# 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 | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **1) ROADWAY** | | | | | | *Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual.* | | | |
| **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 | Nil |
| **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% | Nil |
| | | | | | | 10ft straight edge used to measure rut depth for localized areas. | 1.2.3 | Depth of rut at any location greater than ½" | Nil |
| | | | | | | **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" | Nil |
| | | | | | | **d) Edge drop-offs** Physical measurement of edge drop-off level compared to adjacent surface | 1.2.5 | Occurrence of any failure | Nil |
| | | | | | | | 1.2.6 | Number of instances of edge drop-off greater than 2" | Nil |
| **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. | 100% |
| | | | | | | | 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.~~ NOT USED | |
| | | | | | | | 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. | 100% |
| | | | | | | | 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. | 100% |
| **1.3** | **Crossovers and other paved areas** | Crossovers and other paved areas are free of Defects | 24 hrs | 28 days | 6 months | **a) Potholes** | 1.3.1 | Number of potholes of low severity or higher | Nil |
| | | | | | | **b) Base failures** | 1.3.2 | NOT USED | Nil |
| **1.4** | **Joints in concrete** | Joints in concrete paving are sealed and watertight<br><br>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" | Nil |
| | | | | | | 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" | Nil |
| **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 | Nil |
| | | | | | | 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 | Nil |
| | | | | | | 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 | Nil |

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| **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% | Nil |
| | | | | | | 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 | Nil |
| | | | | | | Ditch: Maintain size and shape of ditch for proper drainage | 1.6.3 | Sides of ditches slumping or eroding, or obstructed by debris | Nil |
| | | | | | | 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" | Nil |
| | | | | | | Subgrade: Identify and repair any subgrade failures | 1.6.5 | Locations where subgrade failure is evident | Nil |
| **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. | Nil |
| **2.2** | **Drainage treatment devices** | Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation on Emergency. | 24 hrs | 28 days | 6 months | Visual inspection | 2.2.1 | Number of devices functioning correctly with means of operation displayed. | 100% |
| **2.3** | **Travel Way** | The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth. | 24 hrs | 28 days | 6 months | Visual inspection of water on surface. | 2.3.1 | Number of instances of hazardous water build-up. | Nil |
| **2.4** | **Discharge systems** | Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits. | 24 hrs | 28 days | 6 months | Visual inspection and records | 2.4.1 | Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits. | 100% |
| **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. | 100% |
| **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:<br>• undesirable vegetation<br>• debris and excessive bird droppings<br>• blocked drains, weep pipes manholes and chambers<br>• 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<br>• defects in pedestrian protection measure<br>• scour damage<br>• corrosion of rebar<br>• paint system failures<br>• 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 | Nil |
| | | | | | | ~~As above~~ | ~~3.1.2~~ | ~~Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual~~ | ~~100%~~ |

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| **3.2** | **Structure components** | i) Expansion joints are free of:<br>• dirt debris and vegetation<br>• defects in drainage systems<br>• loose nuts and bolts<br>• defects in gaskets<br>ii) The deck drainage system is free of all debris and operates as intended.<br><br>iii) Parapets are free of:<br>• loose nuts or bolts<br>• blockages of hollow section drain holes<br>• vegetation<br>• accident damage<br>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.<br>v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions is followed.<br>vi) Special finishes are clean and perform to the appropriate standards.<br>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 | Nil |
| | | | | | | 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. | Nil |
| **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]~~ 10 ft intervals | 3.3.1 | Occurrence of any instance where integral wearing surface thickness is less than ~~[50%]~~ 50% of design value | Nil |
| | | | | | | Cracks measured ~~at [3 ft] intervals~~ within designated 1,500 SF measurement areas 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~~ Instances where more than 150 linear ft of cracks exceeding 0.020 inches in width are present within any 1,500 SF measurement area. | Nil |
| | | | | | | De-lamination or spalling | 3.3.3 | Instances of de-lamination or spalling | Nil |
| **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 | Nil |
| | | | | | | | 3.4.2 | Instances of damaged or broken strand / wire | Nil |
| | | | | | | | 3.4.3 | Instances of stay cable damping system not operating as intended including failure to provide the minimum design level of damping | Nil |
| | | | | | | | 3.4.4 | Instances of stay cable acoustic monitoring system not operating as intended including failure to transmit measured information. | Nil |
| **3.5** | **Inspection and access equipment** | Inspection and access equipment is properly maintained including:<br><br>• Under-deck inspection systems such as maintenance travelers<br>• Fixed access and inspection platforms<br>• 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 | Nil |
| | | | | | | | 3.5.2 | Instances of defects in surface protection such as failures of coating systems to bare metal or loss of galvanizing | Nil |
| | | | | | | | 3.5.3 | Instances of failures to conform with relevant standards for fixed and mobile inspection facilities, hoists and lifts | Nil |
| | | | | | | | 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. | Nil |
| **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) | Nil |

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| | | | Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | | | | |
| | | | | | | | 3.6.2 | Instances of corrosion that would reduce the system resistance to below its intended design state | Nil |
| | | | | | | | 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 | Nil |
| **3.7** | **Corrosion protection systems** | Corrosion protection systems are intact and operating in line with design intent including:<br>• Paint systems for steel<br>• Concrete surface protection systems<br>• 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. | Nil |
| | | | | | | | 3.7.2 | Loss of galvanizing | Nil |
| | | | | | | Color determined by CIE 1976 L*a*b*utilizing a D65 illuminant and 10 degree observer | 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. | Nil |
| | | | | | | | 3.7.4 | Noncompliance with manufacturer's recommendations for the maintenance and re-application of coatings | Nil |
| **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. | Nil |
| | | | | | | | 3.8.2 | Instances of lightning protection system not operating as intended. | Nil |
| **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 | Nil |
| **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 | Nil |
| **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 | Nil |
| **4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS** | | | | | | | | | |
| **4.1** | **Pavement markings** | Pavement markings are:<br>• clean and visible during the day and at night<br>• whole and complete and of the correct color, type, width and length<br>• 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 | 100% |
| | | | | | | | 4.1.2 | Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for ~~white~~ yellow | 100% |
| | | | | | | 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 | Nil |
| | | | | | | | 4.1.4 | Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions. | Nil |
| | | | | | | **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 | 100% |
| **4.2** | **Raised Reflective Markings** | Raised reflective pavement markers are:<br>• clean and clearly visible<br>• of the correct color and type<br>• reflective or retroreflective in accordance with TxDOT standards<br>• correctly located, aligned and at the correct level<br><br>• are firmly fixed<br>• 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) | Nil |
| | | | | | | | 4.2.2 | A minimum of four markers are visible at 80' spacing when viewed under low beam headlights. | 100% |
| | | | | | | | 4.2.3 | Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers). | 100% |

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| **4.3** | **Delineators and Markers** | Object markers, mail box markers and delineators are:<br>• clean and visible<br>• of the correct color and type<br>• legible and reflective<br>• 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 | Nil |
| **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 | 100% |
| | | | | | | | 5.1.2 | Performance Sections with all guard rails and safety barriers free from defects | 100% |
| | | | | | | | 5.1.3 | Performance Sections with all guard rails and safety barriers at correct heights | 100% |
| | | | | | | | 5.1.4 | Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles | 100% |
| **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. | 100% |
| **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<br>ii) Identification markers are provided, correctly located, visible, clean and legible<br>iii) Visibility distances meet the stated requirements<br>iv) Obsolete and redundant signs are removed or replaced as appropriate<br>v) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements<br>vi) All structures and elements of the signing system are kept clean and free from debris and have clear access provided.<br>vii) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD<br>viii) Dynamic message signs are in an operational condition | 24 hrs | 28 days | 6 months | **a) Retroreflectivity**<br>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 | Nil |
| | | | | | | **b) Face damage**<br>Visual inspection | 6.1.2 | Number of signs in each Performance Section with face damage greater than 5% of area | Nil |
| | | | | | | **c) Placement**<br>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 | 100% |
| | | | | | | **d) Obsolete signs**<br>Visual inspection | 6.1.4 | Number of obsolete signs in each Performance Section | 100% |
| | | | | | | **e) Sign Information**<br>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 | 100% |
| | | | | | | **f) Dynamic Message Signs**<br>Visual inspection | 6.1.6 | Dynamic message signs are fully functioning | 100% |
| **6.2** | **Gantries** | Sign and signal mounting structures (including gantries) are structurally sound and free of:<br>• defects in surface protection systems<br>• loose nuts and bolts<br>• graffiti | 24 hrs | 28 days | 6 months | Visual inspection | 6.2.1 | Number with defects in surface protection system | Nil |
| | | | | | | | 6.2.1 | Number with loose nuts and bolts | Nil |
| | | | | | | | 6.2.3 | Number with graffiti | Nil |
| **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<br>ii) Lanterns are clean and correctly positioned<br>iii) Lighting units are free from any damage or vandalism<br>iv) Columns are upright, correctly founded, visually acceptable and structurally sound | 24 hrs | 28 days | 6 months | **a) Mainlane lights operable**<br>Night time inspection or automated logs | 8.1.1 | Performance Sections with less than 90% of lights functioning correctly at all times | Nil |

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| | | | | | | **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 | Nil |
| **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 | Nil |
| **8.3** | **Electrical Supply** | Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning | 24 hrs | 7 days | 28 days | Testing to meet NEC regulations, visual inspection | 8.3.1 | Inspection records showing safe installation and maintenance in each Performance Section | Nil |
| **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 | Nil |
| **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 | Nil |
| **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 | Nil |
| **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 | Nil |
| **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.<br>i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear.<br>ii) Steps, handrails and accesses are kept in a good condition.<br>iii) Access to all communication hubs, ground boxes, cabinets and sites is clear.<br>iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition.<br>v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced.<br>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. | 100% |
| **13.2** | **Dynamic Message Sign Equipment** | Dynamic Message Signs are free from faults such as:<br>i) Any signal displaying a message which is deemed to be a safety hazard.<br>ii) Failure of system to clear sign settings when appropriate.<br>iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions.<br>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 | 100% |

