

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

ATTACHMENT 19-1

PERFORMANCE AND MEASUREMENT TABLE
DURING CONSTRUCTION

ADDENDUM #3

SEPTEMBER 18, 2015

ATTACHMENT 19-1
PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|--------------------|-----|--------------|---------------------------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | | | |
| 1) PAVEMENT | | | | | | | | | |
| | | | | | | | Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's <i>Pavement Management Information System Rater's Manual</i> . Unless otherwise stated, pavement performance measurement records relate to 0.1-mile sections as described in the <i>Pavement Management Information System Rater's Manual</i> . | | |
| | 1.1 | Ruts | All roadways are free from surface depressions in wheel path. | 24 hrs | 28 days | 6 months | Visual inspection at travel speed 10 ft straight edge used to measure rut depth for localized areas. | Depth of rut at any location greater than 0.5" | N/A Nil |
| | 1.2 | Ride quality | All roadways have a smooth surface course (including bridge decks, covers, gratings, frames and boxes). | 24 hrs | 28 days | 6 months | Ride quality will not be measured. | | N/A |
| | 1.3 | Failures | All roadways are free from failures. | 2 hrs | 28 days | N/A | Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures | Occurrence of any failure | Nil |

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| | 1.4 | Edge drop-offs | All roadways are free from edge drop-offs | 24 hrs | 28 days | 6 months | Physical measurement of edge drop-off level compared to adjacent surface | Instances of edge drop-off greater than 2" | Nil |
| | 1.5 | Skid resistance | All roadways have adequate skid resistance Road Users warned of potential skidding hazards | 24 hrs | 28 days | 6 months | Skid resistance will not be measured | Instances where road Users warned of potential skidding hazard | N/A 100% |
| | 1.6 | Crossovers and other paved areas | Crossovers and other paved areas are free of defects based on visual survey | 2 hrs | 28 days | N/A | Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures | Occurrence of any failure | Nil |
| | 1.7 | Joints in concrete | Joints in concrete paving are sealed and watertight Longitudinal joint separation | 24 hrs | 28 days | 6 months | Visual inspection of joints Measurement of joint width and level difference of two sides of joints | Length unsealed joints greater than 1/4" Joint width more than 1" or faulting more than 1/4" | Nil Nil |

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| 2) DRAINAGE | | | | | | | | | |
| | 2.1 | Pipes, ditches, and channels | Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate including any vegetation, debris and silt from the point at which water drains from the travel way to the outfall or drainage way. | 24 hrs | 28 days | 6 months | Visual inspection following heavy rain | Identify areas of water back-up | Nil |
| | 2.2 | Drainage treatment devices | Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation in Emergency. | 24 hrs | 28 days | 6 months | Visual inspection | Devices functioning correctly with means of operation displayed | 100% |
| | 2.3 | Travel way | The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth. | 24 hrs | 28 days | 6 months | Visual inspection of water on surface | Instances of hazardous water build-up | Nil |
| | 2.4 | Discharge systems | Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits. | 24 hrs | 28 days | 6 months | Visual inspection and records | Non-compliances with legislation | Nil |
| | 2.5 | Protected species | Named species and habitats are protected. | 24 hrs | 28 days | 6 months | Visual inspection | Compliance with the requirement | 100% |
| | 2.6 | Erosion | Address erosion greater than 12" deep along ditches, swales, ponds, and channels | 24 hrs | 28 days | 3 months | Visual inspection and records | Compliance with the requirement | 100% |

