



# Texas Department of Transportation

## CMA SPECIFICATION

### Item 9

## Attachment 9-1

### Performance and Measurement Table

November 2021

**ATTACHMENT 9-1: PERFORMANCE AND MEASUREMENT TABLE**

NOTES TO PERFORMANCE AND MEASUREMENT TABLE							
Note 1.	DB Contractor shall record a separate Defect upon failure to achieve any of the requirements set forth in a Measurement Record. DB Contractor shall complete hazard mitigation, temporary repair, and permanent repair of each Defect within the specified Defect Repair Period as set forth in <a href="#">Section 9.4.5</a> .						
Note 2.	DB Contractor shall conduct hazard mitigation with respect to a Category 1 Defect to mitigate the hazard to Users or imminent risk of damage or deterioration to property or the environment such that the hazard no longer exists. DB Contractor shall complete temporary repair where needed, monitor hazard mitigation, and take action to avoid a recurrence of the hazard prior to the permanent repair. Refer to <a href="#">Section 9.4.5</a> for TxDOT's rights to conduct hazard mitigation and temporary repair and the remedies available to TxDOT.						
Note 3.	DB Contractor shall conduct permanent repair of all Defects to restore the condition of a Maintained Element: (a) to the standard required for new construction; or (b) to a condition such that the Measurement Record is achieved.						
Note 4.	Unless stated otherwise only in this table, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual, TxDOT Designation TEX-1001-S "Test Procedure for Operating Inertial Profilers and Evaluating Pavement Profiles" and TxDOT Specification No. TxDOT 968-62-65 "Pavement Condition Data Collection Services".						
Note 5.	For Element Category 1.1 (ride quality) the Performance Requirements shall apply to all mainlanes and frontage roads and to ramps, direct connectors, and other roadways including cross streets greater than or equal to 0.5 miles in length within the Maintenance Limits.						
Note 6.	Pavement distress data includes distresses identified directly by automated methods and distresses revealed by post-processing of visual images obtained during data collection by TxDOT certified visual distress raters for flexible and rigid pavements.						
Note 7.	For travel lane ride quality: (i) Performance Requirements for the Second Maintenance Term shall come into effect for Performance Sections that do not meet the Performance Requirements in the Initial Maintenance Term only after DB Contractor has restored the Initial Maintenance Term ride quality through permanent repair; and (ii) Performance Requirements for the Third Maintenance Term shall come into effect for Performance Sections that do not meet the Performance Requirements in the Second Maintenance Term only after DB Contractor has restored the Second Maintenance Term ride quality through permanent repair.						
Note 8.	Subject to <a href="#">Section 9.4.4</a> , for every Performance Section which does not meet the travel lane ride quality Performance Requirement as demonstrated by the annual pavement Specialist Inspection in year Y, the permanent repair to restore ride quality shall be completed prior to the date of the annual pavement Specialist Inspection in year Y+1. For every Performance Section with average IRI > 120" per mile, the permanent repair to restore ride quality shall be completed no later than 6 months after the ride quality Defect is first identified.						
MAINTAINED ELEMENT CATEGORY	REF.	MAINTAINED ELEMENT	PERFORMANCE OBJECTIVE	DEFECT REPAIR PERIOD	INSPECTION AND MEASUREMENT METHOD (See Note 4)	REF.	MEASUREMENT RECORD (See Note 1)
HAZARD MITIGATION AND PERMANENT REPAIR OF CATEGORY 1 DEFECTS							
1) PAVEMENT	0.1	All Maintained Elements	Provide hazard mitigation and permanent repair to any Category 1 Defect in a pavement Maintained Element.	24 hours hazard mitigation (Note 2)	The inspection and measurement method for the identification of Category 1 Defects may include any of the methods in this Table.	0.1.1	No Category 1 Defects, including but not limited to: any failure as defined in TxDOT PMIS System Rater's Manual.
2) DRAINAGE	0.2		Provide hazard mitigation and permanent repair to any Category 1 Defect in a drainage system Maintained Element.	3 months permanent repair (Note 3)		0.2.1	No Category 1 Defects, including but not limited to: any failure of a drainage system that permits water to accumulate on the travel way to the extent that such water would represent a hazard because of its position or depth.
3) STRUCTURES	0.3		Provide hazard-mitigation and permanent repair to any Category 1 Defect in a structures Maintained Element.			0.3.1	No Category 1 Defects, including but not limited to: any structural condition, loading event, deflection, crack or settlement that exceeds the design expectation for the Element.
4) EARTHWORK	0.4		Provide hazard mitigation and permanent repair to any Category 1 Defect in an earthwork Maintained Element.			0.4.1	No Category 1 Defects, including but not limited to: any settlement, earthwork instability or erosion event threatening user safety.
5) GENERAL	0.5		Provide hazard mitigation and permanent repair to any other Category 1 Defect in any Maintained Element.			0.5.1	No other Category 1 Defects, including any other Defect that meets the definition of a Category 1 Defect as defined in <a href="#">Section 9.4.3</a> .  [The following criteria for a Category 1 Defect are included in Section 9.4.3: • Represents an immediate or imminent health or safety hazard to Users or road workers; • There is a risk of immediate or imminent structural failure or deterioration; • There is an immediate or imminent risk of damage to a third party's property; or • There is an immediate or imminent risk of damage to the environment. ]
PERMANENT REPAIR OF ALL OTHER DEFECTS NOT CLASSIFIED AS CATEGORY 1 DEFECTS							
1) PAVEMENT GENERAL							

