NOT USED)									
15) AMENITY (NOT USED)									
16) SNOW AND ICE CONTROL (NOT PART OF ASSET CONDITION SCORE)									
16.1	**Travel lanes**	Maximum 1hr response time to complete manning and loading of spreading vehicles.	16.1.1	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
		Maximum 2hrs from departure from loading point to complete treatment and return to loading point.	16.1.2	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
		Maximum 1hr response time for snow and ice clearance vehicles to depart from base.	16.1.3	Inspection records showing compliance with requirements for snow and ice control in each Performance Section	0	0.0%			
16.2	**Weather Forecasting**	Operations plan details the process and procedures in place and followed.	16.2.1	Inspection records showing compliance with requirements for weather forecasting in each Performance Section	0	0.0%			
16.3	**Operational Plans**	Operations plan details the process and procedures in place and followed.	16.3.1	Inspection records showing compliance with snow and ice clearance plans in each Performance Section	0	0.0%			
16.4	**Operations and Maintenance Manual**	Operations and maintenance instructions detail the process and procedures in place and followed.	16.4.1	Inspection records showing compliance with operations and maintenance instructions in each Performance Section.	0	0.0%			

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17) INCIDENT RESPONSE (NOT PART OF ASSET CONDITION SCORE)									
17.1	**General**	Response times are met for 98% of incidents measured on a 1 year rolling basis.	17.1.1	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section	0	0.0%			
		No complaints from Emergency Services.	17.1.2	Inspection records showing compliance with the MMP and requirements regarding incident response times in each Performance Section	0	0.0%			
17.2	**Hazardous Materials**	MMP details the process and procedures in place and followed.	17.2.1	Inspection records showing compliance with the MMP details regarding hazardous materials in each Performance Section	0	0.0%			
17.3	**Structural Assessment**	Inspections and surveys as required by incident	17.3.1	Inspection records showing compliance with the MMP and requirements for incidents in each Performance Section	0	0.0%			
17.4	**Temporary and permanent remedy**	Review and inspection of the incident site	17.4.1	Inspection records showing compliance with requirements for temporary and permanent remedy for incidents in each Performance Section	0	0.0%			
18) CUSTOMER RESPONSE (NOT PART OF ASSET CONDITION SCORE)									
18.1	**Response to inquiries**	Contact the customer within 48 hours following initial customer inquiry.	18.1.1	Percentage of responses within specified times in each Performance Section.	0	0.0%			
		All work resulting from customer requests is scheduled within 48 hours of customer contact.	18.1.2	Demonstrated by O&M Records	0	0.0%			
		Follow-up contact with the customer within 72 hours of initial inquiry.	18.1.3	Demonstrated by O&M Records	0	0.0%			
		All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	18.1.4	Demonstrated by O&M Records	0	0.0%			
18.2	**Customer Contact Line**				0	0.0%			
19) SWEEPING AND CLEANING									4.5
19.1	**Sweeping**	Buildup of dirt, ice, rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep	19.1.1	Inspection records showing compliance with requirements for sweeping in each Performance Section.	15	1.1%	5	0.06	
19.2	**Litter**	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	19.2.1	Inspection records showing compliance with requirements regarding litter pick-up in each Performance Section.	15	1.1%	4	0.05	
						100.0%			
AGGREGATED ASSET CONDITION SCORE FOR ROADWAY SECTION AFTER SUBSTANTIAL COMPLETION [6]								**3.4**	

NOTES FOR ASSET CONDITION SCORE CALCULATION

1 Weighting is the assigned weighting for each Measurement Record on a scale of 1-50 for purpose of Asset Condition Score

2 Weighting Factor is the Weighting expressed as a percentage for each Measurement Record and totaling 100%

3 Example Raw Asset Condition Score = Asset Condition Score for each Measurement Record across all inspected Performance Sections

4 Weighted Score = Raw Asset Condition Score x Weighting Factor

5 Element Category Asset Condition Score = Sum of Weighted Score / Sum of Weighting Factors for each Element Category

6 Aggregated Asset Condition Score = Sum of Weighted Scores for each Measurement Record for all Element Categories

95	Number of non-zero Weightings
1314	Total of Weightings
13.83	Average Weighting

Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

Design-Build Project

ATTACHMENT 19-7
TxDOT FUNCTION CODES FOR MMS

ATTACHMENT 19-7 : MAINTENANCE PLANNING ACTIVITIES & ASSOCIATED FUNC. CODES

DISTRICT CROSS REFERENCE CODE CHART 12 (FIMS SEGMENT 78, AND PORTIONS OF 70, 71 AND 72)