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| | 2.7 | Channels and ditches – Permanent Erosion Control Measures | Where permanent erosion control measures such as rock or concrete riprap are utilized: repair undermined or damaged erosion control measures | 24 hrs | 28 days | 3 months | Visual inspection | Inspection records showing compliance | 100% |
| 3) STRUCTURES | | | | | | | | | |
| | 3.1 | Structure components (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) | (i) Substructures and superstructures are free of: <ul style="list-style-type: none"> • undesirable vegetation • debris and bird droppings • blocked drains, weep pipes manholes and chambers • blocked drainage holes in structural components • defects in joint sealants • defects in pedestrian protection measure • scour damage • corrosion of rebar • paint system failures • impact damage (ii) Expansion joints free of: <ul style="list-style-type: none"> • dirt, debris and vegetation • defects in drainage systems • loose nuts and bolts • defects in gaskets (iii) The deck drainage system is free of all debris and operates as intended. (iv) Parapets free of: | 24 hrs | 28 days | 6 months | Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge Inspection Manual, and the Federal Highway Administration’s Bridge Inspector’s Reference Manual. | Records as required in the TxDOT Bridge Inspection Manual Occurrences of condition rating below seven (7) for any deck, superstructure or substructure | 100% Nil |

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| | 3.1 cont. | | <ul style="list-style-type: none"> • loose nuts and bolts • blockages of hollow section drain holes • graffiti • vegetation • accident damage (v) Bearings and bearing shelves are clean. (vi) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions in the Structure Maintenance Manual is followed. (vii) Special finishes are clean and perform to the appropriate standards. (viii) 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 | | | |
| | 3.2 | Non-bridge class culverts | Non-bridge-class culverts are free of: <ul style="list-style-type: none"> • vegetation and debris and silt • defects in sealant to movement joints • scour damage | 24 hrs | 28 days | 6 months | Visual inspection | Number with vegetation, debris and silt Number with defects in sealant and movement joints Number with scour damage | Nil Nil Nil |

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| | 3.3 | Load ratings | All structures maintain the design load capacity. | 24 hrs | 28 days | 6 months | Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual. Load restriction requirements as per the TxDOT Bridge Inspection Manual | Number of load restrictions for Texas legal loads (including legally permitted vehicles) | Nil |
| | 3.4 | Gantries and high masts | Sign signal gantries, high masts are structurally sound and free of: <ul style="list-style-type: none"> • loose nuts and bolts • defects in surface protection systems | 24 hrs | 28 days | 6 months | Visual inspection | Number with loose assemblies Number with defects in surface protection | Nil Nil |
| | 3.5 | Access points | All hatches and points of access have fully operational and lockable entryways. | 24 hrs | 28 days | 6 months | Visual inspection | Number of Defects in locks or entryways | Nil |
| | 3.6 | Mechanically stabilized earth and retaining walls | Mechanically stabilized earth and retaining walls free of: <ul style="list-style-type: none"> • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage Parapets free of: <ul style="list-style-type: none"> • loose nuts and bolts | 24 hrs | 28 days | 6 months | Perform inspection and assessment using Good Industry Practice of all mechanically stabilized earth and retaining walls | Mechanically stabilized earth and retaining walls are 95% free of blocked weep holes, undesirable vegetation, defects in joint sealants, defects in pedestrian protection, scour damage, corrosion of reinforcing bars, paint system failure, concrete spalls and impact damage Number of parapet areas with loose nuts & bolts, blockage, undesirable vegetation, impact damage or concrete spalling in the Performance Section. | 100% Nil |

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| | 3.6 cont. | | <ul style="list-style-type: none"> blockage of drain holes undesirable vegetation impact damage concrete spalling | 24 hrs | 28 days | 6 months | | | |
| 4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS | | | | | | | | | |
| | 4.1 | Pavement markings | Pavement markings are: <ul style="list-style-type: none"> clean and visible during the day and at night whole and complete and of the correct color, type, width and length placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets | 24 hrs | 28 days | 6 months | a) Markings - General Visual inspection at 300 ft with low beams as per earlier TxDOT practice Physical measurement b) Profile Markings Visual inspection | Length found defective Length with more than 5% loss of area of material at any point Length with spread more than 10% of specified dimensions. Length performing its intended function and compliant with relevant regulations | Nil Nil Nil 100% |
| | 4.2 | Raised reflective markers | Raised reflective pavement markers are: <ul style="list-style-type: none"> clean and clearly visible of the correct color and type reflective or retroreflective as per TxDOT standard correctly located, aligned and at the correct level are firmly fixed are in a condition that will ensure that they remain at the correct level. | 24 hrs | 28 days | 6 months | Visual inspection | Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk) A minimum of four markers should be visible at 80' spacing when viewed under low beam headlights Uniformity (replacement raised reflective pavement markers have equivalent physical and performance characteristics to adjacent markers). | Nil 100% 100% |