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| **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:<br>i) Failure of CCTV Systems to provide control offices with access and control of CCTV images.<br>ii) Failure of a CCTV camera or its video transmission system.<br>iii) Failure of a Pan / Tilt unit or its control system.<br>iv) Moisture ingress onto CCTV camera lens.<br>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 | 100% |
| **13.4** | **Vehicle Detection Equipment** | All equipment free of defects and operational problems such as:<br>i) Inoperable loops.<br>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 | 100% |
| | | | | | | | 13.4.2 | Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries. | 100% |
| | | | | | | | 13.4.3 | Insulation resistance to be > 50 meg ohms. | 100% |
| **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 | 100% |
| | | | | | | 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 | 100% |
| | | | | | | 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 | 100% |
| **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 | 100% |
| **16.3** | **Operational Plans** | Operate snow and ice clearance plans to maintain traffic flows during and after snowfall and restore the travel way to a clear condition as soon as possible. | 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 | 100% |
| **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. | 100% |
| **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 | 100% |
| | | | | | | 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 | 100% |
| **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 | 100% |
| **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 | 100% |
| **17.4** | **Temporary and permanent remedy** | Propose and implement temporary measures or permanent repairs to Defects arising from the incident.<br>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 | 100% |
| **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. | 100% |
| | | | | | | All work resulting from customer requests is scheduled within 48 hours of customer contact. | 18.1.2 | Demonstrated by O&M Records | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| | | | | | | Follow-up contact with the customer within 72 hours of initial inquiry. | 18.1.3 | Demonstrated by O&M Records | 100% |
| | | | | | | 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 | 100% |
| **18.2** | **Customer Contact Line** | Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified. | 24 hrs | 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. | Nil |
| **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,<br>ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways<br>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. | 100% |
| **19.2** | **Litter** | i) Keep the right of way in a neat condition, remove litter regularly.<br>ii) Pick up large litter items before mowing operations.<br>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. | 100% |

**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 Target is 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 Target is achieved for each Measurement Record.

# 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 | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **1) ROADWAY** | | | | | | *Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual.*<br><br>*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 | Nil |
| **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% | Nil |
| | | | | | | | 1.2.2 | • Frontage roads - 10% | Nil |
| | | | | | | 10ft straight edge used to measure rut depth for localized areas. | 1.2.3 | Depth of rut at any location greater than ½" | Nil |
| | | | | | | **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 -95" per mile** | 100% |
| | | | | | | ~~** 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 - 120" per mile** | 100% |
| | | | | | | | | *IRI throughout 98% of each Performance Section is less than or equal to:* | |
| | | | | | | | 1.2.6 | • Mainlanes, ramps - 120" per mile** | 100% |
| | | | | | | | 1.2.7 | • Frontage roads - 150" per mile** | 100% |
| | | | | | | | 1.2.8 | Mainlanes, ramps, 0.1 mile average - 150" per mile** | 100% |
| | | | | | | | 1.2.9 | Frontage roads, 0.1 mile average - 180" per mile** | 100% |
| | | | | | | 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** | 100% |
| | | | | | | **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" | Nil |
| | | | | | | | 1.2.12 | Occurrence of any failure | Nil |
| | | | | | | 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" | Nil |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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. | 100% |
| | | | | | | | 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. | 100% |
| | | | | | | | 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. | 100% |
| | | | | | | | 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. | 100% |
| **1.3** | **Crossovers and other paved areas** | Crossovers and other paved areas are free of Defects | 24 hrs | 28 days | 6 months | **a) Potholes** | 1.3.1 | Number of potholes of low severity or higher | Nil |
| | | | | | | **b) Base failures** | 1.3.2 | Number of base failures of low severity or higher | Nil |
| **1.4** | **Joints in concrete** | Joints in concrete paving are sealed and watertight<br>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" | Nil |
| | | | | | | 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" | Nil |
| **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 | Nil |
| | | | | | | 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 | Nil |
| | | | | | | 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 | Nil |
| **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% | Nil |
| | | | | | | 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 | Nil |
| | | | | | | Ditch: Maintain size and shape of ditch for proper drainage | 1.6.3 | Sides of ditches slumping or eroding, or obstructed by debris | Nil |
| | | | | | | 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" | Nil |
| | | | | | | Subgrade: Identify and repair any subgrade failures | 1.6.5 | Locations where subgrade failure is evident | Nil |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **2) DRAINAGE** | | | | | | | | | |
| **2.1** | **Pipes and Channels** | Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way. | 24 hrs | 28 days | 6 months | Visual inspection supplemented by CCTV where required to inspect buried pipe work. | 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. | Nil |
| **2.2** | **Drainage treatment devices** | Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation on Emergency. | 24 hrs | 28 days | 6 months | Visual inspection | 2.2.1 | Number of devices functioning correctly with means of operation displayed. | 100% |
| **2.3** | **Travel Way** | The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth. | 24 hrs | 28 days | 6 months | Visual inspection of water on surface. | 2.3.1 | Number of instances of hazardous water build-up. | Nil |
| **2.4** | **Discharge systems** | Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits. | 24 hrs | 28 days | 6 months | Visual inspection and records | 2.4.1 | Performance Sections with surface water discharge systems performing their proper function and discharging in compliance with the relevant legislation and permits. | 100% |
| **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. | 100% |
| **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:<br>• undesirable vegetation<br>• debris and excessive bird droppings<br>• blocked drains, weep pipes manholes and chambers<br>• 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<br>• defects in pedestrian protection measure<br>• scour damage<br>• corrosion of rebar<br>• paint system failures<br>• 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 | Nil |
| | | | | | | ~~As above~~ | ~~3.1.2~~ | ~~Performance Sections with structure components with condition states of one, in accordance with the TxDOT Field Inspection Manual~~ | ~~100%~~ |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **3.2** | **Structure components** | i) Expansion joints are free of:<br>• dirt debris and vegetation<br>• defects in drainage systems<br>• loose nuts and bolts<br>• defects in gaskets<br>ii) The deck drainage system is free of all debris and operates as intended. | 24 hrs | 28 days | 6 months | Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal 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 | Nil |
| | | iii) Parapets are free of:<br>• loose nuts or bolts<br>• blockages of hollow section drain holes<br>• vegetation<br>• accident damage<br>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.<br>v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions is followed.<br>vi) Special finishes are clean and perform to the appropriate standards.<br>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. | | | | 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. | Nil |
| **3.9** | **Non-bridge class culverts** | Non-bridge-class culverts are free of:<br>• vegetation and debris and silt<br>• defects in sealant to movement joints<br>• 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 | Nil |
| | | | | | | | 3.9.2 | Number of non-bridge class culverts with defects in sealant and movement joints in each Performance Section | Nil |
| | | | | | | | 3.9.3 | Number of non-bridge class culverts with scour damage in each Performance Section | Nil |
| **3.10** | **Gantries and High-masts** | Overhead sign bridges, high masts are structurally sound and free of:<br>• loose nuts and bolts<br>• 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 | Nil |
| | | | | | | | 3.10.2 | Number of gantries and high masts with defects in surface protection in each Performance Section | Nil |
| **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 | Nil |
| **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 | Nil |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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:<br>• blocked weep holes<br>• undesirable vegetation<br>• defects in joint sealants<br>• defects in pedestrian protection<br>• scour damage<br>• corrosion of reinforcing bars<br>• paint system failure<br>• concrete spalling<br>• 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 | 100% |
| | | Parapets free of:<br>• loose nuts and bolts<br>• blockage of drain holes<br>• undesirable vegetation<br>• impact damage<br>• 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. | Nil |
| **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 | Nil |
| **4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS** | | | | | | | | | |
| **4.1** | **Pavement markings** | Pavement markings are:<br>• clean and visible during the day and at night<br>• whole and complete and of the correct color, type, width and length<br>• 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 | 100% |
| | | | | | | | 4.1.2 | Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for ~~white~~ yellow | 100% |
| | | | | | | 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 | Nil |