All segment 78 functions are trackable

Effective September, 2012 (Rev Date: July, 2011)

110	P03	CY	Removal and Replacement Removal of base and/or subgrade materials from distressed or failed areas and replacement with suitable materials. (Includes resurfacing.)	522	R0	MI	Street Sweeping Routine street sweeping. Units are the actual miles swept regardless of centerline miles.	593	T04	LF	Cable Median Barrier Installation and maintenance of high tension cable median barrier systems, including the cable, posts and end treatments.	733	T03	EA	Vandalized Signs Replacement or repair of signs damaged by vandalism.
120	P03	CY	In Place Repair In place repair base and/or subgrade material. (Includes resurfacing, and may or may not include additional stabilizing material.)	523	R1	MI	Debris Routine **patrolling** to remove and dispose of debris, including dead animals.	594	T04	LF	Concrete Barrier Installation, removal and maintenance of concrete barriers, including attached headlight barrier fence.	738	T11	EA	Installation and Maintenance of Flashing Beacons Installation and maintenance of overhead flashing beacons, pedestal or sign mounted flashing beacons, etc.
135	R05	EA ~~LF~~	Install and/or Maintain Underdrains Installation, repair and maintenance of all types of underdrains.	524	R0	AC	Spot Litter Spot removal and disposal of litter, including dead animals, from the right of way.	595	T04	LF	Guard Fence Installation and maintenance of guard fence, MBGF, turn down ends, headlights	742	T07	EA	Illumination Installation, maintenance and operation of illumination systems, including continuous lighting, safety lighting and sign illumination.
145	S06	SY	Unpaved Road Maintenance Repair of gravel or dirt roads, including blading, addition of base, etc.	525	R0	HRS	Adopt-A-Highway Installation of posts and signs, materials furnished to groups, and the personnel and equipment used to assist in removal and disposal of collected litter.				barrier fence, including posts, metal beams, etc. (End treatment other than turn down ends, see function 596.)	743	T06	EA	Installation and Maintenance of Isolated Traffic Signals Maintenance and operation of isolated traffic signals, diamond interchange signals, etc.
				526			Deleted replaced by 522	596	T05	EA	Guardrail End Treatment Systems	~~744~~			Replaced by Function Code 743
211	P01	SY	Leveling or Overlay with Laydown Machine The application of asphaltic tack coat and placing of asphaltic concrete materials to improve the ride qualities or level up low spots.	527	R0	SY	Hand Sweeping Hand sweeping of riprap, islands, medians, curb & gutter, bullpens, driveways, etc.				Installation and maintenance of guardrail end treatment systems. (For attenuators other than GETS, see function 725).	745	T08	CL M	Traffic Management System Maintenance and operation of traffic management systems on freeways or non-freeways, entrance/exit ramps, motorist information (e.g. changeable message signs, highway advisory radio, etc.) surveillance and related communications equipment. (ITS Control Center personnel should charge to segment 70, detail 0570.)
212	P01	SY	Leveling or Overlay with a Maintainer The application of asphaltic tack coat and placing layers of asphaltic concrete material.	530	S10	SF	Removal of Graffiti Removal of graffiti from fixtures, wing walls, bridge structures, etc. Not to be used in lieu of function 733 (Vandalized Signs), 731 or 732 (Sign Installation).	597	T03	EA	Mailboxes, Installation and Maintenance				
				531	S06	HRS	Picnic Area Maintenance (Without Restrooms) Refer to function 532 for description.	598	S06	HRS	Boat Ramp Maintenance Work performed in maintaining boat ramps, including mowing, litter removal, emptying litter barrels, maintenance of paved and unpaved areas, etc.	750	T09	EA	Installation and Removal of Pavement Markers Installation and/or removal of traffic buttons or reflective pavement markers.
213	P01	SY	Leveling by Hand The application of asphaltic tack coat and placing layers of asphaltic concrete material by hand. This includes repair of pavement areas greater than one square	532	S06	HRS	Rest Area Maintenance (With Restrooms) Work performed in janitorial and grounds maintenance, including mowing, litter pickup, emptying litter barrels, maintenance of plantings, cleaning restroom, cleaning arbors,	610	S04	HRS	Bridge, Movable Span Operation, routine maintenance and inspection of movable span bridges (swing barge, lift or turn). Restricted use: Beaumont, Houston, Pharr and Yoakum Districts only.	790	S07	HR	Miscellaneous Traffic Services All traffic surveys (including all motor vehicle and pedestrian counts at intersections and directly related locations) and other traffic services not covered elsewhere.
214	P01	SY	Leveling or Overlay with Drag Box The application of asphaltic tack coat and placing layers of asphaltic concrete material.				graffiti removal, minor paintings, etc. This item shall also include special maintenance required to repair/replace arbors, picnic tables, fixtures, litter barrels, paved areas, etc. (including maintenance of treatment plants and dump stations).	611	S04	HRS	Bridge, Portable Installation, removal, maintenance and inspection of portable bridges.				**Note**: Traffic control performed during the pavement evaluation process should be charged to segment 71, detail 3214 and the appropriate function (600 thru 690).