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| | 4.3 | Delineators & markers | Object markers, mail box markers and delineators are: <ul style="list-style-type: none"> • clean and visible • of the correct color and type • legible and reflective • straight and vertical | 24 hrs | 28 days | 6 months | Visual inspection | Less than 5% of object markers or delineators defective or missing | 100% |
| 5) CURBS, GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS | | | | | | | | | |
| | 5.1 | Curbs | Curbs are free of cracks, chips and separation and are in good alignment. | 24 hrs | 28 days | 6 months | Visual inspection Physical measurement 10 feet straight edge will be used to measure each curb alignment | Continuous curb lengths where more than 10% of the length has defects such as cracks and chips Continuous curb lengths where more than 5% of the length has a separation exceeding 0.25" between curb face and adjacent roadway surface Deviation from original alignment greater than 1" | Nil Nil Nil |
| | 5.2 | Guard rails and safety barriers | All guardrails, safety barriers, and concrete barriers are maintained free of Defects. They are appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs shall be carried out in accordance with the requirements of NCHRP 350 standards. | 24 hrs | 28 days | 6 months | Visual inspection | Length of road restraint systems correctly installed Length free from defects Length at correct height Length at correct distance from roadway and obstacle | 100% 100% 100% 100% |
| | 5.3 | Impact attenuators | All impact attenuators are appropriately placed, correctly installed, and free of damage. | 24 hrs | 7 days | 6 months | Visual inspection | Number correctly placed and installed | 100% |

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| 6) TRAFFIC SIGNS | | | | | | | | | |
| | 6.1 | General – All signs | (i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects (ii) Identification markers are provided, correctly located, visible, clean and legible (iii) Sign mounting posts are vertical, structurally sound and rust free (iv) All break-away sign mounts are clear of silt or other debris that could impede break-away features and shall have correct stub heights (v) Obsolete and redundant signs are removed or replaced as appropriate (vi) Visibility distances meet the stated requirements (vii) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements (viii) All structures and elements of the signing system are kept clean and free from debris and have clear access provided. | 24 hrs | 28 days | 6 months | a) Retroreflectivity Visual inspection at 300 ft with low beams as per earlier TxDOT practice b) Face damage Visual inspection c) Placement Visual inspection d) Sign Information Visual inspection | Number of signs found nonreflective Number of signs with face damage greater than 5% of area Signs are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning Sign information is of the correct size, location, type and wording to meet its intended purpose | Nil Nil 100% 100% |

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| | 6.1 cont. | | (ix) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD | 24 hrs | 28 days | 6 months | | | |
| | 6.2 | General - Safety critical signs | Requirements as 6.1, Plus: "Stop," "Yield," "Do Not Enter," "One Way" and "Wrong Way" signs are clean legible and undamaged. | 2 hrs | 7 days | N/A | Visual inspection | Number of damaged safety critical signs | Nil |
| 7) TRAFFIC SIGNALS | | | | | | | | | |
| | 7.1 | General | (i) Traffic Signals and their associated equipment are: <ul style="list-style-type: none"> • clean and visible • correctly aligned and operational • free from damage caused by accident or vandalism (ii) Signal timing and operation is correct (iii) Contingency plans are in place to rectify Category 1 defects not immediately repairable to assure alternative traffic control is provided during a period of failure | 2 hrs | 24 hrs | 6 months | a) General condition Visual inspection b) Damage Visual inspection c) Signal timing Timed measurements d) Contingency plans Records review | Signals are clean and visible Signals are undamaged Installations have correct signal timings Full contingency plans are in place | 100% 100% 100% 100% |
| | 7.2 | Soundness | Traffic signals are structurally and electrically sound | 24 hrs | 28 days | 6 months | a) Structural soundness Visual inspection b) Electrical soundness Testing to meet NEC regulations | Inspection records showing safe installation and maintenance | 100% 100% |

