

# Special Specification 7222

## Performance Based Maintenance of Highways



### 1. DESCRIPTION

Perform Maintenance Services, as described herein, on mainlane roadways, frontage roads, shoulders, ramps, intersections, cross streets, roadsides, bridges, pump stations, truck parking, drainage structures, traffic operations, etc., within the limits of work shown in the plans.

Provide resources for identifying (evaluations and reporting), plan for addressing, and resolution of deficiencies in accordance with this Item and the Contract.

- 1.1. **Existing Agreements.** The Department has agreements with others concerning the highways included in this Contract. A summary of existing agreements indicating locations and responsibilities of others within these areas are provided in the plans.
- 1.2. **Department Standards.** Unless otherwise approved by the Engineer, Maintenance Services performed and materials used under this Contract will conform to the latest version of Department manuals, standards, specifications, special specifications, and special provisions, policies and procedures, and their addenda; comply with all environmental laws, rules, and regulations. The Contractor will review the Department's website to assure that the latest standards, specifications, policies, procedures, etc. are being used.
- Notify the Engineer immediately if any errors, omissions, or discrepancies are discovered in these documents so that necessary corrections or interpretations can be made. Failure to promptly notify the Engineer will constitute a waiver of all claims for misunderstandings or ambiguities that result from the errors, omissions, or discrepancies discovered.
- 1.3. **Current, Ongoing, and Proposed Construction Projects.** A list of current, ongoing, and proposed construction and maintenance projects performed by others are shown in the plans. Schedules for these projects will be provided at the Contractor's request. The Contractor will be notified of any additional projects not on this list as they become known.

### 2. MATERIALS

Furnish materials in accordance with the following:

- Item 104, "Removing Concrete",
- Item 134, "Backfilling Pavement Edges",
- Item 162, "Sodding for Erosion Control",
- Item 164, "Seeding for Erosion Control",
- Item 169, "Soil Retention Blankets",
- Item 192, "Landscape Planting",
- Item 400, "Excavation and Backfill for Structures",
- Item 416, "Drilled Shaft Foundations",
- Item 421, "Hydraulic Cement Concrete",
- Item 429, "Concrete Structure Repair",
- Item 431, "Pneumatically Placed Concrete",
- Item 432, "Riprap",
- Item 438, "Cleaning and Sealing Joints",
- Item 440, "Reinforcement for Concrete",
- Item 454, "Bridge Expansion Joints",

- Item 471, "Frames, Grates, Rings, and Covers",
- Item 476, "Jacking, Boring, or Tunneling Pipe or Box",
- Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls",
- Item 550, "Chain Link Fence",
- Item 552, "Wire Fence",
- Item 556, "Pipe Underdrains",
- Item 610, "Roadway Illumination Assemblies",
- Item 613, "High Mast Illumination Poles",
- Item 614, "High Mast Illumination Assemblies",
- Item 616, "Performance Testing of Lighting Systems,"
- Item 618, "Conduit",
- Item 620, "Electrical Conductors",
- Item 621, "Tray Cable",
- Item 622, "Duct Cable",
- Item 624, "Ground Boxes",
- Item 627, "Treated Timber Poles",
- Item 628, "Electrical Services",
- Item 636, "Signs",
- Item 643, "Sign Identification Decals",
- Item 644, "Small Roadside Sign Assemblies",
- Item 647, "Large Roadside Sign Supports and Assemblies",
- Item 650, "Overhead Sign Supports",
- Item 654, "Sign Walkways",
- Item 656, "Foundations for Traffic Control Devices",
- Item 658, "Delineator and Object Marker Assemblies",
- Item 666, "Retroreflectorized Pavement Markings",
- Item 668, "Prefabricated Pavement Markings",
- Item 672, "Raised Pavement Markers",
- Item 677, "Eliminating Existing Pavement Markings and Markers",
- Item 678, "Pavement Surface Preparation for Markings",
- Item 680, "Highway Traffic Signals",
- Item 682, "Vehicle and Pedestrian Signal Heads",
- Item 684, "Traffic Signal Cables",
- Item 685, "Roadside Flashing Beacon Assemblies",
- Item 686, "Traffic Signal Pole Assemblies (Steel)",
- Item 687, "Pedestal Pole Assemblies",
- Item 688, "Pedestrian Detectors and Vehicle Loop Detectors",
- Item 690, "Maintenance of Traffic Signals",
- Item 700, "Pothole Repair",
- Item 712, "Cleaning and Sealing Joints and Cracks (Asphalt Concrete)",
- Item 720, "Repair of Spalling in Concrete",
- Item 730, "Roadside Mowing",
- Item 734, "Litter Removal",
- Item 735, "Debris Removal",
- Item 738, "Cleaning and Sweeping Highways",
- Item 740, "Graffiti Removal and Anti-Graffiti Coating",
- Item 752, "Tree and Brush Removal",
- Item 764, "Pump Station and Drainage System Cleaning",
- Item 770, "Guard Fence Repair",

- Item 771, "Repair Cable Barrier System"
- Item 772, "Post and Cable Fence",
- Item 774, "Attenuator Repair",
- Item 776, "Metal Rail Repair",
- Item 778, "Concrete Rail Repair",
- Item 780, "Concrete Crack Repair",
- Item 785, "Bridge Joint Repair or Replacement",
- Item 6054, "Spread Spectrum Radios for Traffic Signals",
- Item 6058, "Battery Back-up System for Signal Cabinets"
- Item 6292, "Radar Vehicle Detection System for Signalized Intersection Control", and
- Item 6306, "Video Imaging Vehicle Detection System".

All work will be performed using in-kind materials, unless otherwise stated herein or as directed. Furnish all materials necessary to complete the Maintenance Services. Furnish documentation indicating material compliance with Department Specifications. New innovative materials may be used, if approved. Failures of innovative materials will be the responsibility of the Contractor.

In accordance with Article 9.5, "Progress Payments", progress payments may be withheld for not furnishing material compliance documentation.

### 3. EQUIPMENT

Furnish all equipment, tools, supplies and machinery necessary for proper execution of the Maintenance Services.

### 4. WORK METHODS

- 4.1. **General.** Perform Maintenance Services described herein whether deficiencies exist at the date the Contractor is given written notice of authorization to begin Maintenance Services or occur afterwards. If roadway or appurtenance improvements are made through other work performed by, or on behalf, of the Department, perform Maintenance Services described herein without additional cost to the Department to maintain per the established performance measures.

Perform Contractor assessments. Perform daily monitoring of the roadway and its appurtenances to the extent necessary to discover work before discovery by the Department.

The Department will obtain environmental permits when required. Display permits at the work location. Do not initiate work in or near creeks, streams, or wetlands without previous approval. If approval is required, the Engineer must be notified at least 45 Calendar Days before activities located near "Environmental Zones" as shown in the plans, unless otherwise directed by the Engineer. Do not initiate soil disturbing work in the Edwards Aquifer Recharge or Contributing Zones without prior approval. The Engineer must be notified at least 45 Calendar Days before soil disturbance located on the Edwards Aquifer Recharge or Contributing Zones as shown in the plans, unless otherwise directed by the Engineer. Emergency repair or in-kind repairs will not require the above notification.

Adhere to 16TAC§18.1, the Texas Railroad Commission rules requiring all parties to use the Texas One Call system for locating utilities before excavations of more than 16 in. in depth.

Damage to existing assets due to the Contractor's operations will be repaired at the Contractor's expense.

All damaged material will become property of the Contractor to be removed and properly disposed of off the ROW.

Implement best management practices (BMPs) associated work to comply with environmental commitments per the Department's maintenance programs.

Contractor will take all necessary actions to achieve the following while providing Maintenance Services:

- Perform Maintenance Services in a proactive manner to prevent excessive and unanticipated deterioration of the roadway and its appurtenances. If excessive deterioration of the roadway elements occurs, perform all repairs necessary to bring elements to an acceptable condition as approved by the Engineer at no additional cost to the department.
- Perform Maintenance Services in a manner that recognizes that the safety of the public, convenience of the traveling public and providing a safe work environment for all maintenance workers are of prime importance. Repair of damage that is a potential hazard to the public must be initiated with appropriate resources (traffic control, materials, personnel, equipment, etc.) as prescribed in Section 5.3, "Performance Standards". The Department's good faith determination of the existence of such danger will be deemed conclusive in the absence of clear and convincing evidence to the contrary.
- Identify and manage incidents and correct all defects and damages from Incidents to include cleanup of spilled cargo, removal and proper disposal of damaged and unsalvageable materials, obtaining required permits, etc.
- Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and potential safety hazards due to heavy rains, snow, ice, or other severe weather events.
- Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the Project right of way (ROW).
- Minimize the risk of damage, disturbance, or destruction of third-party property during the performance of maintenance activities. Damage, disturbance, or destruction of third-party property resulting from the performance of maintenance activities is the responsibility of the Contractor.
- Locate underground utilities for Maintenance Services associated with this specification. Failure to locate, resulting in damage, will be the responsibility of the Contractor.
- Coordinate with other contractors, cities, counties, state, and local law enforcement, utilities, fire departments, health services and other state and federal agencies. Prepare, maintain and periodically update the contact list of all relevant agencies and jurisdiction.
- Perform systematic Project inspections and maintenance in accordance with the provisions of Contractor's Maintenance Management Plan (MMP) and in accordance with the Contract Documents.
- Perform Maintenance Services in accordance with time requirements shown in Section 5.3 "Performance Standards". Time requirements listed herein will be measured from discovery or notification until the Performance Measure is met. Days are defined as Calendar Days. The term "immediately" is defined as less than 1 hour. The periods stated will be deemed to start upon the date Contractor's first obtained knowledge of, or first reasonably should have known of, the defect. For this purpose, Contractor will be deemed to have first obtained knowledge of the failure not later than the date of delivery of the initial notice to Contractor.
- Contractor will investigate reports and complaints on the condition of the Project received from all sources. Contractor will record such reports and complaints as maintenance records together with details of all relevant inspections and actions taken to rectify defects, including temporary protective measures and repairs.

4.2.

**License and Special Training Requirements.** The Contractor will possess the appropriate qualifications, certifications, or licenses. Contractor will record and maintain certification documentation, identifying certified personnel and provide to the Department upon request.

Engineering: The Contractor will have engineers (structural, civil, geotechnical, etc.) licensed in the State of Texas for the duration of the contract.

Bridge Maintenance Inspector: Contractor will have personnel that have taken and passed the Department's Maintenance Bridge Inspection Course (MNT127) for Maintenance Section Inspector and Maintenance Section User as described in the MBITS 1.0 User Manual.

Electrical: The applicable electrical requirements are shown in Item 7.18 of the Standard Specifications. Submit current and valid license and certification documentation and update accordingly to assure that documentation is valid for all persons performing electrical work on this Contract.

Pesticide/Herbicide Applicator: Comply with the latest version of the Department's Herbicide Operation Manual. Possess a license or employ a person who possesses a Texas Department of Agriculture (TDA) Commercial Pesticide/Herbicide Applicator License in the 3A and 5 categories, to apply pesticide/herbicide within the highway system, as required. Provide the Department with documentation of license before beginning of Maintenance Services.

Traffic Control: Comply with the applicable training requirements per Special Provision 007-001. Submit current and valid certification documentation and update accordingly to assure that documentation is valid for all persons performing traffic control work on this Contract.

Traffic Signals: Comply with the applicable electrical requirements as shown in Item 7.18.1.3 of the Standard Specifications. Submit current and valid license and certification documentation and update accordingly to assure that documentation is valid for all persons performing electrical work on this Contract.

VIVDS: Contractor will have personnel attend TRF450 TxDOT Roadway Illumination & Electrical Installations and TRF453 TxDOT Elect Requirements Install Traffic Signals training course, provided by TxDOT, and obtain an Item 7 Card certification.

Hazardous Materials: Contractor will have personnel trained and certified at least to the minimum requirements established under the current guidelines of OSHA 1910.120 (HAZWOPER Training).

Emergency Management: Comply with the applicable training and certification requirements per HSPD-5 for National Incident Management System (NIMS) Training. Employees involved in emergency/incident response will need to complete IS-700, IS-100 and IS-200.

- 4.3. **Maintenance Management Plan.** Submit Maintenance Management Plan (MMP) with content as described in the plans for approval. Upon initial submittal of each plan, the Department will have 30 Calendar Days to review and comment. The contractor must resolve all resulting comments within the following 30 Calendar Days. Include all necessary meetings, needed with the Department for comment resolution, in an effort to expedite resolution and submittal of final plans within this timeframe.

All subsequent updates will occur each year as noted in the Plans by engaging in an interactive process of discussion between the Department, Contractor, and other agencies (as necessary) whereby lessons learned from past experience can be implemented for future use. Submit changes for the Engineer's review. The Engineer will meet with the Contractor within 30 Calendar Days after submittal to discuss revisions and clarifications to reach agreement(s). Resubmit the Plans to the Engineer within 15 Calendar Days following this meeting.

#### 4.4. **Reporting**

- 4.4.1. **Work Accomplished.** Implement, maintain and use a computerized maintenance management system (CMMS) to track and validate work performed, compliance with timeliness, and other Contract requirements within 30 Calendar Days of the date of authorization to begin Maintenance Services. Data input required daily after completion of work. A Monthly Work Accomplishment report is required to be submitted by close of business on the 3<sup>rd</sup> of each month. If the 3<sup>rd</sup> is not a business day then they will be due the following business day. In addition, by close of business on the 15<sup>th</sup> of each month, contractor must submit all CMMS data in an exportable, open, digital format to be approved by the Engineer. All data are required to be formatted into standard database file extensions with the ability to be imported into any modern database. All location information will contain GPS coordinates (latitude and longitude in NAD83).

Allow, and maintain, access to Department personnel to review and input data in real-time. Users must be able to access, configure, modify, save and print standard and customized reports. With the exception of planned maintenance, the CMMS cannot be inaccessible for more than 8 hours per month. Planned maintenance items must be scheduled a minimum of 2 weeks in advance of the planned outage. Failure to

meet the maximum downtime requirement will result in the assessment of Deductions for Non-Compliance. The Contractor must use a quality process to ensure contract timeliness requirements are being met.

The CMMS will be structured to track the following, using the Department's Function Code Chart 12 and its guidelines:

- Date or dates of work;
- Location including roadway, travel direction, beginning and ending Texas Reference Marker (TRM), and County;
- GPS coordinates (NAD83) must be accurate within a 10-foot radius;
- When referencing items with length (such as guardrail), provide both starting and ending GPS coordinates;
- Element, Element Type, and Condition;
- Function Code;
- The quantity of work performed, description of activities, materials used (quantity, source and invoices), specific notes as needed;
- The quantity of work performed and details associated with asset damage for third-party claims, including documentation required per 4.4.3.
- Locations where the Contractor is called to perform traffic control, clean up or damage repair including, but not limited to accidents and incidents per 4.4.3.
- Separate entries for the time of Contractor discovery, time of notification to Contractor, notifying party name and organization affiliation, time to respond, and time of work completion to each Performance Measure.

- 4.4.2. **Customer Service Inquiries.** The Department will process, administer, and manage all customer service inquiries, complaints and service requests. The Contractor's role will be to complete the work associated with the complaint or service request at the direction of the Department and in accordance with the standards and time limits set forth in this specification. All customer service inquiries and outcomes, complaints or service requests received from the public, cities, counties, etc. must be documented by entering into CMMS and will report to the Department daily. This information must include, at a minimum, the date and time of the complaint or request; the location of the concern; the nature of the complaint or request; who made the complaint or service request, name, address, and contact information; and date, time, and action taken to address the issue.

Immediately notify the Engineer of any contact by elected officials.

Notify the Department of any abandoned vehicles, trailers, etc. within the right of way. Contact local law enforcement immediately for removal of abandoned vehicles.

- 4.4.3. **Accidents.** Immediately report accidents to the Engineer involving: the Contractor or subcontractor personnel, equipment, barricades or tools; traffic accidents within the limits or in the vicinity of any work being performed by the Contractor or its subcontractors; incidents meeting the requirements of FHWA's incident report Form 2111; hazardous material spills; bridge failures or closures; potentially hazardous weather conditions; and capable of creating significant media interest. Incident/event reports meeting the criteria as described in Form 2111 will be submitted to the Engineer within 8 hours of the incident.

If there are any questions from the media, call the Department's Contract manager to discuss the accident and the need for reporting.

The contractor will repair any damage due to incidents or accidents. Report no later than the 15<sup>th</sup> of each month, information from the previous month on any accident or incident related to work being performed, including, but not limited to any accident involving the traveling public that causes damage to an appurtenance or fixture within the ROW.