								620	S05	CY	Bridge Channel Maintenance	799	S07	HR	Traffic Control
225	P06	LM	Sealing Cracks Cleaning, filling and sealing cracks in the pavement using asphaltic rubber or other sealants.	533	S06	HRS	Rest Area Facility Maintenance through Regional Contracts (Maintenance Division Use Only)				Removal of silt and drift, filling eroded areas, channel maintenance (including easements) and maintenance and repair of jetties and dikes.				The placement, maintenance and removal of barricades, signs, cones, lights and other such devices needed to handle traffic during emergencies or special events.
				535	S0	HRS	Maintenance of Specialty Facilities	628	S02	LF	Bridge Rail				This includes flaggers.
231	P05	SY	Seal Coat Application of a single layer of asphaltic material followed by the application of a single layer of aggregate over the full width of the lane or a shoulder (greater than 6' in width) for a minimum of 1000 continuous feet.				All maintenance costs to specialty facilities including border safety inspection facilities (BSIFs), toll booths, service plazas, fencing and associated appurtenances. This includes both temp and perm facilities. The highway class code will determine the type of facility.	645	S02	LF	Maintenance of bridge rail, posts & post connections to deck, including painting. Bridge Joint Maintenance Repair of bridge joints, including cleaning and sealing	~~806~~ ~~807~~ ~~809~~			Replaced by Function Code 799 Replaced by Function Code 799 Accident Flag selected Replaced by Function Code 799 Disaster Project;Task number
				646	S02	LF	Bridge Joint Replacement					~~810~~			Replaced by Function Code 523 Disaster Project;Task number
232	P04	SY	Strip or Spot Seal Coat Application of a single layer of asphaltic material followed by the application of a single layer of aggregate over areas less than the full width of the lane or shoulder (6' or less in width), or the full width of the lane or shoulder but less than 1000 feet in length.	538	R0	AC	Pest Control Activities related to use of predatory animal and insect control whether in turf and ornamental sites or on the ROW.	650	S01	SF	Replacement of bridge joints Bridge Deck Repair to bridge decks.	811	S07	HR	Snow and Ice Response Emergency response to clear roads during or after a snowfice event. Includes sanding, deicing, clearing and removal, etc.
				540	R0	HRS	Hand Vegetation Control Hand cleaning vegetation out of islands, medians, riprap, drainage channels, etc. by chemical, manual or mechanical means.	660	S01	SF	Bridge Superstructure, Concrete Routine maintenance of the concrete components of the bridge superstructure, including bearings, concrete diaphragms, and beams.	~~813~~ ~~814~~ ~~820~~			Replaced by Function Code 799, 523 Disaster Project;Task number Replaced by Function Code 563 Disaster Project;Task number Deleted
233	P04	SY	Fog Seal Retain aggregate, enliven surface and/or seal hairline cracks by the application of a thin layer of asphaltic material.	541	R0	AC	Chemical Vegetation Control, Edges Complete control of vegetation encroaching in pavement edges, shoulders, medians, islands and curbs with herbicides.	665	S01	SF	Bridge Superstructure, Steel Routine maintenance of the steel components of the bridge superstructure, including stell diaphragms and beams.	~~821~~ ~~822~~ ~~823~~			Replaced by Function Code 110, 120 Disaster Project;Task number Replaced by Function Code 360 Disaster Project;Task number Replaced by Function Code 360 Disaster Project;Task number
235	P04	SY	Microsurfacing The application of a polymer modified high performance emulsion coupled with fine graded aggregate, mineral fillers and special additives in a slurry, to full ruts or to a new wearing surface. (Caution: Should not be used to seal cracked pavements.)	542	R0	AC	Chemical Vegetation Control, Overspray Control of undesirable vegetation growth by overspraying wide areas of the right of including fixtures (i.e. signs, delineators, guardrails, culverts, etc.) with herbicides.	670	S03	SF	Bridge Substructure, Concrete Routine maintenance of the concrete components of the bridge substructure, including caps, columns, abutments, wingwalls, pilings, etc.	~~824~~ ~~825~~			Replaced by Function Code 211, 212, 213, 214 Replaced by Function Code 231, 232 Disaster Project;Task number Replaced by Function Code 560,561,562,563
241	P09	EA	Pothole Repair The repair of holes with an area of less than or equal to one square yard. Charge to Function 213 if greater than one square yard.	544	R0	AC	Chemical Vegetation Control, Rope-wick Control of tall vegetation (i.e. Johnsongrass) in the right of way with a wick application.	675	S03	SF	Bridge Substructure, Steel and Timber Routine maintenance of the steel or timber components of the bridge substructure, including caps, abutments, pile extensions, etc.	~~826~~ ~~827~~			Appropriate Bridge, Disaster Project;Task number Replaced by whatever Function Code; Disaster or Damage Claim Project;Task number Replaced by Function Code 743; Disaster or Damage Claim Project;Task number