| | | | | | | | 4.1.4 | Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions. | Nil |
| | | | | | | **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 | 100% |
| **4.2** | **Raised Reflective Markings** | Raised reflective pavement markers are:<br>• clean and clearly visible<br>• of the correct color and type<br>• reflective or retroreflective in accordance with TxDOT standards<br>• correctly located, aligned and at the correct level<br>• are firmly fixed<br>• 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) | Nil |
| | | | | | | | 4.2.2 | A minimum of four markers are visible at 80' spacing when viewed under low beam headlights. | 100% |
| | | | | | | | 4.2.3 | Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers). | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **4.3** | **Delineators and Markers** | Object markers, mail box markers and delineators are:<br>• clean and visible<br>• of the correct color and type<br>• legible and reflective<br>• 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 | Nil |
| **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.<br>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 | 100% |
| | | | | | | | 5.1.2 | Performance Sections with all guard rails and safety barriers free from defects | 100% |
| | | | | | | | 5.1.3 | Performance Sections with all guard rails and safety barriers at correct heights | 100% |
| | | | | | | | 5.1.4 | Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles | 100% |
| **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. | 100% |
| **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**<br>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 | Nil |
| | | ii) Identification markers are provided, correctly located, visible, clean and legible | | | | **b) Face damage**<br>Visual inspection | 6.1.2 | Number of signs in each Performance Section with face damage greater than 5% of area | Nil |
| | | iii) Visibility distances meet the stated requirements | | | | **c) Placement**<br>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 | 100% |
| | | iv) Obsolete and redundant signs are removed or replaced as appropriate | | | | **d) Obsolete signs**<br>Visual inspection | 6.1.4 | Number of obsolete signs in each Performance Section | 100% |
| | | v) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements<br>vi) All structures and elements of the signing system are kept clean and free from debris and have clear access provided.<br>vii) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD | | | | **e) Sign Information**<br>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 | 100% |
| | | viii) Dynamic message signs are in an operational condition | | | | **f) Dynamic Message Signs**<br>Visual inspection | 6.1.6 | Dynamic message signs are fully functioning | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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:<br>• defects in surface protection systems | 24 hrs | 28 days | 6 months | Visual inspection | 6.2.1 | Number with defects in surface protection system | Nil |
| | | • loose nuts and bolts | | | | | 6.2.1 | Number with loose nuts and bolts | Nil |
| | | • graffiti | | | | | 6.2.3 | Number with graffiti | Nil |
| **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<br>ii) Lanterns are clean and correctly positioned<br>iii) Lighting units are free from any damage or vandalism<br>iv) Columns are upright, correctly founded, visually acceptable and structurally sound | 24 hrs | 28 days | 6 months | **a) Mainlane lights operable**<br>Night time inspection or automated logs | 8.1.1 | Performance Sections with less than 90% of lights functioning correctly at all times | Nil |
| | | | | | | **b) Mainlane lights out of action**<br>Night time inspection or automated logs | 8.1.2 | Instances of more than two consecutive lights out of action | Nil |
| **8.2** | **Sign Lighting** | Sign lighting is fully operational | 24 hrs | 28 days | 6 months | Night time inspection or automated logs | 8.2.1 | Number of instances of more than one bulb per sign not working in each Performance Section | Nil |
| **8.3** | **Electrical Supply** | Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning | 24 hrs | 7 days | 28 days | Testing to meet NEC regulations, visual inspection | 8.3.1 | Inspection records showing safe installation and maintenance in each Performance Section | Nil |
| **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 | Nil |
| **8.5** | **High Mast Lighting** | i) All high mast luminaries functioning on each pole<br>ii) All obstruction lights are present and working (if required)<br>iii) Compartment door is secure with all bolts in place<br>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 | Nil |
| | | | | | | | 8.5.2 | Any other defects per the "general Performance Requirements" column | Nil |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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 | 100% |
| **9.2** | **Construction** | Integrity and structural condition of the fence is maintained | 24 hrs | 28 days | 6 months | Structural assessment if visual inspection warrants | 9.2.2 | Inspection records for fences and walls showing compliance with fence and wall requirements in each Performance Section | 100% |
| **9.3** | **Operation** | Fences, Walls, and Sound Abatement elements free of:<br>• blocked weep holes<br>• undesirable vegetation<br>• defects in joint sealants<br>• defects in pedestrian protection<br>• scour damage<br>• corrosion of reinforcing bars<br>• paint system failure<br>• concrete spalling<br>• impact damage<br>• 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 | 100% |
| **10) ROADSIDE MANAGEMENT** | | | | | | | | | |
| **10.1** | **Vegetated Areas - Except landscaped areas - General** | Vegetation is maintained so that:<br>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.<br>ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance.<br>iii) Grass or vegetation does not encroach into or on paved shoulders, main lanes, sidewalks, islands, riprap, traffic barrier or curbs.<br>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.<br>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. | 100% |
| | | | | | | **b) Encroachment** Visual inspection of instances of encroachment of vegetation | 10.1.2 | Number of occurrences of vegetation encroachment in each Performance Section | Nil |
| | | | | | | **c) Wildflowers** Visual Inspection with audit of process. | 10.1.3 | Adherence to vegetation management manuals | 100% |
| | | | | | | **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 | Nil |
| **10.2** | **Landscaped Areas** | i) All landscaped areas are maintained to their originally constructed condition. Landscaped areas are as designated in the plans.<br>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.<br>iii) The height of grass and weeds is kept between 2" and 8". Mowing begins before vegetation reaches 8 in.<br>iv) Damaged or dead vegetation is replaced.<br>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. | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cat 1 | Cat 1 | Cat 2 | | | | |
| | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | | |
| **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. | Nil |
| **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.<br>ii) Trees, brush and ornamentals are trimmed to insure they do not interfere with vehicles or sight distance, or inhibit the visibility of signs.<br>iii) Dead trees, brush, ornamentals and branches are removed. Potentially dangerous trees or limbs are removed.<br>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. | 100% |
| **10.5** | **Wetlands** | Wetlands are managed in accordance with the permit requirements. | 24 hrs | 7 days | 28 days | Visual inspection, assessment of permit issuers | 10.5.1 | Number of instances of permit requirements not met in each Performance Section | Nil |
| **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 | Nil |
| **12.2** | **Slopes - General** | Slopes are maintained in general conformance to the original graded cross-sections, the replacement of landscaping materials, reseeding and re-vegetation for erosion control purposes and removal and disposal of all eroded materials from the roadway and shoulders | 24 hrs | 28 days | 6 months | 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. | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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.<br>i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear.<br>ii) Steps, handrails and accesses are kept in a good condition.<br>iii) Access to all communication hubs, ground boxes, cabinets and sites is clear.<br>iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition.<br>v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced.<br>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. | 100% |
| **13.2** | **Dynamic Message Sign Equipment** | Dynamic Message Signs are free from faults such as:<br>i) Any signal displaying a message which is deemed to be a safety hazard.<br>ii) Failure of system to clear sign settings when appropriate.<br>iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions.<br>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 | 100% |
| **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:<br>i) Failure of CCTV Systems to provide control offices with access and control of CCTV images.<br>ii) Failure of a CCTV camera or its video transmission system.<br>iii) Failure of a Pan / Tilt unit or its control system.<br>iv) Moisture ingress onto CCTV camera lens.<br>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 | 100% |
| **13.4** | **Vehicle Detection Equipment** | All equipment free of defects and operational problems such as:<br>i) Inoperable loops.<br>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 | 100% |
| | | | | | | | 13.4.2 | Traffic Detector Loop circuit's inductance to be > 50 and < 1,000 micro henries. | 100% |
| | | | | | | | 13.4.3 | Insulation resistance to be > 50 meg ohms. | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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 | 100% |
| | | | | | | 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 | 100% |
| | | | | | | 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 | 100% |
| **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 | 100% |
| **16.3** | **Operational Plans** | Operate snow and ice clearance plans to maintain traffic flows during and after snowfall and restore the travel way to a clear condition as soon as possible. | 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 | 100% |
| **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. | 100% |
| **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 | 100% |
| | | | | | | 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 | 100% |
| **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 | 100% |
| **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 | 100% |
| **17.4** | **Temporary and permanent remedy** | Propose and implement temporary measures or permanent repairs to Defects arising from the incident.<br>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 | 100% |