At a minimum include the following information:

- Date and time of the accident/incident;

- Location of the problem;
- Nature of the problem;
- Digital photographs of traffic control items, accident/incident scene, damaged highway features, etc.;
- All parties involved in the incident including name, address, telephone number and their involvement (including witnesses);
- Responsible party (identified by law enforcement) and insurance information, description of vehicles involved;
- Action taken to address the incident;
- Documentation of traffic control in place at location;
- Weather and road conditions;
- Type of hazardous materials, if applicable; and
- Number of fatalities or injuries, if applicable.

For third party damage claims, reports will include date of the incident or accident; location of the damage (e.g. city, county, highway); description of the damage; at least 2 clear digital photographs of the damage to show the location of the accident with date stamped in the photographs, extent and damage to highway appurtenances; all parties involved including name, address, telephone number, and their involvement (including witnesses); responsible party (identified by law enforcement) and insurance information; description of vehicles involved; a copy of incident/accident report(s) (police, fire, sheriff, DPS, eyewitness, etc.); actions taken to address the incident or accident, documentation of traffic control in place; the date(s) repairs are completed, the repair invoice with details, cost breakdown, and a summary, including total price, of work performed, and any additional documentation to support the claim. Provide documentation supporting the claim within 60 Calendar Days after completion of repairs. Damage claims will be submitted in an approved format, signed and certified by the Contractor's project manager. Damage claims submitted with incomplete or incorrect documentation will be returned to the Contractor.

4.4.4. **Highway Condition Report (HCR).** The Contractor is required to have a personal computer that will connect to the Department's information systems and must input requirements of the highway conditions reporting system (HCRS/DriveTexas.org) within the limits of this Contract. Information is required to be entered into the Department's HCR System each morning before 9 a.m. and at 5 p.m. Updates will be required immediately before extended closures and when said closures are opened. All closures are required to be entered in HCRS before implementation.

4.5. **Exceptions.** The following items are excluded from the Contract:

- Roadside assistance (courtesy patrol) to the traveling public,
- All intelligent transportation system (ITS) devices (including but not limited to ITS cameras (not used for traffic signal control), permanent changeable message signs, and Roadside Vehicle Identification readers/antennae),
- Executing agreements, such as utility permits, driveway permits, multiple use agreements, construction and maintenance agreements, and other similar type agreements,
- Obtaining environmental permits,
- Logo signing (including but not limited to: manufacturing, installation, removal, maintenance),
- the "Sponsor A Highway" Program,
- Safety rest areas,
- Permanent pavement repairs,
- Other exceptions noted in the plans.

4.6. **Perform Maintenance of the Roadway, Bridges and Roadway Appurtenances.** Work required in referenced standard specifications or other special specifications in this Item are required to be performed with exception to the "Measurement" and "Payment" Articles of those Items. New innovative work methods may be used if approved.

4.6.1. **Traffic Control.** Perform traffic control for all work, condition assessments, and emergency operations. Provide lane closures for Department or law enforcement functions such as pavement evaluation, accident

reconstruction, bridge inspections, pavement coring, traffic counter maintenance, etc. Perform traffic control in conformance with the latest edition of Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest edition, current TxDOT Barricade and Construction Standards (BC), Work Zone Standards (WZ), and TxDOT Traffic Control Plan Standard Sheets (TCP). Unique work situations may require the preparation of individual traffic control plans (TCPs). Submit Contractor-proposed TCP changes, signed and sealed by a licensed professional engineer, for approval. The Engineer may develop, sign, and seal Contractor-proposed changes. Changes must conform to guidelines established in the TMUTCD using approved products from the Department's Compliant Work Zone Traffic Control Device List.

Locations that could pose a hazard to the traveling public must be signed and delineated using appropriate traffic control devices, such as signs, drums, cones, etc.

When the BC, WZ, TCP, or TMUTCD uses the word "should", the word is considered to be replaced with "must" under this Item. The Contractor must present requests for deviation from this replacement to the Engineer before implementation for approval.

Any work activity requiring the implementation of temporary traffic control (TTC), as indicated within the TMUTCD, within the traveled way must be limited to the hours indicated in the plans for lane closures including mobile operations except TTC required for incidents. Report all Contractor work scheduled lane closures within the timeframes shown in the plans. If a lane is closed without notifying the Department or extends into hours outside the hours permitted in the plans, it will be considered as non-performance and subject to reduction in payment as stated in the plans, with the exception of TTC required for incidents.

Provide PCMS for this project as required by the TCP.

Place PCMS at time of LCN request. Place the PCMS at the expected end of queue caused by the closure. When the closure is active, revise the message to reflect the actual condition during the closure, such as "RIGHT LN CLOSED XXX FT".

A Truck Mounted Attenuator (TMA) in accordance with the TMUTCD Typical Applications will be used when installing and removing a TCP setup.

The contractor will be responsible for determining if one or more operations will be ongoing at the same time to determine the total number of TMAs required for the work.

- 4.6.2. **Roadway.** Temporary repairs for instances of flexible and rigid pavement failures and defects as defined by the criteria set forth in the TxDOT PMIS Rater's Manual.

Permanent repairs will be performed by others. The Contractor must notify the Engineer when any 0.10 lane mile that has patches on more than 30% of the area. Upon notification the Department will review the site and schedule repairs through its on-call paving contractor (or other resources). The Contractor must continue to maintain the site at their cost until the Department's repairs are performed.

- 4.6.2.1. **Localized Roughness.** Variation between any 2 contacts on 10-foot straight edge will not exceed ¼" between the repairs and existing pavement.

- 4.6.2.2. **Flexible Failures.** Perform temporary repair of pavement distress and failures. Pavement distress and failures will be identified as defined in TxDOT PMIS Rater's Manual criteria for flexible pavement surfaces. Types of repairs included but not limited to potholes, depressions, failures, and raveled or damaged pavement edges. Where flexible pavement meets approach slab, perform pavement repairs to prevent rainfall runoff from entering under approach slab.

- 4.6.2.3. **Rigid Failures.** Perform temporary repair of pavement distress and failures. Pavement distress and failures will be identified as defined in TxDOT PMIS Rater's Manual criteria for concrete pavement and approach slabs. Types of repairs included but not limited to spalls and partial-depth failures will be performed in accordance with Department Specifications and as specified in the plans. Perform temporary repairs using polymeric materials in accordance with Departmental Materials Specification.



- 4.6.2.4. **Edge Drop-offs.** Maintain edges to less than a 2 in. drop off from the pavement. Backfill and compact the pavement edges with approved Type A materials unless approval is given for Type B materials. Backfill and compact the pavement edges to produce a smooth surface adjacent to the pavement with no vertical edges before opening to traffic.
- 4.6.2.5. **Expansion Joints.** Perform cleaning and sealing, when seal is damaged or no longer bonding, of expansion joints between approach slabs and concrete pavement. Repair polymer concrete expansion joints with material meeting Department Materials Specifications unless otherwise approved. If the expansion joint is:
- greater than 1/2 in. wide, but the seal is damaged, remove the existing seal, clean, and seal the joint; or
  - less than 1/2 in. wide, resize the joint to the appropriate dimension shown in Department standard JS-94, Concrete Paving Details Joint Seals, unless otherwise approved, by sawing concrete on sliding side of joint and clean and seal joint.
- 4.6.2.6. **Cracks in Asphalt.** Perform crack sealing in accordance with Department Specifications.
- A light coat of fine aggregate will be applied to cracks after sealing and before opening to traffic to prevent tracking, or as directed. The Contractor will be responsible for any cleanup if any tracking should occur.
- Class B rubber asphalt crack sealing materials will not be applied when the pavement temperature is 40 degrees Fahrenheit and falling. This material can be applied when the pavement temperature is 40 degrees Fahrenheit and rising. Rubber-asphalt crack sealing compound will be used for crack sealing locations on this contract. This sealant will be heated to a minimum of 350 degrees Fahrenheit but no higher than 400 degrees Fahrenheit.
- 4.6.3. **Sweeping, Litter and Debris.** Perform cleaning and sweeping of highways and litter and debris removal.
- Immediately remove dead animals that can be handled by one person. Conceal dead animals from view of the traveling public during transport. Properly dispose of all dead animals. Refer to the Department's Standard Operating Procedure No. 001-18: Disposal of Dead Animals. For live animals, contact local law enforcement immediately for safe removal. Ensure that live animals are removed safely from the ROW.
- If any items are found in the ROW that contain personal information, notify the owner and allow the owner the opportunity to pick up the items before destroying.
- 4.6.3.1. **Sweeping.** Perform hand sweeping or vacuuming in areas which restrict the use of sweeping equipment and other hard to reach areas including, but not limited to: attenuators, high curbed areas, bullpens, behind and next to retaining walls, behind and underneath guardrail, around bridge and structure columns, sidewalks on structures, sidewalks along the roadway (within the ROW), concrete riprap, behind concrete safety barriers and other areas under structures before accumulation greater than 18 in. wide.
- Take measures to ensure debris from sweeping operations does not clog drainage inlets. Establish cyclical sweeping cycles of the entire corridor as part of the MMP, in addition to necessary spot sweeping to ensure a uniform appearance of the facility. One sweeping cycle will be required per month at a minimum.
- Perform sweeping, vacuuming, and removal of deicing chemicals, rock, debris, etc. from bridge deck, parapets, railing, joints, backwalls, caps, joints, and bearings within 30 Calendar Days from the last application of deicing chemicals unless another ice event is predicted within 2 weeks of the 30-day deadline.
- Do not stockpile swept material on ROW before disposal. Remove and dispose of accumulated material within the same day.
- Wet the pavement during sweeping operations to control the dust for the improved visibility of operations and safety of the traveling public.
- All sweepers must have a panel Type "B" (60" x 30") Arrow Display properly mounted and operating on the vehicle.

- 4.6.3.2. **Litter.** Keep the ROW in a neat condition, remove litter regularly. Pick up large litter items before mowing operations. Dispose of all litter and debris collected at an approved solid waste site.
- Remove all hazardous material discovered on the highway system in accordance with federal, state and local regulations. Report any hazardous material findings.
- Contractor must retain records for sites used for disposal of solid waste (litter, debris, dead animals, etc.). Contractor must be able to provide records upon the Department's request.
- 4.6.3.3. **Debris.** Remove debris from drain openings (barrier drain slots) in concrete traffic barrier (CTB) and inlet openings. Remove any obstructions or blockage behind CTB drain openings. Remove debris and obstructions from roadway and clear zone. Do not stockpile debris, etc. on the ROW before disposal.
- 4.6.4. **Vegetation Management.** Perform vegetation management within the ROW including, but not limited to, the roadside, landscaped areas, mitigation areas, channel easements, ditches, etc.
- Unless otherwise indicated, mow entire ROW width. Mow the vegetation and spot mow vegetation near intersections, ramps and other areas impacting driver sight distances to regulatory and warning signs, signals, intersecting roads and drives, etc.
- Remove all equipment from the ROW at the completion of each mowing cycle. Equipment will not be left within 30 feet of the travel lane.
- All rotary mowers must be equipped with either safety chains or the manufacturer's safety device to prevent damage to property caused by flying debris propelled out from under the mower. Approved deflection devices must be spaced side by side around the mowers front, sides and rear.
- 4.6.4.1. **Vegetation Height.** Following approval, begin and continuously mow vegetation to meet the requirements of this Item. Landscape areas are designated in the plans. Limits for rural, metro or urban areas are as shown in the plans. Maintain vegetation height between:
- 7 and 18 in. in height in metro and urban areas,
  - 7 and 30 in. in height in rural areas.
- 4.6.4.2. **Noxious Weeds.** Control noxious weeds and trees before them reaching 30 in. in height during the seasons with the materials and application rates in the latest version of the Department's Herbicide Operations Manual, unless otherwise approved. Control other noxious weeds as specified in the plans.
- Conduct all herbicide operations in the appropriate use category and in accordance to Texas Department of Agriculture requirements. Provide the Department with documentation of licenses before beginning the work. Spray equipment must be in good operating condition and calibrated to deliver the appropriate application rates as required. Sufficiently agitate tank to keep dry substance herbicides in spray suspension. Periodically check the equipment is delivering the calibrated spray solution.
- 4.6.4.3. **Vegetation Encroachment.** Prevent vegetation encroachment into or on edges of pavements, sidewalks, islands, riprap, signs, any paved roadway surface, retaining walls, sidewalk, mow strip, concrete barrier, curbs, culverts, light poles, guardrail, cable, etc.
- Keep all riprap (concrete slope protection) joints and cracks free from vegetation.
- 4.6.4.4. **Vegetation Trimming.** Mow as close as possible to all fixed objects exercising extreme care not to damage trees, plants, shrubs, signs, delineators or other appurtenances which are part of the facility. Hand trimming or chemical control around such objects will be required to include removal of all small woody plants. Any damage caused by the Contractor's operation will be repaired/replaced at the Contractor's expense. All hand trimming will be performed in conjunction with the mowing operation. Immediately remove grass and trimmings in the gutter and roadway and dispose of properly.

- 4.6.4.5. **Loss of Vegetation.** Implement erosion control measures as necessary (slope stabilization, seeding, mulching, soil retention blankets, etc.) to support revegetation of barren areas.
- 4.6.4.6. **Sight Lines.** Perform spot mowing at intersections, ramps or other areas as needed or as directed to maintain visibility of appurtenances, safety, and sight distance. Do not use equipment that damages the pavement or turf in any way.
- 4.6.4.7. **Wildflowers.** Preserve wildflowers in accordance with the guidelines in the Department's Mowing Specifications, Herbicide Operations Manual, and Vegetation Management Manual. The Contractor will avoid mowing all wildflower areas during the growth of wildflowers, before seeds have matured, unless otherwise directed by the Engineer. Vegetation height will be allowed to exceed 30 in. until wildflowers mature and drop their seeds.
- 4.6.4.8. **Seasonal Mowing**
- First Frost Mowing Cycle.** Complete a mowing cycle after the first frost unless otherwise directed by the Engineer.
- Spring Mow Cycle.** In the spring season, before May 15th, no mowing is allowed without prior approval from the Engineer. The contractor must notify the Engineer at least 5 Working Days before mowing. The Engineer will perform a visual inspection once notified. Mowing can proceed once the Engineer has approved the activity.
- 4.6.4.9. **Landscaped Areas.** Perform mowing, litter pickup, plant maintenance, pruning, insect, disease, and pest control, fertilization, mulching, bed maintenance, etc. in landscape areas. Remove and replace damaged or dead plants, trees, and brush in landscaped areas. Remove all vines from trees and shrubs before applying herbicide. Remove or replace any dead and unacceptable plants as their condition becomes apparent. Use plants, trees, and brush of the original size at the time of replacement, species, and characteristics, or an approved substitute. A plant is considered dead or unacceptable when more than 20% of the foliage or branches are dead. The Contractor's liability for replacement of damaged or dead plants in landscaped areas, trees, shrubs, ornamentals, and vines will be limited to a maximum of \$50,000 per year.
- Following approval, begin and continuously mow vegetation to meet the requirements of this Item. Landscape areas are designated in the plans. Maintain vegetation height between 5 and 8 in. in landscaped areas.
- Add mulch to any area of bare soil within planting beds, large shrub rings, or tree rings. Maintain mulch at a settled depth of 3 in. Replace mulch with shredded hardwood mulch.
- 4.6.4.10. **Tree and Brush.** Prune trees and brush to optimize their health and growth and prohibit interference with vehicles, pedestrians, sight distance, drainage within channels or visibility of signs and signals. Vertical clearances will be as specified in the plans. Remove damaged or dead trees, branches and brush unless shown in the plans as a non-maintenance area. Non-maintenance areas include native forests and wetlands.
- The limits of tree trimming and brush removal will include the complete width of the ROW or as directed.
- Perform all tree trimming and brush removal by cutting. Flailing equipment is not allowed. Use hand methods or other means of removal if doing work by mechanical methods is impractical. Treat all cuts with approved tree dressing. Pushing of trees and brush will not be allowed. Cease all activities for a period of 48 hours following any rainfall event totaling greater than 2 in., unless directed otherwise by the Engineer.
- Unless shown otherwise in the plans or a designated non-mow area, perform trimming or removal for areas within 30 ft. of edge of pavement. Trim or remove to provide minimum of 5 ft. of horizontal clearance and 7 ft. of vertical clearance for the following: sidewalks, paths, guard fence, rails, signs, object markers, and structures. Trim to provide a minimum vertical clearance under all trees, in accordance with the current standard.
- All tree trimming and brush removal will be performed as shown in the plans.

Brush burning will not be permitted.

Work will be conducted September 16 thru February 28. Work conducted outside this timeframe will require a bird survey. Submit a survey request to TxDOT 30 business days before beginning work.

- 4.6.5. **Drainage, Excavation, Embankment and Related Appurtenances.** Perform maintenance of embankment, excavation, drainage in the ROW, and drainage appurtenances (culverts, pipes, channels, easements, inlets, grates, curb and gutter, storm drain systems, bridge drains, pump station wells and baskets, mitigation sites, detention, retention, and water quality ponds, hazardous material traps, ditches, traffic barrier drainage slots, etc.).