242			Replaced by Function 241	545	R0	HRS	Chemical Vegetation Control, Basal Application Control of undesirable brush species in the right of way with a low volumne basal bark application.	680	S03	SF	Bridge Painting Cleaning and painting of superstructure or substructure.	~~828~~ ~~829~~			Replaced by Function Code 721,731,732; Disaster or Damage Claim Project;Task number Replaced by Function Code 742; Disaster or Damage Claim Project;Task number
245	P10	SY	Adding or Widening Pavement Widening travel lanes up to 2 feet, adding shoulders up to 4 feet **to correct a maintenance problem** (includes sub-grade, base & surfacing), or adding turn lanes to improve safety.	548	R0	SY	Seeding, Sodding, Hydromulching and Blanketing Seeding, sodding, hydromulching and/or placing soil retention blankets.	690	S04	HRS	Bridge, Mechanical and Electrical Maintenance and repair of the electrical & mechanical components of a bridge.	830	R1	HR	Hazardous Material Clean up, Spills or Leaking Storage Tanks Investigations, testing, clean up, removal, disposal and restoration work associated with a spill or leaking storage tanks.
252	P02	SY	Milling and Planing The removal of pavement surface by milling or planing.	551	R0	AC	Landscaping The installation or maintenance of landscape plantings and their facilities including planter walls, borders, sprinkler systems, etc. (excluding picnic and rest areas).	695	S04	HRS	Fender Systems Installation and maintenance of fender systems.	831	R1	HR	Hazardous Material Clean up, Abandoned Materials Investigations, testing, clean up, removal, disposal and restoration work associated with abandoned hazardous materials of unknown ownership.
253	P02	SY	Spot Milling The removal of pavement surface by milling using a small milling machine (4 feet or less drum width).	552	R0	CL	Tree and Brush Control The trimming, pruning and disposal of shrubs, vines, and trees (excluding picnic and rest areas).	711	T01	LF	Paint and Bead Striping Striping or re-striping lane lines, centerlines and edge lines using paint and beads.	**Segment 70**			**Maintenance Section Overhead Costs** Detail 08XX (XX = Office No.); not reasonably identifiable to a roadway
265	P04	SY	Treat Bleeding Pavement Treatment of excess asphalt on the pavement surface.	558	R0	LF	Storm Water Pollution Protection Maintenance or installation of storm water pollution protection plan (SW3P) in accordance with EPA regulations on projects designated by area engineers.	712	T02	LF	High Performance Striping Striping or re-striping lane lines, centerlines and edge lines using thermoplastic or other high performance materials.	400 401 402			Training (informal or on-the-job training) Meetings (non-coded meetings; Safety Banquets) Yard Maintenance and Inspections (maintenance/inspections to facilities or yard)
270	P07	LF	Edge Repair Repair of raveled, low or damaged pavement edges with asphaltic materials.									403			Office/Section Administration (pick up/purchase supplies, HR admin., office tech duties)
315	P08	SY	Slab Stabilization / Jacking Leveling concrete pavement through the use of hydraulically placed material.	560	R06	SY	Riprap Installation and Maintenance Installation and maintenance of ditch liners, retards, down drains, riprap, flumes, concrete mowing strips, gabions, retaining walls and other erosion protection.	713	T02	EA	Specialty Markings Medians, islands and other pavement markings not covered under function 711 or 712. (Including make-ready operations for all stripe alignment, such spotting, tabs, temporary tape, etc.)	404 405 406 407			Section Support (customer support, contractor support, damage claims) Section Management (checking on crews, supervisor admin, meeting with local govts.) Material Management (inventory mgmt, material deliveries from WH to yard, hauling) Standby Time (weekend and weekday)
325	P06	LF	Cleaning and Sealing Joints and Cracks Cleaning, filling and sealing joints and cracks in concrete pavement.	561	R04	CY	Ditch Maintenance Removal and hauling of silt, drift, and/or filling eroded areas. Not to be used for work at culverts or bridges (see functions 570 or 620).	715	T02	LF	Removal of Pavement Striping Use when striping is not going to be replaced.	408			General Overhead **District Contract Management - Roadway Maintenance**
330	P08	SY	Blowouts and Stress Relief Repair of blowouts and cutting pavement for stress relief.												**(not reasonably identifiable to a roadway)**
345	P08	SY	Repair Spalling Clean and repair spalled areas (not full depth of concrete slab).	562	R04	LF	Reshaping Ditches Reshaping ditches using maintainer and/or gradall, etc. Not to be used for work at culverts or bridges (see functions 570 or 620).	716	S11	LM	Performance Based Contract Distribution (Contract Payments ONLY) These contracts are set up to pay the contractor a fixed price on a periodic basis of type of work performed and/or amount of work performed				Detail 0585 All district costs of roadway maintenance contract development and management not reasonably identifiable to a specific roadway or other accounts.