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	1.1	Travel Lane Ride Quality	All roadways have a smooth surface course.	See Note 8	TxDOT Designation TEX-1001-S "Test Procedure for Operating Inertial Profilers and Evaluating Pavement Profiles" (See Note 5)	1.1.1	For each Performance Section, excluding Performance Sections with bridge deck and/or bridge approach slab, average IRI shall meet the following criteria:  <b>Initial Maintenance Term:</b> from Final Acceptance to end of Initial Maintenance Term (years 1 - 5)  Asphalt Pavement • Mainlanes, Ramps, Direct Connectors - IRI ≤ 85" per mile • All other roadways - IRI ≤ 95" per mile  Concrete Pavement • Mainlanes, Ramps, Direct Connectors - IRI ≤ 95" per mile • All other roadways - IRI ≤ 105" per mile  <b>Second Maintenance Term:</b> 5 years from Final Acceptance (years 6 - 10) - See Note 7  Asphalt Pavement • Mainlanes, Ramps, Direct Connectors - IRI ≤ 95" per mile • All other roadways - IRI ≤ 110" per mile  Concrete Pavement • Mainlanes, Ramps, Direct Connectors - IRI ≤ 105" per mile • All other roadways - IRI ≤ 120" per mile  <b>Third Maintenance Term:</b> 10 years from Final Acceptance (years 11 - 15) - See Note 7  • All roadways - IRI ≤ 120" per mile
		Travel Lane Localized Roughness	No localized areas of roughness within travel lanes. This shall include local bumps, settlements, heaves, and discontinuities at covers and frames that do not show up on the IRI profile reported in item 1.1.1.	6 months	Section 7 of TxDOT Designation TEX-1001-S "Test Procedure for Operating Inertial Profilers and Evaluating Pavement Profiles"	1.1.2	For each Performance Section, no localized roughness deviations calculated in accordance with the method set forth in Section 7 of TEX-1001-S exceeding 1/2" or less than -1/2" (positive deviations are bumps and negative deviations are dips).  <i>[This inspection and measurement is not included in the annual Specialist Inspection program but may be used at TxDOT's sole discretion and compliance is required at all times.]</i>
<b>1) PAVEMENT GENERAL</b>							
	1.2	Discontinuities at bridge approaches	All bridge deck approaches to have a smooth surface with no discontinuities exceeding stated measurement in any travel lane or shoulder.	6 months	10-ft straightedge used to measure discontinuities for localized areas.	1.2.1	For each Performance Sections that include a bridge deck and/or bridge approach slab, maximum 1/2" variation of the pavement surface from the testing edge of the straightedge between any two straightedge contact points with the pavement surface, measured at any location within the 100 feet length of pavement on either side of the bridge deck. For clarification, in addition to measurements in which both ends of the straightedge have contact points on pavement approach to structure, this measurement shall allow one contact point of the straightedge on the traveled surface supported by the structure and the other contact point on the pavement approach to the structure.  <i>[This inspection and measurement is not included in the annual Specialist Inspection program but may be used at TxDOT's sole discretion and compliance is required at all times.]</i>
		Discontinuities in localized areas and crossovers	All localized areas such as crossovers to have a smooth surface course with no discontinuities exceeding specified requirement in Measurement Record.			1.2.2	For each Performance Section measured in localized areas, excluding bridge decks and the 100 feet length of pavement on either side of the bridge decks, maximum 1/2" variation of the pavement surface from the testing edge of the straightedge between any two straightedge contact points with the pavement surface.  <i>[This inspection and measurement is not included in the annual Specialist Inspection program but may be used at TxDOT's sole discretion and compliance is required at all times.]</i>

