

18.0 Maintenance During Construction

This Section 18 includes the requirements for the maintenance during construction Work for the Project. This Work shall be completed in accordance with the Contract Documents.

18.1 Maintenance Administration

18.1.1 Responsibilities for Maintenance

The responsibility for performing maintenance of the highway facility will be borne by CDOT. The responsibility for performing maintenance of assets disturbed by the Contractor's Work, including but not limited to the Contractor's use of the existing water supply tank and supply lines, electrical system, drainage and seep lines, and heat trace within the Project limits, shall be borne by the Contractor.

18.1.1.1 Initiation of Contractor Maintenance Responsibilities

The Contractor shall be responsible for the maintenance of assets disturbed by the Contractor's Work, following NTP2, upon initiation of Work that impacts those assets until the issuance of Final Acceptance. For maintenance of assets that either connect to or extend outside the Contractor's Work limits, the demarcation of maintenance responsibilities between the Contractor and CDOT for that specific asset shall be determined based on the process defined in Section 18.1.2.

18.1.1.2 Termination of Contractor Maintenance Responsibilities

All responsibilities assigned to the Contractor shall remain as defined until Final Acceptance.

18.1.2 Baseline Inspection and Baseline Asset Condition Report of Existing Assets

The Contractor shall carry out inspections and tests for all assets that connect, tie into, or are dependent on the Work to function as intended, but are not part of the Work, to determine the existing condition of each asset of the Project to be maintained by Contractor during the construction period as described in Section 18.1.1 (the "Baseline Inspections").

The Contractor shall prepare a report (the "Baseline Asset Condition Report (BACR)"), which shall:

1. list in detail all such assets that are required to be subject to the Baseline Inspections;
2. assess and describe the existing condition of all such assets (including details such as photographs or test results, as applicable), which description and condition assessment reporting shall be by reference to CDOT's Highway Level of Service Manual or an alternate industry standard Approved by CDOT. Include in the existing condition assessment the estimated remaining service life of each asset.

3. identify the demarcation line of maintenance responsibilities between CDOT and the Contractor that corresponds to the Work limits and provides a logical separation in accordance with industry standard practice and any relevant codes and requirements.
4. identify the minimum baseline asset condition for each asset that shall allow for safe and reliable operation of the existing asset and shall meet or exceed the existing condition of the relevant asset. In the event that the existing asset is in such condition that the safe and reliable operation of the asset is not possible, the Contractor shall document this in the BACR.

The Contractor shall submit the proposed scope of the Baseline Inspections it intends to carry out, together with the methodology proposed and the list of qualified testing organizations in carrying out the proposed scope (“Baseline Asset Condition Inspection Plan”) to, and obtain the Acceptance thereof from, CDOT prior to the issuance of NTP2. Following Acceptance by CDOT of the Baseline Asset Condition Inspection Plan, Contractor shall provide to CDOT a minimum of ten Working Days’ written notice prior to the commencement of the Baseline Inspections.

After carrying out the Baseline Inspections, the Contractor shall submit the Baseline Asset Condition Report (BACR) to, and obtain the Acceptance thereof from, CDOT prior to the issuance of NTP2. The Accepted BACR shall be an appendix to the Maintenance Service Plan as described in Section 18.1.3.

All current CDOT maintenance records that are available for the EJMT can be provided upon request by the Contractor.

18.1.3 Maintenance Service Plan

The Contractor shall develop and submit to CDOT a Maintenance Service Plan. The plan shall define the Contractor’s complete strategy for the implementation, coordination, scheduling, and monitoring of maintenance Activities during the Project. The Maintenance Service Plan shall be updated every six months to reflect changes in the Contractor’s construction Activities. The Maintenance Service Plan shall also address the following components:

1. Maintenance Condition Survey

Every six months, the Contractor shall perform a detailed survey of maintenance conditions for any of the affected assets until all of the Contractor’s maintenance responsibilities are complete (Final Acceptance). The results of the survey shall be documented by the Contractor and submitted to CDOT for Acceptance.