| ELEMENT CATEGORY | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASURE-MENT REF | MEASUREMENT RECORD | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | 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. | 100% |
| | | | | | | All work resulting from customer requests is scheduled within 48 hours of customer contact. | 18.1.2 | Demonstrated by O&M Records | 100% |
| | | | | | | Follow-up contact with the customer within 72 hours of initial inquiry. | 18.1.3 | Demonstrated by O&M Records | 100% |
| | | | | | | 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 | 100% |
| **18.2** | **Customer Contact Line** | Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified. | 24 hrs | 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. | Nil |
| **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,<br>ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways<br>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. | 100% |
| **19.2** | **Litter** | i) Keep the right of way in a neat condition, remove litter regularly.<br>ii) Pick up large litter items before mowing operations.<br>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. | 100% |

**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 the Target is 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 Target is achieved for each Measurement Record.

# Texas Department of Transportation

## BOOK 2 – TECHNICAL PROVISIONS

## FOR

## US 181 HARBOR BRIDGE PROJECT

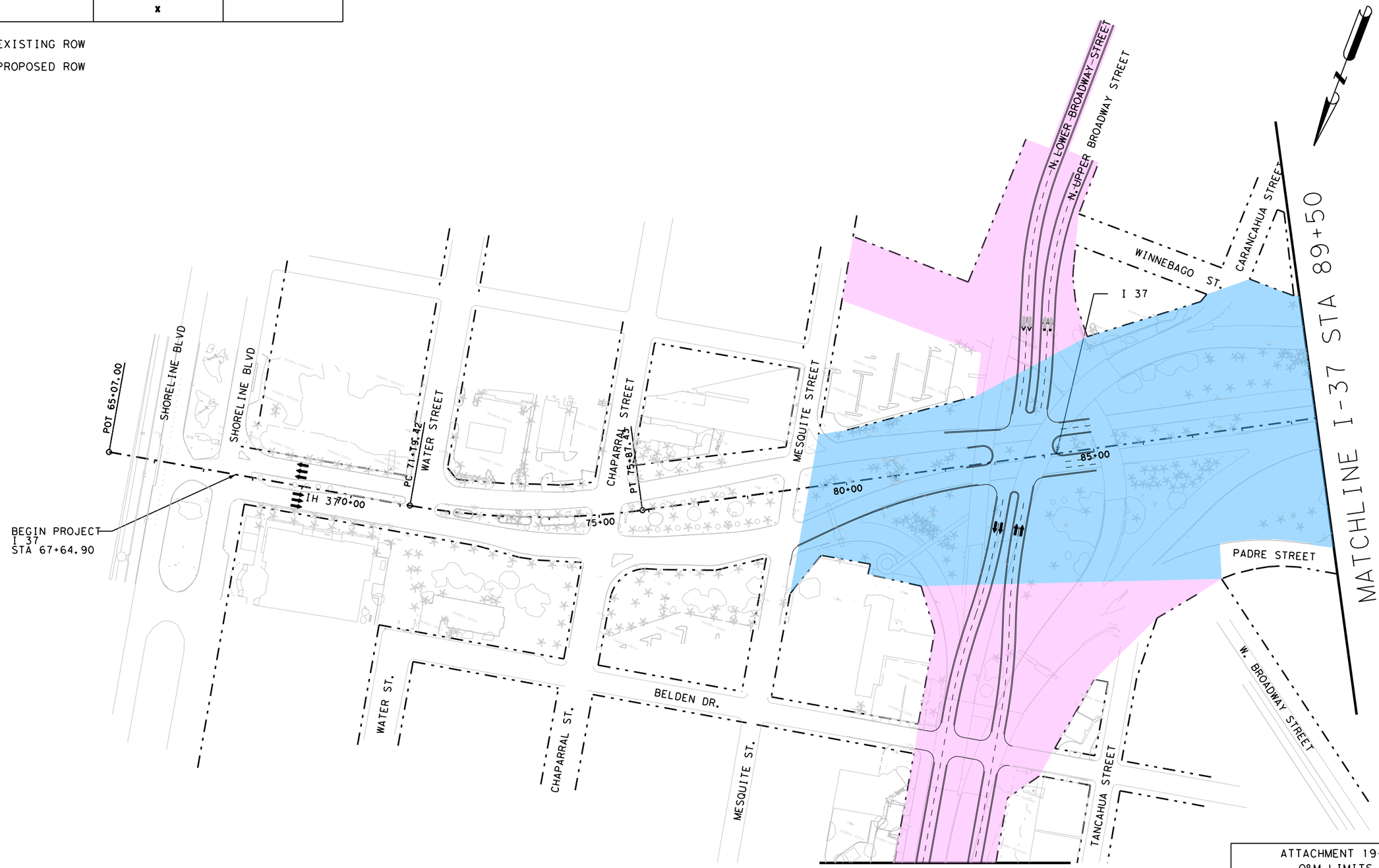
## DESIGN-BUILD PROJECT

# ATTACHMENT 19-4
## OPERATIONS AND MAINTENANCE LIMITS

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




MATCHLINE C-C
SEE SHEET 15 OF 15

ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

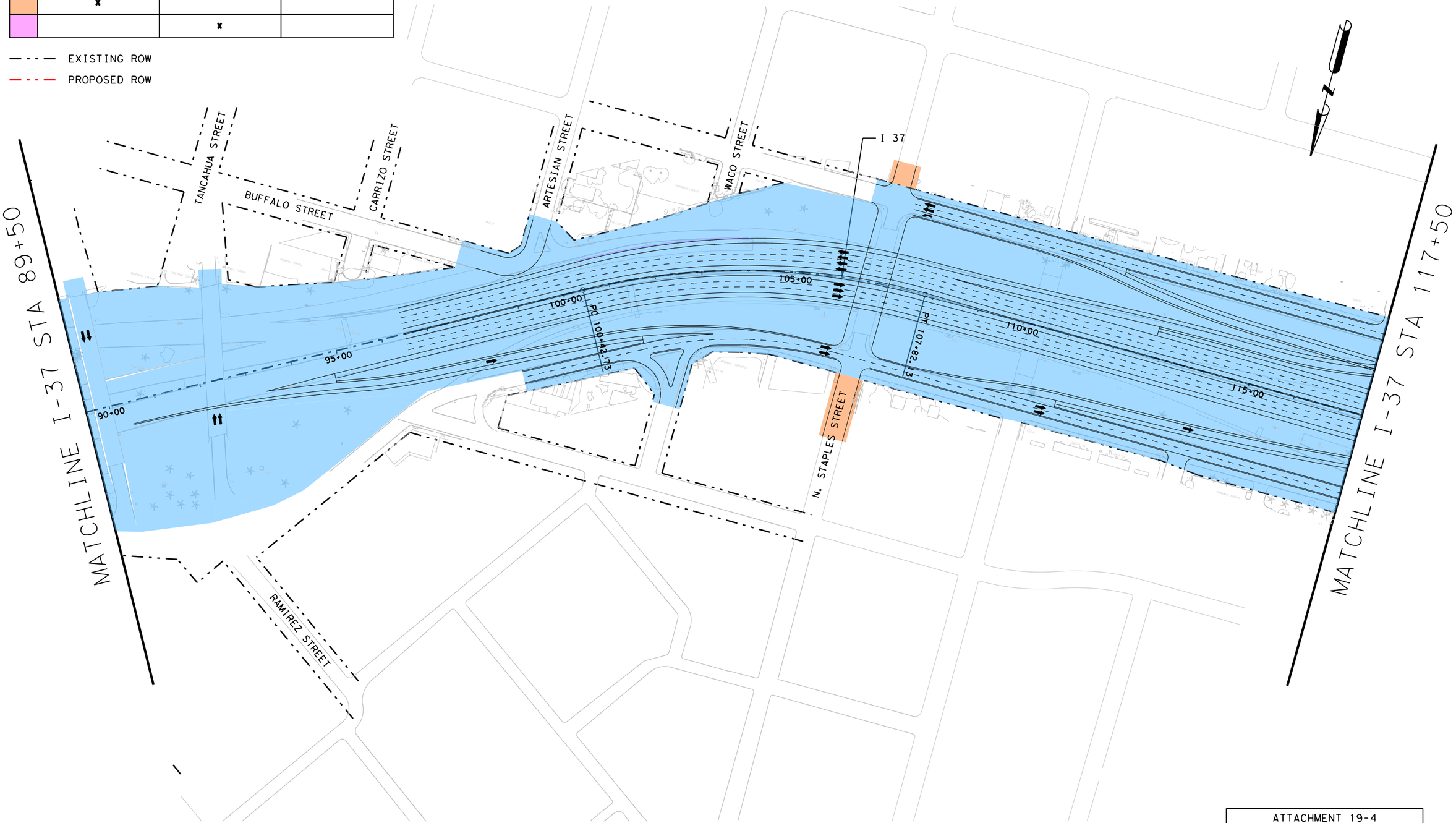
SHEET 1 OF 15

Scale: 1:200
Plotted on: 11/12/2014
Model Name: PLN031
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 2 OF 15

Scale: 1:200
Plotted on: 11/12/2014

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 12 OF 15

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW
PROPOSED ROW

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

MATCHLINE I-37 STA 117+50
MATCHLINE I-37 STA 145+50

MATCHLINE US-181 STA 1151+58.1
SEE SHEET 11 OF 15

ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

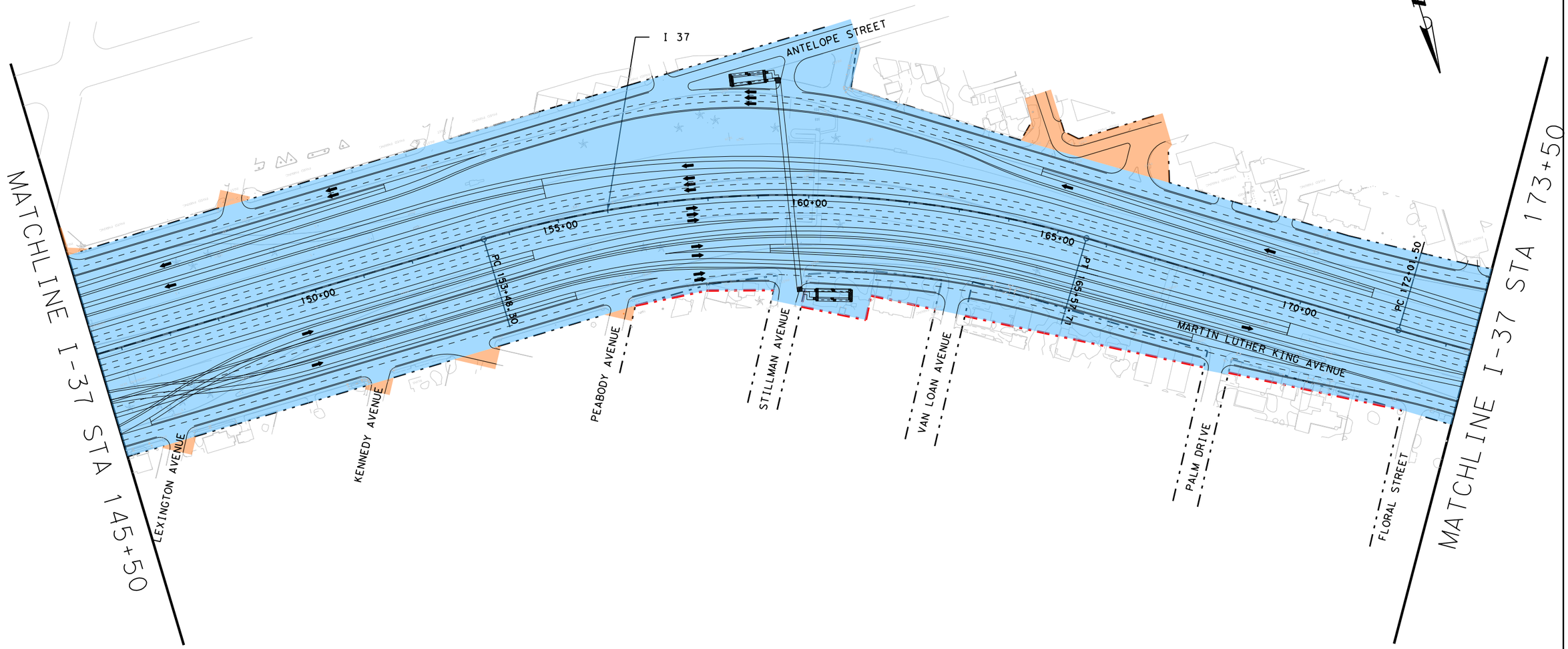
SHEET 3 OF 15

Scale: 1:200
Plotted on: 11/12/2014
Model Name: PLN033
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 4 OF 15