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MAINTAINED ELEMENT CATEGORY	REF.	MAINTAINED ELEMENT	PERFORMANCE OBJECTIVE	DEFECT REPAIR PERIOD	INSPECTION AND MEASUREMENT METHOD (See Note 4)	REF.	MEASUREMENT RECORD (See Note 1)
	1.3	Edge drop-offs and other edge defects	No edge drop-offs or edge breaks exceeding stated measurements.	3 months	Visual inspection	1.3.1	For each Performance Section: <ul style="list-style-type: none"> <li>No instances of lane-to-lane or lane- to-shoulder separation or drop-off greater than 1/2" for more than 10 feet in length.</li> <li>No instances of shoulder to adjacent non-vehicular area drop off greater than 2" for more than 10 feet in length.</li> <li>No instances of build-up of material in non-vehicular area adjacent to shoulder with height greater than 3" for more than 10 feet in length.</li> <li>No more than 50 cumulative feet of edge breaking greater than 4" wide.</li> </ul>
<b>1a) PAVEMENT (ASPHALT)</b>							
	1a.1	Ruts	All roadways (including ramps) are free from surface depressions in wheel path exceeding measurement record thresholds.	6 months	a. Depth as measured using an automated device in compliance with TxDOT Specification 968-62-65 Section 10.4.2. b. 10-ft straight edge used to measure rut depth for localized areas.	1a.1.1	No depth of rut at any location greater than 1/2" for more than 10 feet in length.
	1a.2	Cracking	All roadways (including shoulders and ramps) are free from cracking of any type exceeding measurement record thresholds. (Cracking types include longitudinal, transverse, alligator and block cracking).	6 months	a. Pavement surface distresses measured using the methods identified in TxDOT Specification 968-62-65 Section 10.4.5. (See Note 6) b. Visual inspection	1a.2.1	All cracks exceeding 1/4" wide with a length exceeding 5 feet shall be sealed within 6 months of first identification.
	1a.3	Raveling	All roadways (including shoulders and ramps) are free from raveling exceeding measurement record thresholds.	6 months		1a.3.1	Total area of raveling shall not exceed 10% of pavement surface area in any Performance Section (rating code 1 or less). (where there are multiple areas of raveling within a Performance Section, these areas shall be added to determine whether the 10% criterion is exceeded).
	1a.4	Flushing / bleeding	All roadways (including shoulders and ramps) are free from flushing / bleeding exceeding measurement record thresholds.	6 months		1a.4.1	Total area of flushing / bleeding shall not exceed 10% of wheel path surface area in any Performance Section (rating code 1 or less). (where there are multiple areas of flushing / bleeding within a Performance Section, these areas shall be added to determine whether the 10% criterion is exceeded).
<b>1b) PAVEMENT (CRCP)</b>							
	1b.1	Spalled Cracks	All roadways (including shoulders and ramps) are free from spalled cracks exceeding measurement thresholds.	6 months	a. Pavement surface distresses measured using the methods identified in TxDOT Specification 968-62-65 Section 10.4.5. (See Note 6) b. Visual inspection	1b.1.1	No spalled cracks exceeding 10% of total crack length within a Performance Section. • No individual spalling of any crack greater than 12" length.
	1b.2	Popouts and Punchouts	All roadways (including shoulders and ramps) are free from popouts and punchouts exceeding measurement thresholds.	6 months		1b.2.1	• No popouts greater than 4" wide or long exceeding a depth of 1". • No punchouts with a maximum dimension of 24" or more exceeding 1/4" vertical fault dimension compared to adjacent intact slab.
	1b.3	Longitudinal Cracking	All roadways (including shoulders and ramps) are free from longitudinal cracks exceeding measurement record thresholds.	6 months		1b.3.1	• No unstitched longitudinal cracks with width less than or equal to 1/8". • No longitudinal cracks with width exceeding 1/8".
<b>1c) PAVEMENT (JCP)</b>							
	1c.1	Damaged Joints and Cracks	All roadways (including shoulders and ramps) are free from damaged joints and cracks.	6 months	a. Pavement surface distresses measured using the methods identified in TxDOT Specification 968-62-65 Section 10.4.5. (See Note 6) b. Visual inspection	1c.1.1	• No missing or damaged joint seal exceeding 10% of joint length. • No spalling of joints or cracks exceeding 10% of joint or crack length for any slab. • No individual spalling of joints or cracks more than 3" in width and greater than 12" length.
	1c.2	Slabs with cracks in multiple directions	All roadways (including shoulders and ramps) are free from potential shattered slabs.	6 months		1c.2.1	No slabs separated into three or more pieces by a combination of transverse cracks and longitudinal cracks of any width extending from edge to edge of the slab.
	1c.3	Slabs with Longitudinal Cracks	All roadways (including shoulders and ramps) are free from slabs with longitudinal cracks.	6 months		1c.3.1	No longitudinal cracks in any slab with width exceeding 1/8".
<b>2) DRAINAGE</b>							
	2.1	Non-bridge class culverts, Pipes, ditches, channels, catch basins, inlets, manholes and outfalls	Each element of the drainage system functions properly from the point at which water drains from the travel way to the outfall or drainage way and is free of: <ul style="list-style-type: none"> <li>defects in sealant at movement joints</li> <li>scour damage</li> <li>corrosion of rebar</li> </ul>	6 months	Visual inspection supplemented by CCTV where there is evidence of a Defect and further investigation is needed to inspect buried pipe work.	2.1.1	Pipes, ditches and channels are clear of obstructions to flow, including debris and other accumulations, such that throughout their length, no more than 10% of the design cross sectional area is impeded.
						2.1.2	Performance objective met.