2. Monthly Maintenance Progress Report

Monthly Maintenance Progress Reports shall be required for the full term of the Contractor’s maintenance responsibilities. These reports shall detail all maintenance Activities performed, monitored maintenance condition of existing facilities, identification of any deficiencies from minimum standards, and an action plan for correcting the deficiencies. Monthly Maintenance

Progress Reports shall be submitted to CDOT each month with the invoice submittal as required in Book 2, Section 2.

The Maintenance Service Plan shall be submitted to CDOT for Approval at least 15 days prior to NTP2.

18.1.4 Maintenance Responsibilities of the Contractor

Except as specifically assigned to CDOT in Section 18.1.5 below, the Contractor shall perform all maintenance Activities for all affected assets within the Project limits.

18.1.5 Maintenance Responsibilities of CDOT

CDOT will perform the following maintenance Activities:

1. Inspection of structures
2. Patching and repair of all existing roadway elements or structures, not affected by Contractor Activities, within the Project limits.
3. Snow and ice control for all lanes of traffic, prior to and during a snow event.

18.1.6 Limits of Maintenance Responsibilities

The longitudinal limits of the Contractor's maintenance responsibilities on the Project shall conform to the limits of the Project, including all portions of the Work.

Any areas disturbed by Contractor Activities shall be the sole maintenance responsibility of the Contractor.

18.1.7 Excluded Areas

There are no excluded areas within the Project limits.

18.1.8 Payment for Maintenance During Construction

Progress payments for maintenance during construction shall be according to Book 2, Section 2. Disincentives for outages of the EJMT lighting and fire life safety systems shall be according to the Project Special Provisions at the end of this Section.

18.2 Performance Specifications

In performance of maintenance on the Project, the Contractor shall comply with the CDOT Highway Maintenance Levels of Service Manual or an alternate industry standard Approved by CDOT. Specifically, the Contractor shall adhere to the requirements for data collection and measurement for equating level of service (LOS) on the Highway and incorporate these requirements into its performance of all maintenance Work according to the maintenance of LOS plan.

18.3 Right-of-Way Construction Requirements

18.3.1 Risk of Loss, Obligation to Maintain and Repair

The Contractor shall comply with requirements in Book 2, Section 8, and shall maintain improvements and provide reasonable safety and security measures to preserve any acquired ROW or easements (temporary or permanent). The Contractor shall prevent, minimize, or correct problems such as vandalism, trespassing, rodent infestation, weed control (in accordance with any local agency ordinances), illegal dumping or disposal of rubble, and other debris on all areas of the Project that are under the Contractor’s maintenance responsibility.

18.3.1.1 Loss Prevention Methods

Once the Contractor’s permission to enter has been acquired, in accordance with Book 2, Section 8, the Contractor shall manage and minimize losses to the property by utilizing some or all of the following loss prevention methods:

1. Daily site inspections
2. Installation of chain link security fencing along property boundaries
3. Installation of locking devices, accessible by Project personnel only on buildings, structures, and other improvements located on a parcel
4. Monthly inspection and application of pest/rodent control measures on each parcel
5. Coordination with local law enforcement agencies and neighborhood watch groups to increase awareness about vandalism, illegal dumping, or indication of trespass or other illegal activity on any parcel
6. Any other means and method determined necessary by CDOT or the Contractor to manage and minimize loss to the property or improvement

18.4 Deliverables

The Contractor shall submit the following to CDOT for Review, Approval, and/or Acceptance:

Table 18-1: Deliverables by the Contractor

Deliverable	Review, Acceptance, or Approval	Schedule
Baseline Asset Condition Inspection Plan	Acceptance	Prior to the issuance of NTP2
Baseline Asset Condition Report	Acceptance	Prior to the issuance of NTP2
Maintenance Service Plan	Approval	At least 15 days prior to NTP2

Deliverable	Review, Acceptance, or Approval	Schedule
Maintenance Service Plan Updates	Acceptance	Every six months
Maintenance Condition Surveys	Acceptance	Every six months
Maintenance Progress Reports	Review	Concurrent with each Monthly Invoice submittal
Electrical Work Cutover Plan	Acceptance	14 Days prior to performing Work
Fire Life Safety Systems Maintenance Plan	Acceptance	14 Days prior to performing Work
Temporary Offline Lighting And Fire Life Safety Systems Notification Form	Approval	7 Days prior to planned outage

All deliverables shall also conform to the requirements of Book 2, Section 3.