Scale: 1:200
Plotted on: 11/12/2014

Model Name: PLN034

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Design Filename: US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
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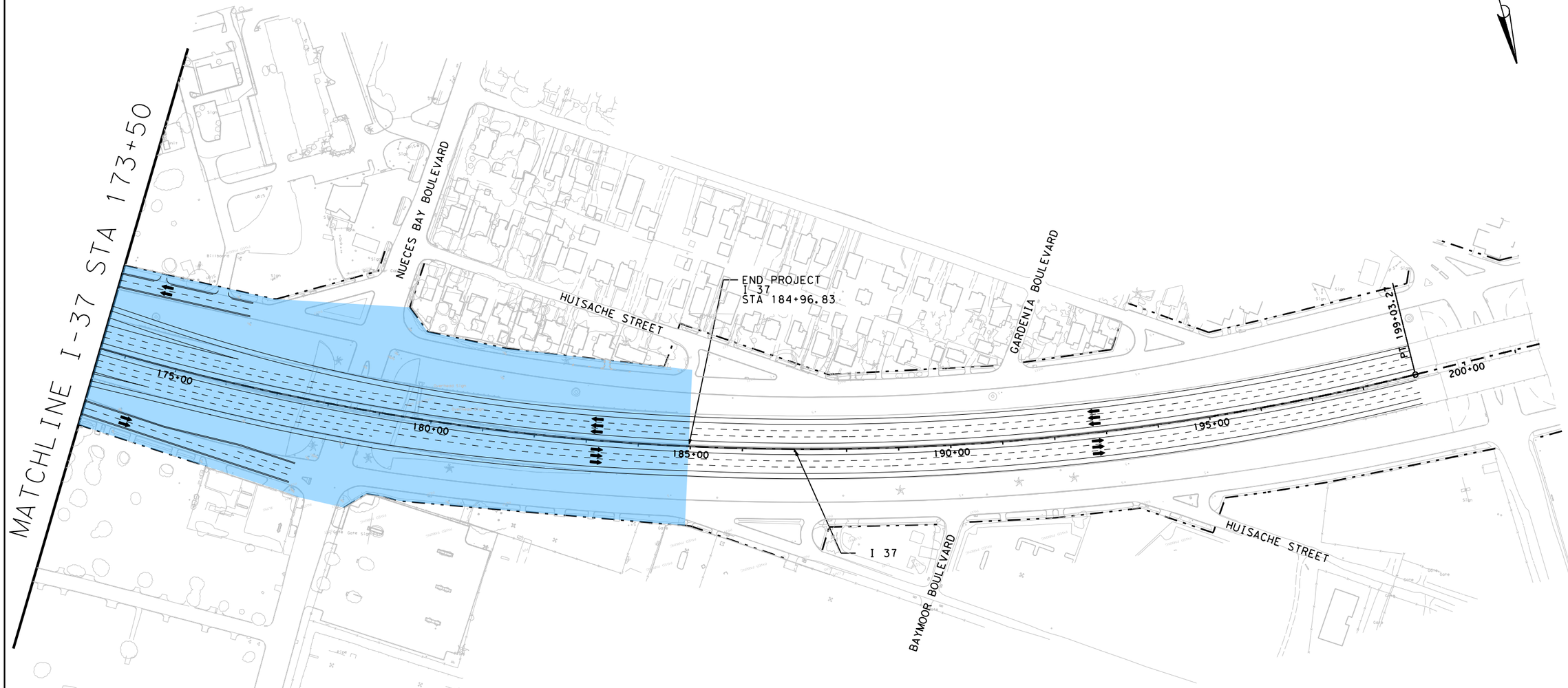
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 5 OF 15

Scale: 1:200
Plotted on: 11/12/2014

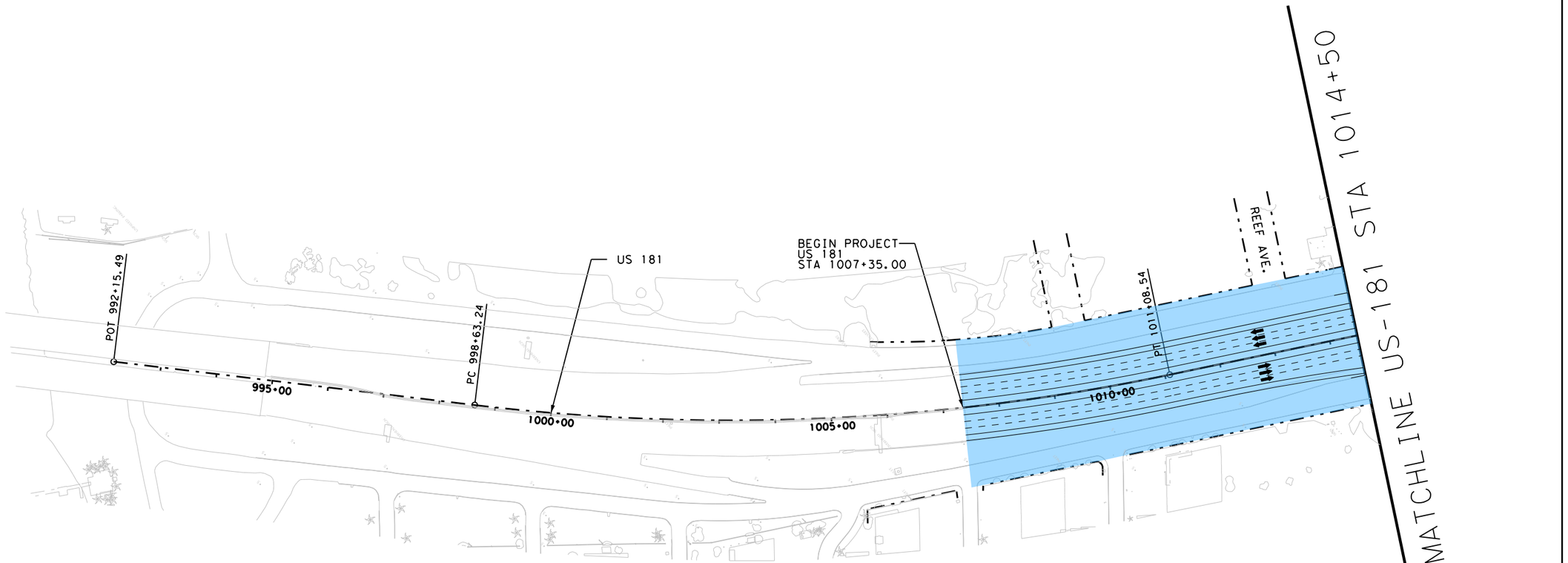
Model Name: PLN035

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 6 OF 15

Scale: 1:200
Plotted on: 11/12/2014
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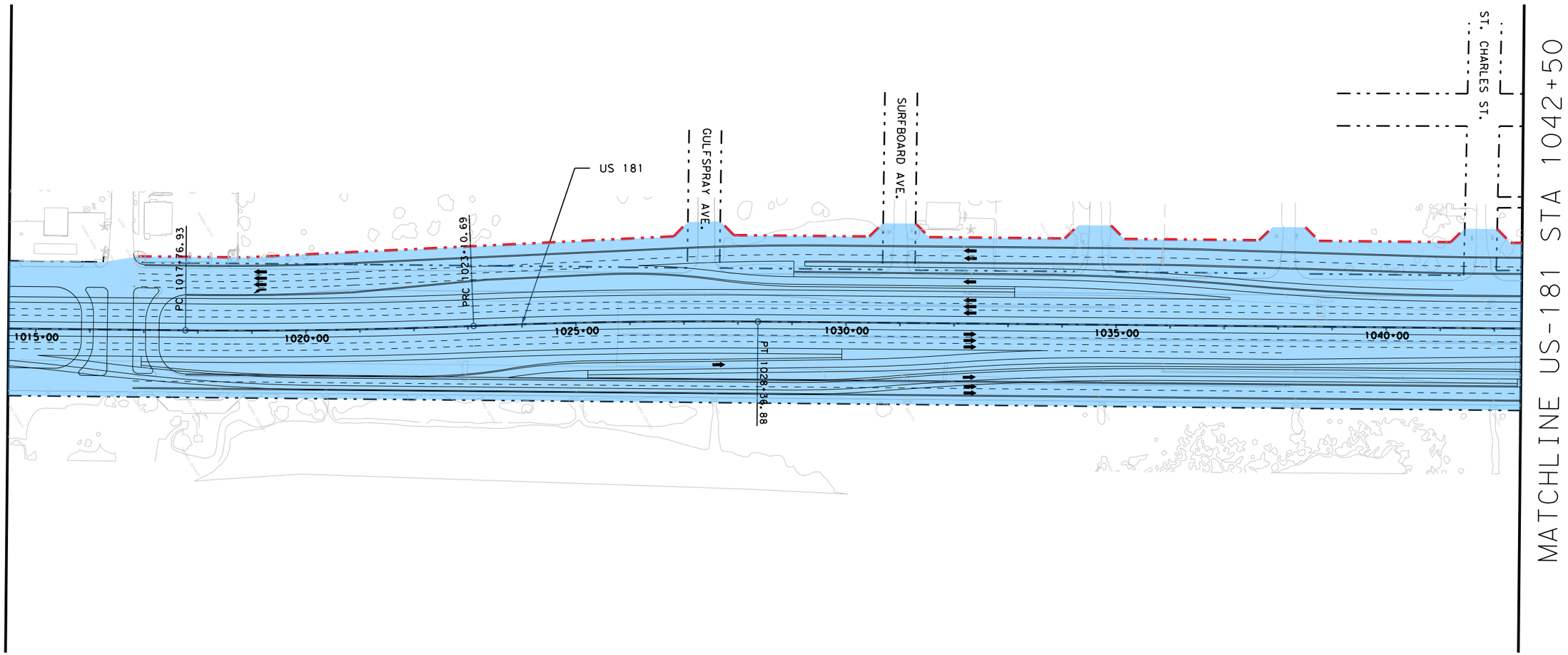
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 7 OF 15