Investigate and remediate any drainage related issue that could affect the health and welfare of the public.

- 4.6.5.1. **Pipes and Channels.** Repair or replace separated, collapsed, or crushed pipes and culverts, and damaged and undermined riprap in accordance with Section 9.7, "Payment for Extra Work and Force Account Method" when approved.

Replace or repair any damaged or missing frames, grates, rings, and covers in accordance Department Standards. Upon discovery of missing safety covering, contractor must mediate potential hazard in accordance with Category 1 Mitigation requirements.

Keep drainage appurtenances including ditches clear, functioning, and free of obstructions, debris, trees, and brush to maintain positive flow. Maintain ditches upstream and downstream of detention structures. Vegetation protecting or stabilizing channel banks may be allowed to remain if approved. Remove debris that interferes with stream flow in channels after storm events unless otherwise directed by the Engineer. Maintain channel in original condition.

- 4.6.5.2. **Pump Stations.** Maintain in accordance with Department Specifications. Perform hydraulic cleaning, vacuum removal and disposal of debris in drain inlets, pump station wells, basket and inlet pipes, downspouts, sumps, storm sewers, and slotted drains. Debris is defined as dirt and other material not part of the drainage system. Perform visual inspections supplemented by cameras utilizing closed-caption television (CCTV) for inspections where required to inspect buried pipe work to ensure proper drainage every 6 mo. with the first test due 60 Calendar Days before the anniversary of the date as stated in the written notice of authorization to begin Maintenance Services. Plans to be provided by the Engineer, if applicable.

- 4.6.5.3. **Non-bridge class culverts.** Maintain structures with an opening measured along the center of the roadway of less than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes.

- 4.6.5.4. **Travel Way.** Monitor roadway conditions (including on the road monitoring) during weather conditions that could cause flooding; report status to the Engineer; respond and implement traffic control; and remedy, to the extent practicable, flooding of roadways impacted by rainfall events. Remove debris from the roadway and channels to an approved place in the roadside to the extent necessary to restore the roadway to safe travel.

Correct any ponding of water on the roadway, to include travel lanes and shoulder. This includes the removal of edge build up.

- 4.6.5.5. **Underdrains.** Maintain underdrains and related clean-outs in good operating conditions at all times in accordance with original construction.

- 4.6.5.6. **Erosion or Siltation.** Repair erosion before it is deeper than 12 in. Provide sodding and seeding for erosion control, fertilizer, erosion control devices, and soil retention blankets as necessary to allow natural vegetation to re-establish after repairs. Perform temporary erosion, sedimentation, and environmental. Erosion issues should be addressed within 24 hours if within clear zone and 48 hours outside of clear zone.

- 4.6.5.7. **Slopes.** Embankment and slopes will be maintained to prevent erosion. Repair erosion or damage to bring the ROW back to the lines and grades as originally constructed, or as approved by the Engineer. Repair ruts using an approved method. Replace vegetation by sodding, seeding and applying fertilizer. Use erosion

control measures such as compost, erosion control blankets, silt fences, rock berms, etc. to allow repaired areas to revegetate. Drain holes/weep holes must be clear and functional. Repair or replace damaged or undermined riprap. Mitigate or barricade slope failures and repair slope failures to approximately conform to the original cross-section and revegetate. Slope or embankment failures with the potential to become a hazard to the traveling public that impedes drainage, or that pose a potential risk of structural failure are considered an emergency.

4.6.5.8. **Mitigation Areas, Water Quality Ponds, and Detention Facilities.** Maintain mitigation areas as shown on the plans as originally designed.

Inspect, maintain and clean water quality ponds and detention facilities in accordance with approved TCEQ Edwards Aquifer Protection Program (EAPP) permit and General Notes. Water quality pond inspection and maintenance and repair requirements vary depending on the type of pond and the TCEQ EAPP permit's Inspection, Maintenance & Repair Plan. The specific inspection, maintenance and repair requirements are located in the EAPP permit (i.e. Water Pollution Abatement Plan (WPAP), Contributing Zone Plan (CZP) or Exception Request Plan (EXP)). Generally, water quality pond inspections are required twice annually with one inspection occurring after a significant rain event. The contract will determine the TCEQ inspection and maintenance requirements for the subject ponds and conduct inspection and maintenance activities accordingly. Inspection forms will be provided by the Department. Clean detention ponds when design capacity is reduced by 20%. Maintain water quality pond so that there is no standing water 48 hours after a rain event.

Pickup, remove, and dispose of litter from the water quality and detention facilities a minimum of once every 30 days. Litter is defined as trash, wastepaper, garbage, or other items that have been washed into the facility and described as, but not limited to, scrap metal, paper, wood, plastic, glass products, bottle caps, ring-pull tabs, cigarette butts, feces, and animal remains.

Maintain and keep water quality and detention facilities free of undesirable vegetation. Woody vegetation should be removed when observed because the roots can damage or compromise the liner.

Maintain and treat all water quality and detention facilities, keeping vegetation height below 18 in., where applicable.

Inspect, maintain and clean hazardous material traps (HMTs), water quality ponds and detention facilities in accordance with approved TCEQ permit and contract specifications.

Post rainfall inspections: drain stormwater from HMTs on the first working day after a significant rainfall event. Valves must be closed after HMTs are drained. Ensure proper operation of valves. Contact the Engineer in the event of petroleum or hazardous material spill inside or outside of HMTs.

Monthly: pickup, remove and dispose of litter from the HMTs, water quality ponds and detention facilities as per specifications. Litter is defined as trash, wastepaper, garbage or other items, including but not limited to; scrap metal, paper, wood, plastic, glass products, bottle caps, ring-pull tabs, cigarette butts, feces and animal remains, which have been washed into the facility. Control vegetation in clay bottom facilities. Maintain water quality ponds so that there is no standing water 48 hours after a rain event. These inspections must be documented on an approved checklist form to be provided by the Engineer.

Annual inspections: All HMTs, water quality ponds and detention facilities must be inspected for drainage defects twice annually. These inspections must be documented on an approved checklist form to be provided by the Engineer. If structural defects are found, immediately notify the Engineer.

4.6.6. **Roadside Traffic Safety Appurtenances.** Perform maintenance of roadside traffic safety appurtenances (e.g. concrete traffic barrier, metal beam guard fence, etc.), including cleaning, replacing or tightening bolts, repairing or adjusting to maintain proper operation.

Repairs of roadside traffic safety appurtenances must be straight, in the original alignment, and made with the same material as the original fabrication to provide an adjoining color and finish match and minimize

damaged appearance unless otherwise approved or directed. Repairs and replacement of traffic safety appurtenances must have the appropriate delineation for proper operation.

All repair of rail will comply with the appropriate rail standards.

- 4.6.6.1. **Guard Fence.** Inspect and adjust guardrails and end treatments, as necessary, to ensure proper operations. When guard fence damage is identified, immediately remove debris and install warning signs and temporary barriers. Repair or replace nonfunctioning guardrail and/or end treatment. Replace in-kind unless otherwise noted. Upgrade to the latest standards, including end treatments, when cost to repair guardrail damage exceeds 50% of the cost to replace the total length.

Cut all guardrail bolts protruding from the back of the guard posts such that no more than  $\frac{3}{4}$  in. remains behind the nut. Cut the bolt with a saw so that the nut can be removed from the bolt.

Cutting with a cutting torch will not be allowed. Cut these bolts the same day as repaired. Provide cold galvanizing to treat cut bolts.

Inspect guardrail and tighten bolts or adjust as necessary to ensure proper operation.

- 4.6.6.2. **Concrete Safety Barrier.** Immediately respond and mitigate or temporarily repair damaged safety barrier. Repair or replace damaged safety barrier that will no longer function as designed. Straighten misaligned safety barrier and repair any safety barrier with broken edges. Repair spalls and damaged areas. Immediately remove debris and install warning signs.

The Department will provide Portable Concrete Traffic Barrier (PCTB) when damages to existing barrier require replacement, in the opinion of the Engineer. Department-furnished barrier sections will be at a stockpile location or an existing traffic barrier installation shown in the plans.

The Contractor is responsible for hauling and placing. After use, stockpile barrier sections and connection hardware that are to be retained by the Department at the location shown in the plans or as otherwise directed.

Repair or replace any pavement damaged in the process of installing, moving, or removing barrier sections at the Contractor's expense.

- 4.6.6.3. **Cable Barrier.** Immediately respond and mitigate or temporarily repair damaged cable barrier. Repair or replace damaged cable barrier that will no longer function as designed as recommended by the manufacturer's specifications. Immediately remove debris and install warning signs.

Maintain cable barrier so that it is free of debris, vegetation growth or other obstacles within area of impact recovery. Maintain cable barrier at the correct tension and ensure cable anchor system is properly maintained and operational.

- 4.6.6.4. **Impact Attenuators.** Clean, adjust, and inspect attenuators as necessary to ensure proper operation. Immediately remove debris and install warning signs and temporary barriers if needed. Repair, replace or reset nonfunctioning attenuators. Replace damaged attenuators in-kind unless otherwise approved. Remove and properly dispose of any parts that are not reusable.

When an attenuator system is repaired, clean the entire length of the attenuator system of dirt or debris before completing work. Ensure the impact attenuator is properly marked and that object marker is clean.

- 4.6.7. **Miscellaneous.** Perform maintenance of miscellaneous roadside items.

- 4.6.7.1. **Chain Link Fence.** Perform maintenance of chain link fence. Immediately mitigate or temporarily repair if potential hazards could exist to the traveling public. Repair or replace damaged fencing or gates, including, but not limited to decorative, barbed wire, wire, vinyl, and chain link.

4.6.7.2. **Encroachments.** Remove signage and any non-standard mailbox assembly ROW encroachments not authorized by the Department. Notify the Engineer when other ROW encroachments are discovered.

4.6.7.3. **Mailboxes.** Install approved resident supplied mailboxes on Contractor furnished, and approved, post, mounting hardware, and delineation. Installation of mailbox will be performed at time of removal.

4.6.7.4. **Graffiti.** Perform removal of graffiti and application of anti-graffiti.

Remove gang related and potentially offensive (vulgar, sexually or racially oriented, etc.) graffiti immediately. Use an approved method of removal. Perform removal - in a manner that restores the surface to an appearance similar to adjoining surfaces and that does not damage surface or coating. Collect all debris resulting from the cleaning process and remove from ROW at the end of each day.

4.6.7.5. **Aesthetic Features.** Maintain ornamental or aesthetic features, signs, lighting, etc. Repair or replace damaged features. Aesthetic features include but are not limited to the following.

- Decorative stacked stone walls
- Emblems
- Or other aesthetics features

4.6.8. **Bridges.** Perform routine bridge inspection and maintenance.

4.6.8.1. **Bridge Inspection and Report.** The Department has separate contracts to conduct Routine Safety Inspections of all bridges every 24 mo. Those inspections are evaluated utilizing the National Bridge Inspection Standards (NBIS) and are conducted by others. Copies of those inspection reports will be provided and will indicate needed bridge maintenance work that the Contractor may need to address.

To supplement the bridge inspections conducted by others, the Contractor is required to perform visual bridge maintenance inspections every year, at a minimum, to monitor bridges for needed repairs and damage caused by over-height loads, other vehicular accident damages or other damage caused by settlement, deterioration or natural causes. More frequent inspections will be performed, as described, to address other maintenance activities.

Perform inspections and submit inspection findings:

- within the first 90 Calendar Days after the date time charges begin as stated in the written notice of authorization to begin Maintenance Services.
- with personnel that have taken and passed the Department's Maintenance Bridge Inspection Course (MNT127) or approved equivalent. Submit evidence of successful course completion within 60 Calendar Days after the date time charges begin as stated in the written notice of authorization to begin Maintenance Services or 30 Calendar Days after course completion, applicable to the date of course completion; and
- when notified that damage has occurred due to impact, incident or any other cause; after a rainfall event that may have caused damage to the bridge, as determined by the Engineer; and every 24 mo. or as stated in the plans.

Provide inspection reports in accordance with the Department's Maintenance Bridge Inspection Tracking System (MBITS) within 14 Calendar Days following each inspection. Refer to the MBITS 1.0 User Manual and Inspection Sheet.

Measure and report the bridge clearance measurements for "Actual Clearance", "Signed Clearance", nature of any sign work performed, and when it was done annually. Maintain records indicating dates of and observations during inspections.

When damage to a highway bridge structure or overpass is discovered, the safety of the traveling public will be of immediate concern. Immediately establish detours if there is any question about the ability of the structure to function in a safe manner.

Notify the Engineer when there is any question about the ability of the structure to function in a safe manner within 1 hr. Establish detours when directed by the Engineer.

4.6.8.2. **Bridge Maintenance.** Correct, repair, resolve and eliminate nonstructural deficiencies per this Item.

Repair concrete spalls, punch-outs, or asphalt failures on bridge decks. When asphalt fails, remove asphalt and inspect the surface and underside of deck at problem area. If no surface spall is detected, replace asphalt. Report findings to the Engineer. Repair deck surface spalls and damage in accordance with Department Specifications, unless otherwise approved. Obtain concrete repair design approval from the Engineer. Restore asphalt over repairs with asphalt where existing previously unless otherwise directed.

Structural bridge repair work will be paid for by Article 9.7, "Payment for Extra Work and Force Account Method" or other pertinent items.

Perform removal and disposal of debris from bridge drains, caps, bearings, substructure, riprap, etc. including, but not limited to, bat guano and other animal droppings.

Perform sweeping, vacuuming, and removal of deicing chemicals, rock, debris, etc. from bridge deck, parapets, railing, joints, backwalls, caps, joints, and bearings annually and within 30 days from the last application of deicing chemicals unless another ice event is predicted within 2 weeks of the 30 day deadline.

Perform maintenance and repair of bridge curbs, parapets, sidewalks, sidewalk joints, bridge rails, beam protection system, illumination, signage including mounting hardware, etc.

Perform concrete crack repair in accordance with Department Specifications.

Perform maintenance of channels or water crossings including, but not limited to:

- repair channel erosion, scour, sediment buildup, culvert end treatment safety features, and slope or channel stabilization measures (e.g. riprap, gabions, etc.);
- vegetation management to include control of encroachment on bridges; and
- removal of debris.

4.6.8.3. **Expansion Joints.** Perform vacuuming of bridge joints to remove debris during roadway sweeping operations. Perform cleaning and sealing, when seal is damaged or no longer bonding, of bridge deck armor and expansion joints. If the expansion joint is greater than 1/2 in. wide, but the seal is damaged, remove the existing seal, clean and seal the joint. Repair polymer concrete expansion joints with material meeting Department Materials Specifications, unless otherwise approved. Submit material information for review and approval. If permanent repairs cannot be initiated within 1 hr., fill hole created by failed expansion joint with containerized asphalt.

4.6.9. **Traffic Operations Devices.** Perform traffic operations device inspection and maintenance. Work excludes responsibility for utility costs.

4.6.9.1. **Traffic Signals.** Perform inspection and maintenance of highway traffic signals for signals the Department maintains, as listed in the plans in accordance Department Specifications.

New traffic signal construction or reconstruction project(s) may be underway through the duration of this contract. Once they are completed or partially accepted for maintenance or performance periods, begin/resume maintenance at these intersections for the remainder of the Contract term. An updated list of signals the Department maintains will be provided annually.

4.6.9.2. **Traffic Signal Inspections.** Perform inspections and submit inspection findings for:

- All signal system inspection within the first 60 Calendar Days after date time charges begin as stated in the written notice of authorization to begin Maintenance Services, and every 12 mo. thereafter.



- Place a log book in the controller cabinet and keep a record of each trouble call reported. Notify the Engineer of each trouble call immediately.
- Document all inspections and corrective actions for each intersection in the log book located in the controller cabinet. Report all findings.
- Check controllers, MMU (memory management unit) or conflict monitors, detector units (conventional, VIVDS, and radar), relays, uninterruptible power supplies, railroad pre-emption devices, pedestrian push buttons, pedestrian and signal heads, and APS (accessible pedestrian signal) units for proper function with certified testers. Repair and replace as necessary.
- Inspect traffic signal and pedestrian heads for damage, proper alignment, dirt, debris, etc. for proper operation.
- Conduct inspections by certified signal technician per section 4.2.

4.6.9.3. **Traffic Signal Maintenance.** Maintain signals so that they perform as they were originally designed. Perform repair work with equivalent material, or as approved, in accordance with the Department Specifications. Report all work performed to the Engineer.

Perform maintenance, repairs or replacement of traffic detection devices every 6 mo.

Check cabinet filters at least once every 6 mo. and clean if necessary. Replace cabinet filters every 2 yr. Keep interior of controller cabinets in a neat and clean condition at all times.