360	P08	SY	Full Depth Removal and Replacement The removal and replacement of failed areas for the full depth of the concrete slab.	563	R06	SY	Slope Repair/Stabilization Slope repair and/or stabilization. Not to be used for work at culverts or bridges (see functions 570 or 620).	721	T03	EA	Delineators Installation, maintenance and/or replacement of damaged or missing reflectors and/or posts. This function shall include straightening of posts. Measured by each post and each reflector replaced.	**Segment 71**			**Direct District Charges (No specified road location)** Detail 1305, function 020; field inspections not identifiable to a roadway, including damage assessments, night inspections, permit inspections, bridge inspections
455	P07	LF ~~SY~~	Reshaping Unpaved Shoulders Restore sod or flexible base shoulders to original sections. Includes reshaping front slope to eliminate low pavement edges along a paved shoulder.	570	R0	EA	Culvert and Storm Drain Maintenance The installation, repair and maintenance of culverts up to bridge classification (twenty feet measured along centerline of roadway). This work includes silt and debris removal from inlet, storm drains, retention ponds and culverts (except those costs associated with function 571).	724	T04	LF	Roadway Access Control Installation and maintenance of barriers (other than those covered by functions 594 or 595) designed to control access on highways, including post and cable fences, ROW fences and cattle guards.				Detail 1310, function 020; special services not identifiable to a roadway, including cleaning stockpile locations, collectiong ditch grade data, and counting loads of RAP for county assistance.
480	S08	SY	Side Road Approaches, Crossovers and Turnouts The installation or maintenance of side road approaches, crossovers, historical markers, mailbox and litter barrel turnouts, etc.												Detail 1315, function 020; Courtesy Patrol
488	S08	SY	Concrete Appurtenance Installation and Maintenance The maintenance, installation, or removal of concrete appurtenances which include curbs and/or gutters, raised medians, sidewalks and sound barriers.	571	R0	EA	Storm Water Pump Station Maintenance Repair and maintenance of motors, pumps, generators, wet wells, dry wells, debris screening baskets, buildings, etc., including costs of utility services.	725	T05	EA	Vehicle Attenuators Installation and maintenance of vehicle attenuators, crash cushions, etc. (**Excludes** the end treatment devices on guard fence.)				**Roadway Evaluation** Detail 3214, function codes 600 thru 690; functions related to Pavement Management, including traffic control while performing pavement evaluation
495	S06	SY	Parking Area Maintenance Repair of sub-grade, base or surface of areas including parking lots, park and ride lots and camping pads.	580	T03	EA	Removal of Illegal Signs on ROW, TEMP (Temporary, no special handling required.) Removal of illegal signs on right of way, including disposal and written notice to owners.	731	T03	EA	Installation/Maintenance of Small Signs The installation and maintenance of signs (less than 4 ft. X 4 ft.). Includes the	**Segment 72**			**Off-System Disaster Cleanup** Detail 000470001; off-system assistance that has been approved by the Disaster District
511	R02	AC	Mowing Mowing of the right of way.	581	T03	EA	Removal of Illegal Signs on ROW, PERM (Permanent, special handling required.) Removal of illegal signs on right of way, including disposal and to written notice to owners.				installation of an old sign on a new post, the installation of a new sign on an existing post, removing or straightening of signs and posts. Not to be used in lieu of function 732 (Installation of Large Signs), function 733 (Vandalized Signs), or function 525 (Adopt-A-Highway). Measured by each post and each sign maintained.	500 501 505			Chairman Debris Removal Fire Control Evacuee Assistance
513	R02	HRS	Spot Mowing Spot mowing of the right of way.	582	S10	HRS	Removal of Encroachments, Other than Signs								
520	R10	CY	Illegal Dumpsite Removal and Disposal Removal and disposal of debris discarded or deposited in an unauthorized area in the right of way such as under a bridge, overpass, culvert, etc.	585	S08	SY	Driveway Installation/Removal and Maintenance See access management policy.	732	T10	EA	Installation/Maintenance of Large Signs The installation or maintenance of signs (equal to or greater than 4 ft. X 4 ft.) Includes the installation of an old sign on a new post, the installation of a new sign on an existing post, removing or straightening of signs and posts. Not to be used in lieu of function 731 (Installation of Small Signs), function 733 (Vandalized Signs), or function 525 (Adopt-A-Highway)	510 515 520			Traffic Control for Disasters Sign and Signal Repair for Disasters Repairs to Roads for Disasters
521	R03	AC	Litter Removal and disposal of litter from the entire right of way, excluding paved areas, picnic and rest areas.	591	S09	HRS	Utilities and Driveway Inspection								