Scale: 1:200
Plotted on: 11/12/2014
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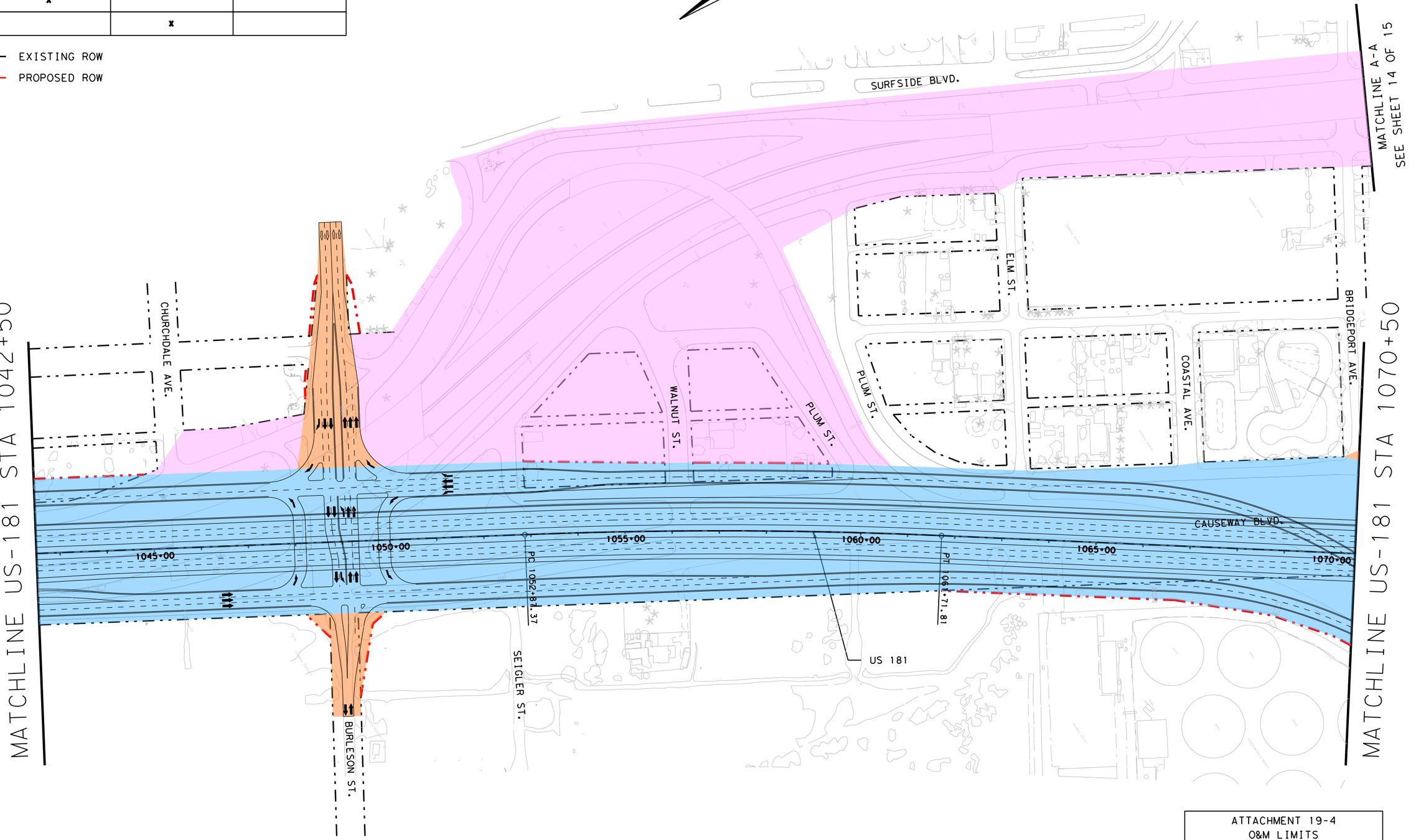
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename: US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 8 OF 15

Scale: 1:200
Plotted on: 11/12/2014

Model Name: PLN038

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW

MATCHLINE US-181 STA 1070+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.