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| | 7.3 | Identification marking | Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible | N/A | 28 days | 6 months | Visual inspection | Inspection records showing identification markers and other information are easily readable | 100% |
| | 7.4 | Pedestrian elements and vehicle detectors | All pedestrian elements and vehicle detectors are correctly positioned and fully functional at all times | 24 hrs | 28 days | 6 months | Visual Inspection | Inspection records showing compliance | 100% |
| 8) LIGHTING | | | | | | | | | |
| | 8.1 | Roadway lighting – General | (i) All lighting is free from defects and provides acceptable uniform lighting quality (ii) Lanterns are clean and correctly positioned (iii) Lighting units are free from accidental damage or vandalism (iv) Columns are upright, correctly founded, visually acceptable and structurally sound | 24 hrs | 28 days | 6 months | a) Mainlane lights operable Night time inspection or automated logs b) Mainlane lights out of action Night time inspection or automated logs | Performance Sections with less than 90% of lights functioning correctly at all times Instances of more than two consecutive lights not functioning | Nil Nil |
| | 8.2 | Sign lighting | Sign lighting is fully operational | 24 hrs | 28 days | 6 months | Night time inspection or automated logs | Instances of more than one bulb per sign not working | Nil |
| | 8.3 | Electrical supply | Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning | 24 hrs | 7 days | 28 days | Testing to meet NEC regulations, visual inspection | Inspection records showing safe installation and maintenance | 100% |
| | 8.4 | Access panels | All access panels in place at all times. | 24 hrs | 7 days | 28 days | Visual inspection | Instances of missing access panels | Nil |

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| | 8.5 | High mast lighting | (i) All high mast luminaries functioning on each pole (ii) All obstruction lights are present and working (if required) (iii) Compartment door is secure with all bolts in place (iv) All winch and safety equipment are correctly functioning and maintained without rusting or corrosion (for structural requirements refer to Element Category 3) | 24 hrs | 7 days | 28 days | Night time inspections or automated logs | Instances of two or more lamps not working per high mast pole Identification of other defects | Nil Nil |
| 9) FENCES, WALLS AND SOUND ABATEMENT | | | | | | | | | |
| | 9.1 | Design and location | Fences and walls act as designed and serve the purpose for which they were intended | 24 hrs | 28 days | 6 months | Visual inspection | Inspection records showing compliance in each Performance Section | 100% |
| | 9.2 | Construction - fences | Integrity and structural condition of the fence is maintained | 24 hrs | 28 days | 6 months | Structural assessment if visual inspection warrants | Inspection records showing compliance in each Performance Section | 100% |
| | 9.3 | Construction - walls | Integrity and structural condition of the walls are maintained | 24 hrs | 28 days | 6 months | Structural assessment if visual inspection warrants | Inspection records showing compliance in each Performance Section | 100% |
| | 9.4 | Operation | Fences, Walls, and Sound Abatement elements free of: <ul style="list-style-type: none"> • blocked weep holes • undesirable vegetation • defects in joint sealants • defects in pedestrian protection | 24 hrs | 28 days | 6 months | Structural assessment if visual inspection warrants | Inspection records showing compliance in each Performance Section | 100% |