Program the signal timing and operational phasing as directed. The Department will be responsible for providing signal timing and phasing diagrams.

Perform routine traffic signal system maintenance including response to notices of operational malfunctions and damage. Respond to locations when notices are received of operational malfunctions and damage within 2 hours for Category 1 Defects as defined in the performance measures noted in Section 5.3, "Performance Standards". Ensure 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.

Repair signal pole and controller cabinet damage. Perform tightening of bolts on foundations.

Immediately repair operational problems with traffic detection systems. Repair or replace inoperable vehicle detection cameras and other detection devices. Repair or replace inoperable vehicle detection camera controllers.

Repair traffic signal safety lighting for proper alignment and operation.

Coordinate with permit coordinator regarding movement of oversize overweight vehicles within the corridors covered in this specification.

Raise, remove, and turn traffic signal cables or mast arms for the passage of oversized vehicles as required.

Perform traffic signal and pedestrian heads repair, proper alignment, cleaning, etc. for proper operation. Repair or replace back plates as needed. Back plates will be black aluminum.

4.6.9.4. **Video Imaging Vehicle Detection System (VIVDS).** Perform maintenance to include replacement of damaged VIVDS cameras onto the mast arms with the attachment mechanisms provided with the camera system. Place the traffic signal cable (TY A) (3-conductor) (16 AWG) and the VIVDS communication cable coaxial in continuous and separate runs from each VIVDS camera to the controller.

Aim and adjust the cameras, install the cables and VIVDS cards into the controller cabinet and complete any other necessary work to bring the traffic signal into operation.

Provide the traffic signal cable and coaxial cable above and any incidentals necessary to install them.

Provide VIVDS system components to include the cameras, monitor and cards. The VIVDS system also contains the attachment mechanisms needed to attach the cameras to the mast arms.

Provide and install all cables necessary to provide complete VIVDS operation. Provide a minimum of 10 cables to direct connect the notebook to the VIVDS port.

The VPU operational software will be stored internally in flash memory and be capable of being updated without the removal and replacement of memory devices.

Provide surge protection in the controller cabinet protecting the camera video and power inputs/outputs. All surge protection will be din rail mounted.

Install the VIVDS detection zones as directed. Have certified personnel on site at the time of the signal turn-on to assist with the installation of detection zones.

The video output from the C/VPU will be in color or black/white with active detection zones overlaid on full motion video.

Contractor will respond to customer service inquiries immediately to perform needed repairs.

- 4.6.9.5. **Broad Band for Traffic Signals.** Perform maintenance to included replacement of damaged broad band ethernet cable as approved by the Engineer. Install the ethernet cable in a continuous run from the antenna to the radio in the controller cabinet.

Install cable so that none of it is exposed.

Provide the latest version of the applicable SSR diagnostic software to the Department.

Contractor will respond to customer service inquiries immediately to perform needed repairs.

- 4.6.9.6. **Signs, Supports & Assemblies.** Perform maintenance, repairs or replacement of signs, assemblies and overhead supports. Sign design (size, legend, and content), lateral placement, sign posts, sign foundations, and sign supports must be in accordance with the applicable Department's Sign Mounting Detail (SMD) and Typical Sign Requirements (TSR) standard sheets and Department Specifications.

Immediately begin repair or remove overhead sign structures and signs that present a Category 1 Defect. Install temporary signs, which may include portable changeable message signs. Portable message boards will be placed within 24 hours. Replace overhead sign structures and signs that are damaged.

No fiberglass signs may be used. Maintain all sign posts vertical with all break-away sign mounts clear of silt or other debris that could impede break-away features. Knocked down or damaged signs will be immediately removed from the ROW. Remove roadside signs that have been knocked down from the ROW within 48 hours of discovery. All exposed sign footings will be delineated. Repair and replace damaged signs and posts. Replace damaged sign mounts with the same type of mount as on the existing sign being replaced or as approved.

Reinstall large signs knocked down with no sign face damage. Wash sign faces before reinstallation. Install temporary ground-mounted signs for damaged exit signs immediately.

All signs that are replaced will include sign identification decals affixed to the back of the sign and filled-out by the Contractor per Department Specifications.

Perform monthly day and night inspections of all signs. Replace all signs not meeting standards or minimum retroreflectivity levels shown in the TMUTCD. Maintain a log of inspection findings in CMMS to include roadway designation, roadbed, direction, reference marker with offset, and global positioning system (GPS)

coordinates and submit a report in a format acceptable by the Engineer. Due date is the 15<sup>th</sup> Calendar Day of each month, performing the first inspection within 30 Calendar Days after notice of authorization to begin Maintenance Services.

Triangular slip base that use set screws to secure the post will require 1 of the set screws to penetrate the post by drilling a hole in the post at the location of the screw. All set screws must be treated with anti-seize compound.

If replacing one or more signs in a "rack" (multiple signs mounted on single post), replace all signs to ensure that they are similar in material and appearance during day and night.

Install new signs at new locations as directed. This work, and other pertinent items, will be compensated in accordance with Section 9.7, "Payment for Extra Work and Force Account Method", when approved.

Where riprap exists, replace damaged riprap around reconstructed large sign foundations as shown on the applicable standard or as directed. Replace and relocate speed limit signs within the limits of the project, as directed, based on findings and recommendations of future engineering and traffic studies. In the event speed limit signs are relocated, remove and dispose of abandoned sign bases. Place all speed limit signs within 14 working days after the direction by the Engineer is given.

The Department will provide details for all non-standard signs.

Replace bridge vertical clearance signs when measurements do not reflect signed clearance following bridge inspection, as directed.

All damaged materials replaced will become the property of the contractor for proper disposal.

- 4.6.9.6.1. **Warning and Regulatory Signs:** Install temporary signs immediately upon discovery or notification of damaged, non-functioning warning or regulatory signs.
- 4.6.10. **Illumination.** Perform inspection and maintenance of highway illumination (roadway, high mast lighting, and underpass lighting). The Contractor is not responsible for utility costs.
- 4.6.10.1. **Illumination Inspection.** Perform monthly day and night inspections of all luminaires, whether within boundaries covered by an Illumination Agreement or not and submit a report in a format acceptable to the Engineer. Identify each outage, knockdown, or other deficiency by pole number, if present, roadway designation, mainlane, ramp, frontage road, direction, mile marker with offset, and global positioning system (GPS) coordinates. Due date is the 15<sup>th</sup> Calendar Day of each month, performing the first inspection within 30 Calendar Days after notice of authorization to begin Maintenance Services.
- 4.6.10.2. **Illumination Maintenance.** Repair or replace all deficiencies, including the electrical system, noted in the monthly inspection report, with equivalent material found on the material producer list (MPL). Material not found on the MPL will not be allowed. Maintenance of illumination assemblies will include, but not be limited to, replacement of lamps, LED optics, fuses, fuse holder, starting aid, surge protection device, photocells, ballasts, drivers and other work required to keep lights operational. Conform to the latest edition of the National Electric Code (NEC) as adopted by the Texas Department of Licensing and Regulation, local utility requirements, the requirements of this Item, and other Departmental standards as applicable.

Repair, replace, and re-aim illumination assemblies, induction fluorescent fixtures, luminaire poles, luminaire arms, wiring, high mast luminaires, lamps, fuses, fuse holder, starting aid, photocells, ballasts, overhead sign lighting, underpass fixtures, etc. to maintain operation.

Perform the following, but not limited to, to maintain operation:

- maintenance of all foundation anchor bolts, nuts, and washers;
- prep and touch up rust spots with cold galvanizing spray;
- plumb fixture;
- repair or replace damaged ground boxes;

- repair or replace damaged conduit;
- replace damaged foundations;
- replace damaged transformer bases and covers;
- repair shorts or open circuits;
- replace damaged or missing hand hole covers;
- install or replace fused disconnect;
- fill gearbox lubrication reservoir;
- lubricate grease fittings;
- adjust brake mechanism to proper torque;
- repair cable drum deficiencies;
- repair or replace all wire rope and cables with deterioration;
- repair welds around baseplate and ground sleeve for visible cracks;
- prep and touch up rust spots with cold galvanizing spray;
- replace lamps and clean fixtures;
- replace ballasts;
- replace aviation warning lamps;
- repair short or open circuits; and
- raise high mast ring to proper position.

Perform cleaning of LED optics reflectors, glass lenses and refractors at the same time any maintenance or repair work is performed on an illumination assembly. Relevel roadway illumination fixtures. Re-aim high mast illumination.

Remove luminaire poles that have been knocked down from the ROW within 48 hours of discovery.

4.6.10.3. **Electrical Supply.** Repair or replace damaged electrical conductors and cables in all parts of the illumination system, including, but not limited to, those in poles, T-bases, ground boxes, conduits, and cabinets.

4.6.10.4. **Access Panels.** Secure all access panels and covers. Replace all missing and damaged panels and covers with equivalent material.

4.6.10.5. **High Mast.** Provide the portable power drive assembly for any high mast lighting work. Ensure high mast assemblies are structurally sound and all winch and safety equipment is correctly functioning and maintained without rusting or corrosion.

4.6.11. **Pavement Markings.** Remove existing longitudinal pavement markings, as directed, before placing new pavement markings that will result in 180 or more mils (not including glass beads). Black paint/thermo will not be allowed.

Restriped areas must be a minimum of 1,000 feet, with no less than 500 feet between restriped areas.

Place materials, as applicable, to the existing longitudinal pavement markings, and perform work in accordance with Department Specifications, unless otherwise required in the plans to be alternate materials governed by another special specification included in the Contract.

When the raised portion of a profile marking is placed as a separate operation from the pavement marking, the raised portion must be placed first then covered with TY I marking materials.

4.6.11.1. **New Striping.** Perform placement and maintenance of pavement markings. When temporary pavement repairs are performed, place temporary pavement markings before opening to traffic and place permanent markings within 14 Calendar Days.

New type I marking retroreflectivity must be measured by the contractor and meet minimum retroreflectivity values for edge line markings, centerline or no passing barrier-line, and lane lines in accordance with Department Specifications.

- 4.6.11.2. **Longitudinal Pavement Markings.** Placement of Longitudinal Pavement Markings (centerline, lane line, and edge line). Replace pavement markings when:
- retroreflectivity, performed during Mobile Retroreflectivity Data Collection (MRDC), does not meet the minimum reflectivity requirements (MRR) of 150 mcd/m<sup>2</sup>/lx for white and 100 mcd/m<sup>2</sup>/lx for yellow.
  - length, width, shape, size, color, and configuration does not meet minimum requirements.
- 4.6.11.3. **Non-Longitudinal Pavement Markings.** Placement of Non-Longitudinal Pavement Markings (Stop bars, crosswalks, arrows, symbols, shapes, graphics, channel lines, exit and entrance gores, etc.)
- Replace non-longitudinal pavement markings when 30% or more of a marking is damaged or missing (e.g. length, width, shape, configuration, lack of reflectivity, etc.).
- 4.6.11.4. **Mobile Retroreflectivity Data Collection (MRDC).** Perform MRDC for all lane line, edge line, and centerline or no passing barrier-line pavement markings every 6 mo. with the first test due 60 Calendar Days before the anniversary of the date stated in the written notice of authorization to begin Maintenance Services. Perform MRDC in accordance with Special Specification 6291, "Mobile Retroreflectivity Data Collection for Pavement Markings", unless otherwise superseded by an alternate Special Specification included in the contract. Provide data to the Engineer within seven (7) Calendar Days of completion.
- A marking will be considered to meet the mobile retroreflectivity (MR) if:
- the combined average retroreflectivity measurement for a one-mile segment meets the MRR; and
  - no more than 30% of the retroreflectivity measurement values are below the MR value within the 1 mi. segment.
- 4.6.12. **Raised Pavement Markers.** Perform inspection, replacement, and maintenance of raised pavement markers.
- Perform an initial inspection of all raised pavement markers within 30 Calendar Days of date time charges begin as stated in the written notice of authorization to begin Maintenance Services. Perform inspection, both during the day and at night, every 6 mo. after date time charges begin as stated in the written notice of authorization to begin Maintenance Services and 60 Calendar Days before the end of the contract.
- Night inspections must be performed using a passenger vehicle with headlights set on low beam and 4 markers must be reflective when placed on 80 ft. spacing or 8 markers must be reflective when placed on 40 ft. spacing. RPMs (including traffic buttons where placed) must be functional when viewed at night in accordance with the performance measures as noted in Section 5.3. A functional marker is both visible and conspicuous.
- At a minimum, perform full replacement of raised pavement markers every 24 mo. on all roadbeds, simultaneously.
- 4.6.13. **Raised Traffic Curb Guidance Systems (RTSCGS), Barrier Markers, Object Markers, Delineators, and Object Marker Assemblies.** Repair or replace deficient raised RTSCGS, barrier markers, object markers, delineators, and object marker assemblies in accordance with Department Specifications and latest standard plan sheets. RTSCGS must be maintained or replaced in accordance with the plans and/or latest standard plan sheet. Deficient will mean not reflective, not vertical, or missing, not meeting minimum standards.
- 4.6.14. **Retaining and Sound Walls.** Maintain retaining and sound walls as designed including keeping the drain holes, underdrain system, and/or weep holes clear and functioning as intended. Monitor reinforced earth walls and notify the Department of any notable movement or loss of backfill. Kill and remove all weeds and undesirable vegetation using an approved herbicide program. Repair damaged retaining wall panels and copings. Maintain aesthetic features of walls as applicable.
- Upon discovery, immediately notify the Engineer of any notable movement or other issues that may affect structural integrity of reinforced earth walls.

- 4.6.15. **Incident Management.** Perform incident management. An incident will be defined as an event that disrupts the normal operations of the roadway and flow of traffic. Examples include, but are not limited to accidents, utility line failures, flooding, and lane blockage.

When receiving initial notification, obtain information about incident to determine the necessary equipment for traffic control, debris removal, etc. and respond to the incident.

Provide an Incident Scene Commander at all major incidents. A major incident, unless otherwise defined by the Engineer, is any incident resulting in the need for the Contractor to close a lane of traffic.

The Incident Scene Commander must be certified as a traffic control supervisor (TCS) by the ATSSA, or approved equal, and:

- participate in scheduled meetings with law enforcement, fire departments, wrecker services, environmental cleanup crews, etc. to develop close cooperation between these entities, improve response and incident clearance time; and debrief after major events;
- serve as the Department's point of contact for response to the incident scene(s);
- provide support to the lead agency;
- obtain necessary information to mobilize equipment and personnel, upon contact, to clear or repair the roadway and roadside to return the roadway to normal traffic flow; and initiate equipment and personnel response upon notification;
- report to the scene of major incidents and remain on the scene overseeing the Contractor's resources assisting the lead agency in the clearance of incidents;
- supervise implementation of traffic control;
- maintain contingency plans for incidents involving live animals;
- coordinate detour routes for freeway closures so that traffic movement is accommodated;
- communicate condition updates to the Engineer upon notification and each hour thereafter until the incident is resolved or cleared; and
- oversee implementation of traffic control at incidents.

Coordination and communication with the Engineer will include the following:

- Immediately notify the Combined Transportation and Emergency Communication Center (CTECC) about accidents or incidents that affect traffic
- For incidents that meet the criteria for reporting within 8 hours of the incident per FHWA Form 2111, contact the Engineer, District's Maintenance Administrator or Director of Operations immediately, within 1 hour of the incident by email and phone. The Department will make contact with the emergency contacts noted in Form 2111.
- Coordination with Department and other agencies to establish or implement detour routes
- Coordination with Texas DPS, CTECC and other appropriate agencies
- Participation in Department meetings, including Austin-area Incident Management for Highways (AIMHigh), as a representative or partner of the Department as requested.

If the incident/event management includes catastrophic events the Incident Scene Commander will:

- Secure the site and/or provide assistance as required
- Provide necessary personnel, emergency response equipment, supplies, materials, etc. to perform the work
- Upon notification of the incident, follow procedures to provide a maximum response time of 15 min. to initiate action and be on site within 45 min. for assessment and to begin implementation of necessary control measures.

- Ensure compliance with applicable local, state, and federal regulations for the containment, handling and disposing of hazardous material
- Implement measures to protect or isolate damaged infrastructure and to restore the roadway or structure to a safe condition
- Initiate traffic control including short term lane closures, long term lane closures, detour routes, implementation and maintenance
- Initiate measures to mitigate impacts to mobility
- Perform emergency repairs and permanent repairs as approved by the Engineer
- Removal debris

Immediately begin removal and clean-up of any debris from roadway. Contractor must have personnel/ materials/ equipment on-site and ready to perform traffic control, debris removal and cleanup, hazard mitigation, and other work necessary to restore mobility within 90 min. upon notification. If access is restricted while responding to a major incident, the response requirement may be extended to 4 hours. Properly dispose of debris off of the ROW within 48 hr. after the cleanup has been completed.