MATCHLINE US-181 STA 1098+50

ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 9 OF 15

Scale: 1:200
Plotted on: 11/12/2014

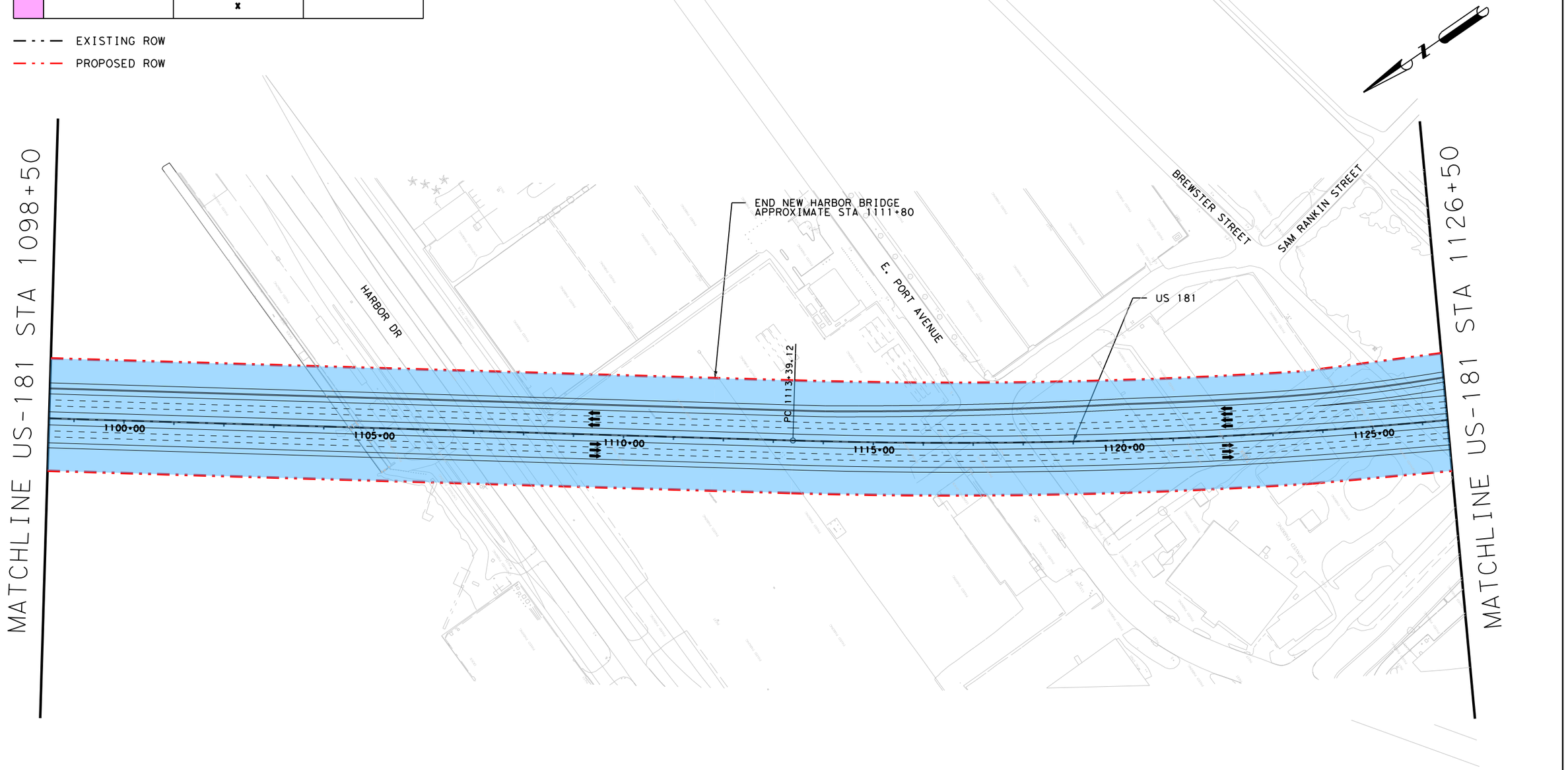
Model Name: PLN039

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

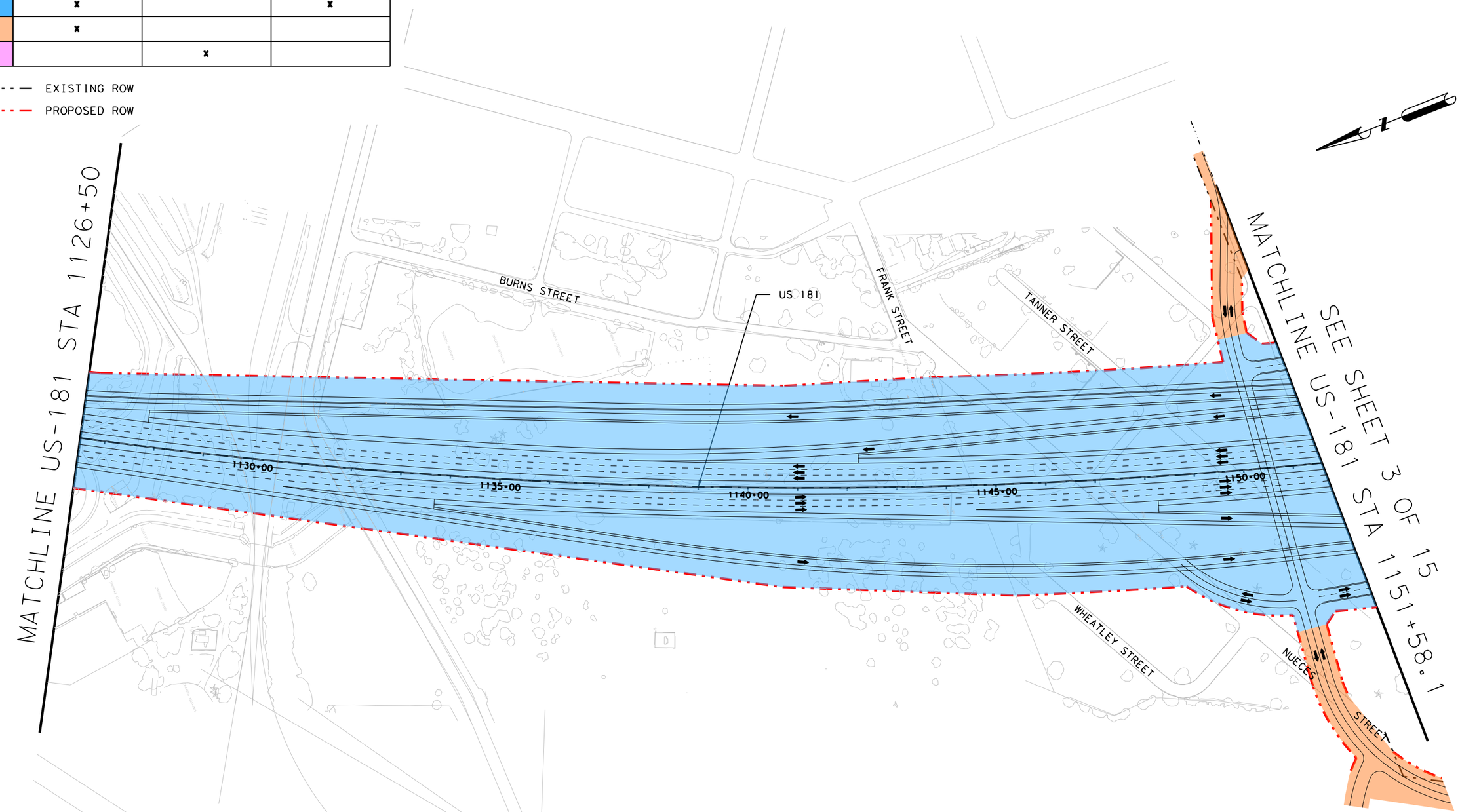
SHEET 10 OF 15

Scale: 1:200
Plotted on: 11/12/2014
Model Name: PLN040
Pen Table:TexasTwoStep*pentable*co.tbl
Design Filename:US181HB-E-RD-PLN00.dgn

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 11 OF 15

Scale: 1:200
Plotted on: 11/12/2014

Model Name: PLN041

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

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

ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 12 OF 15

Scale: 1:200
Plotted on: 11/12/2014

Model Name: PLN042

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW


ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 13 OF 15

Scale: 1:200
Plotted on: 11/12/2014

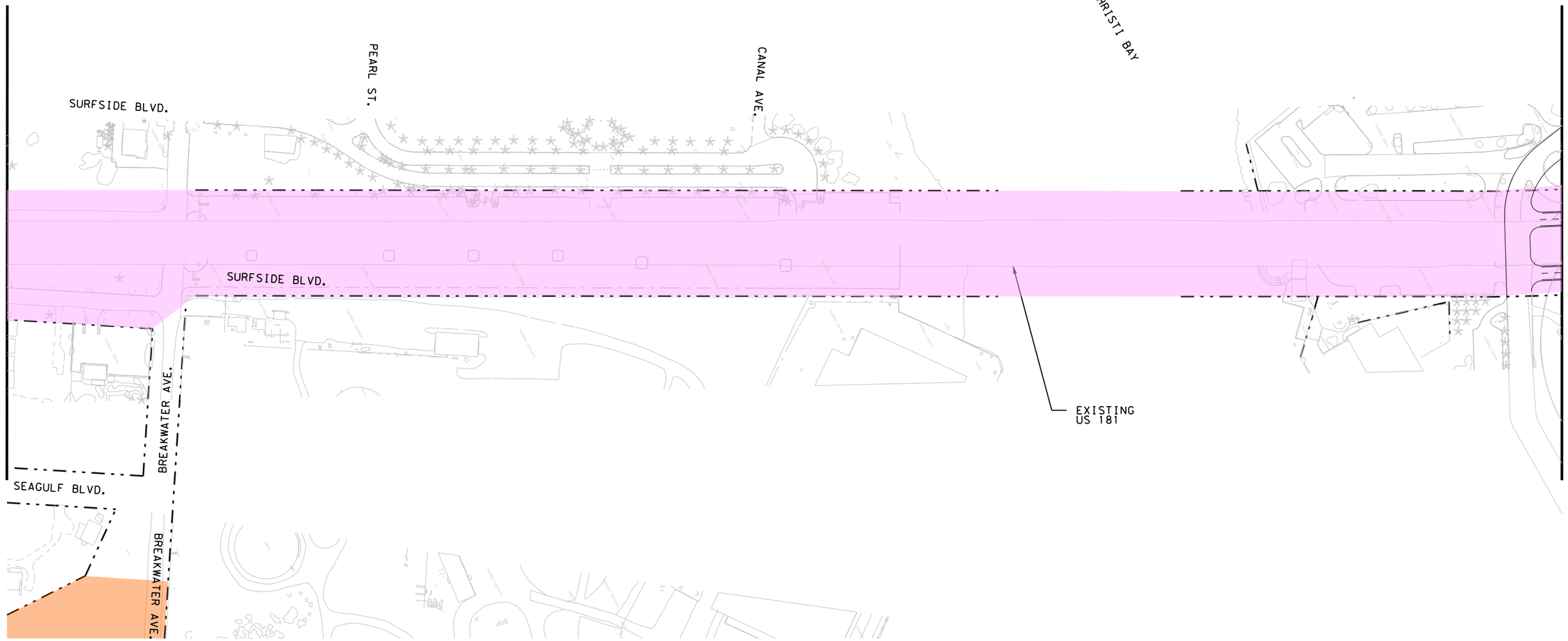
Model Name: PLN043

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 14 OF 15

Scale: 1:200
Plotted on: 11/12/2014

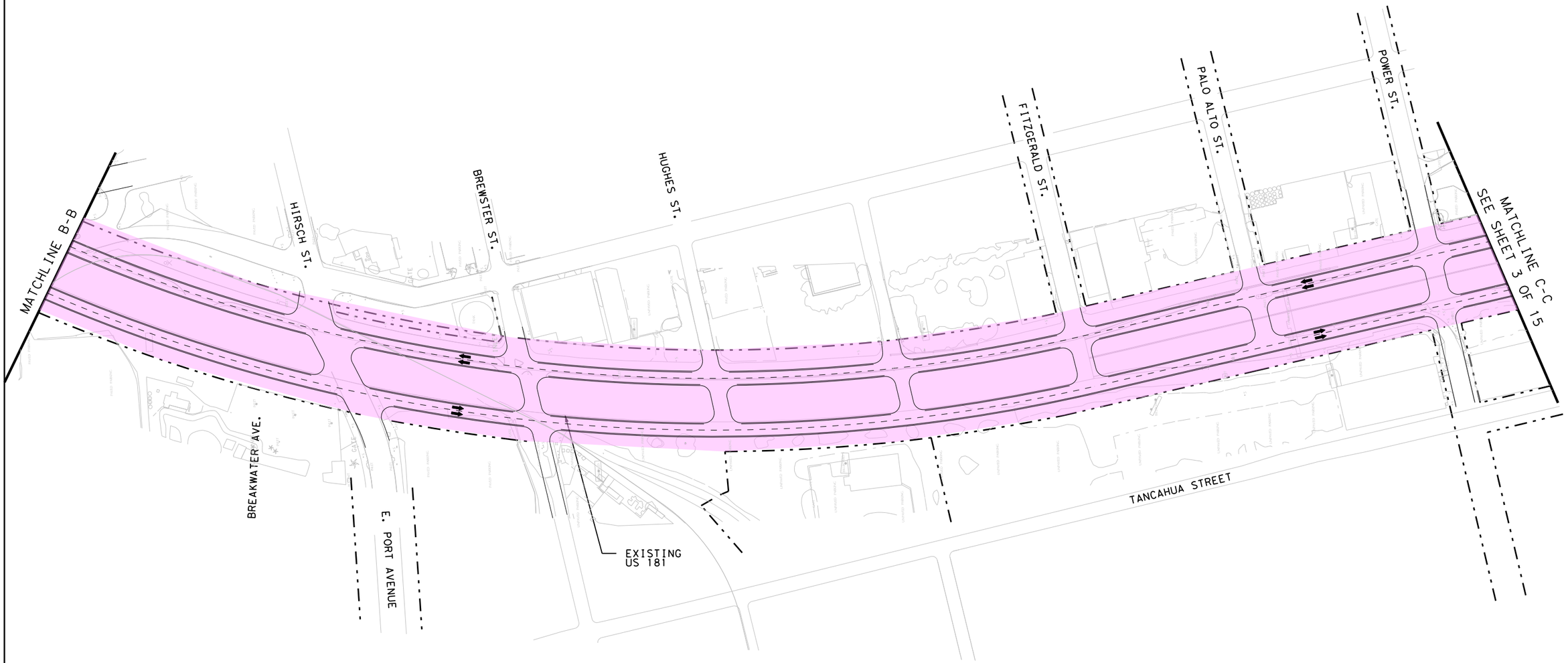
Model Name: PLN044

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

| | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 1) | O&M LIMITS FOR O&M DURING CONSTRUCTION (PHASE 2) | O&M LIMITS AFTER SUBSTANTIAL COMPLETION |
|---|---|---|---|
| | x | | x |
| | x | | |
| | | x | |