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| | 9.4 cont. | | <ul style="list-style-type: none"> • scour damage • corrosion of reinforcing bars • paint system failure • concrete spalling • impact damage | 24 hrs | 28 days | 6 months | | | |
| 10) ROADSIDE MANAGEMENT | | | | | | | | | |
| | 10.1 | Vegetated areas – Except landscaped areas – General | Vegetation is maintained so that: (i) Height of grass and weeds is kept within the limits described for rural areas. Mowing begins before vegetation reaches the maximum height. (ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance. (iii) Grass or vegetation does not encroach into or on paved shoulders, mainlanes, sidewalks, islands, riprap, traffic barrier or curbs. (iv) A herbicide program is undertaken in accordance with the TxDOT Herbicide Manual to control noxious weeds and to eliminate grass in pavement or concrete. (v) A full width mowing cycle is completed after the first frost (vi) Wildflowers are preserved utilizing the guidelines in the | 24 hrs | 7 days | 28 days | a) Rural areas Physical measurement of height of grass and weeds b) Encroachment Visual inspection of instances of encroachment of vegetation c) Wildflowers Visual inspection with audit of process. d) Sight lines Visual inspection | Individual measurement areas to have 95% of height of grass and weeds between 5” and 30” Occurrences of vegetation encroachment in each Performance Section Adherence to vegetation management manuals Instances of impairment of sight lines or sight distance to signs | 100% Nil 100% Nil |

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| | 10.1 cont. | | mowing specifications and TxDOT Roadside Vegetation Manual. | 24 hrs | 7 days | 28 days | | | |
| | 10.2 | Landscaped areas | (i) All landscaped areas are maintained to their originally constructed condition. Landscaped areas are as designated in the Plans. (ii) Mowing, litter pickup, irrigation system maintenance and operation, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance, watering is undertaken as per MMP. (iii) The height of grass and weeds is kept between 2" and 8". Mowing begins before vegetation reaches 8". (iv) Damaged or dead vegetation is replaced. | 24 hrs | 7 days | 28 days | Visual inspection | Inspection records showing compliance | 100% |
| | 10.3 | Fire hazards | Fire hazards are controlled | 24 hrs | 7 days | 28 days | Visual inspection | Instances of dry brush or vegetation forming fire hazard | Nil |
| | 10.4 | Trees, brush and ornamentals | (i) Trees, brush and ornamentals on the right of way, except in established no mow areas, are trimmed in accordance with TxDOT standards. | 24 hrs | 7 days | 28 days | Visual inspection | Inspection records showing compliance | 100% |

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| | 10.4 cont. | | (ii) Trees, brush and ornamentals are trimmed to insure they do not interfere with vehicles or sight distance, or inhibit the visibility of signs. (iii) Dead trees, brush, ornamentals and branches are removed. Potentially dangerous trees or limbs are removed. (iv) All undesirable trees and vegetation are removed. Diseased trees or limbs are treated or removed by licensed contractors. | 24 hrs | 7 days | 28 days | | | |
| | 10.5 | Wetlands | Wetlands are managed in accordance with the permit requirements | 24 hrs | 7 days | 28 days | Visual inspection, assessment of permit issuers | Instances of permit requirements not met | Nil |
| | 10.6 | Sidewalks and pedestrian curb ramps | Maintain at a standard to be free of defects as follows: (i) unsealed cracks or joints (ii) broken sections (iii) vertical displacement or misalignment | 24 hrs | 7 days | 28 days | Visual inspection | Inspection records showing compliance with TxDOT Design Standards and Americans with Disabilities Act (ADA) requirements. | 100% |
| 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 | Recorded instances of slope failure | Nil |

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| | 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 | Inspection records showing compliance | 100% |
| | 12.3 | Slopes – Erosion | Slopes are maintained to prevent erosion leading to further deterioration | 24 hrs | 28 days | 3 months | Visual inspection | Length of erosion greater than six inches (> 6") deep | Nil |
| | 12.4 | Slopes - Permanent Erosion Control Measures | Where permanent erosion control measures such as rock or concrete riprap are utilized: repair undermined or damaged erosion control measures | 24 hrs | 28 days | 3 months | Visual inspection | Inspection records showing compliance | 100% |
| 13) ITS EQUIPMENT | | | | | | | | | |
| | 13.1 | ITS Equipment | All ITS equipment is fully functional and housing is functioning and free of defects. (i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear (ii) Steps, handrails and accesses are kept in a good condition (iii) Access to all communication hubs, ground boxes, cabinets | 24 hrs | 14 days | 28 days | Visual inspection | Inspection records showing compliance with requirements for maintenance of ITS equipment in each Performance Section. | 100% |