	P01	Pavement Leveling		R01	Sweeping		S01	Bridge Superstructure Maintenance		T01	Paint and Bead Striping
	P02	Milling		R02	Mowing		S02	Bridge Rial and Joints		T02	High Performance Striping
	P03	Base Repair		R03	Litter Control		S03	Bridge Substructure Maintenance		T03	Sign Maintenance
	P04	Spot Seal Coat		R04	Drainage Maintenance		S04	Specialty Bridge Maintenance		T04	Safety Barrier Maintenance
	P05	Full Width Seal Coat		R05	Drainage Structures		S05	Bridge Channel Maintenance		T05	Crash Attenuators
	P06	Cracl Sea;		R06	Erosion Control		S06	Specialty Maintenance		T06	Traffic Signal Maintenance
	P07	Edge Maintenance		R07	Vegetation and Pest Control		S07	Traffic Control Services		T07	Illumination Maintenance
	P08	Concrete Pavement Maintenance		R08	Tree and Brush Control		S08	County Road Approaches, Crossovers, & Turnouts		T08	Traffic Management Systems
	P09	Pothole Repair		R09	Landscape Maintennace		S09	Utility & Driveway Inspection		T09	Raised Pavement Markings
	P10	Adding or Widening Pavement		R10	Debris and Cleanup		S10	Graffiti & Encroachment Removal		T10	large Sign Maintenance
										T11	Beacon Maintenanee