- 4.6.16. **Hazardous Material.** When hazardous materials are encountered during cleaning and sweeping operations, the Contractor is responsible for taking the appropriate safety precautions and providing the appropriate equipment to protect their employees.

When hazardous materials are dispersed at an incident or discovered on the ROW, provide support to the lead agency and notify the appropriate local, state, or federal governmental regulatory agency.

Provide the responsible party, of the hazardous material, the opportunity to perform the removal of the hazardous material. If the responsible party does not initiate steps to remove the material, re-notify the appropriate local, state, or federal governmental regulatory agency for direction. If the responsible party of the hazardous material does not remove the material, notify the Engineer, Maintenance Administrator or Director of Operations.

In accordance with 30 TAC Chapter 327 Spill Prevention and Control, the reportable quantity for petroleum products or used oil is 25 gal. For other hazardous material spills, refer to 30 TAC Chapter 327.4 for the applicable reporting quantity.

- 4.6.17. **Public Information.** Assist the Department in public relations activities including notification of department personnel of lane closures, documenting and addressing customer service inquiries, comments, compliments and complaints from the public and local entities.

- 4.6.18. **Environmentally Sensitive Areas.** Perform maintenance in environmentally sensitive areas. Refer to the plans for special requirements in Environmental Zones.

- 4.6.18.1. **Karst Preserve Areas.** Karst preserve areas in or adjacent to the ROW will be shown on the plans. Maintain the ROW in accordance with the requirements shown on the plans. Take particular care to avoid disturbance of the ROW in these areas. All maintenance activities are prohibited within these areas. Consult the Engineer if soil disturbance or invasive species removal is necessary. Spot removal of invasive species may be performed by hand at the direction of the Engineer.

- 4.6.18.2. **Wetland Mitigation Areas and Waters of the U.S.** If wetland mitigation areas exist in the ROW, as shown in the plans, all required maintenance must be performed so that the native characteristics of the vegetative community are retained.

Limit active maintenance practices such as herbicides and pesticide application within 500 ft. of the mitigation areas. Maintain, replace, or place "No Mow" signs at the edge of the wetland areas to prohibit mowing in the wetland areas within 30 days of date time charges begin as stated in the written notice of authorization to begin work.

Limit any necessary seeding, or sodding, of grasses or planting of woody vegetation in these mitigation areas to the species as shown in the plans. Other species may be used upon approval.

- 4.6.18.3. **Migratory Bird Treaty and Endangered Species Act.** The contract maintenance limits are subject to the Migratory Bird Treaty and Endangered Species Act. More information is available on the Federal Fish & Wildlife website.

Remove all old and unoccupied migratory bird nests from any structures, trees, etc. For woody vegetation clearing and tree trimming throughout the designated areas may occur only between September 16 and February 28, outside the nesting season. Submit a plan (including description of work, proposed dates, and location) 2 weeks before the trimming or clearing date. Prevent migratory birds from re-nesting between and obtain approval for woody vegetation removal from March 1 to September 15 for migratory birds. All methods used for the removal of old nesting areas and the prevention of re-nesting must be submitted to TxDOT 30 business days before beginning work. Obtain approval throughout the year in the areas designated as endangered species habitats. Maintain the native characteristics of the vegetative community.

If active nests are encountered on-site, all activity within 50 ft. of the nest must stop. Contact the Engineer to determine how to proceed.

Migratory birds and bats may be nesting within the project limits and concentrated on roadway structures such as bridges and culverts. Notify the Engineer, if any occupied bird nests are identified in the path of any vegetation removal or trimming. According to the Migratory Bird Treaty Act, it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product manufactured or not.

- 4.6.18.4. **Recharge and Contributing Zones.** Implement water quality protections and coordinate with the TCEQ, as required by law.

Regulated activities include, but are not limited to, installation of aboveground or underground storage tanks, modification of existing water quality structures, and ground soil disturbing activities such as clearing and excavation within the recharge or contributing zones. Special restrictions apply as shown in the plans. Refer to regulations found in 30 TAC Chapter 213 aquifer areas for compliance requirements. Contact the Engineer as necessary for approval.

- 4.6.19. **Roadway and Appurtenance Damage Caused by Third Parties.** Perform repair, and replacement, of roadway and roadway appurtenance, damage caused by third parties. Replacement must be made if the appurtenance no longer functions as designed, when damaged, at the discretion of the Engineer. Repairs and replacement must be completed to meet the performance standard. Obtain local or state law enforcement participation in pursuit of action against the third party supporting the claim, if necessary. The Department will provide the Contractor with access to the Crash Records Information System (CRIS) upon the Contractor's execution of related request for access.

- 4.6.20. **Construction Work Zones.** Reduced maintenance in construction work zone limits within the limits covered by this Contract may be required, as directed. Once construction or reconstruction project(s) are completed or partially accepted for maintenance or performance periods, resume work along those portions of the highway for the remainder of the Contract term.

The Contractor will be given opportunity to provide a punch list on construction projects before the acceptance of the construction project.

- 4.6.21. **Force Majeure Events.** The Contractor will repair any damage due to Force Majeure events. If major damage caused by a Force Majeure event should occur, the first \$50,000 per event will be the responsibility of the Contractor and will not be reimbursed by the Department, the Federal Highway Administration (FHWA) or third parties. Receive written approval before commencing additional work and proceed in accordance with Item 4.4 Changes in the Work. Any approved amount over \$50,000 per event will be added to the monthly payment after the work is completed. The Engineer reserves the right to reject the proposal and



perform the work by state forces or other Contract. In the event the Engineer exercises this option, the first \$50,000 per event will still be the responsibility of the Contractor.

At the express written request of the Department, but not otherwise, prepare the documentation in the required format to apply for any reimbursement for any loss that occurs on the highway as well as Emergency Relief Funds (ER) from the FHWA in the event of a Presidential Disaster Declaration. Should the Department receive funds as a result of these claims or ER projects, reimbursements will be paid to the Contractor as applicable.

It is the contractor's responsibility to ensure their employees complete the required National Incident Management System NIMS Training provided by the U.S. Federal Emergency Management Agency (FEMA).

## 5. MEASUREMENT

This Item will be measured by the highway centerline mile. This measurement will include payment for all assets to include all roadbeds within the ROW including main lanes, frontage roads, cross streets, ramps, collector distributors, direct connectors, turnarounds, easements, etc. being maintained each month.

The Department will measure the Contractor's performance through the performance of condition assessments and attainment of performance standards.

- 5.1. **Condition Assessments.** The Department will perform a condition assessment in accordance with the frequencies set forth in Table 1, Condition Assessment Frequencies. The Contractor will be notified at least 7 Working Days before the date of condition assessments and is encouraged to accompany the Department during the assessment. The condition assessment will randomly sample at least 10% of the centerline mile length of all roadways broken into 1.0-mile sections or portions thereof starting at the southern or western most project limits.

Table 1  
Condition Assessment Frequencies

ELEMENT CATEGORY		Assessment Frequency				
		Monthly	Quarterly	Twice Annually	Annually	As Required
<b>4.6.2 ROADWAY</b>						
4.6.2.1	Localized Roughness	x				
4.6.2.2	Flexible Failures	x				
4.6.2.3	Rigid Failures	x				
4.6.2.4	Edge Drop-offs	x				
4.6.2.5	Expansion Joints	x				
4.6.2.6	Cracks in Asphalt	x				
<b>4.6.3 SWEEPING, LITTER AND DEBRIS</b>						
4.6.3.1	Sweeping	x				
4.6.3.2	Litter	x				
4.6.3.3	Debris	x				
<b>4.6.4 VEGETATION MANAGEMENT</b>						
4.6.4.1	Vegetation Height	x				
4.6.4.2	Noxious Weeds	x				
4.6.4.3	Vegetation Encroachment	x				
4.6.4.4	Vegetation Trimming	x				
4.6.4.5	Loss of Vegetation	x				
4.6.4.6	Sight Lines	x				
4.6.4.7	Wildflowers					x
4.6.4.8	Seasonal Mowing					x
4.6.4.9	Landscape Areas	x				
4.6.4.10	Tree and Brush	x				
<b>4.6.5 DRAINAGE, EXCAVATION, EMBANKMENT AND RELATED APPURTENANCES</b>						
4.6.5.1	Pipes and Channels		x			
4.6.5.2	Pump Stations		x			
4.6.5.3	Non-bridge class culverts		x			
4.6.5.4	Travel Way		x			x
4.6.5.5	Underdrains		x			
4.6.5.6	Erosion or Siltation		x			
4.6.5.7	Slopes		x			
4.6.5.8	Mitigation Areas, Water Quality Ponds, and Detention Facilities	x		x		x
<b>4.6.6 ROADSIDE TRAFFIC SAFETY APPURTENANCES</b>						
4.6.6.1	Guard Fence	x				
4.6.6.2	Concrete Safety Barrier	x				
4.6.6.3	Cable Barrier	x				
4.6.6.4	Impact Attenuators	x				

ELEMENT CATEGORY		Assessment Frequency				
		Monthly	Quarterly	Twice Annually	Annually	As Required
<b>4.6.7 MISCELLANEOUS</b>						
4.6.7.1	Chain Link Fence	x				
4.6.7.2	Encroachments	x				
4.6.7.3	Mailboxes	x				
4.6.7.4	Graffiti	x				
4.6.7.5	Aesthetic Features	x				
<b>4.6.8 BRIDGES</b>						
4.6.8.2	Bridge Maintenance		x			
4.6.8.3	Expansion Joints		x			
<b>4.6.9 TRAFFIC OPERATION DEVICES</b>						
4.6.9.2	Traffic Signal Inspection					x
4.6.9.3	Traffic Signal Maintenance	x				x
4.6.9.4	Video Imaging Vehicle Detection System (VIVDS)	x				x
4.6.9.5	Broad Band for Traffic Signals	x				x
4.6.9.6	Signs, Supports & Assemblies	x				
4.6.9.6.1	Warning and Regulatory Signs	x				
<b>4.6.10 ILLUMINATION</b>						
4.6.10.2	Illumination Maintenance	x				
4.6.10.3	Electrical Supply	x				
4.6.10.4	Access Panels	x				
4.6.10.5	High Mast	x				
<b>4.6.11 PAVEMENT MARKINGS</b>						
4.6.11.1	New Striping					x
4.6.11.2	Longitudinal Pavement Markings		x			
4.6.11.3	Non-longitudinal Pavement Striping		x			
<b>4.6.12 RAISED PAVEMENT MARKERS</b>						
4.6.12	Raised Reflective Pavement Markers		x			
<b>4.6.13 RTSCGS, BARRIER MARKERS, OBJECT MARKERS, DELINEATORS AND OBJECT MARKER ASSEMBLIES</b>						
4.6.13	RTSCGS, Barrier & Obj Mrkrs, Delineators & Assemblies	x				
<b>4.6.14 RETAINING AND SOUND WALLS</b>						
4.6.14	Retaining and Sound Walls - General		x			
<b>4.6.15 INCIDENT MANAGEMENT</b>						
4.6.15	General	x				x
	Communication and Reporting	x				x
	Temporary and Permanent Remedy	x				x
	Management of Catastrophic Events					x
<b>4.6.16 HAZARDOUS MATERIALS</b>						
4.6.16	Hazardous Materials					x
<b>4.6.17 PUBLIC INFORMATION</b>						
4.6.17	Response to Inquiries	x				
<b>4.6.18 ENVIRONMENTALLY SENSITIVE AREAS</b>						
4.6.18.1	Karst Preserve Areas	x				
4.6.18.2	Wetland Mitigation Areas and Waters of the U.S	x				
4.6.18.3	Migratory Bird Treaty and Endangered Species Act	x				
4.6.18.4	Recharge and Contributing Zones	x				

Bridge condition will be assessed separate from the roadway. At least 10% of the bridges will be randomly selected for assessment in conjunction with the quarterly condition assessment.

Mitigation Areas, Water Quality Ponds, and Detention Facilities will be assessed separate from the roadway. Assessment of this element will consist of 100% of the inventory and is not subject to random selection.

Assessments will include main lanes, frontage roads, ramps, roadsides, etc. (e.g. from right of way to right of way) that are under contract. Portions reduced from payment for construction or reconstruction that add

capacity or totally reconstruct the pavement on portions of highways will be excluded. Contracts other than those adding capacity or total reconstruction will be considered during the condition assessment with respect to their impact on the condition not under the control of the Contractor. The Department will randomly select the sections to be assessed using a random number generator selected by the Department. These sections will be approximately 1.0-mile centerline length segments.

The Department will conduct video logging for visual assessment (Paveview or other similar software) for roadway condition assessments.

Asset Condition Scores of each Element of the Project will be determined using the inspection and measurement method set forth in the Section 5.3, "Performance Standards". Achievement of the Performance Standards as set forth in the column entitled, "Measurement Record", will be assessed at a frequency noted in Table 1, Condition Assessment Frequencies. The Asset Condition Score according to the measurement criteria will be determined as set forth in Table 2, Asset Condition Score Criteria for Element Categories.

**Table 2**  
**Asset Condition Score Criteria for Element Categories**

SCORE	CRITERIA
5	<ul style="list-style-type: none"> <li>Criteria for individual Elements are almost entirely met (90% to 100% compliance with the relevant criteria for each element within each Auditable Section), and</li> <li>Is fully functional and in nearly new condition, meeting or exceeding Performance Requirement.</li> </ul>
4	<ul style="list-style-type: none"> <li>Criteria for individual Elements are Substantially met (less than 90% compliance and 80% or greater compliance with the relevant criteria for each element within each Auditable Section), and</li> <li>Is functional and in good condition, meeting or exceeding Performance Requirement.</li> </ul>
3	<ul style="list-style-type: none"> <li>Criteria for individual Elements are mostly met (less than 80% compliance and 70% or greater compliance with the relevant criteria for each element within each Auditable Section), and</li> <li>Is in fair condition, but suggesting need for early replacement, renewal or repair of individual Element and/or maintenance or operation improvement action to meet Performance Requirement.</li> </ul>
2	<ul style="list-style-type: none"> <li>Criteria for individual Elements are barely met (less than 70% compliance and 60% or greater compliance with the relevant criteria for each element within each Auditable Section), or</li> <li>In poor condition demonstrating need for immediate replacement, renewal or repair of individual Element and/or immediate change to Project Management Plan (PMP).</li> </ul>
1	<ul style="list-style-type: none"> <li>Criteria for individual Elements are not met (less than 60% compliance with the relevant criteria for each element within each Auditable Section), or</li> <li>In very poor condition demonstrating need for immediate replacement, renewal or repair of individual Element and/or immediate change to Project Management Plan (PMP).</li> </ul>

- The calculation of Asset Condition Score for an Element within an Element Category is demonstrated by the following example:
- Assume there are 250 Auditable Sections, of these 10%, or 25 are audited each quarter on a particular facility. There are five criteria to be assessed for Element "Longitudinal Pavement Markings". There are therefore  $5 \times 25 = 125$  measurement records for pavement markings. If 120 of these measurement records meet the criteria, there would be 96% compliance and an Asset Condition Score of five assigned for that Element.
- If the criteria are met for a particular measurement record, that measurement record receives a score of 1. If the criteria are not met, and a deficiency is recorded, the measurement record receives a score of 0.
- After calculating the Asset Condition Scores for each Element, a mean score across Elements will be determined for the Element Category, per facility. This mean score is calculated to 1 decimal point and recorded.
- "Mean" in this context will be the arithmetic mean.
- Where a measurement record relates to a service measured over time or an Element that is not represented in more than 25% of Auditable Sections, per facility, then the Asset Condition Score will be based on the total service and not

a 10% random sample. This applies to the performance measurement of Element Categories: Structures, Traffic Signals, Incident Response, Customer Service, Snow and Ice Control or other Element Categories meeting the above criteria identified following establishment of the Auditable Sections.

7. Contractor acknowledges that Asset Condition Score is a mechanism to benchmark the performance of each facility included in the Project against the performance of other similar facilities and that the Department may, during the Term, alter the Asset Condition Score criteria to reflect Good Industry Practice.
8. Each Asset Condition Score of less than two or a mean Asset Condition Score across Elements of less than 3.5 (for any Element Category) is deemed a Noncompliance Event.

- 5.2. **Auditable Sections.** The Department will establish Auditable Sections referenced to the Texas Reference Marker (TRM) System used by TxDOT. Project limits and auditable sections will be shown in the plans. All lane types and assets are subject to audit.

The Department will audit and monitor the activities described in the MMP to assess the Contractor's performance. All statements contained in the MMP will be of an auditable nature, as described in this Section 5.2, "Auditable Sections".