ATTACHMENT 19-1
PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|------------------|------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------|-----------------------------------|-------------------------------------------|---------------------------------------|--------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Perma- nent Remedy | Cat 2 Perma- nent Repair | | | |
| | 13.1 cont. | | <p>and sites is clear</p> <p>(iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition</p> <p>(v) All communication cable markers, cable joint markers and duct markers are visible and missing markers are replaced</p> <p>(vi) Backup power supply system is available at all times</p> | 24 hrs | 14 days | 28 days | | | |
| | 13.2 | Dynamic message sign equipment | <p>Dynamic message signs are free from faults such as:</p> <p>(i) Any signal displaying a message which is deemed to be a safety hazard</p> <p>(ii) Failure of system to clear sign settings when appropriate.</p> <p>(iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions</p> <p>(iv) Signs displaying an incorrect message.</p> | 2 hrs | 24 hrs | 14 days | Defect measurement dependent on equipment | Inspection records showing compliance | 100% |
| | 13.3 | CCTV equipment | CCTV Systems are free from faults that limit the availability of the operators to monitor the area network, | 2 hrs | 24 hrs | 14 days | Defect measurement dependent on equipment | Inspection records showing compliance | 100% |

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PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|--------------------------------------------------------|--------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Perma- nent Remedy | Cat 2 Perma- nent Repair | | | |
| | 13.3 cont | | such as: (i) Failure of CCTV Systems to provide control offices with access and control of CCTV images (ii) Failure of a CCTV camera or its video transmission system. (iii) Failure of a pan / tilt unit or its control system. (iv) Moisture ingress onto CCTV camera lens (v) Faults that result in significant degradation of CCTV images | 2 hrs | 24 hrs | 14 days | | | |
| | 13.4 | Vehicle detection equipment | All equipment free of defects and operational problems such as; (i) Inoperable loops. (ii) Malfunctioning camera controllers. | 2 hrs | 24 hrs | 28 days | Defect measurement dependent on equipment Traffic detector loops: Loop circuit's inductance to be > 50 and < 1,000 micro henries. Insulation resistance to be > 50 meg ohms. | Inspection records showing compliance Instances of loops out of compliance | 100% Nil |
| 14) TOLLING Facilities and Buildings (Not Used) | | | | | | | | | |

**ATTACHMENT 19-1
PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|---------------------------------|------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------|
| | | | | Cat 1 Hazard Mitiga- tion | Cat 1 Perma- nent Remedy | Cat 2 Perma- nent Repair | | | |
| 15) AMENITY | | | | | | | | | |
| | 15.1 | Graffiti | Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces | 4 hrs | 7 days | N/A | All graffiti is considered a Category 1 defect. | Inspection records showing compliance | 100% |
| | 15.2 | Animals | All dead or injured animals are removed | 2 hrs | N/A | N/A | Visual inspection | No dead or injured animals are present | 100% |
| | 15.3 | Abandoned vehicles and equipment | All abandoned vehicles and equipment are removed | 1 hr | 3 days | N/A | Visual inspection | No abandoned vehicles or equipment present | 100% |
| 16) SNOW AND ICE CONTROL | | | | | | | | | |
| | 16.1 | Travel lanes | Maintain travel way free from snow and ice | 1 hr or 2 hrs as noted. | N/A | N/A | Maximum 1 hr response time to complete manning and loading of spreading vehicles Maximum 2 hrs from departure from loading point to complete treatment and return to loading point Maximum 1 hr response time for snow and ice clearance vehicles to depart from base | Inspection records showing compliance | 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 | N/A | N/A | MMP details the process and procedures in place and followed | Inspection records showing compliance | 100% |