Texas Department of Transportation

BOOK 2 – TECHNICAL PROVISIONS

FOR

US 181 HARBOR BRIDGE PROJECT

DESIGN-BUILD PROJECT

ATTACHMENT 19-8
BASELINE INSPECTION REQUIREMENTS

ATTACHMENT 19-8: BASELINE ELEMENT CONDITION SURVEY REQUIREMENTS

Provide photographic records and physical measurements referenced by location to establish an agreed reference condition for each Performance Section as follows:				
ELEMENT CATEGORY	**ELEMENT**		**MEASURE-MENT REF**	**BASELINE INSPECTION REQUIREMENT**
1) ROADWAY				
1.2	**Pavement**	**a) Ruts – Mainlanes, shoulders & ramps**	1.2.1	Wheel path length with given rut depth
			1.2.2	Depth of rut at any location
		b) Ride quality	1.2.3	Individual discontinuity (e.g. bumps and depressions)
		d) Failures	1.2.4	Failure conditions per TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures
		e) Edge drop-offs	1.2.5	Edge drop-offs
1.3	**Crossovers and other paved areas**	**a) Potholes**	1.3.1	Size and number of potholes
		b) Base failures	1.3.2	Size and frequency of base failures
1.4	**Joints in concrete**		1.4.1	Length and width of unsealed joints
2) DRAINAGE				
2.1	**Pipes and Channels**		2.1.1	Length of pipe or channel subject to accumulation of debris, silt or other blockage
2.2	**Drainage treatment devices**		2.2.1	General condition
2.3	**Travel Way**		2.3.1	General condition
2.4	**Discharge systems**		2.4.1	General condition and permit compliance
3) STRUCTURES				
3.1	**Structures**		3.1.1	Condition and defects as noted in each structure
			3.1.2	Condition States applicable to each Structure
3.2	**Structure components**		3.2.1	Condition and defects as noted in each structure
			3.2.2	Condition States applicable to each Structure
3.3	**Non-bridge class culverts**		3.3.1	Condition and defects as noted in each structure
3.4	**Gantries and high masts**		3.4.1	Condition and defects as noted in each structure
3.7	**Mechanically Stabilized Earth and Retaining Walls**		3.7.1	Condition and defects as noted in each structure

ATTACHMENT 19-8: BASELINE ELEMENT CONDITION SURVEY REQUIREMENTS

ELEMENT CATEGORY	ELEMENT		MEASURE-MENT REF	BASELINE INSPECTION REQUIREMENT
4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS				
4.1	Pavement markings	a) Markings - General		
			4.1.1	Marking visibility under low-beam headlight
			4.1.2	Length of pavement marking where there is loss of material
		b) Profile Markings	4.1.3	General condition
4.2	Raised reflective markers		4.2.1	Number ineffective, missing, damaged, settled or sunk
4.3	Delineators & Markers		4.3.1	General condition
5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS				
5.1	Guardrails and safety barriers		5.1.1	General condition
			5.1.3	Height and offset compliance
5.2	Impact attenuators		5.2.1	General condition
6) TRAFFIC SIGNS				
6.1	Gantry-mounted overhead signs		6.1.1	General condition
7) TRAFFIC SIGNALS (NOT PART OF MAINTAINED ELEMENTS)				
8) LIGHTING				
8.1	Roadway Lighting		8.1.1	General condition
9) FENCES, WALLS AND SOUND ABATEMENT				
9.1	Construction		9.1.1	General condition
10) ROADSIDE MANAGEMENT				
10.1	Vegetated Areas -		10.1.1	Height of grass and weeds
10.2	Landscaped Areas		10.2.1	General condition
11) REST AREAS AND PICNIC AREAS (Not Used)				
12) EARTHWORKS, EMBANKMENTS AND CUTTINGS				
12.1	Slope Failure		12.1.1	General condition including any failures
13) ITS EQUIPMENT				
13.1	ITS Equipment - Maintenance		13.1.1	General condition
13.2	Dynamic Message Sign Equipment		13.2.1	General condition
13.3	CCTV Equipment		13.3.1	General condition
13.4	Vehicle Detection Equipment		13.4.1	General condition