- 5.3. **Performance Standards.** The Contractor must meet the performance standards listed in Table 3, Performance and Measurement. A performance measure will not be considered complete until all requirements are met (e.g. time, material compliance, work compliance, specification compliance, etc.). Meeting performance measures will not relieve the Contractor of the responsibility to monitor and maintain the roadway and all of its appurtenances in accordance with the Contractor's MMP or as required herein.

A Category 1 Defect is a defect which requires prompt attention to mitigate the potential hazard presented to the traveling public, potential risk of structural deterioration, potential risk of damage to a third party's property or equipment, or potential risk of damage to the environment. A Category 2 Defect is any defect other than a Category 1 Defect.

**Table 3  
Performance and Measurement**

XXXX

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.2 ROADWAY</b>								
TxDOT's <i>Pavement Management Information System Rater's Manual</i> will be utilized to define and identify the deficiency. Unless otherwise stated, pavement performance measurement records relate to 1.0-mile sections.								
	4.6.2.1	Localized Roughness	Flexible Pavement, Concrete Pavement and Approach Slab	4 hr.	7 days	N/A	Physical measurement with 10-ft straightedge used to measure discontinuities for temporary repairs	Record individual discontinuities greater than 1/4" for temporary repairs
	4.6.2.2	Flexible Failures		4 hr.	7 days	N/A	Visual inspection	Record occurrence of any pavement failure or defect as defined by the criteria set forth in the TxDOT PMIS Rater's Manual with no temporary repair
	4.6.2.3	Rigid Failures						
	4.6.2.4	Edge Drop-offs		48 hr.	N/A	1 mo.	Physical measurement of edge drop-off level compared to adjacent surface	Record instances of edge drop-off greater than 2"
	4.6.2.5	Expansion Joints	Expansion joints (between approach slabs and concrete pavement) are: 1) free of dirt debris and vegetation 2) bonded and in good condition	N/A	N/A	3 mo.	Physical measurement of joint opening	Record instances of joints less than 1/2" in opening width
							Visual inspection to ensure joint is free of debris, vegetation and is bonded in good condition	Record instances of damaged joints or debris and vegetation within the joint
	4.6.2.6	Cracks in Asphalt	Longitudinal or transverse crack				Measurement of crack width	Record crack widths greater than 1/4"
<b>4.6.3 SWEEPING, LITTER AND DEBRIS</b>								
	4.6.3.1	Sweeping	All paved surfaces and appurtenances (concrete riprap, mowstrips in and around guardrail, all lane types to include shoulders, gore areas, hardscapes, etc.) swept and clean.	24 hr.	N/A	3 mo.	Visual inspection of buildup of dirt, ice rock, debris, etc. to accumulate greater than 18" wide or any areas where edgeline is not visible	Record instances where accumulation is greater than 18" wide or edgeline is not visible
			Perform sweeping, vacuuming, and removal of deicing chemicals, rock, debris, etc. from bridge deck, parapets, railing, joints, backwalls, caps, joints, and bearings	N/A	N/A	30 days*	Visual inspection	Record instances where deicing chemicals and materials are not removed from bridges and appurtenances.
	4.6.3.2	Litter	1) Keep the ROW in a neat condition, remove litter regularly. 2) Pick up large litter items before mowing operations. 3) Dispose of all litter and debris collected at an approved solid waste site.	24 hr.	7 days	1 mo.	Visual inspection to confirm no more than 20 pieces of litter per roadside mile must be visible when traveling at highway speed.	Record instances where ROW does not appear in neat condition and more than 20 pieces of litter per roadside mile are visible when traveling at highway speed
	4.6.3.3	Debris	1) Clear and remove debris from traffic lanes, hard shoulders, mow strips, sidewalks, pedestrian ramps and cycle ways	1 hr	N/A	24 hr.	Visual inspection	Record instances where debris has not been cleared from traffic lanes, hard shoulders, mow strips, sidewalks or cycle ways
			2) Remove debris and clean drain openings in concrete traffic barrier and inlet openings.	24 hr.	24 hr.	Record instances where debris was observed at inlet openings		
			3) Dispose of large animals at an approved site within 24 hr.			Record instances of large animals not disposed of properly, in accordance to Department Standard Operating Procedure No. 001-18.		
			4) Remove obstructions and debris from roadway clear zone	24 hr.	N/A	1 mo.		Record number of obstructions and debris occurring in the roadway clear zone

ELEMENT CATEGORY	REFECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.4 VEGETATION MANAGEMENT</b>								
	4.6.4.1	Vegetation Height	Vegetation is maintained so that: 1) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height. 2) Spot mowing at intersections, ramps and other areas to maintain visibility of appurtenances and sight distance.	24 hr.	7 days	1 mo.	Physical measurement of height of grass and weeds in urban and rural	Record individual measurement areas where less than 95% of height of grass and weeds are between 7 in. and 18 in. in urban areas  Record individual measurement areas where less than 95% of height of grass and weeds are between 7 in. and 30 in. in rural areas
	4.6.4.2	Noxious Weeds	1) Control noxious weeds and trees before them reaching 30 in height.				Visual inspection	Presences of noxious weeds exceeding a height of 30 in.
			2) Application of herbicide to control noxious weeds during the seasons with the materials and application rates in the latest version of the Department's Herbicide Operations Manual.				Visual inspection with audit of process.	Presence of noxious weeds or failure to provide complete and accurate herbicide application records and proofs of purchase to the Department within 7 days after the herbicide is applied.
	4.6.4.3	Vegetation Encroachment	3) Grass, vegetation or turf clippings do not encroach into or on pavement edges, paved surface, mow strips, culverts, sidewalks, islands, riprap, traffic barrier or curbs.				Visual inspection	Record occurrences of vegetation or grass clippings encroaching into or onto pavement, mow strips, culverts, sidewalks, islands, riprap, traffic barrier or curbs
	4.6.4.4	Vegetation Trimming	4) Grass and vegetation trimmed around all fixed objects such as signs, metal beam guard fence, retaining walls, sidewalks, drainage flumes, curbs, etc. Trimmed areas are to be of identical height as adjoining turf.					Record occurrences of instances of grass and vegetation around objects with differing height than adjoining turf
	4.6.4.6	Loss of Vegetation	5) Barren areas are re-seeded and/or erosion control measures are put in place					Record occurrences of barren areas greater than 100 SF without reseeding or erosion control measures
	4.6.4.6	Sight Lines	6) Perform spot mowing at intersections, ramps or other areas as needed or as directed to maintain visibility of appurtenances, safety, and sight distance. Do not use equipment that damages the pavement or turf in any way.	24 hr.	48 hr.	7 days		Record instances of impairment of sight lines or sight distance
	4.6.4.7	Wildflowers	7) Wildflowers are preserved utilizing the guidelines in the mowing specifications and TXDOT Roadside Vegetation Manual	24 hr.	7 days	1 mo.	Visual inspection with audit of process.	Record instances where adherence to guidelines in the mowing specifications and TXDOT Roadside Vegetation Manual is not followed
	4.6.4.8	First Frost Mow	Complete a full width mowing cycle after the first frost.	N/A	7 days	1 mo.	Visual inspection	Record instances where a full width mowing cycle is not conducted after the first frost.
		Spring Mow	Spring mowing will not be performed before May 15th without Austin District environmental section approval.					Record instances where spring mow cycle is conducted before May 15th without Austin District environmental section approval.

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
4.6.4 VEGETATION MANAGEMENT (cont'd.)	4.6.4.9	Landscaped Areas	1) Mowing, litter pickup, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance; watering and electrical maintenance is undertaken.	24 hr.	7 days	1 mo.	a) General condition Visual Inspection	Record instances where mowing, litter pickup, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance, watering are not maintained
			2) The height of grass and weeds is kept between 5" and 8". Mowing begins before vegetation reaches 8"				b) Landscape area vegetation height Physical measurement	Record individual measurement of landscape areas where less than 95% of height of grass and weeds are between 5 in. and 8 in
			3) The height of grass and weeds is kept between 5" and 24" in GRP areas. Mowing begins before vegetation reaches 24"				c) GRP area vegetation height Physical measurement	Record individual measurement of GRP areas where less than 95% of height of grass and weeds are between 5 in. and 24 in
			4) Damaged or dead vegetation is removed and replaced with identical species.				d) Damaged or dead vegetation Visual inspection	Record instances where damaged or dead vegetation has not been replaced
	4.6.4.10	Trees and Brush	1) Trees and brush on the ROW, except in established no mow areas, are trimmed in accordance TxDOT Standards.	24 hr.	7 days	1 mo.	Visual inspection	Record instances where trees and brush are not trimmed in accordance with TxDOT Standards.
			2) Trees and brush are trimmed to ensure they do not interfere with vehicles, sight distance, or the visibility of signs. Minimum vertical clearance over parking spaces is ten feet (10'). Minimum vertical clearance for shared use paths and sidewalks is eight feet (8').	24 hr.	72 hr.	7 days		Record instances where trees and brush are interfering with vehicles, sight distance, or the visibility of signs.  Record instances where vertical clearance is not maintained as specified in the plans.
			3) Dead trees, branches and brush are removed. Replace with same size and identical species. Potentially dangerous trees or limbs are removed.	24 hr.	7 days	1 mo.		Record instances where dead trees and brush are not removed and replaced.  Record instances where potentially dangerous trees or limbs are not removed.
			4) All undesirable trees and vegetation are removed. Diseased trees or limbs are treated or removed by licensed contractors.	24 hr.	7 days	1 mo.		Record instances where undesirable trees and vegetation are not removed (with the exception of non-maintenance areas)



ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.5 DRAINAGE, EXCAVATION, EMBANKMENT AND RELATED APPURTENANCES</b>								
	4.6.5.1	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 hr.	N/A	1 mo.	Visual inspection supplemented by CCTV where required to inspect buried pipe work	Record instances where less than 80% of cross section of pipes and channels is clear
			Keep all barrier inlet drains, slotted drains, grates, tops of inlets, and storm sewer pipe inlet connections intact, unbroken, and open				Visual Inspection	Record each occurrence of grates, inlet tops, or storm sewer inlet connections either: not intact or broken/blocked causing loss of drainage, functionality or hazardous condition.
			1) Remove debris that interferes with stream flow in channels after storm events unless otherwise directed by the Engineer.					Record instances of debris interfering with stream flow
			2) Remove vegetation, including trees and brush that interfere with stream flow, from channels.					Visual Inspection
	3) Maintain channel in original condition.	Record length where channel is not maintained to the original grades and dimensions of the original condition.						
4.6.5.2	Pump Stations	Perform hydraulic cleaning, vacuum removal and disposal of debris in drain inlets, pump station wells, basket and inlet pipes, downspouts, sumps, storm sewers, and slotted drains. Debris is defined as dirt and other material not part of the drainage system.	24 hr.	N/A	1 mo.	Visual inspection supplemented by CCTV where required to inspect buried pipe work	Record length with less than 80% of cross section clear	
4.6.5.3	Non-bridge class culverts	Non-bridge-class culverts are free of:	24 hr.	1 month	6 mo.	Visual inspection of structures with an opening measured along the center of the roadway of less than 20 feet between abutments, extreme ends of openings or multiple boxes.	Record number with vegetation, debris and silt	
		1) vegetation and debris and silt					Record number with defects in sealant at movement joints	
		2) defects in sealant to movement joints					Record number with scour damage	
4.6.5.4	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.	45 min.	7 days	1 mo.	Visual inspection of water on surface during weather conditions that could cause flooding	Record instances of hazardous water ponding	
		1) Maintain traffic drainage slots clear, functioning and free of debris.	48 hr.	N/A	1 mo.		Record instances of traffic drainage slots that are not clear and/or functioning	
		2) Maintain pavement edges are free of buildup.				Visual Inspection	Record instances of build up	

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
4.6.5 DRAINAGE, EXCAVATION, EMBANKMENT AND RELATED APPURTENANCES (cont'd.)	4.6.5.5	Underdrains	Maintain underdrains and related clean-outs in good operating conditions at all times.	24 hr.	1 mo.	6 mo.	Visual inspection	Record instances of non-functioning underdrains
	4.6.5.6	Erosion or Siltation	Address erosion or siltation greater than twelve in. (>12") deep along ditches, swales, ponds, and channels.  *Note: Category 1 Mitigation response time: 24 hr. if within clear zone, 48 hr. outside of clear zone.	24-48 hr.*	1 mo.	3 mo.	Visual inspection	Record instances where greater than twelve in. (>12") in erosion or siltation has occurred in ditches, swales, ponds or channels
	4.6.5.7	Slopes	1) 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 hr.	1 mo.	3 mo.	Visual Inspection	Record instances where slopes are not maintained in conformance with original cross-section
								Record instances where landscape materials are not replaced
								Record instances where eroded material is not disposed of
			2) Slope Failure: All structural or natural failures of the embankment and cut slopes of the Facility are repaired	3 hr.	14 days	3 mo.	Visual inspection	Record instances of slope failure
			3) Erosion: Slopes are maintained to prevent erosion leading to further deterioration	24 hr.	7 days	3 mo.	Visual inspection	Record instances of erosion greater than six in. (> 6") deep on slopes
	4) Permanent Erosion Control: Where permanent erosion control measures such as rock or concrete riprap are utilized: repair undermined or damaged erosion control measures	24 hr.	1 mo.	3 mo.	Visual inspection	Record instances where inspection records show noncompliance for repair of undermined or damaged erosion control measures		
	4.6.5.8	Mitigation Areas, Water Quality Ponds, and Detention Facilities	1) Maintain in accordance with TCEQ EAPP permit, General Notes and ensure function as designed.	24 hr.	N/A	1 mo.	Visual Inspection	Record instances where maintenance is not in accordance with TCEQ EAPP or is not functioning as designed.
			2) Clean detention ponds when design capacity is reduced by 20%.	24 hr.	N/A	1 mo.	Visual inspection	Record instances where capacity is reduced more than 20%
3) Maintain water quality pond and HMTs so that there is no standing water 48 hr. after a rain event.			24 hr.	N/A	1 mo.	Visual inspection	Record instances where standing water is present for more than 48 hours after a rain event.	

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 2	Cat 3		
				Mitigation	Temporary Repair	Permanent Remedy		
4.6.5 DRAINAGE, EXCAVATION, EMBANKMENT AND RELATED APPURTENANCES (cont'd.)	4.6.5.8 (cont'd.)	Mitigation Areas, Water Quality Ponds, and Detention Facilities (cont'd.)	4) Remove litter and undesirable vegetation from mitigation areas	24 hr.	N/A	1 mo.	Visual Inspection	Record instances of undesirable vegetation
			5) Ponds, detention facilities and HMTs will be kept clean and operational by the following: <ul style="list-style-type: none"> <li>• Remove litter and debris once every 30 days</li> <li>• Mow and remove undesirable vegetation</li> <li>• Maintain vegetation height below 18 in.</li> <li>• Repair erosion greater than 6"</li> </ul>	24 hr.	N/A	1 mo.		Record instances where litter and debris are not removed every 30 days
								Record instances where vegetation height exceeds 18 in.
								Record instances where erosion is greater than 6"
			6) Drain stormwater from HMTs on the first working day after a significant rainfall event and ensure proper operation of valves	N/A	N/A	24 hr.		
<b>4.6.6 ROADSIDE TRAFFIC SAFETY APPURTENANCES</b>								
	4.6.6.1	Guard Fence	All guardrails is appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs must be carried out in accordance with TxDOT Standards.	24 hr.	N/A	7 days	Visual inspection	Record instances of guard fence systems not correctly installed
								Record instances of guard fence with defects or out of alignment
								Record instances of guard fence not at correct height
	4.6.6.2	Concrete Safety Barrier	Safety barriers are maintained free of defects, spalls, broken edges and debris and properly aligned.	24 hr.	7 days	1 mo.	Visual inspection	Record instances of concrete safety barrier not correctly installed
								Record instances of concrete safety barrier with defects or out of alignment
								Record instances of concrete safety barrier not at correct height
	4.6.6.3	Cable Barrier	Cable barrier is maintained free of debris, vegetation growth or other obstacles within area of impact recovery. Cable barrier is maintained at correct tension and anchors are properly maintained.	24 hr.	N/A	7 days	Visual Inspection	Record instances of cable barrier not correctly installed or maintained in accordance with Manufacturer's specifications.
								Record instances of cable barrier with defects or out of alignment
								Record instances where impact recovery zone is obstructed.
	4.6.6.4	Impact Attenuators	All impact attenuators are free of damage, appropriately placed and correctly installed	24 hr.	N/A	14 days	Visual inspection	Record instances of attenuators damaged, incorrectly placed or incorrectly installed