EXISTING ROW

PROPOSED ROW




ATTACHMENT 19-4
O&M LIMITS

SCALE: 1" = 200'

SHEET 15 OF 15

Scale: 1:200
Plotted on: 11/12/2014

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

## ATTACHMENT 19-5: ASSET CONDITION SCORE CALCULATION 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** | | | | | | | | | 3.5 |
| **1.1** | **Obstructions and debris** | Visual Inspection | 1.1.1 | Number of obstructions and debris | 25 | 2.4% | 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 | 1.0% | 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 | 1.0% | 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 | 1.0% | 4 | 0.04 | |
| | | **d) Edge drop-offs** Physical measurement of edge drop-off level compared to adjacent surface | 1.2.5 | Occurrence of any failure | 5 | 0.5% | 5 | 0.02 | |
| | | | 1.2.6 | 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 | 1.2.7 | • 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. | 10 | 1.0% | 5 | 0.05 | |
| | | | 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.~~ NOT USED | 0 | 0.0% | | 0.00 | |
| | | | 1.2.9 | • 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 | 1.0% | 2 | 0.02 | |
| | | | 1.2.10 | Instances where road users are warned of a potential skidding hazard where remedial action is identified. | 10 | 1.0% | 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 | 1.0% | 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 | 1.0% | 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 | 2.0% | 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 | 1.0% | 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 | 2.0% | 4 | 0.08 | |
| **3) STRUCTURES** | | | | | | | | | 3.8 |
| **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 | 4.9% | 5 | 0.24 | |
| | | As above | 3.1.2 | Not Used | | | | | |

## ATTACHMENT 19-5: ASSET CONDITION SCORE CALCULATION 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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 | 4.9% | 3 | 0.15 | |
| | | 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 | 4.9% | 4 | 0.20 | |
| **3.3** | **Integral wearing surface** | Concrete cover measured at ~~[10ft]~~ 10 ft intervals. | 3.3.1 | Occurrence of any instance where integral wearing surface thickness is less than ~~[50%]~~ 50% of design value | 25 | 2.4% | 4 | 0.10 | |
| | | Cracks measured ~~at [3 ft] intervals~~ within designated 1,500 SF measurement areas 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~~ Instances where more than 150 linear ft of cracks exceeding 0.020 inches in width are present within any 1,500 SF measurement area. | 25 | 2.4% | 2 | 0.05 | |
| | | De-lamination or spalling | 3.3.3 | Instances of de-lamination or spalling | 10 | 1.0% | 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 | 2.0% | 3 | 0.06 | |
| | | | 3.4.2 | Instances of damaged or broken strand / wire | 50 | 4.9% | 5 | 0.24 | |
| | | | 3.4.3 | Instances of stay cable damping system not operating as intended including failure to provide the minimum design level of damping | 20 | 2.0% | 5 | 0.10 | |
| | | | 3.4.4 | Instances of stay cable acoustic monitoring system not operating as intended including failure to transmit measured information. | 20 | 2.0% | 5 | 0.10 | |
| **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 | 1.0% | 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 | 1.0% | 1 | 0.01 | |
| | | | 3.5.3 | Instances of failures to conform with relevant standards for fixed and mobile inspection facilities, hoists and lifts | 10 | 1.0% | 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 | 1.0% | 3 | 0.03 | |
| **3.6** | **Ship impact protection system** | Visual inspection | 3.6.1 | Instances of marine boring (timber systems) | 10 | 1.0% | 5 | 0.05 | |
| | | | 3.6.2 | Instances of corrosion that would reduce the system resistance to below its intended design state | 10 | 1.0% | 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 | 1.0% | 4 | 0.04 | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **3.7** | **Corrosion protection systems** | Visual inspection | 3.7.1 | Instances of failure of coating system down to bare metal | 15 | 1.5% | 3 | 0.04 | |
| | | | 3.7.2 | Loss of galvanizing | 10 | 1.0% | 2 | 0.02 | |
| | | Color determined by CIE 1976 L*a*b*utilizing a D65 illuminant and 10 degree observer | 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. | 10 | 1.0% | 3 | 0.03 | |
| | | | 3.7.4 | Noncompliance with manufacturer's recommendations for the maintenance and re-application of coatings | 10 | 1.0% | 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 | 1.0% | 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~~ yellow | 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 | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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 | 2.0% | 3 | 0.06 | |
| | | | 5.1.2 | Performance Sections with all guard rails and safety barriers free from defects | 20 | 2.0% | 5 | 0.10 | |
| | | | 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 | 2.0% | 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 | 1.0% | 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 | 1.0% | 5 | 0.05 | |
| | | | 6.2.1 | Number with loose nuts and bolts | 10 | 1.0% | 4 | 0.04 | |
| | | | 6.2.3 | Number with graffiti | 10 | 1.0% | 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 | 2.4% | 4 | 0.10 | |
| | | **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 | 2.4% | 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 | 1.0% | 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 | 1.0% | 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 | 1.5% | 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 | 2.4% | 4 | 0.10 | |
| **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 | 1.0% | 4 | 0.04 | |
| **9) FENCES, WALLS AND SOUND ABATEMENT** | | | | | | | | | |
| **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 | 1.5% | 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 | 1.5% | 5 | 0.07 | |
| | | | | | | **100.0%** | | | |
| **AGGREGATED ASSET CONDITION SCORE FOR NEW HARBOR BRIDGE AFTER SUBSTANTIAL COMPLETION [6]** | | | | | | | | **3.82** | |

**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

| | |
|---|---|
| 90 | Number of non-zero Weightings |
| 1023 | Total of Weightings |
| 11.37 | 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 | 4.0% | 3 | 0.12 | 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 | 1.2% | 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 - 95" 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 - 120" 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 - 120" per mile** | 10 | 0.8% | 4 | 0.03 | |
| | | | 1.2.7 | • Frontage roads - 150" 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 | 1.6% | 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 | 1.6% | 5 | 0.08 | |
| | | | 1.2.13 | Number of instances of edge drop-off greater than 2" | 20 | 1.6% | 2 | 0.03 | |

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|---|---|---|---|---|---|---|---|---|---|
| **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 | 1.2% | 3 | 0.04 | |
| | | | 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 | 1.2% | 3 | 0.04 | |
| | | | 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 | 1.2% | 1 | 0.01 | |
| **1.3** | **Crossovers and other paved areas** | **a) Potholes** | 1.3.1 | Number of potholes of low severity or higher | 50 | 4.0% | 3 | 0.12 | |
| | | **b) Base failures** | 1.3.2 | Number of base failures of low severity or higher | 50 | 4.0% | 3 | 0.12 | |
| **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 | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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** | | | | | | | | | 3.3 |
| **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 | 4.0% | 2 | 0.08 | |
| | | | 3.1.2 | Not Used | | | | | |
| **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 | 4.0% | 3 | 0.12 | |
| | | 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 | 4.0% | 3 | 0.12 | |

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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 | 1.6% | 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 | 1.2% | 3 | 0.04 | |
| | | | 4.1.2 | Percentage of total length of pavement marking in each Performance Section meeting the minimum retroreflectivity 125 med/sqm/lx for ~~white~~ yellow | 15 | 1.2% | 3 | 0.04 | |
| | | 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 | 1.2% | 3 | 0.04 | |
| | | | 4.1.4 | Length of pavement marking in each Performance Section with spread more than 10% of specified dimensions. | 15 | 1.2% | 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 | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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 | |
| | | | 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 | 2.0% | 3 | 0.06 | |
| | | | 5.1.2 | Performance Sections with all guard rails and safety barriers free from defects | 20 | 1.6% | 3 | 0.05 | |
| | | | 5.1.3 | Performance Sections with all guard rails and safety barriers at correct heights | 20 | 1.6% | 2 | 0.03 | |
| | | | 5.1.4 | Performance Sections with all guard rails and safety barriers at correct distances from roadway obstacles | 20 | 1.6% | 4 | 0.06 | |
| **5.2** | **Impact Attenuators** | Visual inspection | 5.2.1 | Performance Sections will all impact attenuators appropriately placed and correctly installed. | 20 | 1.6% | 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 | 1.6% | 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)** | | | | | | | | | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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 | 2.0% | 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 | 2.0% | 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 | 1.2% | 3 | 0.04 | |
| | | | 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 | 1.6% | 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 | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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% | | | |

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| **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 | 1.2% | 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 | 1.2% | 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

| | |
|---|---|
| 94 | Number of non-zero Weightings |
| 1264 | Total of Weightings |
| 13.45 | Average Weighting |