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	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.	6 months	Visual inspection	2.2.1	Performance objective met.
	2.3	Discharge systems	Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits.	6 months	Visual inspection	2.3.1	Performance objective met.
	2.4	Erosion	No deviation from design grade (high or low) greater than 6" exists along ditches, swales, ponds, and channels.	6 months	Visual inspection	2.4.1	Performance objective met.
	2.5	Channels and ditches; permanent erosion control measures	Where permanent erosion control measures such as rock or concrete riprap are utilized: no undermined or damaged erosion control measures.	6 months	Visual inspection	2.5.1	Performance objective met.
<b>3) STRUCTURES</b>							
	3.1	Structure components (Structures having an opening measured along the center of the roadway of more than 20 feet between faces of abutments or spring lines of arches or extreme ends of the openings for multiple box culverts or multiple pipes that are 60 inches or more in diameter and that have a clear distance between openings of less than half of the smallest pipe diameter)	Regardless of maintenance performed by TxDOT, (i) substructures and superstructures are free of defects, including, but not limited to: <ul style="list-style-type: none"> <li>• defects in joint sealants</li> <li>• defects in pedestrian protection measure</li> <li>• scour damage</li> <li>• corrosion of rebar</li> <li>• failure of any paint system that includes flaking, peeling, bubbling, or having the appearance of rust</li> </ul> (ii) Expansion joints free of: <ul style="list-style-type: none"> <li>• defects in drainage system</li> <li>• loose nuts and bolts</li> <li>• defects in gaskets and/or seals</li> </ul> (iii) The deck drainage system operates as intended. (iv) Parapets free of: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• concrete spalling</li> </ul>	6 months	a. The National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650  b. The TxDOT Bridge Inspection Manual  c. The Federal Highway Administration's Bridge Inspector's Reference Manual  d. Visual Inspection	3.1.1	Performance objective is met and records maintained as required in the TxDOT Bridge Inspection Manual.  Condition rating equal to or greater than seven (7) for any deck, superstructure or substructure.
						3.1.2	Performance objective is met and records maintained as required in the TxDOT Bridge Inspection Manual.  Condition rating equal to or greater than seven (7) for any deck, superstructure or substructure.
	3.2	Load ratings	All structures maintain the design load capacity and no load restrictions for Texas legal loads (including legally permitted vehicles)	6 months	a. Load rating calculations in accordance with the AASHTO Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual. b. Load restriction requirements as per the TxDOT Bridge Inspection Manual.	3.2.1	Performance objective met.
	3.3	Gantries and high-masts	Sign gantries, signal gantries and high masts are structurally sound and free of: <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• defects in surface protection systems.</li> </ul>	6 months	Visual inspection	3.3.1	Performance objective met.
	3.4	Access points	All hatches and points of access have fully operational and lockable entryways.	6 months	Visual inspection	3.4.1	Performance objective met.
<b>3) STRUCTURES</b>							