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.7 MISCELLANEOUS</b>								
	4.6.7.1	Chain Link Fence	All fences are free of defects:	24 hr.	N/A	3 mo.	Visual inspection	Record instances where posts are missing, damaged, leaning
			1) All posts are intact, erect and plumb					Record instances where steel wire fabric is damaged or loose
			2) Steel wire fabric is intact and fastened					Record instances where gates are damaged or non-operational
			3) Gates are intact and operational					
	4.6.7.2	Encroachments	Remove encroachments from the ROW:	24 hr.	N/A	1 mo.	Visual inspection	Record instances where temporary encroachments are observed
			1) Non-standard mailboxes					Record instances where non-standard or unapproved mailboxes are observed
			2) Unauthorized signs					Record instances where unauthorized signs are observed on the ROW
	4.6.7.3	Mailboxes	Install mailboxes as approved	N/A	N/A	7 days	Visual inspection	Record instances where mailbox is missing from post or non-standard
	4.6.7.4	Graffiti	Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces	24 hr.	N/A	N/A	All graffiti is considered a Category 1 defect Visual Inspection	Record instances where graffiti is not removed
	4.6.7.5	Aesthetic Features	Repair damaged monuments, logos and aesthetics features	24 hr.	7 days	1 mo.	Visual inspection	Record instances where aesthetics features are damaged or missing
<b>4.6.8 BRIDGES</b>								
	4.6.8.2	Bridge Maintenance	1) Substructures and superstructures are free of:	24 hr.	7 days	60 days	Inspection and assessment in accordance with the requirements of:  -- <i>TxDOT's Maintenance Bridge Inspection Tracking System</i>	Record occurrences of condition rating below six (6) for any deck, superstructure or substructure
			• damaged, faded, mildewed, fire damaged, or otherwise discolored concrete surfaces on bridges and rails					Record occurrences of Condition State of 2 (out of 4) or 3 (out of 5) or more, as required in the TxDOT Bridge Inspection Manual.
			• undesirable vegetation					Record instances of damaged, faded, mildewed, fire damaged, or otherwise discolored concrete surfaces on bridges and rails
			• blocked drains, weep pipes, manholes and chambers					Record instances of undesirable vegetation
			• blocked drainage holes in structural components					Record instances of blocked drains, weep pipes, manholes and chambers
			• defects in joint sealants					Record instances of blocked drainage holes in structural components
			• scour damage					Record instances of defects in joint sealants
			• corrosion of rebar					Record instances of debris in joints
								Record instances of scour damage

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
4.6.8 BRIDGES (cont'd.)	4.6.8.2 (cont'd)	Bridge Maintenance (cont'd.)	<ul style="list-style-type: none"> <li>• paint system failures</li> <li>• impact damage</li> <li>• surface defects such as spalls, punch-outs or asphalt failures</li> </ul> 2) The deck drainage system is free of all debris and operates as intended. 3) Parapets are free of: <ul style="list-style-type: none"> <li>• loose nuts or bolts</li> <li>• blockages of hollow section drain holes</li> <li>• graffiti</li> <li>• vegetation</li> <li>• accident damage</li> </ul> 5) Bearings and bearing shelves are clean. 6) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions in the Structure Maintenance Manual is followed. Special finishes are clean and perform to the appropriate standards. 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 device is maintained.	24 hr.	7 days	60 days	Inspection and assessment in accordance with the requirements of:  -- <i>TxDOT's Maintenance Bridge Inspection Tracking System</i>	Record instances of corrosion of rebar Record instances of paint system failures Record instances of impact damage or surface defects Record instances of debris in deck drainage system or system not operating as intended. Record instances of loose nuts or bolts Record instances of blockages of hollow section drain holes Record instances of vegetation Record instances of accident damage Record instances where bearings and bearing shelves are not clean. Record instances where sliding and roller surfaces are not clean and/or greased to ensure satisfactory performance. Record instances where special finishes are not clean and/or performing to the appropriate standards. Record instances where all non-structural items are not operating correctly and/or are not clean and lubricated as appropriate.
	4.6.8.3	Expansion Joints	Maintain in good working order and free of defects. <ul style="list-style-type: none"> <li>• dirt debris and vegetation</li> <li>• No width greater than 1/2"</li> <li>• defects in drainage systems</li> <li>• loose nuts and bolts</li> <li>• defects in gaskets</li> </ul>	1 hr.	7 days	60 days		Inspection and assessment in accordance with the requirements of:  -- <i>TxDOT's Maintenance Bridge Inspection Tracking System</i>

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD		
				Cat 1	Cat 1	Cat 2				
				Mitigation	Temporary Repair	Permanent Remedy				
<b>4.6.9 TRAFFIC OPERATION DEVICES</b>										
	4.6.9.2	Traffic Signal Inspections	Notify the Engineer of each trouble call.	1 hr.	N/A	N/A	Inspection of records	Record instances where the Engineer did not receive notice of trouble call.		
	4.6.9.3	Traffic Signal Maintenance	<b>General</b> 1) Traffic Signals and Pedestrian Heads and their associated equipment are:	2 hr.	24 hr.	6 mo.	Visual inspection	Record instances where signals are not clean and visible		
• clean and visible • correctly aligned and operational			Visual inspection				Record instances where signals are not correctly aligned or not in operation			
• free from damage caused by accident or vandalism			Visual Inspection				Record instances where signals are damaged			
2) Signals are visually acceptable and free of:			Visual Inspection				Record instances of structurally deficient signals			
• loose nuts and bolts, keep signal poles and controller cabinets tight on their foundations or pedestals							Record instances of loose assemblies on signals			
• defects in surface protection systems							Record instances of defects in surface protection			
• graffiti							Record instances of graffiti			
• proper alignment, cleaning, etc. for proper operation. Repair or replace back plates will be black aluminum.							Record instances where repairs are not made correctly.			
<b>Traffic Detection Device Inspection</b> Perform maintenance, repairs or replacement of traffic detection devices every 6 mo.			N/A				N/A	6-mo. cycle	Inspection of records	Record instances where maintenance inspection and activities are not recording in the log book.
<b>Cabinet Inspection</b> 1) Check cabinet filters at least once every 6 mo. and clean if necessary.			N/A				N/A	6-mo. cycle	Inspection of records	Record instances where maintenance inspection and activities are not recording in the log book.
2) Replace cabinet filters every 2 yr.			N/A				N/A	2-yr. cycle	Inspection of records	Record instances where maintenance inspection and activities are not recording in the log book.
3) Keep interior of controller cabinets in a neat and clean condition at all times.	N/A	N/A	1 mo.	Visual and inspection of records	Record instances where maintenance inspection and activities are not recording in the log book or the cabinet condition is not acceptable.					
<b>Response to Notices</b> Respond to locations when notices are received of operational malfunctions and damage within 2 hr. for Category 1 Defects	2 hr.	N/A	N/A	Visual and inspection of records	Record instances where response time is not met.					
3) Signal timing and operation is correct	2 hr.	24 hr.	6 mo.	d) Signal timing Timed measurements	Record instances where installations do not have correct signal timings					

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				Cat 1	Cat 1	Cat 2					
				Mitigation	Temporary Repair	Permanent Remedy					
4.6.9 TRAFFIC OPERATION DEVICES	4.6.9.3 (cont'd.)	Traffic Signal Maintenance (cont'd.)	4) Semi-annual cleaning or replacement of filters in the cabinet, repairs or replacement of traffic detection devices	2 hr.	24 hr.	6 mo.	e) Cleaning and replacement of cabinet components Audit of records	Record instances where replacement of cabinet components is not recorded in the signal maintenance log for a particular location			
			5) 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				f) Contingency plans Records Review	Record instances when full contingency plans are not in place			
			6) IMSA Level 2 certified signal technician must be available to respond to Category 1 defects					Record instances where IMSA Level 2 certified signal technician is not available to respond to a Category 1 defect			
			Traffic Signals - Identification Marking 7) Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible				N/A	1 mo.	6 mo.	Visual inspection	Record instances where identification markers or other information and are not easily readable
			Traffic Signals - Pedestrian Elements and Vehicle Detectors 8) All pedestrian elements and vehicle detectors are correctly positioned and fully functional at all times				24 hr.	1 mo.	6 mo.	Visual inspection	Record instances where pedestrian elements and vehicle detectors are not functioning as intended
	4.6.9.4	Video Imaging Vehicle Detection System (VIVDS)	Replace damaged VIVDS and ensure functioning as designed	1 hr.	N/A	TBD by repair needs	Visual inspection and inspection of records	Record instances where Contractor did not respond to Customer Inquiry for VIVDS not functioning properly, within timeframe			
	4.6.9.5	Broad Band for Traffic Signals	Replace damaged broad band and ensure functioning as designed	1 hr.	N/A	TBD by repair needs	Visual inspection and inspection of records	Record instances where Contractor did not respond to Customer Inquiry for broad band not functioning properly, within timeframe			
	4.6.9.6	Signs, Supports, and Assemblies	1) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height, vertical and visually acceptable, free from rust, electrical and other defects	24 hr.	14 days	1 mo.	a) Retroreflectivity Coefficient of retroreflectivity	Record instances where signs are not reflective when viewed under low beam headlights.			
							b) Visibility Visual Inspection	Record instances where signs are not clean, correctly located, clearly visible or legible			
							c) Function Visual Inspection	Record instances where signs are not at vertical, correct height or exhibit visual structural defects or rust			
d) Electrical Visual and audit of inspection records							Record instances of electrical defects or inspection records indicating electrical deficiencies not repaired				
e) Face damage Visual Inspection							Record instances where signs with face damage greater than 5% of area				
f) Placement Visual Inspection							Record instances where signs not placed in accordance with TxDOT's Sign Crew Field Book including those twisted or leaning				
		2) Sign placement in accordance with TxDOT Sign Crew Field Book									

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				Mitigation	Temporary Repair	Permanent Remedy					
4.6.9 TRAFFIC OPERATION DEVICES (cont'd.)	4.6.9.6 (cont'd.)	Signs, Supports, and Assemblies (cont'd.)	3) Identification markers are provided, correctly located, visible, clean and legible	24 hr.	14 days	1 mo.	g) Identification Markers Visual inspection	Record instances where identification markers are not provided, correctly located, visible, clean and legible			
			4) All break-away sign mounts are clear of silt or other debris that could impede break-away features and must have correct stub heights				h) Sign foundations Visual inspection	Record instances where sign foundations are not in compliance			
			5) Obsolete and redundant signs are removed or replaced as appropriate				i) Obsolete signs Visual Inspection	Record instances of obsolete signs			
			6) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements				j) Sign Information Visual Inspection	Record instances where sign information is not of the correct size, location, type or wording to meet its intended purpose			
			7) All structures and elements of the signing system are kept clean and free from debris and have clear access provided.				k) Sign Information Visual Inspection	Record instances where signing elements do not have clear access provided			
			8) Repair or remove small sign and supports				1 hr.	24 hr.	14 days	Visual inspection	Record instances of damaged or missing small signs
			9) Repair or remove large sign and supports							60 days	Visual inspection
			10) Overhead sign supports are visually acceptable and free of:				24 hr.	1 mo.	6 mo.	Visual inspection	Record instances of visual structurally deficient overhead sign supports
			• loose nuts and bolts								Record instances of loose assemblies
			• defects in surface protection systems								Record instances of defects in surface protection
	• graffiti	24 hr.	N/A								
	11) Repair or remove overhead sign structures and signs that present a safety hazard.	1 hr.	24 hr.	60 days	Audit of records	Record instances when signs presenting a safety hazard are not addressed within the required time frame.					
	12) Remove downed roadside signs from ROW	48 hr.	N/A	N/A	Visual inspection	Record instances where downed roadside signs have not been removed from the ROW.					
4.6.9.6.1	Warning and Regulatory Signs	Replace or repair non-functioning, warning and regulatory signs. Install temporary signs immediately upon discovery or notification	1 hr.	N/A	24 hr.	Visual inspection	Record instances of missing, warning or regulatory signs				



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				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.10 ILLUMINATION</b>								
	4.6.10.2	Illumination Maintenance	1) All lighting is free from defects and provides acceptable uniform lighting quality 2) Luminaires are clean and correctly positioned 3) Lighting units are free from accidental damage or vandalism 4) Poles are upright, correctly installed and visually acceptable 5) Foundations and anchor bolts are in good condition	24 hr.	N/A	1 mo.	Visual Day/Night time inspection or automated logs	Record instances with less than 90% of lights functioning correctly at all times within the auditable section
							Visual Day/Night time inspection or automated logs	Record instances of more than two consecutive lights out of order
	4.6.10.3	Electrical Supply	Electrical services, service pole, cabinets, switches and fittings are electrically, visually mechanically and structurally sound and functioning	24 hr.	7 days	1 mo.	Inspection of testing records to meet NEC regulations, visual inspection	Record instances where inspection records are not showing safe installation and maintenance of electrical components
	4.6.10.4	Access Panels	All access panels in place at all times.	24 hr.	7 days	1 mo.	Visual Inspection	Record instances of missing access panels
	4.6.10.5	High Mast	1) All high mast luminaires functioning on each pole 2) All obstruction lights are present and working (if required) 3) Hand hole cover is secure with all bolts in place 4) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion 5) High mast poles are free of: • loose nuts and bolts • defects in galvanizing and surface protection systems 6) Foundations and anchor bolts are in good condition	24 hr.	48 hr.	1 mo.	Annual inspection and night time inspections or automated logs	Record instances of two or more luminaires not working per high mast pole
								Record instances of unsecure compartment doors
								Record instances of winch and safety equipment not functioning or being maintained without corrosion/rusting.
				24 hr.	1 mo.	6 mo.	Visual Inspection	Record instances of visual structurally deficient high mast light towers
								Record instances of loose assemblies on high mast light towers
								Record instances of defects in surface protection
<b>4.6.11 PAVEMENT MARKINGS</b>								
	4.6.11.1	New Striping	For repair work: placement of pavement markings within 14 days of opening to traffic.	N/A	N/A	14 days	Visual inspection and audit of records	Record instances where permanent striping is not placed within 14 days of opening to traffic.
			Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets				Mobile retroreflector, which uses 30 m geometry meeting the requirements described in ASTM E 1710	Record length not meeting the minimum retroreflectivity 250 mcd/sqm/lx for white
			Striped areas must be a minimum of 1,000 feet, with no less than 500 feet between striped areas.				Visual inspection	Record instances where striped areas are not 1,000 feet in length or areas between striped areas are less than 500 feet in length

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
4.6.11 PAVEMENT MARKINGS (cont'd.)	4.6.11.2	Longitudinal Pavement Markings	Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hr.	1 mo.	6 mo.	Mobile retroreflectometer, which uses 30 m geometry meeting the requirements described in ASTM E 1710	Record length not meeting the minimum retroreflectivity 150 mcd/sqm/lx for white
								Record length not meeting the minimum retroreflectivity 100 mcd/sqm/lx for yellow
							Visual Inspection	Record instances with more than 5% loss of area of material at any point
								Record instances with spread more than 10% of specified dimensions.
								Record instances where striping is not performing its intended function or not compliant with relevant regulations
		Restriped areas must be a minimum of 1,000 feet, with no less than 500 feet between restriped areas.	N/A	N/A	1 mo.	Visual inspection	Record instances where restriped areas are not 1,000 feet in length or areas between restriped areas are less than 500 feet in length	
	4.6.11.3	Non-longitudinal Pavement Markings	Pavement markings are: • clean and visible during the day and at night • whole and complete and of the correct color, type, width and length • placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets	24 hr.	1 mo.	6 mo.	Mobile retroreflectometer, which uses 30 m geometry meeting the requirements described in ASTM E 1710  Visual inspections	Record length not meeting the minimum retroreflectivity 150 mcd/sqm/lx for white  Record length not meeting the minimum retroreflectivity 100 mcd/sqm/lx for yellow  Record instances with more than 30% loss of area of material at any point
<b>4.6.12 RAISED PAVEMENT MARKERS</b>								
	4.6.12	Raised Reflective Pavement Markers	Raised reflective pavement markers, object markers and delineators are: • Clearly visible • Of the correct color and type • Reflective or retroreflective per TxDOT standard • Correctly located, aligned and at the correct level • Are firmly fixed	N/A	1 mo.	6 mo.	Visual inspection	Record instances where four (4) or more markers associated with road markings indicating a lane designation that are ineffective in any 20 consecutive markers. (Ineffective includes missing, damaged, settled or sunk.)  Record instances where a minimum of 4 (four) markers are not visible at 80' spacing or minimum of 8 (eight) markers are not visible at 40' spacing, when viewed under low beam headlights as indicated for single lane designation.  Record instances of non-uniformity (replacement rpms not having equivalent physical or performance characteristics to adjacent markers).

ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.13 RTSCGS, BARRIER MARKERS, OBJECT MARKERS, DELINEATORS AND OBJECT MARKER ASSEMBLIES</b>								
	4.6.13	RTSCGS, Barrier & Obj Mrkrs, Delineators & Assemblies	Curb, barrier, and object markers and delineators are: <ul style="list-style-type: none"> <li>• clean and visible</li> <li>• of the correct color and type</li> <li>• legible and reflective</li> <li>• Straight and vertical</li> </ul>	24 hr.	1 mo.	6 mo.	Visual inspection	Record instances of delineators dirty, not visible or missing Record instances when delineator is not of the correct color or type Record instances when delineator is not reflective when viewed under low beam headlights Record instances when delineator is leaning
<b>4.6.14 RETAINING WALLS AND SOUND ABATEMENT</b>								
	4.6.14	Retaining and Sound Walls - General	Integrity and structural condition of the wall is maintained so that: 1) Address retaining backfill loss due to surface erosion 2) Maintain drain holes, underdrain systems, cleanouts and weep holes 3) Remove weeds and/or vegetation 4) Maintain aesthetic features including coatings and paint	24 hr.	14 days	1 mo.	Visual inspection  Structural assessment if visual inspection warrants	Record instances where backfill loss due to surface erosion is observed Record instances where drainage is not functioning properly Record instances where weeds and vegetation are present Record instances where aesthetic features are defective
<b>4.6.15 INCIDENT MANAGEMENT</b>								
	4.6.15	General	Respond to Incidents in accordance with the Emergency Management Plan	1 hr.	N/A	N/A	Review and inspection of records.	Record instances where inspection records show noncompliance with this section.
		Communication and Reporting	Provide communication, coordination and reporting as described in the Contract Documents	As required	N/A	N/A		Record instances where incident records show noncompliance with Contract Documents
		Temporary and Permanent Remedy	Propose and implement temporary measures or permanent repairs to Defects arising from the Incident. Ensure the structural safety of any structures affected by the incident.	24 hr.	1 mo.	N/A		Record instances where inspection records show noncompliance
		Management of Catastrophic Events	Initiate action upon notification of the incident.	15 min.	N/A	N/A		Record instances where inspection records show noncompliance
			Implement response measures on site upon notification of the incident.	45 min.	N/A	N/A		Record instances where inspection records show noncompliance
			Restore mobility upon notification of the incident.	90 min.	N/A	N/A		Record instances where inspection records show noncompliance
			Properly dispose of debris off of the ROW once cleanup efforts have been completed	48 hr.	N/A	N/A		Record instances where inspection records show noncompliance
<b>4.6.16 HAZARDOUS MATERIALS</b>								
	4.6.16	Hazardous Materials	For any hazardous materials spills, comply with the requirements of this section	1 hr.	N/A	N/A	Review and inspection of records.	Record instances where inspection records show noncompliance



ELEMENT CATEGORY	REF SECTION	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD	MEASUREMENT RECORD
				Cat 1	Cat 1	Cat 2		
				Mitigation	Temporary Repair	Permanent Remedy		
<b>4.6.17 PUBLIC INFORMATION</b>								
	4.6.17	Response to Inquiries	Timely and effective response to customer inquiries and complaints.	N/A	N/A	48 hr.	Review and inspect records of the following in accordance with Communications Plan: 1) Contact the customer within 48 hours following initial customer inquiry.	Record instances where customer is not contacted within 48 hours of initial inquiry
				N/A	N/A	48 hr.	2) All work resulting from customer requests is scheduled within 48 hours of customer contact.	Record instances where work is not scheduled within 48 hours of customer contact
				N/A	N/A	3 days	3) Follow-up with the Customer within 3 Calendar Days of the scheduled work providing an expected completion date	Record instances where follow-up with customer does not occur within 72 hours of initial inquiry
				N/A	N/A	2 weeks	4) All customer concerns/requests are resolved to the Department's satisfaction within 2 weeks of the initial inquiry.	Record instances where concerns/requests are not resolved to the Department's satisfaction within 2 weeks of initial inquiry
				24 hr.	2 days	1 week	5) Response to unexpected requests for information, communicate changes or revisions to necessary Contractor personnel, notifying the Department before and after changes are made to the Contract Documents.	Record instances where response to unexpected requests for information at not met.
<b>4.6.18 ENVIRONMENTALLY SENSITIVE AREAS</b>								
	4.6.18.1	Karst Preserve Areas	Take particular care to avoid disturbance of the ROW in these areas, as identified in the plans.	N/A	N/A	1 mo.	Visual inspection of ROW and records	Record instances where karst areas, identified in plans, have been disturbed.
	4.6.18.2	Wetland Mitigation Areas and Waters of the U.S	For wetland mitigation areas shown in the plans, all required maintenance must be performed so that the native characteristics of the vegetative community are retained.	N/A	N/A	1 mo.	Visual inspection of ROW and records	Record instances where active maintenance practices such as herbicides and pesticide application are not limited within 500 ft. of the mitigation areas.
								Record instances where "No Mow" signs at the edge of the wetland areas to prohibit mowing in the wetland areas are not in place.
								Record instances where non-native seeding or sodding is used.
4.6.18.3	Migratory Bird Treaty and Endangered Species Act	Mitigation of Migratory Bird Treaty Act in accordance with this section and as shown in plans.	N/A	N/A	1 mo.	Visual inspection of ROW and records	Record instances where woody vegetation clearing and tree trimming throughout the designated areas is not limited to September 16 and February 28.	
							Record instances where a plan is not submitted (including description of work, proposed dates, and location) 2 weeks before the trimming or clearing date.	
							Record instances where approval is not obtained for woody vegetation removal from March 1 to September 15.	
							Record instances where there is failure to notify the Engineer, if any occupied bird nests are identified in the path of any vegetation removal or trimming.	
4.6.18.4	Recharge and Contributing Zones	Mitigation of Recharge and Contributing Zones in accordance with this section and as shown in plans.	N/A	N/A	1 mo.	Visual inspection of ROW and records	Record instances of failure to implement water quality protections and coordinate with the TCEQ, as required by law.	

## 6. PAYMENT

Maintenance Services performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Performance Based Maintenance of Highway" within the right of way including main lanes, frontage roads, cross streets, ramps, collector distributors, direct connectors, turnarounds, easements, etc. as shown in the plans. This price will be full compensation for Maintenance Services. Maintenance Services will include all of the activities or services required, including but not limited to; all administrative, support services, utility work, procurement, manufacturing, supply, installation, construction, supervision, management, testing, verification, labor, materials, equipment, ordinary preventative, repair or replacement maintenance, documentation, and other duties and services to be furnished and provided by Contractor as required by the Contract, including all efforts necessary or appropriate to maintain, repair, preserve and protect the highway for its intended purposes in a safe and continually usable condition, except for those efforts which expressly specify will be performed by Persons other than the Contractor. Exceptions to these payments are stated below in this Article.

Contractor monthly payments may be reduced in the event of significant scope reduction, such as but not limited to, construction or reconstruction project(s) on portions of highways covered by this Contract. The payment may be reduced or responsibility removed for each mile, or portion thereof. At a minimum, maintenance activities will consist of incident management and snow and ice in areas not removed from the Contractor's responsibility. If additional areas of roadway in the project limits are added to the maintenance requirements, it will be paid for at centerline mile unit price bid.

The Department reserves the right not to assess any or all deductions if, in the Department's sole discretion, the Department determines that the circumstances surrounding any such failures warrants that such deduction be waived. The waiver of any current deductions will not affect the Department's right to enforce future deductions or take any other necessary actions.

- 6.1. **Damage Caused by Others.** Submit proposed third-party claim for review and approval where the third party can be identified. Submit all required documentation within 60 days after the completion of repairs. Failure to submit documentation within 60 days may result in no payment. Once approved, the Department will file the claim in the Department's name.

Payment for repairs for damage caused by others will be made in accordance with TxDOT Standard Specifications Section 9.7, "Payment for Extra Work and Force Account Method", only when documentation provided by the Contractor is sufficient for the Department to file a claim.

- 6.2. When the third party cannot be identified, the Contractor's liability will be limited to a maximum of \$10,000 per incident and an annual cap of \$100,000 each year of the Contract. Only incidents with costs of \$10,000 and above will apply to the annual cap. Thereafter incidents with a cost of \$10,000 and above will be reimbursed to the Contractor less \$1,000. The Contractor will be required to show objective evidence that the third party cannot be identified and detailed costs of repair subject to approval of the Engineer within 30 Calendar Days of damage to apply towards the annual cap.

- 6.3. **Failure to Meet Performance Standards.** If the work is not in compliance with reference specifications, standard details, this Item and/or Section 5.3, "Performance Standards", or as shown in the plans, Deductions for Non-Compliance will be assessed as noted in this section, per performance standard per location per occurrence as a payment reduction each month until the work is completed. Deductions for Non-Compliance will be assessed by the Non-Compliance Deduction column unless otherwise shown in the plans. Such deductions are considered non-payment for Maintenance Services not accomplished as required by this Item. If the plans do not allow lane closure(s) and lane closure(s) is required to perform the work, as determined by the Engineer, the timeframe will begin upon allowance of the lane closure instead of the time of notification or discovery, unless the Engineer allows the lane closure(s) to proceed. Lane closure assessment fees will be determined per the assessment schedule shown in the plans.

**Table 4**  
**Failure to Submit Deliverables Non-Compliance Deductions**

Deliverable Description	Contract Section	Due Date	Non-compliance Penalty
<b>Maintenance Management Plans</b>			
Failure to Follow MMP Comment Resolution Schedule	Section 4.3	Resolve comments within the following 30 Calendar Days	\$500/day
Computerized Maintenance Management System (CMMS)	Section 4.4.1	Within 30 Calendar Days of written notice of authorization to begin Maintenance Services; updated as required or noted in plans	
Communications Plan	General Notes	Within 30 Calendar Days of written notice of authorization to begin Maintenance Services; updated as required	
Emergency Management Plan			
Snow and Ice Control Plan		Within 60 Calendar Days of written notice of authorization to begin Maintenance Services; updated as required	
<b>Reports</b>			
Monthly Work Accomplishment Report	Section 4.4.1	Due by the 3 <sup>rd</sup> business day of each month	
Customer Service Inquiries	Section 4.4.2	Daily, 24 hr interval	\$100/Day
		Immediately (within 1 hour) notify the Engineer of any contact by elected officials.	\$100/Hour
		Notify the Department of any abandoned vehicles, trailers, etc. within the right of way. Contact local law enforcement for removal of abandoned vehicles upon discovery (within 1 hour).	
Accident Report	Section 4.4.3	Due by the 15 <sup>th</sup> of each month	\$100/Day
Reporting Incidents to Engineer per Form 2111		As required in accordance with Form 2111, within 8 hours of the incident	\$500/Day
HCR Entry	Section 4.4.4	As required and in accordance with 4.4.1	\$100/Day
CCTV Inspection of Pump Stations and Storm Sewer Report	Section 4.6.5.2	Every 6 mo. first test due 60 Calendar Days before the anniversary of written notice of authorization to begin Maintenance Services	\$500/Month
Bridge Inspection Report	Section 4.6.8.1	Every 24 mo. within the first 90 Calendar Days after the written notice of authorization to begin Maintenance Services	\$1,000/Month
Signal System Inspection Report	Section 4.6.9.2	Every 12 mo. within the first 60 Calendar Days after written notice of authorization to begin Maintenance Services	
		Place a log book in each controller cabinet to record each trouble call reported, documentation of all inspections, corrective actions and findings.	\$500/Occurrence
Illumination Inspection Report	Section 4.6.10.1	Due by the 15 <sup>th</sup> of each month; within the first 30 Calendar Days after written notice of authorization to begin Maintenance Services	\$100/Day
Mobile Retroreflectivity Data Collection (MRDC) Report	Section 4.6.11.4	Every 6 mo. within 60 Calendar Days before the anniversary date stated in the written notice of authorization to begin Maintenance Services	\$500/Month
Raised Pavement Markers Inspection Report	Section 4.6.12		
<b>Other Contract Requirements</b>			
Superintendent	Item 5	In accordance with Contract Documents	\$500/Occurrence
Incident Scene Commander	Section 4.6.15		
Public Notification	General Notes Item 500		
CMMS Reporting and Availability	Section 4.4.1		
Certifications	Section 4.2		
All Other Deliverables			

Deliverable Description	Contract Section	Due Date	Non-compliance Penalty
Replace Raised Pavement Markers	Section 4.6.12	At a minimum, perform full replacement of raised pavement markers every 24 mo. on all roadbeds, simultaneously.	\$5,000/Month
Field Office and Laboratory	General Notes Item 504	To be provided in accordance with the General Notes	\$500/Day

**Table 5**  
**Roadway Asset Condition Score for Elements Audited Monthly Non-Compliance Deductions**

Monthly Audit of Asset Condition Score (ACS)	
Score	Deductions for Non-Compliance
<u>Element Category</u> identified in Exhibit 2 that achieves a monthly mean ACS of less than 3.5 and greater than 2.0	\$10,000 per Month
<u>Element Category</u> identified in Exhibit 2 that achieves a monthly mean ACS of less than 2.0 and greater than 1.0	\$15,000 per Month
<u>Element Category</u> identified in Exhibit 2 that achieves a monthly mean ACS of 1.0	\$20,000 per Month
<u>Element</u> identified in Exhibit 2 that achieves a monthly ACS of 2.0	\$10,000 per Month
<u>Element</u> identified in Exhibit 2 that achieves a monthly ACS of 1.0	\$15,000 per Month

1. Failure to record a deficiency in the CMMS system or failure to meet timeliness requirements, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$500 per day per deficiency. Failure to correct deficiencies noted as Category 1 Mitigation within the timeliness criteria, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$1,000 per interval of time per deficiency.
2. For Element Categories with only one Element, Deductions for Non-Compliance will be assessed for the Element Category, only.



**Table 6**  
**Roadway Asset Condition Score for Elements Audited Quarterly Non-Compliance Deductions**

Quarterly Audit of Asset Condition Score (ACS)	
Score	Deductions for Non-Compliance
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of less than 3.5 and greater than 2.0	\$20,000 per Quarter
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of less than 2.0 and greater than 1.0	\$25,000 per Quarter
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of 1.0	\$35,000 per Quarter
<u>Element</u> identified in Exhibit 2 that achieves a quarterly ACS of 2.0	\$20,000 per Quarter
<u>Element</u> identified in Exhibit 2 that achieves a quarterly ACS of 1.0	\$25,000 per Quarter

1. Failure to record a deficiency in the CMMS system or failure to meet timeliness requirements, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$500 per day per deficiency. Failure to correct deficiencies noted as Category 1 Mitigation within the timeliness criteria, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$1,000 per interval of time per deficiency.
2. For Element Categories with only one Element, Deductions for Non-Compliance will be assessed for the Element Category, only.

**Table 7**  
**Roadway Asset Condition Score for Elements Audited at Other Frequencies Non-Compliance Deductions**

Other Frequency Audit of Asset Condition Score (ACS)	
Score	Deductions for Non-Compliance
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of less than 3.5 and greater than 2.0	\$20,000 per Occurrence
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of less than 2.0 and greater than 1.0	\$25,000 per Occurrence
<u>Element Category</u> identified in Exhibit 2 that achieves a quarterly mean ACS of 1.0	\$35,000 per Occurrence
<u>Element</u> identified in Exhibit 2 that achieves a quarterly ACS of 2.0	\$20,000 per Occurrence
<u>Element</u> identified in Exhibit 2 that achieves a quarterly ACS of 1.0	\$25,000 per Occurrence

1. Failure to record a deficiency in the CMMS system or failure to meet timeliness requirements, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$500 per day per deficiency. Failure to correct deficiencies noted as Category 1 Mitigation within the timeliness criteria, as noted in the Contractor's MMP, may result in an additional Deduction for Non-Compliance of \$1,000 per interval of time per deficiency.
2. For Element Categories with only one Element, Deductions for Non-Compliance will be assessed for the Element Category, only.

- 6.4. **Ramp Up Period.** A ramp up period will be allowed for Deduction for Non-Compliance assessments related to Section 5.3, "Performance Standards".

**Table 8**  
**Reduction Percentage Applied to Deductions for Non-Compliance**  
**During Ramp Up Period <sup>(1)</sup>**

Calendar Days <sup>(2)</sup>	Reduction Percentage
30	25
60	50

1. Deductions for Non-Compliance related to Performance Measures, only, will be reduced by multiplying the deduction by the applicable Reduction Percentage.
2. Number of Calendar Days from the date Contractor receives written notice of authorization to begin Maintenance Services.

- 6.5. **Failure to Complete Work.** The Department may take steps to correct work when contractor fails to comply with the provisions of this specification. The Contractor will be notified in writing in advance of this intent providing the Contractor the opportunity and timeframe to make corrections, before the Department implementing actions. This may include the use of state forces, other contract agreements, or emergency contracts. Once notified that the Department is taking corrective action, refrain from performing work on the item in question, unless otherwise approved. The costs associated with these measures will be deducted from any monies due to the Contractor.