18.5 Project Special Provisions

The following pages provide the modified standard specifications that shall be applicable to the Project.

**REVISION OF SECTION 108
DISINCENTIVE FOR OFFLINE LIGHTING OR FIRE LIFE SAFETY SYSTEMS**

Section 108 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

The Contractor is responsible for maintaining full functionality of all EJMT lighting and fire life safety systems devices and communications infrastructure contained within the limits of this project throughout the duration of the project.

Offline, as used in this specification, is defined as time during which these systems are not functioning or if a device is not operating at optimal performance as determined by CDOT.

CONSTRUCTION REQUIREMENTS

Anytime Contractor work impacts a lighting or fire life safety device or system, the Contractor shall notify CDOT immediately upon discovery of an outage. This notice, as well as advanced notices described below for planned outages, shall be provided to the CDOT Project Director and the CDOT EJMT Operations Center (contact Mike Martinez at michael.a.martinez@state.co.us) by the Contractor.

(a) Planned Lighting and Fire Life Safety Systems Outages

A “planned outage” is considered to be any loss of system or device functionality or communication that can be anticipated in advance due to work activities within or related to the Project. For planned outages, CDOT shall be given proper advance notice as described below. All proposed equipment, power, and all temporary communications necessary for maintaining lighting and fire life safety systems and devices during construction shall be constructed and put in place prior to the cutover or reset in order to minimize downtime of systems and devices. The Contractor shall provide the advance notices to CDOT described below via the Temporary Offline Systems and Device Notification Form for any planned outages.

(1) EJMT Lighting System: The Contractor shall submit a detailed Electrical Work cutover plan to include all infrastructure and preparation work to be completed before the cutover, number of electricians and equipment to be used, identification of the priority circuits and infrastructure to be completed first and contingency plan if an issue should arise to CDOT for Acceptance at least 14 days prior to performing the work, as well as a 7 day advance notice to CDOT of any electrical work impacting the EJMT lighting system. The cutover plan shall include a Hold Point Inspection with IQC and CDOT at least 24 hours ahead of the cutover to confirm that all preparation work is on track to be completed. If the preparation work is determined to be incomplete at the time of the inspection, the Contractor shall reschedule the cutover. The cutover may be rescheduled as early as one week after the originally planned cutover. This cutover plan shall detail how the Contractor shall sequence the cutover activities, so that the new electrical infrastructure is installed and integrated into the existing EJMT systems and devices such that a 8-hours downtime is not exceeded. The Electrical Work cutover shall

be scheduled for an overnight shift between 10:00 pm and 6:00 am on a Sunday through Friday, excluding holidays, or per CDOT. The EJMT lighting systems and devices shall be fully functional by 6:00 am and the remaining cutover work shall complete by 9:00 am, unless otherwise approved by the Engineer.

Power shall be shut down in a responsible sequence that will not harm existing equipment. All necessary precautions and preparations shall be made and coordinated with CDOT prior to power being turned off. Power may not be off for a period of longer than 45 minutes and shall only occur during off-peak traffic hours unless specifically authorized by CDOT.

For planned outages where CDOT receives advance notice, the Contractor shall be charged a disincentive of \$1,000 per hour for any portion of the EJMT lighting system that is offline beyond the 8-hour offline period unless there is a pre-approved extended outage time.

- (2) EJMT Fire Life Safety Systems: The Contractor shall submit a fire life safety systems maintenance plan to CDOT for Acceptance at least 14 days prior to scheduling the work, as well as 7 days advance notice to CDOT of any work impacting the fire life safety systems at EJMT. This plan shall detail how the Contractor shall sequence the construction installation activities impacting the EJMT fire life safety systems, integration and testing of any new infrastructure with the existing EJMT fire life safety systems and how the Contractor will maintain full functionality of the EJMT fire life safety systems during construction. The plan shall include estimated duration of fire life safety system outages and contingency plans if an issue should arise. The EJMT fire life safety systems shall remain fully operational while traffic is utilizing the EJMT, unless otherwise Approved by CDOT.