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	3.5	Retaining walls	Regardless of maintenance performed by TxDOT, retaining walls are free of defects, including, but not limited to:	6 months	Visual inspection	3.5.1	Performance objective met.
			<ul style="list-style-type: none"> <li>• defects in sealed joints</li> <li>• defects in pedestrian protection</li> <li>• scour damage</li> <li>• corrosion of rebar</li> <li>• failure of any paint system-that includes flaking, peeling, bubbling, or having the appearance of rust</li> <li>• concrete spalling</li> <li>• settlement beyond that anticipated in the signed and sealed design report</li> </ul>			3.5.2	Performance objective met.
	Parapets are free of:	3.6.1	Performance objective met.				
	3.6	MSE Walls	Regardless of maintenance performed by TxDOT, panel conditions are free of defects, including, but not limited to:		Visual inspection or other specialist inspections to determine variances from constructed alignment.		
			<ul style="list-style-type: none"> <li>• No panels are allowed to touch</li> <li>• No more than 5% showing cracking, delaminations, spalls, or scaling per panel for each MSE wall.</li> <li>• No instances of cracks &gt;1/4", on more than one panel per wall. All cracking greater than 1/4" must be sealed</li> <li>• No concrete surfaces with spalls greater than 1" deep or to reinforcement depth. Any spall showing reinforcement must be repaired</li> <li>• Joint condition - No instances of joints with exposed fabric; provide repairs when wall backfill integrity is jeopardized.</li> <li>• No instances of MSE backfill material below joint or vegetation growing between joints.</li> <li>• Panel offset at joints shall not exceed 3/4". Joint opening shall not exceed 1/4" greater or 1/2" less than the design width along adjoining panels.</li> <li>• Settlement beyond that anticipated in the signed and sealed design report</li> <li>• Measured erosion - No instances of erosion &gt; 6" deep along wall coping, erosion exposing the top of the leveling pad (where pad is not on rock), or exposed straps or mesh.</li> <li>• Measurement of bowed wall: variance from constructed alignment. Change from as built records measured using 10-ft. straight edge. No instances of variance from constructed alignment greater than 3/4" horizontal movement within 10-ft. vertical.</li> <li>• Visual Inspection - free from vegetation and overgrowth of trees affecting or having the potential to affect structural integrity.</li> </ul>				
<b>4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS (NOT USED)</b>							
<b>5) CURBS, GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS (NOT USED)</b>							
<b>6) TRAFFIC SIGNS (NOT USED)</b>							
<b>7) TRAFFIC SIGNALS (NOT USED)</b>							
<b>8) LIGHTING (NOT USED)</b>							
<b>9) FENCES, WALLS AND SOUND ABATEMENT (NOT USED)</b>							
<b>10) ROADSIDE MANAGEMENT (NOT USED)</b>							
<b>11) REST AREAS AND PICNIC AREAS (NOT USED)</b>							
<b>12) EARTHWORKS, EMBANKMENTS AND CUTTINGS</b>							
	12.1	Slope failure	No structural or natural failures of the embankment and cut slopes of the Project.	6 months	Visual inspection	12.1.1	Performance objective met.
	12.2	Slopes General	Slopes are in conformance to the original, as-designed, graded cross-sections (or any modifications to such cross sections needed to address erosion or instability).	6 months		12.2.1	Performance objective met with no deviation from original designed, graded section greater than six inches in absolute elevation at any location.
	12.3	Slopes Erosion	Slopes function properly with no erosion of a nature that may result in further deterioration. All necessary erosion prevention measures are in place, including landscaping materials, seeding, turf or other vegetation. The roadway, shoulders and ditches are free from all eroded materials.	6 months		12.3.2	Performance objective met with no erosion greater than six inches deep.

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	12.4	Slopes - Permanent Erosion Control Measures	Where permanent erosion control measures such as rock or concrete riprap are utilized, erosion control measures are not damaged or undermined, function properly and concrete slope protection joints are sealed and free from vegetation affecting or having the potential to affect structural integrity.	6 months		12.4.3	Performance objective met.
<b>13) ITS EQUIPMENT (NOT USED)</b>							
<b>14) TOLLING FACILITIES AND BUILDINGS (NOT USED)</b>							
<b>15) AMENITY (NOT USED)</b>							
<b>16) SNOW AND ICE CONTROL (NOT USED)</b>							
<b>17) INCIDENT RESPONSE (NOT USED)</b>							
<b>18) CUSTOMER RESPONSE (NOT USED)</b>							
<b>19) SWEEPING AND CLEANING (NOT USED)</b>							