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PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|------------------------------|------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | | | |
| | 16.3 | Snow and ice control | Operate snow and ice clearance plans to maintain traffic flows during and after precipitation resulting in snowfall or ice and restore the travel way to a clear condition as soon as possible. | 2 hrs | N/A | N/A | MMP details the process and procedures in place and followed | Inspection records showing compliance | 100% |
| 17) INCIDENT RESPONSE | | | | | | | | | |
| | 17.1 | General | Respond to Incidents in accordance with the MMP. | 1 hr | N/A | N/A | Response times met for 98% of Incidents measured on a 1 year rolling basis. No complaints from Emergency Services. | Inspection records showing compliance | 100% |
| | 17.2 | Hazardous Materials | For any Hazardous Materials spills, comply with the requirements of the MMP. | 1 hr | N/A | N/A | MMP details the process and procedures in place and followed. | Inspection records showing compliance | 100% |
| | 17.3 | Structural assessment | Evaluate structural damage to structures and liaise with Emergency Services to ensure safe working in clearing the Incident | 1 hr | N/A | N/A | Inspections and surveys as required by Incident | Inspection reports showing compliance | 100% |
| | 17.4 | Temporary and permanent remedy | Propose and implement temporary measures and permanent remedies or repairs to Defects arising from the Incident. Ensure the structural safety of any structures affected by the Incident | 24 hrs | 28 days | N/A | Review and inspection of the Incident site | Performance Section inspection records showing compliance | 100% |

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PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|----------------------------------|------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Perma- nent Remedy | Cat 2 Perma- nent Repair | | | |
| 18) CUSTOMER RESPONSE | | | | | | | | | |
| | 18.1 | Response to inquiries | Timely and effective response to customer inquiries and complaints. | 48 hrs | 14 days | N/A | Contact the customer within 48 hours following initial customer inquiry. All work resulting from customer requests is scheduled within 48 hours of customer contact. Follow-up contact with the customer within 72 hours of initial inquiry. All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry. | Number of responses within specified times | 100% |
| | 18.2 | Customer contact line | Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified | 24 hrs | N/A | N/A | Instances of line out of action or unmanned | Operations records showing non availability including complaints from public. | Nil |
| 19) SWEEPING AND CLEANING | | | | | | | | | |
| | 19.1 | Obstructions and debris | Roadway and clear zone free from obstructions and debris including at a minimum objects, luminaire poles, and tires. | 2 hrs | N/A | N/A | Visual Inspection | Number of obstructions and debris | Nil |

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PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | DEFECT REMEDY PERIOD | | | INSPECTION AND MEASUREMENT METHOD | MEASUREMENT RECORD | TARGET |
|------------------|------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------|
| | | | | Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | | | |
| | 19.2 | Sweeping | (i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean, (ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways (iii) Remove all sweepings without stockpiling in the right of way and dispose of at approved tip. | 24 hrs | 3 days | N/A | Buildup of dirt, ice rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep | Inspection records showing compliance | 100% |
| | 19.3 | Litter | (i) Keep the Project in a neat condition, remove litter regularly (ii) Pick up large litter items before mowing operations. (iii) Dispose of all litter and debris collected at an approved solid waste site. | 24 hrs | 3 days | N/A | No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed. | Inspection records showing compliance | 100% |

NOTES FOR PERFORMANCE AND MEASUREMENT TABLE DURING CONSTRUCTION

- ¹ "Cat 1 Hazard Mitigation" shall be an action taken by DB Contractor to mitigate a hazard to Users or imminent risk of damage or deterioration to property or the environment.
² "Cat 1 Permanent Remedy" shall be an action taken by DB Contractor to restore the condition of an Element following "Cat 1 Hazard Mitigation" of a Category 1 Defect: (a) to the standard required for new construction; or (b) to a condition such that the Target is achieved for each "Measurement Record".
³ "Cat 2 Permanent Repair" shall be an action taken by DB Contractor to restore the condition of an Element for which a Category 2 Defect has been recorded: (a) to the standard required for new construction; or (b) to a condition such that the Target is achieved for each "Measurement Record".