Allowable offline periods for fire life safety systems and devices shall be a maximum 8-hour period. Fire life safety systems offline periods shall be scheduled for an overnight shift between 10:00 pm and 6:00 am on a Monday through Friday, excluding holidays, unless otherwise Approved by CDOT. For planned outages where CDOT receives advance notice, the Contractor shall be charged a disincentive of \$1,000 per hour per each device that is offline beyond the 8-hour offline period unless there is a pre-approved extended outage time. No more than two fire life safety zones shall be inoperable at any one time unless approved by CDOT.

(b) Unplanned Lighting and Fire Life Safety Systems Outages

An “unplanned outage” is considered to be any loss of EJMT lighting or fire life safety systems communications or systems and device functionality that CDOT does not receive proper advance notice, as described above, and is due to the Contractor’s negligence, act or omission under their control as a result of project activities. For clarity, the offline disincentive shall be applied beginning at the time of outage until such time the outage is fully resolved, restored or repaired, as determined by CDOT.

- (1) EJMT Lighting System: If the Contractor damages the EJMT lighting system (or any other system or infrastructure supporting the EJMT lighting system), or if CDOT loses communications or power to the system as a result of the Contractor’s negligence, act

or omission under their control, the Contractor shall be charged a disincentive. This first time lighting system disincentive rate shall be \$1,000 per hour.

This disincentive rate shall increase to \$2,000 per hour for a second occurrence, and \$3,000 per hour any subsequent occurrences.

Additionally, the Contractor shall be responsible for any CDOT or third party charges involved with investigating such an outage and restoration of the EJMT lighting system to full working condition. These disincentive rates are in addition to any costs that may be levied by CDOT for Working Time Violations per Book 2 Section 16.

- (2) EJTM Fire Life Safety Systems: If the Contractor damages the EJMT fire life safety systems or devices, or if CDOT loses communications, water supply, or power to the system as a result of the Contractor's negligence, act or omission under their control, the Contractor shall be charged a disincentive. This first time fire life safety system disincentive rate shall be \$1,000 per hour.

This disincentive rate shall increase to \$2,000 per hour for a second occurrence, and \$3,000 per hour for any subsequent occurrences.

Additionally, the Contractor shall be responsible for any charges involved with investigating such an outage and restoration of the EJMT fire life safety systems and devices to full working condition. These disincentive rates are in addition to any costs that may be levied by CDOT for Working Time Violations per Book 2 Section 16.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

All work, materials, and equipment required to reset, repair, restore, reconfigure, and perform cutover will not be measured and paid for separately, but shall be considered incidental to the work.

This disincentive is not a penalty, but is based on costs associated with the disruption of EJMT operations, impacts to the traveling public, and general safety of the traveling public.

There will be no incentive paid for this work.

The disincentive will be deducted from any monies owed to the Contractor for work performed.

**TEMPORARY OFFLINE LIGHTING AND FIRE LIFE SAFETY SYSTEMS OR
DEVICE NOTIFICATION FORM INSTRUCTIONS**

The following instructions are provided for information to the Contractor. The Contractor shall direct all questions regarding the Temporary Offline Lighting and Fire Life Safety Systems Device Notification Form to CDOT.

(a) General Instructions

Fill out this form and submit it to CDOT at least 7 days in advance of any planned system or device outage for CDOT Approval.

(b) Project Description / Location / Project # / Project Code (SA #)

Provide this information, typically found on the title sheet of the plans.

(c) Project Director / Project Director Contact / Date

Fill in the name and contact phone number of the Project Director assigned to the project. Fill in the date the form will be submitted.

(d) Contractor / Contractor Representative / Contractor Rep Contact #

Fill in the name of the Contracting company, the name of the Contractor's representative (typically the person filling out the form), and the Contractor's representative's contact telephone number.

(e) System or Device Type / Highway / Direction / Station or Mile Marker / Description of System or Device Location / Offline Date / Estimated Down Time / Online Date

Fill in the information following the examples provided. Fill in a new row for each system or device location. If there is more than one device in the same location (i.e. all lighting installed in an EJMT zone), they may be included on one line (i.e. EJMT lighting zone XX).

(f) Contractor Notes

Fill in additional information the Contractor would like to communicate with the Project Director

(g) Maintenance Notes

To be filled in as needed by CDOT maintenance personnel.